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Stock Exchanges and Seasons

Hakan Altin
Assistant Professor
Departmant of Business Administration
University of Aksaray
E-mail: hakanaltinasu@hotmail.com
Tel: +90 382 288 24 48

Abstract

In this study, the effect of seasonal changes to index returns of stock exchanges have been analyzed. In the study, 11 countries in the North Hemisphere and 6 countries in the South Hemisphere have been used. Analysis period covers the years between 2000-2010. According to descriptive statistical results, stock exchanges of countries might be affected by seasonal changes. This interaction level differs among countries. Despite this, according to hypothesis testing results, the seasonal division of years composing analysis period as spring-summer and autumn-winter in the form of two independent sample groups does not give significant results statistically. Two independent samples come from a universe with the same distribution.

Keywords: Behavioral Finace, Social Mood, Seasonal Affective Disorder, Invester Sentiment, Stock Exchanges
JEL Classification Codes: G1, G12, G14, G15

1. Introduction

Classical theory of Finance is based on the assumption that market is active and on rationality principle. According to this approach, assets' prices remain same and individual decisions do not affect assets' prices. In contrast to Classical Finance, Behavioral Finance claim that psychological factors and cognitive biases might affect assets' possible prices.

Behavioral finance is a study field relating between investment and social and psychological concepts. Studies show that investment decisions do not only depend on rational decisions but also are affected by social sciences such as sociology and psychology. Many paradoxical issues that could not be explained by classical finance teories can now be explained with the help of behavioral finance. Sociological and psychological facts existing in the origin of behavioral finance are handled with its pschological dimensions more.

According to Galler (2009), stock exchanges are not only affected by economical facts. But they are also affected by psychological states of individuals and social mental states. Price fluctuations in stock exchanges which occur cyclically are explained as a result of social mood and moods. In psychological literature, it is considered that social mental mood is between manic mood and depressed mood. The meaning of the word "social" here expresses one of the massive psychological moods. In such a case, noone can rid themselves of this process.

As long as manic mental mood continues, investors and managers will feel strong and insurmountable. According to this, investors and managers will rely on taking a great risk, on ignoring negative economy news and on positive knowledge. A continuous capital flow will be a matter of the market and stock exchanges. When this mental mood converts into negativity, a process contrary to the above mentioned explanations will be lived. When the existing strength and reliance disappear, investors and managers will begin to worry and ask for their money back. So social mental mood will be one of the determiners of the trend in economy and stock exchanges.

One of the most substantial assumptions of Efficient Market Hypothesis that explains decision-making process rationally is that the individual accepts that he has all required information in order to make the most correct decision. By using these information, the individual forms a set of alternatives in which “the best” also exists (Korkmaz and Ceylan 2006: 611). The individual will choose the best of all by evaluating these alternatives.

Kahneman and Tversky asserted that some human behaviours such as avoidance of taking risk and much self-confidence restrain their rational acting by adding the concept of “limited rationality” in financial literature and that, as a result, suboptimal consequences might occur (Korkmaz and Ceylan 2006: 613). Hence, behavioral finance is an alternating field of study unlike classical finance that helps to explain abnormalities in markets.

According to Szyszka (2010), behavioral finance is an alternating method which can explain the operation of capital markets. The fact that psychological states of people are different and human mind does not operate faultlessly leads both individual investors and Professional investors to make a mistake.

Psychological moods of individuals are not only affected by their own intrinsic properties. But they are also affected by extrinsic factors. Seasonal changes are one of the factors that might affect psychological states of individuals.

“The influence of seasonal changes on market index returns” forms the subject of the study. In the implementation phase of the study, descriptive statistics and hypothesis testing have been benefited.

2. Literature

Literature research is composed of studies made about pioneering studies on Behavioral Finance and about the influence of seasonal changes and weather conditions on stock exchanges. These are the results obtained from these studies.

Barber and Odean (2000) have analysed the relationship between trading and return. According to authors, a great deal of trading means less return. Overconfidence leads to too much trading. In their study, Bhandari and Deaves (2006) have explained the influence of overconfidence as presence of certainty and absence of knowledge.

According to Ritter (2005), Behavioral Finance is divided into two. The first one is cognitive bias including heuristics, framing, overconfidence, mental accounting, representativeness, conservatism and disposition effect. The second one is limit to arbitrage. These principles are new financial approaches that explain market abnormalities.

Barber and Odean (2001) viewed the effect of gender difference on overconfidence . According to authors, men are more self-confident. This situation leads men to take action more. The cost resulted from overaction and overconfidence remains above the expected return. According to research results of Dreman et al. (2001), men follow the market more frequently compared to women. They carry out more actions and they take the risf of loss more. Men take more risks than women. Individuals with high income invest more than individuals with low income.

In his study, Stein (2005) detected that investors hold stock certificates of local firms more. According to the author, the fact that central offices of these local firms are in its own land explains the reason why investors hold stock certificates. This case is explained with country effect.

According to Galler (2009), one of the determiners of social mental mood are politics and politicians. Politics and politicians might behave rationally or irrationally. Behaving rationally in politics leads to a decrease in risk-taking emotions by diminishing fears and worries of people. But behaving irrationally leads to changes in investors' and managers' sentiments. This situation causes an increase in risk-taking choices and in prices of stock certificates.

In his study, Prechter (2001) asserts that basic human behaviour is determined by others, this behaviour is performed as herding and that impulsive mental activities lie behind this herd behaviour. According to the author, emotional behaviour is much more fast than rational behaviour. Herd behaviour is impulsive, uncontrolled and stable. Such a herd behaviour comes into question in the existence of a strong social trend believing that lack of knowledge and confused flow of knowledges need to be followed. A great amount of massive investments are encountered more in periods when markets are on the rise. Caparrelli et al. (2004) viewed the relationship of herd behaviour in stock exchanges in their study. During this period, they explained the fluctuation in stock exchanges depending on herd behaviour.

Risk-taking or risk avoidance is a condition which might vary according to certain conditions. Positive or negative change in feeling of investor leads to increase or decrease in stock exchanges. In his study, Dreman et al. (2001) found that investor sentiment did not change from the period when the market was on the rise to the period when the market went into a decline. When speculations started to emerge, a change in investor's sentiments and in investor diversification came into question.

In his study, Caginalp (2002) asserted that prices of stock exhanges fluctuate and this situation results from expectations and motivation terms rather than supply and demand terms while the change in consumer prices is relatively steady in other developed economies. According to the author, the change and trend in prices depend on the availability and interpretability of knowledge. Equilibrium price is formed according to the knowledge level that is used by the investor in decision-making. Cash money penetrating in the market affect trading of investors. Excess cash money will lead to over-pricing in stock quotations.

In his study, Fischhoff et al. (2001) viewed the effect of activities unaccepted by society on profitability of companies. A firm which does not show responsibility will not be chosen by investors, its profit will decrease and in the last stage it will have to pull out of the market. Cooper et al. (2001) asserted that even the change of the firm name which represents the firm provides over-normal profit.

On the other hand, psychological evidences and our intuitons show that sunny weathers lead individuals to be more optimistic. In their study, Hirshleifer and Shumway (2003) researched the relationship between sunny days and stock index returns. According to authors, there is a strong and meaningful relationship between sunlight and share earnings. However, they could not find a meaningful relationship between snowy days and index earnings. For an investor, the transaction cost will decrease in an investment strategy which will be done pursuant to weather conditions. But, transaction costs as a result of trading in a short time have a reducing effect on expected earnings. The fact that investors are aware of their moods in decisions to be made will be for the benefit of investors.

Kamstra et. al. (2003) adduces significant evidences in his study that seasonal affective disorder (SAD) affects stock incomes. According to the authors, day light affects the moods of people. Psychological moods of people are one of the affecting reasons of stock incomes.

Kliger and Levy (2003) claimed in their studies that weather conditions have affected moods and emotions of people. According to the authors, the fact that an individual makes decision with a bad mood will affect his investments negatively.

In his study, Saunders (1993) did a research about whether share prices are affected by weather conditions or not. According to this, weather condition affects share prices systematically. Securities markets are affected by psychological states of investors. Investors behave irrationally in securities markets which do not operate effectively. The information coming to the market affects stock exchanges. According to the author, the effect of information to the market on stock exchanges outweighs the effect of weather conditions.

Schwarz (2010) states in his study that psyhological mood and emotion of individual are effective in decision-making process. Individuals make wide range of decisions and one of these decisions is related to stock exchanges. Good or bad feeling of the individual depending on weather conditions affects his investment decision.

In his study, Kamstra et. al. (2003) researched the effect of seasonal affective disorder (SAD) on stock returns. The fluctuation in stock exchanges is the result of SAD. There is a significant relationship between stock returns and SAD. The SAD periods are generally autumn and winter with short days. Experimental researches on psychology and economy show that the feeling of risk-avoidance increases in the periods of mental depression.

In their study, Goetzmann and Zhu (2002) viewed whether investors transacting in stock exchanges are affected by weather conditions or not. According to the authors, weather conditions do not affect individuals' investments to a high degree. The factor affecting investments is individuals' psychological moods.

In their study, Dowling and Lucey (2007) researched the relationship between psychological mood and stock prices. Depending on variations used in the study, they adduced evidences that there is a significant relationship between stock prices and high temperature. According to the authors, the mood of investors affects stock prices.

On the other hand, there are also studies in literature suggesting that weather conditions are not effective in decision-making process of investors, so stock prices are not affected by weather conditions. Among these studies, there are Loughran and Schultz (2003), Pardo and Valor (2002), and Kramer and Runde (1997). According to the authors, there is not a significant relationship between weather conditions and stock prices.

3. Purpose and Scope of the Study

The purpose of the study is to determine the effect of seasonal changes on index returns of stock exchanges. In this context, the research covers 11 countries in Northern Hemisphere (USA, Germany, China, France, India, England, Japan, Canada, Mexico, Russia, Turkey) and 6 countries in Southern Hemisphere (Argentine, Australia, Brezil, Indonesia, South Africa, New Zealand).

Depending on the calendar, in Northern Hemisphere the Spring-Summer term is between March 21 - September 23 and the Autumn-Winter term is between September 23 - March 21; in Southern Hemisphere the Spring-Summer term is between September 23 - March 21 and the Autumn-Winter term is between March 21 - September 23. The research period covers the years between 2000-2010 for each country.

4. Research Model and Implementation

In the first phase of the study, each index of stock exchanges which constitutes the research subject is divided into two terms as spring-summer and autumn-winter. Then, descriptive statistics, which reflect the characteristical features of each term, have been used by calculating the annual returns of these datas. In the second phase, whether the seasonal division of stock indexes into two statistically is significant or not has been analysed. In this phase, four tests of hypothesis have been applied. These tests of hypothesis are 2 Independent Samples Equal (Constant) Variance T Test (Levene's Test), 2 Independent Samples Mann-Whitney Test, 2 Independent Samples Kolmogorov-Smirnov Test and 2 Independent Samples Wald-Wolfowitz Tests. The fundemental features and hypothesis of these tests have been formed as follows:

Levene's Test is used to test the homogeneity of variances. The hypotheses formed for the respective test are as follows:

H_0 = Variations are equal.

H_A = Variations are not equal.

Mann-Whitney is used to test that two groups are same in case of the nonnormal data set. The hypotheses formed for the respective test are as follows:

H_0 = Two universes are same.

H_A = Two universes are not same.

In two independent groups, Kolmogorov-Smirnov Test is used to test the hypothesis that two samples come from universes with the same range. The hypotheses formed for the respective test are as follows:

H_0 = Two samples are taken from the universe with same range.

H_A = Two samples are taken from the universe with different range.

In two independent groups, Wald-Wolfowitz Test is another technique used to test null hypothesis that two samples come from universes with same range. The hypotheses used for the respective test are identical with Kolmogorov-Smirnov Test.

5. Model Analysis

5.1. Descriptive Statistics

5.1.1. Countries in the Northern Hemisphere

According to Table- 1a, SP100 index traded in US. returned negatively per 5 years, while it returns positively per 6 years in an 11-year period. While the highest season of volatility was in 2008, the lowest season of volatility was in 2005. According to Table- 1b, SP100 index returned negatively per 4 years, while it returned positively per 7 years in this period during winters. While the highest season of volatility was in 2008, the lowest season of volatility was in 2005.

Relatively, it has been detected that stock exchange remains more open and more transactions are carried out in summer periods. However, it is not easy to say that moods of investors are good in summer periods, they take more risks and this risk reflects as positive return. Because SP100 index returned more positively in winter period.

According to Table- 2a, GDAXI index transacting in Germany returned negatively per 4 years while it returned positively per 7 years in a 11-year period during summer terms. While the highest sseason of volatility was in 2009, the lowest season of volatility was in 2002. According to Table- 2b, while GDAXI index returned positively per 6 years during winter terms, it returned negatively per 5 years. While the highest season of volatility was in 2002, the lowest season of volatility was in 2005.

Relatively, it has been detected that stock exchange remains more open and more transactions are carried out in summer periods. It might be said that moods of investors are good in summer periods, they take more risks and this risk reflects as positive return. This relationship remains at a low level when summer and winter periods are compared together.

According to Table- 3a, while SSEC index transacting in China returned positively per 5 years during 11-year period in summer terms, it returned negatively per 6 years. While the highest season of volatility was in 2006, the lowest season of volatility was in 2008. According to Table- 3b, while SSEC returned positively per 6 years during winter terms, it returned negatively per 5 years. The highest season of volatility was in 2006 while the lowest season of volatility was in 2001.

Relatively, it has been detected that stock exchange remains more open and more transactions are carried out in summer periods. However, it is not easy to say that moods of investors are good in summer periods, they take more risks and this risk reflects as positive return. Because SSEC index returned more positively in winter period.

According to Table- 4a, while FCHI index transacting in France returned positively per 7 years during 11-year period in summer terms, it returned negatively per 4 years. While the highest season of volatility was in 2002, the lowest season of volatility was in 2006. According to Table- 4b, while FCHI returned positively per 6 years during winter terms, it returned negatively per 5 years. The highest season of volatility was in 2008 while the lowest season of volatility was in 2004.

Relatively, it has been detected that stock exchange remains more open and more transactions are carried out in summer periods. It might be said that moods of investors are good in summer periods, they take more risks and this risk reflects as positive return. This relationship remains at a low level for France when summer and winter periods are compared together.

According to Table- 5a, while BSESN index transacting in India returned positively per 3 years during 4-year period in summer terms, it returned negatively per 1 year. While the highest season of volatility was in 2009, the lowest season of volatility was in 2010. According to Table- 5b, while BSESN returned positively per 1 year during winter terms, it returned negatively per 3 years. The highest season of volatility was in 2008 while the lowest season of volatility was in 2010.

Relatively, it has been detected that stock exchange remains more open and more transactions are carried out in summer periods. It might be said that moods of investors are good in summer periods, they take more risks and this risk reflects as positive return. This relationship occurs at a high level for India.

According to Table- 6a, while FTSE index transacting in England returned positively per 4 years in 11-year period during summer terms, it returned negatively per 7 years. While the highest season of volatility was in 2002, the lowest season of volatility was in 2006. According to Table- 6b, while FTSE index returned positively per 6 years in this period during winter terms, it returned negatively per 5 years. The highest season of volatility was in 2008 while the lowest season of volatility was in 2004.

Relatively, it has been detected that stock exchange remains more open and more transactions are carried out in summer periods. It is impossible to say that moods of investors are good in summer periods and that they take more risks. Because FTSE index returned negatively in summer periods.

According to Table- 7a, while TPX index transacting in Japan returned positively per 4 years in 11-year period during summer terms, it returned negatively per 7 years. While the highest season of volatility was in 2008, the lowest season of volatility was in 2007. According to Table- 7b, while TPX index returned positively per 8 years in this period during winter terms, it returned negatively per 3 years. The highest season of volatility was in 2007 while the lowest season of volatility was in 2010.

Relatively, it has been detected that stock exchange remains more open and more transactions are carried out in summer periods. It is impossible to say that moods of investors are good in summer periods and that they take more risks. Because TPX index returned negatively in summer periods.

According to the Tablo- 8a, while TSX index transacting in Canada returned positively per 7 years in 11-year period during summer terms, it returned negatively per 4 years. While the highest season of volatility was in 2010, the lowest season of volatility was in 2009. According to Table- 8b, while TSX index returned positively per 5 years in this period during winter terms, it returned negatively per 6 years. The highest season of volatility was in 2008 while the lowest season of volatility was in 2000.

Relatively, it has been detected that stock exchange remains more open and more transactions are carried out in summer periods. It might be said that moods of investors are good in summer periods, they take more risks and that this risk reflects as positive return. This relationship occurred at high level for Canada.

According to Table- 9a, while MEXBOL index transacting in Mexico returned positively per 6 years in 11-year period during summer terms, it returned negatively per 5 years. While the highest season of volatility was in 2003, the lowest season of volatility was in 2000. According to Table- 9b, while MEXBOL index returned positively per 4 years in this period during winter terms, it returned negatively per 7 years. The highest season of volatility was in 2009 while the lowest season of volatility was in 2010.

Relatively, it has been detected that stock exchange remains more open and more transactions are carried out in summer periods. It might be said that moods of investors are good in summer periods, they take more risks and that this risk reflects as positive return. This relationship occurred at high level for Mexico.

According to Table-10a, while RTSI index transacting in Russia returned positively per 7 years in 11-year period during summer terms, it returned negatively per 4 years. While the highest season of volatility was in 2009, the lowest season of volatility was in 2005. According to Table- 10b, while RTSI index returned positively per 6 years in this period during winter terms, it returned negatively per 5 years. The highest season of volatility was in 2009 while the lowest season of volatility was in 2010.

Relatively, it has been detected that stock exchange remains more open and more transactions are carried out in summer periods. It might be said that moods of investors are good in summer periods, they take more risks and that this risk reflects as positive return. This relationship occurred at low level for Russia.

According to Table- 11a, while ISE100 index transacting in Turkey returned positively per 6 years in 11-year period during summer terms, it returned negatively per 5 years. While the highest season of volatility was in 2001, the lowest season of volatility was in 2005. According to Table- 11b, while ISE100 index returned positively per 5 years in this period during winter terms, it returned negatively per 6 years. The highest season of volatility was in 2008 while the lowest season of volatility was in 2006.

Relatively, it has been detected that stock exchange remains more open and more transactions are carried out in summer periods. It might be said that moods of investors are good in summer periods, they take more risks and that this risk reflects as positive return. This relationship occurred at high level for Turkey.

11 of Northern Hemisphere countries constitute the research subject. According to the results, the number of countries which returned positively in summer period is 7. These countries are Germany, France, India, Canada, Mexico, Russia and Turkey. Despite this, the number of countries which returned negatively in summer period is 4. These countries are USA, China, England and Japan. According to these results, stock indexes are affected by seasonal changes.

5.1.2. Countries in the Southern Hemisphere

According to Table- 23a, while MERV index transacting in Argentine returned positively per 6 years in 11-year period during summer terms, it returned negatively per 5 years. While the highest season of volatility was in 2008, the lowest season of volatility was in 2007. According to Table- 23b, while MERV index returned positively per 5 years in this period during winter terms, it returned negatively per 6 years. The highest season of volatility was in 2000 while the lowest season of volatility was in 2007.

Relatively, it has been detected that stock exchange remains more open and more transactions are carried out in winter periods. It might be said that moods of investors are good in summer periods, they take more risks and that this risk reflects as positive return. This relationship occurred at low level for Argentine.

According to Table- 24a, while AORD index transacting in Australia returned positively per 6 years in 11-year period during summer terms, it returned negatively per 5 years. While the highest season of volatility was in 2010, the lowest season of volatility was in 2000. According to Table- 24b, while AORD index returned positively per 6 years in this period during winter terms, it returned negatively per 5 years. The highest season of volatility was in 2008 while the lowest season of volatility was in 2000.

Relatively, it has been detected that stock exchange remains more open and more transactions are carried out in summer periods. It is impossible to say that moods of investors are good in summer periods and that they take more risks. Because AORD index has the same feature in summer and winter periods.

According to Table- 25a, while BVSP index transacting in Brazil returned positively per 6 years in 11-year period during summer terms, it returned negatively per 5 years. While the highest season of volatility was in 2003, the lowest season of volatility was in 2010. According to Table- 25b, while BVSP index returned positively per 5 years in this period during winter terms, it returned negatively per 6 years. The highest season of volatility was in 2008 while the lowest season of volatility was in 2010.

Relatively, it has been detected that stock exchange remains more open and more transactions are carried out in winter periods. It might be said that moods of investors are good in summer periods, they take more risks and that this risk reflects as positive return. This relationship occurred at low level for Brazil.

According to Table- 26a, while JSKE index transacting in Indonesia returned positively per 1 year in 4-year period during summer terms, it returned negatively per 3 years. While the highest season of volatility was in 2009, the lowest season of volatility was in 2008. According to Table- 26b, while JSKE index returned positively per 3 years in this period during winter terms, it returned negatively per 1 year. The highest season of volatility was in 2009 while the lowest season of volatility was in 2010.

Relatively, it has been detected that stock exchange remains more open and more transactions are carried out in winter periods. Despite this, it is hard to say that moods of investors are good in summer periods and that they take more risks. Because JSKE index returned negatively in summer periods.

According to Table- 27a, while JSAI index transacting in South Africa returned positively per 2 year in 4-year period during summer terms, it returned negatively per 2 years. While the highest season of volatility was in 2008, the lowest season of volatility was in 2010. According to Table- 27b, while JSAI index returned positively per 2 years in this period during winter terms, it returned negatively per 2 year. The highest season of volatility was in 2008 while the lowest season of volatility was in 2007.

Relatively, it has been detected that stock exchange remains more open and more transactions are carried out in summer periods. It is impossible to say that moods of investors are good in summer periods and that they take more risks. Because JSAI index has the same feature in summer and winter periods.

According to Table- 28a, while NZX index transacting in New Zealand returned positively per 2 years in 4-year period during summer terms, it returned negatively per 2 years. While the highest season of volatility was in 2008, the lowest season of volatility was in 2007. According to Table- 28b, while NZX index returned positively per 2 years in this period during winter terms, it returned negatively per 2 years. The highest season of volatility was in 2008 while the lowest season of volatility was in 2009.

Relatively, it has been detected that stock exchange remains more open and more transactions are carried out in winter periods. Moreover, it is impossible to say that moods of investors are good in summer periods and that they take more risks. Because NZX index has the same feature in summer and winter periods.

6 of Northern Hemisphere countries constitute the research subject. According to the results, the number of countries which returned positively in summer period is 2. These countries are Argentine and Brazil. It has been undecided about the fact that Australia, South Africa and New Zealand acquired positive return in summer. Indonesia does not have this feature.

5.2. Tests of Hypothesis Applied in Two Groups

5.2.1. Countries in the Northern Hemisphere

For USA, when the results of Levene's Test in Table-12a are analysed, it is decided that variations are not equal due to the fact that P-value is 0,013 < α (0,05) significance level. In case that variations are not equal, P-value "2-tail Sig" is viewed by choosing Unequal part. Because P-value is = 0,738 > 0,05, H_0 hypothesis is accepted. In other words, variations of both groups which belong to spring-summer and autumn-winter periods composed of 2010 index returns are equal. When Table-12b Mann-Whitney Test results are viewed, H_0 hypothesis is accepted because P is = 0,329 > 0,05 significance level. In other words, the nature of both groups is same. When Table-12c Kolmogorov-Smirnov Test results are viewed, H_0 hypothesis is accepted because P is = 0,155. That is, the nature of both groups is same.

When Table-12d Wald-Wolfowitz Test results are viewed, H_0 hypothesis is accepted in 0,05 P = 0,992 significance level. According to this, both samples come from the nature with same distribution.

For Germany, when the results of Levene's Test in Table-13a are analysed, it is decided that variations are equal due to the fact that P-value is 0,373 > α (0,05) significance level. In case that variations are equal, P-value "2-tail Sig" is viewed by choosing Unequal part. Because P-value is = 0,716 > 0,05, H_0 hypothesis is accepted. In other words, variations of both groups which belong to spring-summer and autumn-winter periods composed of 2010 index returns are equal. When Table-13b Mann-Whitney Test results are viewed, H_0 hypothesis is accepted because P is = 0,675 > 0,05 significance level. In other words, the nature of both groups is same. When Table-13c Kolmogorov-Smirnov Test results are viewed, H_0 hypothesis is accepted because P is = 0,472. That is, the nature of both groups is same. When Table-13d Wald-Wolfowitz Test results are viewed, H_0 hypothesis is accepted i0,05 significance level because P = 0,992. According to this, both samples come from the nature with same distribution.

The results are not only limited to these two countries. But they are also valid for all countries in the Northern Hemisphere which constitute the research subject. Besides, these results are not limited to the year 2010. Same results have been found for all years related to the research period.

5.2.2. Countries in the Southern Hemisphere

For Argentine, when the results of Levene's Test in Table-29a are analysed, it is decided that variations are equal due to the fact that P-value is 0,398 > α (0,05) significance level. In case that variations are equal, P-value "2-tail Sig" is viewed by choosing Equal part. Because P-value is = 0,884 > 0,05, H_0 hypothesis is accepted. In other words, variations of both groups which belong to spring-summer and autumn-winter periods composed of 2010 index returns are equal. When Table-29b Mann-Whitney Test results are viewed, H_0 hypothesis is accepted because P is = 0,166 > 0,05 significance level. In other words, the nature of both groups is same. When Table-29c Kolmogorov-Smirnov Test results are viewed, H_0 hypothesis is accepted because P is = 0,453. That is, both samples come from the nature with same distribution. When Table-29d Wald-Wolfowitz Test results are viewed, H_0 hypothesis is accepted in 0,05 significance level because P = 0,984. According to this, both samples come from the nature with same distribution.

For Australia, when the results of Levene's Test in Table-29a are analysed, it is decided that variations are not equal due to the fact that P-value is 0,001 < α (0,05) significance level. In case that variations are not equal, P-value "2-tail Sig" is viewed by choosing Unequal part. Because P-value is = 0,587 > 0,05, H_0 hypothesis is accepted. In other words, variations of both groups which belong to spring-summer and autumn-winter periods composed of 2010 index returns are equal. When Table-30b Mann-Whitney Test results are viewed, H_0 hypothesis is accepted because P is = 0,585 > 0,05 significance level. In other words, the nature of both groups is same. When Table-30c Kolmogorov-Smirnov Test results are viewed, H_0 hypothesis is accepted because P is = 0,187. That is, both samples come from the nature with same distribution. When Table-12d Wald-Wolfowitz Test results are viewed, H_0 hypothesis is accepted in 0,05 significance level because P = 0,779. According to this, both samples come from the nature with same distribution.

The results are not only limited to these two countries. But they are also valid for all countries in the Southern Hemisphere which constitute the research subject. Besides, these results are not limited to the year 2010. Same results have been found for all years related to the research period.

According to results of Hypothesis tests, the division of stock returns into two seasonally has not given a significant result statistically.

6. Conclusion

In this study, whether seasonal changes affect stock indexes has been analysed. According to descriptive statistical results, 10 of total 17 country stock exchanges in the northern and southern hemispheres are affected by seasonal changes. It has been undecided about stock exchange of 2 countries regarding this effect. The remaining stock exchanges of 5 countries are not affected by seasonal changes.

The effect level for countries affected by seasonal changes differs among countries. According to this, while the effect level for some countries occurs at a high level, this effect occurs at a low level for others. Hence, it is not easy to generalize that individuals or investors feel better psychologically in spring-summer period, they invest more and that they earn more positive income.

On the other hand, according to results of hypothesis test, the division of stock returns into two seasonally does not give a significant result statistically. So separation of stock index returns in some way is not suggested by us.

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Appendix A: Nort Hemisphere Countries

Table 1a: United States of America: SP100: Sp 100 Index

Sample: 1 127

	SUMMER2000	SUMMER2001	SUMMER2002	SUMMER2003	SUMMER2004	SUMMER2005	SUMMER2006	SUMMER2007	SUMMER2008	SUMMER2009	SUMMER2010
Mean	-0.000277	-0.000961	-0.002324	0.000981	3.45E-05	9.93E-05	0.000316	0.000673	-0.000826	0.001934	-0.000277
Median	0.000216	-0.001943	-0.002597	0.001256	0.001060	0.000751	0.000325	0.000895	0.000251	0.002103	0.000216
Maximum	0.040770	0.049074	0.058551	0.028644	0.018373	0.020364	0.019829	0.027434	0.043121	0.034796	0.040770
Minimum	-0.038050	-0.052777	-0.045074	-0.036572	-0.015768	-0.015029	-0.017300	-0.031684	-0.048935	-0.040632	-0.038050
Std. Dev.	0.012826	0.014841	0.018827	0.010502	0.006909	0.006356	0.006732	0.009627	0.015245	0.013324	0.012826
Skewness	-0.009477	0.127902	0.568601	-0.200858	-0.106561	0.043756	0.207434	-0.381784	-0.165629	-0.407125	-0.009477
Kurtosis	4.215579	4.631056	3.778581	3.578627	3.024553	2.993415	3.863047	4.320343	4.370522	3.851105	4.215579
Jarque-Bera	7.821036	14.42392	10.05107	2.625649	0.243542	0.040755	4.852277	12.31024	10.52016	7.341571	7.821036
Probability	0.020030	0.000738	0.006568	0.269059	0.885351	0.979829	0.088377	0.002123	0.005195	0.025456	0.020030
Sum	-0.035166	-0.122001	-0.295096	0.124605	0.004388	0.012611	0.040130	0.085459	-0.104939	0.245674	-0.035166
Sum Sq. Dev.	0.020728	0.027752	0.044660	0.013897	0.006014	0.005091	0.005710	0.011679	0.029285	0.022369	0.020728
Observations	127	127	127	127	127	127	127	127	127	127	127

Table 1b: United States of America: SP100: Sp 100 Index

Sample: 1 123

	WINTER2000	WINTER2001	WINTER2002	WINTER2003	WINTER2004	WINTER2005	WINTER2006	WINTER2007	WINTER2008	WINTER2009	WINTER2010
Mean	0.000521	0.001334	0.003602	-0.000697	0.000242	0.000153	-0.000108	-0.000647	0.002588	-0.001917	0.000319
Median	0.001198	0.001198	-0.000633	0.000633	0.000315	0.000147	0.000960	-0.000397	-0.002818	0.000872	0.001434
Maximum	0.149086	0.127385	0.324235	0.034408	0.016260	0.016891	0.012240	0.030431	0.585026	0.062366	0.021653
Minimum	-0.037754	-0.050347	-0.035682	-0.163130	-0.045322	-0.016117	-0.122893	-0.044871	-0.087769	-0.143377	-0.075828
Std. Dev.	0.021156	0.017919	0.033112	0.018455	0.008187	0.005987	0.012191	0.010905	0.062560	0.021380	0.010613
Skewness	2.907807	2.716677	7.467831	-5.501923	-1.344321	-0.048360	-8.397399	-0.891442	6.648150	-2.379871	-3.169190
Kurtosis	21.69555	22.07278	72.82526	50.11708	9.416645	3.228505	85.16453	5.844630	62.51093	17.83010	23.48955
Jarque-Bera	1916.725	2015.622	26130.54	11998.16	248.0609	0.315541	36044.51	57.76179	19056.51	1243.258	2357.482
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.854046	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	0.062524	0.164132	0.442992	-0.085679	0.029760	0.018813	-0.013318	-0.079536	0.318332	-0.235732	0.039189
Sum Sq. Dev.	0.053264	0.039173	0.133763	0.041552	0.008178	0.004374	0.018131	0.014507	0.477471	0.055767	0.013741
Observations	123	123	123	123	123	123	123	123	123	123	123

Table 2a: Germany: GDAXI: Dax Index

Sample: 1 128

	SUMMER00	SUMMER01	SUMMER02	SUMMER03	SUMMER04	SUMMER05	SUMMER06	SUMMER07	SUMMER08	SUMMER09	SUMMER10
Mean	-0.001036	-0.002921	-0.004022	0.002064	0.000558	0.001099	0.000121	0.001225	-0.000433	0.002586	0.000419
Median	-0.001058	-0.001901	-0.005725	0.001351	-8.28E-06	0.001534	0.001137	0.001810	-0.000194	0.003294	0.001240
Maximum	0.030883	0.038631	0.078452	0.058352	0.023040	0.017129	0.026393	0.023185	0.055618	0.060837	0.052986
Minimum	-0.031444	-0.064358	-0.058298	-0.061395	-0.028501	-0.025520	-0.034040	-0.024285	-0.029056	-0.050985	-0.033325
Std. Dev.	0.012978	0.017872	0.025299	0.018842	0.010392	0.007766	0.011458	0.010679	0.012921	0.016830	0.013115
Skewness	0.080105	-0.623325	0.417402	-0.080369	-0.271087	-0.455540	-0.297025	-0.283584	0.484511	-0.141997	0.170597
Kurtosis	2.675691	4.600078	3.730501	3.951216	3.085715	3.907323	3.111573	2.712660	4.799250	4.115381	4.751552
arque-Bera	0.697831	21.94338	6.562823	4.963462	1.606934	8.817608	1.948499	2.155964	22.27363	7.065220	16.98319
Probability	0.705453	0.000017	0.037575	0.083598	0.447774	0.012170	0.377476	0.340282	0.000015	0.029229	0.000205

Table 2a: Germany: GDAXI: Dax Index – continued

Sample: 1 128 - continued

Sum	-0.132562	-0.373952	-0.514795	0.264137	0.071380	0.140694	0.015523	0.156839	-0.055456	0.331028	0.053691
Sum Sq. Dev.	0.021391	0.040567	0.081286	0.045087	0.013714	0.007660	0.016675	0.014484	0.021202	0.035974	0.021846
Observations	128	128	128	128	128	128	128	128	128	128	128

Table 2b: Germany: GDAXI: Dax Index

Sample: 1 122

	WINTER00	WINTER01	WINTER02	WINTER03	WINTER04	WINTER05	WINTER06	WINTER07	WINTER08	WINTER09	WINTER10
Mean	0.001367	0.003484	0.007116	-0.001544	2.63E-05	-0.000987	0.000143	-0.001058	0.002143	-0.002380	-0.000265
Median	0.001887	0.001584	0.000791	0.000294	0.000828	0.000723	0.001711	0.000737	-0.002316	-0.000976	0.000941
Maximum	0.049296	0.396018	0.786568	0.068703	0.026217	0.021433	0.022447	0.025535	0.652553	0.054250	0.026634
Minimum	-0.035578	-0.126849	-0.055315	-0.216919	-0.055821	-0.206486	-0.173860	-0.171828	-0.072300	-0.165232	-0.125270
Std. Dev.	0.017523	0.041179	0.075394	0.027620	0.010438	0.020068	0.017573	0.017879	0.067374	0.023782	0.014885
Skewness	0.163772	6.915721	9.149796	-3.822181	-1.566716	-8.884357	-8.034213	-7.213708	7.495948	-2.481154	-4.904996
Kurtosis	2.862553	69.70704	95.23416	31.79647	9.488633	91.68633	80.22184	69.60333	72.65332	19.75516	41.99861
Jarque-Bera	0.641397	23592.45	44946.91	4512.339	263.9305	41586.71	31625.49	23607.78	25804.74	1552.245	8220.397
Probability	0.725642	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	0.166715	0.425000	0.868158	-0.188406	0.003205	-0.120436	0.017423	-0.129065	0.261449	-0.290300	-0.032335
Sum Sq. Dev.	0.037152	0.205179	0.687787	0.092305	0.013183	0.048730	0.037365	0.038678	0.549258	0.068437	0.026811
Observations	122	122	122	122	122	122	122	122	122	122	122

Table 3a: China: SSEC: Shanghai Se Composite Index

Sample: 1 128

	SUMMER00	SUMMER01	SUMMER02	SUMMER03	SUMMER04	SUMMER05	SUMMER06	SUMMER07	SUMMER08	SUMMER09	SUMMER10
Mean	0.001190	-0.001080	-0.000293	-0.000413	-0.001855	2.65E-05	0.002356	0.004713	-0.005024	0.001753	-0.001241
Median	0.002294	0.000000	0.000000	-0.000343	-0.001313	-0.000470	0.002022	0.007523	-0.004636	0.004692	-7.28E-06
Maximum	0.026386	0.034687	0.092525	0.033984	0.042196	0.082100	0.042572	0.053318	0.092944	0.047901	0.034798
Minimum	-0.045708	-0.052722	-0.030563	-0.030394	-0.028038	-0.037549	-0.053349	-0.082570	-0.077287	-0.067445	-0.050692
Std. Dev.	0.010194	0.011361	0.013460	0.010067	0.012253	0.015277	0.014392	0.021300	0.027913	0.019113	0.014264
Skewness	-0.972464	-0.919600	2.778694	0.470153	0.633733	1.283582	-0.598249	-1.188491	0.347950	-0.859972	-0.612220
Kurtosis	6.252981	7.059513	20.01686	4.573967	3.993874	8.362137	5.670113	5.507012	3.896602	4.577940	4.676238
Jarque-Bera	76.61139	105.9323	1709.111	17.92826	13.83603	188.4952	45.65927	63.65415	6.870243	29.05655	22.98148
Probability	0.000000	0.000000	0.000000	0.000128	0.000990	0.000000	0.000000	0.000000	0.032221	0.000000	0.000010
Sum	0.152343	-0.138254	-0.037479	-0.052821	-0.237433	0.003391	0.301510	0.603264	-0.643092	0.224420	-0.158875
Sum Sq. Dev.	0.013199	0.016392	0.023007	0.012871	0.019066	0.029639	0.026305	0.057616	0.098948	0.046396	0.025840
Observations	128	128	128	128	128	128	128	128	128	128	128

Table 3b: China: SSEC: Shanghai Se Composite Index

Sample: 1 114

	WINTER00	WINTER01	WINTER02	WINTER03	WINTER04	WINTER05	WINTER06	WINTER07	WINTER08	WINTER09	WINTER10
Mean	-0.000265	0.001211	-0.000106	0.000908	0.001475	0.001046	-7.51E-05	-0.003925	0.013596	-0.000614	0.001667
Median	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.002884	0.000000	0.000000	0.003459	0.000000
Maximum	0.090515	0.264718	0.204639	0.058097	0.175338	0.090814	0.042016	0.049353	1.870605	0.061156	0.189379
Minimum	-0.321734	-0.046210	-0.063335	-0.101899	-0.038782	-0.023257	-0.566035	-0.491506	-0.072173	-0.423552	-0.051564
Std. Dev.	0.033911	0.029552	0.024936	0.015719	0.020315	0.013771	0.054770	0.051285	0.177420	0.045327	0.022475
Skewness	-7.388591	6.498530	4.952851	-1.829254	5.533191	2.826522	-9.788868	-7.644877	10.18541	-7.244883	5.000230
Kurtosis	72.67242	57.68059	41.94088	18.88129	48.37842	18.78671	101.8038	73.09409	107.1537	67.99587	44.14267
Jarque-Bera	24094.90	15004.73	7668.946	1261.600	10362.91	1335.592	48191.00	24448.05	53499.05	21063.48	8515.460
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	-0.030189	0.138052	-0.012132	0.103475	0.168195	0.119227	-0.008566	-0.447424	1.549989	-0.070031	0.190063
Sum Sq. Dev.	0.129948	0.098684	0.070265	0.027920	0.046634	0.021431	0.338978	0.297202	3.556993	0.232164	0.057079
Observations	114	114	114	114	114	114	114	114	114	114	114

Table 4a: France: FCHI: Cac 40 Index

Sample: 1 128

	SUMMER00	SUMMER01	SUMMER02	SUMMER03	SUMMER04	SUMMER05	SUMMER06	SUMMER07	SUMMER08	SUMMER09	SUMMER10
Mean	1.89E-05	-0.002352	-0.003305	0.001108	0.000394	0.000895	5.67E-05	0.000385	-0.000507	0.002340	-0.000233
Median	0.000273	-0.003074	-0.001813	0.002141	0.000288	0.000405	0.001625	0.000452	1.39E-05	0.002619	0.000000
Maximum	0.030989	0.035077	0.070375	0.041305	0.020784	0.018881	0.024521	0.032701	0.092729	0.053676	0.096593
Minimum	-0.039665	-0.073907	-0.053980	-0.056675	-0.027327	-0.020507	-0.031757	-0.032566	-0.037780	-0.042695	-0.045983
Std. Dev.	0.013906	0.016369	0.023905	0.015092	0.008846	0.006749	0.010899	0.011623	0.016222	0.015438	0.017924
Skewness	-0.337133	-0.761526	0.215772	-0.580363	-0.339497	-0.274738	-0.356818	-0.313833	1.362039	-0.132000	0.872305
Kurtosis	2.939799	5.296109	3.195904	4.641228	3.315335	3.715569	3.427653	3.377612	10.21614	3.764582	8.926490
Jarque-Bera	2.444045	40.48962	1.197913	21.55154	2.989169	4.341131	3.691545	2.861630	317.2978	3.489502	203.5571
Probability	0.294634	0.000000	0.549385	0.000021	0.224342	0.114113	0.157903	0.239114	0.000000	0.174688	0.000000
Sum	0.002418	-0.301061	-0.423003	0.141851	0.050409	0.114616	0.007253	0.049319	-0.064958	0.299475	-0.029806
Sum Sq. Dev.	0.024561	0.034030	0.072571	0.028925	0.009938	0.005785	0.015086	0.017158	0.033420	0.030269	0.040801
Observations	128	128	128	128	128	128	128	128	128	128	128

Table 4b: France: FCHI: Cac 40 Index

Sample: 1 123

	WINTER 00	WINTER 01	WINTER 02	WINTER 03	WINTER 04	WINTER 05	WINTER 06	WINTER 07	WINTER 08	WINTER 09	WINTER 10
Mean	0.000143	0.003473	0.004862	-0.000962	-0.000151	-0.000758	0.000882	-0.000227	0.002847	-0.002207	0.000394
Median	0.000983	-0.000955	-1.90E-05	-0.001094	0.001086	0.000121	0.001146	-4.09E-05	-0.001775	-0.000765	-1.81E-05
Maximum	0.035361	0.575056	0.245355	0.072533	0.024598	0.043819	0.285975	0.023378	0.727260	0.057314	0.044736
Minimum	-0.041463	-0.203882	-0.058657	-0.094685	-0.038242	-0.216619	-0.332790	-0.030221	-0.090368	-0.153825	-0.034015
Std. Dev.	0.015710	0.057205	0.035537	0.018687	0.008947	0.021122	0.040368	0.009786	0.073737	0.022003	0.011575
Skewness	-0.149008	7.814909	4.264116	-0.311866	-1.032495	-8.681472	-1.748634	-0.306701	7.800509	-2.497968	0.073917
Kurtosis	2.735691	83.81230	28.05027	9.404881	5.977799	90.35181	59.13869	3.566927	77.19785	20.16325	4.467057
Jarque-Bera	0.813198	34721.46	3588.765	212.2342	67.29882	40650.53	16214.39	3.575555	29462.15	1637.624	11.14233
Probability	0.665911	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.167332	0.000000	0.000000	0.003806
Sum	0.017638	0.427185	0.598021	-0.118382	-0.018624	-0.093285	0.108445	-0.027945	0.350195	-0.271404	0.048513
Sum Sq. Dev.	0.030108	0.399230	0.154068	0.042602	0.009766	0.054431	0.198804	0.011684	0.663328	0.059066	0.016347
Observations	123	123	123	123	123	123	123	123	123	123	123

Table 5a: Indian: BSESN: Bse Sensex 30 Index

Sample: 1 125

	SUMMER07	SUMMER08	SUMMER09	SUMMER10
Mean	0.001957	-0.000702	0.004902	0.000834
Median	0.001810	-0.003373	0.003714	0.001161
Maximum	0.041715	0.060702	0.173393	0.033481
Minimum	-0.047179	-0.049084	-0.058315	-0.027689
Std. Dev.	0.013368	0.022569	0.024847	0.009746
Skewness	-0.795756	0.398777	2.359451	-0.070502
Kurtosis	5.613050	3.121250	18.61658	4.013612
Jarque-Bera	48.75492	3.389553	1386.175	5.454646
Probability	0.000000	0.183640	0.000000	0.065394
Sum	0.244685	-0.087785	0.612741	0.104193
Sum Sq. Dev.	0.022161	0.063160	0.076555	0.011778
Observations	125	125	125	125

Table 5b: Indian: BSESN: Bse Sensex 30 Index

Sample: 1 117

	WINTER07	WINTER08	WINTER09	WINTER10
Mean	-0.001745	0.004483	-0.004038	-0.001228
Median	0.000612	-0.003540	0.000000	0.000000
Maximum	0.049895	1.111982	0.049481	0.023983
Minimum	-0.310027	-0.109564	-0.428538	-0.143423
Std. Dev.	0.033821	0.108727	0.043583	0.017011
Skewness	-6.462354	9.124941	-7.981045	-5.078251
Kurtosis	60.32224	93.63824	78.39243	43.03290
Jarque-Bera	16832.83	41673.20	28951.68	8315.716
Probability	0.000000	0.000000	0.000000	0.000000
Sum	-0.204222	0.524531	-0.472422	-0.143692
Sum Sq. Dev.	0.132684	1.371309	0.220339	0.033569
Observations	117	117	117	117

Table 6a: England: FTSE: Ftse 100 Index

Sample: 1 126

	SUMMER00	**SUMMER01**	**SUMMER02**	**SUMMER03**	**SUMMER04**	**SUMMER05**	**SUMMER06**	**SUMMER07**	**SUMMER08**	**SUMMER09**	**SUMMER10**
Mean	-0.000353	-0.001673	-0.002507	0.000831	0.000480	0.000741	-8.72E-05	-3.25E-05	-0.000614	0.002022	-7.57E-05
Median	-0.000692	-0.001663	-0.001956	0.001557	0.000599	0.001173	0.000000	0.000000	-0.000272	0.001173	0.000000
Maximum	0.024981	0.032264	0.049985	0.031827	0.014898	0.014326	0.026389	0.035041	0.039231	0.043958	0.031181
Minimum	-0.030082	-0.040771	-0.054355	-0.030509	-0.022941	-0.013634	-0.029198	-0.040987	-0.039231	-0.034059	-0.031448
Std. Dev.	0.011302	0.013790	0.019367	0.010605	0.006720	0.005024	0.009532	0.011156	0.013818	0.013336	0.012076
Skewness	-0.162773	-0.262335	-0.056884	-0.233344	-0.406692	-0.181827	-0.275307	-0.418116	-0.011184	0.113878	-0.117974
Kurtosis	3.478291	3.490317	3.597952	3.324980	3.577699	3.313775	3.836288	5.370180	3.421163	3.967639	3.494323
Jarque-Bera	1.757398	2.707375	1.945071	1.697900	5.225486	1.211169	5.263413	33.16443	0.933863	5.188035	1.575138
Probability	0.415323	0.258286	0.378123	0.427864	0.073333	0.545755	0.071956	0.000000	0.626923	0.074719	0.454949
Sum	-0.044416	-0.210753	-0.315942	0.104686	0.060493	0.093423	-0.010987	-0.004092	-0.077353	0.254722	-0.009541
Sum Sq. Dev.	0.015966	0.023770	0.046883	0.014058	0.005646	0.003155	0.011359	0.015558	0.023867	0.022231	0.018230
Observations	126	126	126	126	126	126	126	126	126	126	126

Table 6b: England : FTSE: Ftse 100 Index

Sample: 1 122

	WINTER00	**WINTER01**	**WINTER02**	**WINTER03**	**WINTER04**	**WINTER05**	**WINTER06**	**WINTER07**	**WINTER08**	**WINTER09**	**WINTER10**
Mean	0.000566	0.001705	0.003530	-0.000827	-0.000293	-0.000737	0.000329	-0.000379	0.001783	-0.002102	0.000130
Median	0.001566	0.000528	0.000448	-0.000678	0.000542	0.000468	0.000634	0.000928	-0.001455	-0.000593	0.000776
Maximum	0.070775	0.177838	0.337820	0.060815	0.019428	0.019929	0.014602	0.028281	0.460764	0.048789	0.022164
Minimum	-0.025180	-0.029044	-0.047451	-0.103100	-0.064293	-0.137360	-0.096772	-0.029818	-0.084844	-0.158965	-0.078826
Std. Dev.	0.013931	0.020107	0.034007	0.016576	0.008461	0.013802	0.010528	0.010718	0.051100	0.021289	0.011159
Skewness	0.953646	5.540626	7.868322	-1.496919	-3.552110	-8.013013	-6.456538	-0.277077	5.971248	-3.311175	-2.951871
Kurtosis	6.774530	49.43233	77.98220	15.29344	28.43355	80.15471	60.52414	3.481530	54.72439	25.89878	22.06647
Jarque-Bera	90.91462	11583.67	29839.02	813.7994	3544.789	31565.89	17668.52	2.739698	14325.01	2888.400	2025.121
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.254145	0.000000	0.000000	0.000000
Sum	0.069012	0.207978	0.430625	-0.100857	-0.035727	-0.089928	0.040096	-0.046271	0.217481	-0.256440	0.015918
Sum Sq. Dev.	0.023483	0.048921	0.139932	0.033245	0.008662	0.023048	0.013412	0.013900	0.315958	0.054841	0.015068
Observations	122	122	122	122	122	122	122	122	122	122	122

Table 7a: Japan: TPX: Topix Index Tokyo

Sample: 1 135

	SUMMER00	**SUMMER01**	**SUMMER02**	**SUMMER03**	**SUMMER04**	**SUMMER05**	**SUMMER06**	**SUMMER07**	**SUMMER08**	**SUMMER09**	**SUMMER10**
Mean	-0.000976	-0.001455	-0.001142	0.002136	0.000124	0.000833	-0.000371	-0.000849	-0.000592	0.001675	-0.001112
Median	-0.001039	-0.002607	-0.000893	0.002141	0.000674	0.000606	0.000284	-0.000226	-0.000436	0.002171	-0.000239
Maximum	0.030986	0.043719	0.031025	0.032350	0.030692	0.020042	0.036037	0.030371	0.041918	0.046147	0.024459
Minimum	-0.061220	-0.038952	-0.031630	-0.034832	-0.056782	-0.016634	-0.034807	-0.055548	-0.050654	-0.042436	-0.034769
Std. Dev.	0.014085	0.013607	0.013129	0.011502	0.011897	0.006734	0.012545	0.011225	0.015978	0.014591	0.012195
Skewness	-0.658213	0.308410	0.022620	-0.237488	-0.812239	0.077097	-0.084896	-0.844487	0.018135	-0.028186	-0.185244
Kurtosis	5.041567	3.819764	2.549701	3.730526	6.692796	3.517762	3.614462	7.334947	2.902776	3.865341	2.904790
Jarque-Bera	29.99663	5.350101	1.041147	3.859622	82.73465	1.483586	2.065831	110.0257	0.054737	3.822627	0.743823
Probability	0.000000	0.068903	0.594180	0.145176	0.000000	0.476259	0.355968	0.000000	0.973003	0.147886	0.689415
Sum	-0.119013	-0.177463	-0.139343	0.260559	0.015070	0.101595	-0.045294	-0.103625	-0.072240	0.204370	-0.135715
Sum Sq. Dev.	0.024005	0.022402	0.020857	0.016008	0.017126	0.005486	0.019044	0.015245	0.030890	0.025760	0.017995
Observations	122	122	122	122	122	122	122	122	122	122	122

Table 7b: Japan: TPX: Topix Index Tokyo

Sample: 1 109

	WINTER 00	**WINTER 01**	**WINTER 02**	**WINTER 03**	**WINTER 04**	**WINTER 05**	**WINTER 06**	**WINTER 07**	**WINTER 08**	**WINTER 09**	**WINTER10**
Mean	0.001146	0.001922	0.002103	-0.002303	0.000205	-0.000829	0.000481	0.001077	0.002970	-0.002330	0.000688
Median	-0.002926	-0.000884	-0.000835	0.000991	0.000000	0.000835	0.000683	0.000249	-0.001423	-0.001440	0.000111
Maximum	0.272957	0.262590	0.249819	0.028003	0.023215	0.024386	0.031575	0.146671	0.717425	0.048433	0.023249
Minimum	-0.046011	-0.029354	-0.034915	-0.178070	-0.078843	-0.304814	-0.034898	-0.034201	-0.095227	-0.053273	-0.021194
Std. Dev.	0.029808	0.028491	0.028215	0.021961	0.011441	0.030598	0.011422	0.018777	0.077570	0.015898	0.009860
Skewness	7.023741	7.084698	6.276254	-4.845081	-2.908679	-9.099753	-0.188273	4.156944	7.243726	-0.042494	0.098410
Kurtosis	64.81753	65.60434	55.75508	38.96582	22.25501	91.05706	3.942225	34.42112	67.45462	4.358864	2.745738
Jarque-Bera	18251.77	18712.01	13355.51	6301.286	1837.545	36720.59	4.675980	4797.851	19821.13	8.419049	0.469548
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.096521	0.000000	0.000000	0.014853	0.790749

Table 7b: Japan: TPX: Topix Index Tokyo – continued

Sum	0.124961	0.209502	0.229184	-0.251031	0.022330	-0.090338	0.052471	0.117426	0.323783	-0.253999	0.074964
Sum Sq. Dev.	0.095963	0.087665	0.085980	0.052088	0.014136	0.101117	0.014090	0.038076	0.649842	0.027297	0.010501
Observations	109	109	109	109	109	109	109	109	109	109	109

Table 8a: Canadian: TSX: SP/ Toronto Stock Exchange Composite

Sample: 1 126

	SUMMER00	SUMMER01	SUMMER02	SUMMER03	SUMMER04	SUMMER05	SUMMER06	SUMMER07	SUMMER08	SUMMER09	SUMMER10
Mean	0.000863	-0.000768	-0.001942	0.001174	6.93E-05	0.001000	-0.000125	0.000498	-0.000247	0.002107	0.000157
Median	0.002449	-0.000102	-0.002479	0.001122	0.000399	0.000854	0.000475	0.001865	0.000709	0.002863	0.000419
Maximum	0.034245	0.039915	0.021954	0.014006	0.018705	0.019024	0.023035	0.016981	0.028846	0.039319	0.021849
Minimum	-0.039441	-0.040288	-0.026376	-0.015945	-0.030639	-0.014369	-0.026188	-0.027658	-0.040373	-0.041202	-0.029566
Std. Dev.	0.015385	0.010788	0.008249	0.005863	0.006974	0.006476	0.008922	0.008800	0.012954	0.015889	0.009001
Skewness	-0.233859	-0.049314	-0.030004	-0.170428	-0.639144	-0.051012	-0.221583	-0.571887	-0.596898	-0.350849	-0.238098
Kurtosis	3.162938	5.578265	2.883290	3.108354	5.735329	2.902978	3.048021	3.118932	3.538332	2.761578	3.789686
Jarque-Bera	1.287872	34.95018	0.090417	0.671599	47.85924	0.104065	1.043188	6.942413	9.003497	2.883433	4.464432
Probability	0.525221	0.000000	0.955798	0.714766	0.000000	0.949298	0.593574	0.031080	0.011090	0.236521	0.107290
Sum	0.108701	-0.096722	-0.244693	0.147902	0.008735	0.126047	-0.015812	0.062770	-0.031131	0.265435	0.019809
Sum Sq. Dev.	0.029587	0.014548	0.008507	0.004298	0.006080	0.005242	0.009950	0.009679	0.020977	0.031556	0.010127
Observations	126	126	126	126	126	126	126	126	126	126	126

Table 8b: Canadian: TSX: SP/ Toronto Stock Exchange Composite

Sample: 1 114

	WINTER 00	WINTER 01	WINTER 02	WINTER 03	WINTER 04	WINTER 05	WINTER 06	WINTER 07	WINTER 08	WINTER 09	WINTER 10
Mean	-0.000743	0.001645	0.002423	-0.001481	0.000325	-0.000911	0.000228	-0.000655	0.002153	-0.002897	-7.42E-05
Median	-0.001257	0.001154	0.000144	0.000218	0.001318	0.001051	0.000542	0.001123	-8.40E-05	-1.32E-06	0.000710
Maximum	0.041770	0.118551	0.166478	0.016717	0.014030	0.018757	0.016168	0.021864	0.577081	0.166597	0.019677
Minimum	-0.081172	-0.064022	-0.017871	-0.194100	-0.104733	-0.188896	-0.113632	-0.064736	-0.090194	-0.232965	-0.116679
Std. Dev.	0.018978	0.016786	0.018494	0.019309	0.011266	0.019097	0.013161	0.010715	0.062980	0.033823	0.013277
Skewness	-0.612614	2.492553	6.310629	-8.809582	-7.158135	-8.479457	-5.801074	-2.123614	6.691406	-1.996751	-5.988022
Kurtosis	5.720628	23.80865	55.76010	88.45534	67.67353	83.89373	50.41657	13.00069	62.27140	26.27242	53.46080
Jarque-Bera	42.28925	2174.794	13978.89	36161.99	20841.20	32449.15	11318.97	560.7505	17537.94	2648.379	12776.16
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	-0.084700	0.187477	0.276262	-0.168827	0.037033	-0.103868	0.025970	-0.074691	0.245389	-0.330222	-0.008462
Sum Sq. Dev.	0.040700	0.031839	0.038649	0.042131	0.014342	0.041212	0.019573	0.012975	0.448205	0.129273	0.019921
Observations	114	114	114	114	114	114	114	114	114	114	114

Table 9a: Mexico: MEXBOL: IPC Index

Sample: 1 121

	SUMMER00	SUMMER01	SUMMER02	SUMMER03	SUMMER04	SUMMER05	SUMMER06	SUMMER07	SUMMER08	SUMMER09	SUMMER10
Mean	-0.001043	-0.000407	-0.001314	0.002256	0.000645	0.001316	0.000914	0.000749	-0.001162	0.003192	-0.000118
Median	-0.000989	0.000155	-0.001925	0.002165	0.001466	0.001993	0.001773	0.001121	-0.001627	0.004463	0.000341
Maximum	0.063380	0.059463	0.038481	0.022376	0.030925	0.031827	0.067267	0.027800	0.028648	0.063737	0.028749
Minimum	-0.079348	-0.055526	-0.044148	-0.025348	-0.035790	-0.023748	-0.042959	-0.035589	-0.027729	-0.039549	-0.033621
Std. Dev.	0.023566	0.014556	0.014406	0.008620	0.010602	0.010645	0.017854	0.012608	0.010696	0.016301	0.010686
Skewness	0.210731	-0.017731	0.223305	-0.003740	-0.669949	0.011870	0.568363	-0.327980	0.118002	0.242560	-0.364039
Kurtosis	3.965976	6.232380	4.069610	2.998200	4.774565	3.038390	5.301268	3.069176	2.945973	4.574471	4.074130
Jarque-Bera	5.599982	52.68308	6.773609	0.000298	24.92805	0.010272	33.21440	2.193473	0.295527	13.68460	8.489432
Probability	0.060811	0.000000	0.033817	0.999851	0.000004	0.994877	0.000000	0.333959	0.862635	0.001068	0.014340
Sum	-0.126222	-0.049213	-0.159007	0.272923	0.078045	0.159287	0.110618	0.090682	-0.140567	0.386173	-0.014278
Sum Sq. Dev.	0.066640	0.025426	0.024903	0.008916	0.013489	0.013597	0.038253	0.019074	0.013730	0.031887	0.013703
Observations	121	121	121	121	121	121	121	121	121	121	121

Table 9b: Mexico: MEXBOL: IPC Index

Sample: 1 86

	WINTER 00	WINTER 01	WINTER 02	WINTER 03	WINTER 04	WINTER 05	WINTER 06	WINTER 07	WINTER 08	WINTER 09	WINTER 10
Mean	0.000894	0.002392	0.002126	-0.002500	-0.000678	-0.001624	-0.000844	-0.001274	0.002404	-0.003042	-0.000798
Median	-0.001523	0.001971	-0.000276	0.001474	0.003086	0.001838	0.002663	0.002386	-0.000724	0.001686	0.001468
Maximum	0.252207	0.054122	0.046623	0.021368	0.026754	0.030393	0.075125	0.046161	0.280067	0.254400	0.022261
Minimum	-0.056860	-0.140771	-0.026156	-0.290264	-0.320043	-0.268492	-0.322237	-0.102213	-0.070160	-0.283456	-0.143414
Std. Dev.	0.034319	0.020345	0.013919	0.032723	0.035633	0.031262	0.037573	0.019968	0.045533	0.049464	0.017175
Skewness	4.546861	-3.867954	0.949416	-8.028235	-8.506151	-7.332564	-7.282895	-1.725376	2.824651	-1.381922	-6.766423
Kurtosis	34.63372	30.06779	4.002634	71.20383	76.81968	63.26957	63.95069	10.15411	17.68340	24.79918	56.73825
Jarque-Bera	3882.141	2839.825	16.52217	17592.63	20563.90	13786.83	14072.28	226.0688	886.9359	1730.187	11004.19
Probability	0.000000	0.000000	0.000258	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	0.076862	0.205735	0.182812	-0.214976	-0.058325	-0.139663	-0.072622	-0.109556	0.206737	-0.261641	-0.068626
Sum Sq. Dev.	0.100115	0.035182	0.016467	0.091020	0.107923	0.083070	0.119999	0.033890	0.176225	0.207972	0.025073
Observations	86	86	86	86	86	86	86	86	86	86	86

Table 10a: Russia: RTSI: Russian Rts Index

Sample: 1 120

	SUMMER00	SUMMER01	SUMMER02	SUMMER03	SUMMER04	SUMMER05	SUMMER06	SUMMER07	SUMMER08	SUMMER09	SUMMER10
Mean	0.000674	0.000589	-4.71E-05	0.003393	-0.001137	0.002242	0.001364	0.000326	-0.002959	0.003687	-0.000216
Median	0.000902	0.000716	-0.000680	0.005489	0.002037	0.001935	0.003001	0.001270	0.000564	0.004755	0.000506
Maximum	0.063095	0.043320	0.053809	0.044102	0.100964	0.036257	0.067493	0.035109	0.040867	0.073401	0.064146
Minimum	-0.078394	-0.076171	-0.073898	-0.051939	-0.058867	-0.030281	-0.090533	-0.053569	-0.075112	-0.056173	-0.064901
Std. Dev.	0.026899	0.018929	0.020858	0.017309	0.021122	0.011145	0.023110	0.013582	0.020610	0.028404	0.019422
Skewness	-0.292339	-0.653278	-0.025053	-0.641761	0.304065	-0.016671	-0.818943	-0.337866	-0.835168	-0.000539	-0.266792
Kurtosis	3.169891	4.720470	3.592385	3.736921	6.902097	3.738136	6.296110	4.295307	4.275204	2.572575	4.710623
Jarque-Bera	1.853560	23.33553	1.767152	10.95240	77.98092	2.729784	67.73506	10.67217	22.08084	0.913468	16.05471
Probability	0.395826	0.000009	0.413302	0.004185	0.000000	0.255408	0.000000	0.004815	0.000016	0.633349	0.000326
Sum	0.080873	0.070663	-0.005655	0.407127	-0.136403	0.269070	0.163627	0.039137	-0.355074	0.442386	-0.025873
Sum Sq. Dev.	0.086101	0.042637	0.051769	0.035651	0.053089	0.014782	0.063555	0.021951	0.050548	0.096006	0.044889
Observations	120	120	120	120	120	120	120	120	120	120	120

Table 10b: Russia: RTSI: Russian Rts Index

Sample: 1 108

	WINTER 00	WINTER 01	WINTER 02	WINTER 03	WINTER 04	WINTER 05	WINTER 06	WINTER 07	WINTER 08	WINTER 09	WINTER 10
Mean	0.000692	0.001131	0.000170	-0.002345	0.000759	-0.001246	0.000300	-0.001022	0.018402	-0.005016	-0.000282
Median	-0.001815	0.004932	0.001737	0.002040	0.001783	0.003005	0.003844	0.002741	-0.006437	2.79E-05	0.000817
Maximum	0.249285	0.084949	0.062213	0.063266	0.067101	0.031138	0.035050	0.030033	2.672028	0.092588	0.075072
Minimum	-0.108916	-0.489698	-0.282093	-0.374105	-0.055074	-0.460226	-0.357408	-0.214747	-0.191031	-0.557168	-0.183965
Std. Dev.	0.042291	0.054320	0.032220	0.042159	0.017015	0.046711	0.038091	0.024534	0.263487	0.060659	0.022711
Skewness	1.725572	-6.867467	-6.174486	-6.544850	-0.287319	-8.909251	-7.780826	-6.187711	9.581128	-7.018603	-4.650997
Kurtosis	12.80410	63.10636	55.93290	57.56904	5.557890	87.97603	73.48684	54.57527	97.05904	64.99365	41.79880
Jarque-Bera	486.1388	17106.41	13294.75	14171.04	30.92855	33922.91	23447.52	12659.22	41464.33	18181.15	7163.433
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	0.074690	0.122148	0.018310	-0.253308	0.081947	-0.134618	0.032418	-0.110423	1.987428	-0.541741	-0.030460
Sum Sq. Dev.	0.191369	0.315722	0.111078	0.190182	0.030978	0.233463	0.155250	0.064404	7.428506	0.393706	0.055188
Observations	108	108	108	108	108	108	108	108	108	108	108

Table 11a: Turkey: ISE: ISE100 Index

Sample: 1 135

	SUMMER00	SUMMER01	SUMMER02	SUMMER03	SUMMER04	SUMMER05	SUMMER06	SUMMER07	SUMMER08	SUMMER09	SUMMER10
Mean	-0.003412	-3.05E-05	-0.001394	0.002957	0.000226	0.002480	-0.001059	0.001541	-0.001461	0.005245	0.001523
Median	-0.003224	-0.004106	-0.001900	0.002374	0.002671	0.003062	-0.000242	0.000420	-0.003674	0.004559	0.001951
Maximum	0.066400	0.135255	0.101309	0.050867	0.038940	0.038894	0.052352	0.050810	0.055897	0.053355	0.071384
Minimum	-0.074641	-0.090101	-0.054291	-0.054633	-0.043488	-0.044604	-0.083055	-0.067922	-0.053614	-0.031499	-0.055172
Std. Dev.	0.026750	0.036782	0.024391	0.017764	0.017089	0.014627	0.020429	0.018349	0.019363	0.017126	0.014898

Table 11a: Turkey: ISE: ISE100 Index - continued

Skewness	-0.015177	0.475837	0.560344	0.205807	-0.342458	-0.324045	-0.507907	-0.238130	0.066683	0.414282	0.026327
Kurtosis	2.887822	4.343524	4.473214	3.097947	2.985517	3.467728	4.552042	4.609832	3.294172	3.205533	8.193264
Jarque-Bera	0.071465	14.34434	18.13084	0.947315	2.483484	3.380257	18.20711	14.91394	0.552047	3.856374	142.7309
Probability	0.964898	0.000768	0.000116	0.622720	0.288881	0.184496	0.000111	0.000577	0.758795	0.145412	0.000000
Sum	-0.433323	-0.003879	-0.176975	0.375564	0.028646	0.314998	-0.134533	0.195761	-0.185536	0.666074	0.193449
Sum Sq. Dev.	0.090159	0.170468	0.074959	0.039760	0.036797	0.026959	0.052587	0.042423	0.047240	0.036954	0.027966
Observations	127	127	127	127	127	127	127	127	127	127	127

Table 11b: Turkey: ISE: ISE100 Index

Sample: 1 113

	WINTER 00	WINTER 01	WINTER 02	WINTER 03	WINTER 04	WINTER 05	WINTER 06	WINTER 07	WINTER 08	WINTER 09	WINTER 10
Mean	0.006805	0.002159	0.002556	-0.001534	-0.000729	-0.000859	0.001901	-0.001523	0.005208	-0.004786	-0.001494
Median	-0.008181	0.000515	-0.002243	0.002433	0.001131	0.003786	0.002271	-0.000135	-0.005016	0.000553	0.001347
Maximum	0.855653	0.116084	0.368372	0.115848	0.058698	0.041238	0.043813	0.034181	1.071418	0.047945	0.033537
Minimum	-0.098505	-0.313122	-0.071129	-0.420618	-0.233224	-0.360316	-0.045814	-0.299688	-0.086194	-0.477328	-0.201340
Std. Dev.	0.092867	0.051273	0.047057	0.051364	0.028559	0.037446	0.016427	0.032768	0.106071	0.048759	0.023921
Skewness	6.930361	-2.428158	4.352583	-4.838914	-4.686442	-7.899908	-0.062597	-6.712516	9.088298	-8.135959	-5.232054
Kurtosis	63.25799	15.78424	33.82858	41.04328	40.14434	76.57327	3.351997	61.94061	91.99623	79.54812	44.28686
Jarque-Bera	18000.64	880.5553	4831.605	7255.312	6909.728	26661.70	0.657169	17205.32	38847.13	28835.67	8541.399
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.719942	0.000000	0.000000	0.000000	0.000000
Sum	0.768966	0.244002	0.288811	-0.173344	-0.082394	-0.097036	0.214774	-0.172143	0.588459	-0.540832	-0.168769
Sum Sq. Dev.	0.965917	0.294437	0.248005	0.295490	0.091351	0.157050	0.030221	0.120262	1.260123	0.266274	0.064086
Observations	113	113	113	113	113	113	113	113	113	113	113

Table 12a: United States of America T-Test

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
return2010	Equal variances assumed	6,266	,013	-,333	250	,740	-,0004936	,0014845	-,0034174	,0024302
	Equal variances not assumed			-,335	247,720	,738	-,0004936	,0014742	-,0033973	,0024100

Table 12b: Mann-Whitney Test

Test Statistics[a]	
	return2010
Mann-Whitney U	7361,500
Wilcoxon W	16007,500
Z	-,976
Asymp. Sig. (2-tailed)	,329

a. Grouping Variable: group

Table 12c: Two-Sample Kolmogorov-Smirnov Test

Test Statistics[a]		
		return2010
Most Extreme Differences	Absolute	,143
	Positive	,143
	Negative	-,085
Kolmogorov-Smirnov Z		1,131
Asymp. Sig. (2-tailed)		,155

a. Grouping Variable: group

Table 12d: Wald-Wolfowitz Test

Test Statistics[b,c]				
		Number of Runs	Z	Asymp. Sig. (1-tailed)
return2010	Minimum Possible	102[a]	-3,136	,001
	Maximum Possible	146[a]	2,427	,992

a. There are 28 inter-group ties involving 84 cases.
b. Wald-Wolfowitz Test
c. Grouping Variable: group

Table 13a: Germany T-Test

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
return2010	Equal variances assumed	,797	,373	,364	254	,716	,0006329	,0017388	-,0027913	,0040571
	Equal variances not assumed			,362	243,211	,718	,0006329	,0017478	-,0028100	,0040757

Table 13b: Mann-Whitney Test

Test Statistics[a]	
	return2010
Mann-Whitney U	7931,500
Wilcoxon W	16842,500
Z	-,419
Asymp. Sig. (2-tailed)	,675

a. Grouping Variable: group

Table 13c: Two-Sample Kolmogorov-Smirnov Test

Test Statistics[a]		
		return2010
Most Extreme Differences	Absolute	,106
	Positive	,106
	Negative	-,084
Kolmogorov-Smirnov Z		,846
Asymp. Sig. (2-tailed)		,472

a. Grouping Variable: group

Table 13d: Wald-Wolfowitz Test

Test Statistics[b,c]				
		Number of Runs	Z	Asymp. Sig. (1-tailed)
return2010	Minimum Possible	108[a]	-2,610	,005
	Maximum Possible	148[a]	2,408	,992

a. There are 29 inter-group ties involving 77 cases.
b. Wald-Wolfowitz Test
c. Grouping Variable: group

Table 14a: China T-Test

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
return2010	Equal variances assumed	,509	,476	-1,223	248	,222	-,0028447	,0023253	-,0074246	,0017353
	Equal variances not assumed			-1,203	200,036	,230	-,0028447	,0023646	-,0075074	,0018180

Table 14-b: Mann-Whitney Test

Test Statistics[a]	
	return2010
Mann-Whitney U	7430,500
Wilcoxon W	15945,500

Table 14-b: Mann-Whitney Test - continued

Z	-,647
Asymp. Sig. (2-tailed)	,518

a. Grouping Variable: group

Table 14c: Two-Sample Kolmogorov-Smirnov Test

Test Statistics[a]		
		return2010
Most Extreme Differences	Absolute	,080
	Positive	,080
	Negative	-,019
Kolmogorov-Smirnov Z		,633
Asymp. Sig. (2-tailed)		,818

a. Grouping Variable: group

Table 14d: Wald-Wolfowitz Test

Test Statistics[b,c]		Number of Runs	Z	Asymp. Sig. (1-tailed)
return2010	Minimum Possible	109[a]	-2,133	,016
	Maximum Possible	145[a]	2,437	,993

a. There are 24 inter-group ties involving 71 cases.
b. Wald-Wolfowitz Test
c. Grouping Variable: group

Table 15a: France T-Test

Independent Samples Test		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	Upper
return2010	Equal variances assumed	7,606	,006	-,336	255	,737	-,0006301	,0018778	-,0043281	,0030679
	Equal variances not assumed			-,340	228,780	,734	-,0006301	,0018514	-,0042780	,0030178

Table 15b: Mann-Whitney Test

Test Statistics[a]	
	return2010
Mann-Whitney U	7991,000
Wilcoxon W	16902,000
Z	-,428
Asymp. Sig. (2-tailed)	,668

a. Grouping Variable: group

Table 15c: Two-Sample Kolmogorov-Smirnov Test

Test Statistics[a]		
		return2010
Most Extreme Differences	Absolute	,113
	Positive	,113
	Negative	-,094
Kolmogorov-Smirnov Z		,902
Asymp. Sig. (2-tailed)		,389

a. Grouping Variable: group

Table 15d: Wald-Wolfowitz Test

Test Statistics[b,c]		Number of Runs	Z	Asymp. Sig. (1-tailed)
return2010	Minimum Possible	107[a]	-2,796	,003
	Maximum Possible	141[a]	1,459	,928

a. There are 27 inter-group ties involving 65 cases.
b. Wald-Wolfowitz Test
c. Grouping Variable: group

Table 16a: Indian T-Test

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	95% Confidence Interval of the Difference Upper
return2010	Equal variances assumed	1,457	,228	1,163	256	,246	,0019447	,0016720	-,0013478	,0052373
	Equal variances not assumed			1,145	196,902	,253	,0019447	,0016978	-,0014035	,0052930

Table 16b: Mann-Whitney Test

Test Statistics[a]	
	return2010
Mann-Whitney U	7918,000
Wilcoxon W	15793,000
Z	-,659
Asymp. Sig. (2-tailed)	,510

a. Grouping Variable: group

Table 16c: Two-Sample Kolmogorov-Smirnov Test

Test Statistics[a]		
		return2010
Most Extreme Differences	Absolute	,084
	Positive	,033
	Negative	-,084
Kolmogorov-Smirnov Z		,677
Asymp. Sig. (2-tailed)		,748

a. Grouping Variable: group

Table 16d: Wald-Wolfowitz Test

Test Statistics[b,c]				
		Number of Runs	Z	Asymp. Sig. (1-tailed)
return2010	Minimum Possible	104[a]	-3,231	,001
	Maximum Possible	150[a]	2,513	,994

a. There are 33 inter-group ties involving 83 cases.
b. Wald-Wolfowitz Test
c. Grouping Variable: group

Table 17a: England T-Test

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	95% Confidence Interval of the Difference Upper
return2010	Equal variances assumed	3,475	,063	-,137	253	,891	-,0001980	,0014450	-,0030437	,0026477
	Equal variances not assumed			-,137	252,878	,891	-,0001980	,0014419	-,0030377	,0026417

Table 17b: Mann-Whitney Test

Test Statistics[a]	
	return2010
Mann-Whitney U	7808,000
Wilcoxon W	16454,000
Z	-,533
Asymp. Sig. (2-tailed)	,594

a. Grouping Variable: group

Table 17c: Two-Sample Kolmogorov-Smirnov Test

Test Statistics[a]		
		return2010
Most Extreme Differences	Absolute	,123
	Positive	,123
	Negative	-,107
Kolmogorov-Smirnov Z		,984
Asymp. Sig. (2-tailed)		,287

a. Grouping Variable: group

Table 17d: Wald-Wolfowitz Test

Test Statistics[b,c]				
		Number of Runs	Z	Asymp. Sig. (1-tailed)
return2010	Minimum Possible	110[a]	-2,311	,010
	Maximum Possible	154[a]	3,215	,999

a. There are 36 inter-group ties involving 86 cases.
b. Wald-Wolfowitz Test
c. Grouping Variable: group

Table 18a: Japan T-Test

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
return2010	Equal variances assumed	3,048	,082	-1,355	254	,177	-,0018424	,0013600	-,0045208	,0008359
	Equal variances not assumed			-1,365	250,100	,173	-,0018424	,0013493	-,0044999	,0008150

Table 18b: Mann-Whitney Test

Test Statistics[a]	
	return2010
Mann-Whitney U	7512,500
Wilcoxon W	16423,500
Z	-1,127
Asymp. Sig. (2-tailed)	,260

a. Grouping Variable: group

Table 18c: Two-Sample Kolmogorov-Smirnov Test

Test Statistics[a]		
		return2010
Most Extreme Differences	Absolute	,106
	Positive	,106
	Negative	-,027
Kolmogorov-Smirnov Z		,849
Asymp. Sig. (2-tailed)		,467

a. Grouping Variable: group

Table 18d: Wald-Wolfowitz Test

Test Statistics[b,c]				
		Number of Runs	Z	Asymp. Sig. (1-tailed)
return2010	Minimum Possible	117[a]	-1,481	,069
	Maximum Possible	155[a]	3,286	,999

a. There are 24 inter-group ties involving 68 cases.
b. Wald-Wolfowitz Test
c. Grouping Variable: group

Table 19a: Canadian T-Test

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
return2010	Equal variances assumed	,014	,906	,153	254	,878	,0002094	,0013660	-,0024807	,0028995
	Equal variances not assumed			,152	217,074	,880	,0002094	,0013812	-,0025130	,0029317

Table 19b: Mann-Whitney Test

Test Statistics[a]	
	return2010
Mann-Whitney U	7846,000
Wilcoxon W	16624,000
Z	-,571
Asymp. Sig. (2-tailed)	,568

a. Grouping Variable: group

Table 19c: Two-Sample Kolmogorov-Smirnov Test

Test Statistics[a]		
		return2010
Most Extreme Differences	Absolute	,090
	Positive	,090
	Negative	-,044
Kolmogorov-Smirnov Z		,723
Asymp. Sig. (2-tailed)		,673

a. Grouping Variable: group

Table 19d: Wald-Wolfowitz Test

Test Statistics[b,c]				
		Number of Runs	**Z**	**Asymp. Sig. (1-tailed)**
return2010	Minimum Possible	120[a]	-1,113	,133
	Maximum Possible	126[a]	-,360	,359

a. There are 1 inter-group ties involving 9 cases.
b. Wald-Wolfowitz Test
c. Grouping Variable: group

Table 20a: Mexico T-Test

Independent Samples Test										
		Levene's Test for Equality of Variances		**t-test for Equality of Means**						
		F	**Sig.**	**t**	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Std. Error Difference**	**95% Confidence Interval of the Difference**	
									Lower	**Upper**
return2010	Equal variances assumed	,359	,549	-,010	255	,992	-,0000157	,0015880	-,0031431	,0031116
	Equal variances not assumed			-,010	216,219	,992	-,0000157	,0016081	-,0031854	,0031539

Table 20b: Mann-Whitney Test

Test Statistics[a]	
	return2010
Mann-Whitney U	7654,000
Wilcoxon W	16565,000
Z	-,994
Asymp. Sig. (2-tailed)	,320

a. Grouping Variable: group

Table 20c: Two-Sample Kolmogorov-Smirnov Test

Test Statistics[a]		
		return2010
Most Extreme Differences	Absolute	,124
	Positive	,124
	Negative	-,068
Kolmogorov-Smirnov Z		,991
Asymp. Sig. (2-tailed)		,279

a. Grouping Variable: group

Table 20d: Wald-Wolfowitz Test

Test Statistics[b,c]				
		Number of Runs	Z	Asymp. Sig. (1-tailed)
return2010	Minimum Possible	124[a]	-,669	,252
	Maximum Possible	130[a]	,082	,533

a. There are 1 inter-group ties involving 7 cases.
b. Wald-Wolfowitz Test
c. Grouping Variable: group

Table 21a: Russia T-Test

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
return2010	Equal variances assumed	1,369	,243	-,246	255	,806	-,0006217	,0025255	-,0055951	,0043517
	Equal variances not assumed			-,245	244,669	,807	-,0006217	,0025359	-,0056168	,0043734

Table 21b: Mann-Whitney Test

Test Statistics[a]	
	return2010
Mann-Whitney U	7855,000
Wilcoxon W	16633,000
Z	-,663
Asymp. Sig. (2-tailed)	,507

a. Grouping Variable: group

Table 21c: Two-Sample Kolmogorov-Smirnov Test

Test Statistics[a]		
		return2010
Most Extreme Differences	Absolute	,161
	Positive	,161
	Negative	-,064
Kolmogorov-Smirnov Z		1,291
Asymp. Sig. (2-tailed)		,071

a. Grouping Variable: group

Table 21d: Wald-Wolfowitz Test

Test Statistics[b,c]				
		Number of Runs	Z	Asymp. Sig. (1-tailed)
return2010	Minimum Possible	105[a]	-3,053	,001
	Maximum Possible	127[a]	-,301	,382

a. There are 21 inter-group ties involving 56 cases.
b. Wald-Wolfowitz Test
c. Grouping Variable: group

Table 22a: Turkey T-Test

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
return2010	Equal variances assumed	2,428	,120	1,094	245	,275	,0027210	,0024861	-,0021758	,0076179
	Equal variances not assumed			1,077	196,516	,283	,0027210	,0025256	-,0022597	,0077017

Table 22b: Mann-Whitney Test

Test Statistics[a]	
	return2010
Mann-Whitney U	7356,000
Wilcoxon W	14496,000
Z	-,463
Asymp. Sig. (2-tailed)	,643

a. Grouping Variable: group

Table 22c: Two-Sample Kolmogorov-Smirnov Test

Test Statistics[a]		
		return2010
Most Extreme Differences	Absolute	,109
	Positive	,065
	Negative	-,109
Kolmogorov-Smirnov Z		,857
Asymp. Sig. (2-tailed)		,455

a. Grouping Variable: group

Table 22d: Wald-Wolfowitz Test

Test Statistics[b,c]				
		Number of Runs	**Z**	**Asymp. Sig. (1-tailed)**
return2010	Minimum Possible	102[a]	-2,852	,002
	Maximum Possible	132[a]	,979	,836

a. There are 22 inter-group ties involving 54 cases.
b. Wald-Wolfowitz Test
c. Grouping Variable: group

Appendix B: South Hemisphere Countries

Table 23a: Argentine: MERV: Merval Index

Sample: 1 112

	SUMMER00	SUMMER01	SUMMER02	SUMMER03	SUMMER04	SUMMER05	SUMMER06	SUMMER07	SUMMER08	SUMMER09	SUMMER10
Mean	0.002733	0.006892	0.002262	-0.000992	0.001143	-0.000221	0.001283	-0.000559	0.005693	-0.003971	-0.000368
Median	-0.001312	0.001644	0.005423	0.003469	0.004014	0.002440	0.004482	0.000206	0.001739	0.000711	0.002258
Maximum	0.324064	0.417448	0.134238	0.044833	0.049561	0.046207	0.033825	0.031935	0.992979	0.188746	0.041856
Minimum	-0.052299	-0.086734	-0.383553	-0.515587	-0.204462	-0.112622	-0.255824	-0.074912	-0.121480	-0.507340	-0.321871
Std. Dev.	0.035975	0.053002	0.049998	0.051308	0.028495	0.018686	0.027094	0.013319	0.101216	0.056724	0.034203
Skewness	6.500009	4.445192	-3.995203	-9.105940	-3.504467	-1.899614	-7.695440	-1.461293	8.338952	-6.021539	-7.511368
Kurtosis	58.28510	34.22769	33.53858	92.00614	25.84034	13.31483	73.83509	10.53638	82.38320	57.78086	71.11664
Jarque-Bera	15052.07	4919.634	4650.106	38517.57	2663.762	563.8723	24520.95	304.9130	30705.94	14681.23	22705.94
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	0.306088	0.771857	0.253329	-0.111050	0.128012	-0.024757	0.143701	-0.062556	0.637668	-0.444748	-0.041180
Sum Sq. Dev.	0.143653	0.311820	0.277479	0.292214	0.090130	0.038758	0.081486	0.019692	1.137170	0.357149	0.129856
Observations	112	112	112	112	112	112	112	112	112	112	112

Table 23b: Argentine: MERV: Merval Index

Sample: 1 116

	WINTER 00	WINTER 01	WINTER 02	WINTER 03	WINTER 04	WINTER 05	WINTER 06	WINTER 07	WINTER 08	WINTER 09	WINTER 10
Mean	504.5016	-0.003722	-0.000159	0.002526	-0.001811	0.001219	-0.000728	-7.25E-05	-0.001695	0.004800	0.000228
Median	495.9400	-0.004720	-0.004011	0.002441	-0.001056	4.13E-05	-0.000248	0.001209	-0.000861	0.005590	0.000496
Maximum	607.9900	0.081588	0.086240	0.067014	0.061364	0.039584	0.062751	0.052031	0.102416	0.062517	0.071632
Minimum	425.6300	-0.081654	-0.072222	-0.086265	-0.083659	-0.037229	-0.045639	-0.051708	-0.062176	-0.051359	-0.054150
Std. Dev.	39.15949	0.028354	0.029889	0.022083	0.020551	0.015307	0.016950	0.014762	0.019452	0.021609	0.016907
Skewness	0.743807	0.012664	0.489823	-0.535568	-0.363404	0.099928	0.251280	-0.710566	0.877588	0.139811	0.242513
Kurtosis	3.256038	3.542101	3.577602	5.195852	5.542788	2.692359	4.350810	5.753838	10.26372	3.606646	6.564094
Jarque-Bera	11.01301	1.423487	6.251097	28.85064	33.80443	0.650498	10.04006	46.41566	269.9046	2.156674	62.53374
Probability	0.004060	0.490788	0.043913	0.000001	0.000000	0.722347	0.006604	0.000000	0.000000	0.340161	0.000000

Table 23b: Argentine: MERV: Merval Index - continued

Sum	58522.19	-0.431806	-0.018469	0.293061	-0.210053	0.141435	-0.084443	-0.008411	-0.196565	0.556800	0.026403
Sum Sq. Dev.	176348.6	0.092455	0.102733	0.056083	0.048569	0.026945	0.033039	0.025062	0.043513	0.053701	0.032873
Observations	116	116	116	116	116	116	116	116	116	116	116

Table 24a: Australian: AORD: All Ordinaries Index

Sample: 1 121

	SUMMER00	SUMMER01	SUMMER02	SUMMER03	SUMMER04	SUMMER05	SUMMER06	SUMMER07	SUMMER08	SUMMER09	SUMMER10
Mean	0.000123	0.000877	0.001181	-0.001035	-0.000360	-0.000513	0.000114	-0.000752	0.002328	-0.002267	0.000307
Median	0.000123	0.002069	-0.000100	-0.000198	0.001293	0.000434	0.001099	0.000230	-0.005656	-0.000925	0.000678
Maximum	0.019819	0.019325	0.143219	0.034452	0.010423	0.016634	0.019873	0.022026	0.791530	0.032692	0.020911
Minimum	-0.023431	-0.047090	-0.016574	-0.092418	-0.184175	-0.137636	-0.163563	-0.121083	-0.081980	-0.245781	-0.024030
Std. Dev.	0.007672	0.008228	0.014659	0.010948	0.017330	0.013905	0.016412	0.014806	0.076741	0.025778	0.007981
Skewness	-0.017649	-1.465767	7.558607	-4.616025	-9.974439	-8.038004	-8.273241	-4.604790	9.069020	-7.043825	-0.186619
Kurtosis	3.565045	11.22969	74.19892	42.16838	106.3735	79.62133	83.21583	37.37223	94.03410	67.14087	3.685570
Jarque-Bera	1.615966	384.7881	26709.82	8164.437	55882.00	30901.72	33821.34	6384.093	43439.99	21742.25	3.071952
Probability	0.445756	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.215245
Sum	0.014866	0.106069	0.142876	-0.125221	-0.043587	-0.062085	0.013734	-0.091015	0.281732	-0.274247	0.037150
Sum Sq. Dev.	0.007063	0.008125	0.025786	0.014383	0.036038	0.023203	0.032322	0.026305	0.706706	0.079743	0.007644
Observations	121	121	121	121	121	121	121	121	121	121	121

Table 24b: Australian: AORD: All Ordinaries Index

Sample: 1 128

	WINTER 00	WINTER 01	WINTER 02	WINTER 03	WINTER 04	WINTER 05	WINTER 06	WINTER 07	WINTER 08	WINTER 09	WINTER 10
Mean	-4.84E-05	-0.000699	-0.000845	0.000916	0.000548	0.000456	5.21E-05	0.000720	-0.000365	0.002372	-0.000207
Median	0.001002	-4.71E-05	-0.000845	0.001106	0.000327	0.001216	0.000402	0.001009	-0.000268	0.002050	0.000199
Maximum	0.022774	0.019951	0.020968	0.015641	0.009537	0.015217	0.019998	0.045183	0.043258	0.032317	0.025469
Minimum	-0.056848	-0.047816	-0.022903	-0.011511	-0.012346	-0.017203	-0.024275	-0.035958	-0.030742	-0.034275	-0.030648
Std. Dev.	0.009153	0.008780	0.007139	0.005044	0.004020	0.005895	0.009141	0.010937	0.013809	0.012431	0.010900
Skewness	-1.787815	-1.829666	0.140092	0.154226	-0.309686	-0.350238	-0.315611	-0.141207	0.536859	-0.171512	-0.141668
Kurtosis	13.44878	11.45475	3.669557	2.980373	3.489408	3.173698	2.836708	5.764564	3.487639	3.101868	2.991882
Jarque-Bera	650.4650	452.6586	2.809656	0.509480	3.323428	2.777796	2.267224	41.18704	7.416867	0.682895	0.428508
Probability	0.000000	0.000000	0.245409	0.775118	0.189813	0.249350	0.321869	0.000000	0.024516	0.710741	0.807143
Sum	-0.006189	-0.089518	-0.108105	0.117215	0.070112	0.058415	0.006668	0.092163	-0.046682	0.303614	-0.026517
Sum Sq. Dev.	0.010641	0.009791	0.006473	0.003231	0.002052	0.004413	0.010612	0.015193	0.024219	0.019626	0.015088
Observations	128	128	128	128	128	128	128	128	128	128	128

Table 25a: Brazil: BVSP: Brazil Bovespa Stock Index

Sample: 1 116

	SUMMER00	SUMMER01	SUMMER02	SUMMER03	SUMMER04	SUMMER05	SUMMER06	SUMMER07	SUMMER08	SUMMER09	SUMMER10
Mean	0.000871	0.003386	0.004219	-0.001820	-0.000412	-0.000578	0.001148	-0.001799	0.004128	-0.002431	0.000288
Median	-0.001852	-0.000181	0.002558	0.002105	0.001466	0.001857	0.002314	0.002617	0.000000	0.002231	0.000471
Maximum	0.109509	0.136029	0.231097	0.036207	0.048789	0.045518	0.036000	0.049521	0.672826	0.090459	0.024782
Minimum	-0.063733	-0.042932	-0.052506	-0.478189	-0.143190	-0.231168	-0.246014	-0.286940	-0.113931	-0.413285	-0.047305
Std. Dev.	0.023174	0.024890	0.029207	0.047366	0.022732	0.026543	0.026364	0.032710	0.075211	0.044619	0.011472
Skewness	0.818138	1.570870	4.003928	-8.860850	-2.175414	-5.689621	-7.134576	-5.820756	6.142925	-6.703933	-0.727443
Kurtosis	6.138917	9.064057	32.78203	89.77390	15.46847	50.31724	67.93421	51.05556	55.25208	63.40589	4.917796
Jarque-Bera	60.56264	225.4426	4596.960	37911.55	842.8965	11447.31	21363.63	11816.83	13925.91	18505.10	28.00741
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000001
Sum	0.101028	0.392816	0.489348	-0.211145	-0.047818	-0.067063	0.133216	-0.208709	0.478796	-0.282024	0.033418
Sum Sq. Dev.	0.061758	0.071244	0.098098	0.258009	0.059423	0.081023	0.079930	0.123044	0.650514	0.228945	0.015134
Observations	116	116	116	116	116	116	116	116	116	116	116

Table 25b: Brazil: BVSP: Brazil Bovespa Stock Index

Sample: 1 125

	WINTER 00	WINTER 01	WINTER 02	WINTER 03	WINTER 04	WINTER 05	WINTER 06	WINTER 07	WINTER 08	WINTER 09	WINTER 10
Mean	-0.000922	-0.002709	-0.002707	0.003054	0.000662	0.000591	-4.78E-05	0.001937	-0.001355	0.003042	-6.20E-05
Median	-0.001093	-0.000569	-0.002441	0.004541	0.000788	-0.000998	-0.000130	0.002460	0.000413	0.001522	0.000156
Maximum	0.049968	0.043105	0.045187	0.034140	0.052999	0.033813	0.061408	0.042622	0.063340	0.065871	0.041065
Minimum	-0.050358	-0.091766	-0.065293	-0.036219	-0.054565	-0.041510	-0.048574	-0.038606	-0.075898	-0.036575	-0.034991
Std. Dev.	0.020774	0.020403	0.021157	0.014377	0.017713	0.015945	0.017439	0.015480	0.021098	0.017154	0.013909

Table 25b: Brazil: BVSP: Brazil Bovespa Stock Index - continued

Skewness	0.054961	-0.995564	-0.142644	-0.340701	-0.189315	-0.107939	0.334899	-0.347038	-0.300308	0.438820	0.092199
Kurtosis	2.506736	6.026831	2.964170	2.963530	3.372849	2.588922	4.528704	3.477753	4.403357	4.335515	3.542265
Jarque-Bera	1.330167	68.36613	0.430589	2.425205	1.470715	1.122858	14.50815	3.697870	12.13621	13.30131	1.708615
Probability	0.514231	0.000000	0.806304	0.297422	0.479334	0.570393	0.000707	0.157405	0.002316	0.001293	0.425578
Sum	-0.115259	-0.338681	-0.338380	0.381730	0.082782	0.073864	-0.005981	0.242185	-0.169422	0.380268	-0.007756
Sum Sq. Dev.	0.053512	0.051619	0.055506	0.025629	0.038905	0.031528	0.037709	0.029714	0.055194	0.036489	0.023988
Observations	125	125	125	125	125	125	125	125	125	125	125

Table 26a: Indonesia: JKSE: Jakarta Composite Index

Sample: 1 111

	SUMMER07	SUMMER08	SUMMER09	SUMMER10
Mean	-0.001855	0.005279	-0.001187	-0.001971
Median	0.002204	-0.001717	0.000453	0.001027
Maximum	0.041003	1.024225	0.586869	0.024887
Minimum	-0.331160	-0.103753	-0.643333	-0.306674
Std. Dev.	0.034564	0.102618	0.083799	0.030852
Skewness	-7.873020	8.909167	-0.954278	-8.779669
Kurtosis	75.69902	89.22401	53.87804	87.32094
Jarque-Bera	25590.52	35853.34	11989.01	34309.87
Probability	0.000000	0.000000	0.000000	0.000000
Sum	-0.205925	0.585942	-0.131776	-0.218774
Sum Sq. Dev.	0.131410	1.158351	0.772455	0.104703
Observations	111	111	111	111

Table 26b: Indonesia: JKSE: Jakarta Composite Index

Sample: 1 124

	WINTER07	WINTER08	WINTER09	WINTER10
Mean	0.002249	-0.002040	0.004656	0.001536
Median	0.003443	0.000232	0.004648	0.002019
Maximum	0.069652	0.034339	0.050930	0.073851
Minimum	-0.064354	-0.047011	-0.036455	-0.037232
Std. Dev.	0.016154	0.015910	0.017361	0.014082
Skewness	-0.494535	-0.529526	0.146102	0.610376
Kurtosis	8.251870	3.188788	3.032677	8.651915
Jarque-Bera	147.5620	5.979029	0.446661	172.7443
Probability	0.000000	0.050312	0.799850	0.000000
Sum	0.278897	-0.252951	0.577345	0.190480
Sum Sq. Dev.	0.032095	0.031134	0.037072	0.024390
Observations	124	124	124	124

Table 27a: South Africa: JSAI: Ftse/Jse Africa All Sr

Sample: 1 116

	SUMMER07	SUMMER08	SUMMER09	SUMMER10
Mean	-0.000853	0.002501	-0.002213	-5.41E-05
Median	0.001214	-0.001533	0.000000	0.002044
Maximum	0.030607	0.370751	0.045524	0.017211
Minimum	-0.170649	-0.069704	-0.207836	-0.141061
Std. Dev.	0.019090	0.044511	0.024177	0.015451
Skewness	-6.163593	4.908532	-5.261998	-6.644591
Kurtosis	55.20915	41.58558	46.36338	61.07136
Jarque-Bera	13909.15	7661.907	9623.831	17152.94
Probability	0.000000	0.000000	0.000000	0.000000
Sum	-0.098905	0.290112	-0.256731	-0.006272
Sum Sq. Dev.	0.041909	0.227841	0.067223	0.027454
Observations	116	116	116	116

Table 27b: South Africa: JSAI: Ftse/Jse Africa All Sr

Sample: 1 112

	WINTER07	WINTER08	WINTER09	WINTER10
Mean	0.000823	-0.001259	0.001493	-0.000592
Median	0.002098	-0.000809	0.000997	-0.001309
Maximum	0.032838	0.054347	0.035666	0.043241
Minimum	-0.040152	-0.043835	-0.035442	-0.036265
Std. Dev.	0.012354	0.016773	0.015736	0.012831
Skewness	-0.568765	0.177651	-0.113070	0.213502
Kurtosis	4.120795	3.422732	2.671821	4.060741
Jarque-Bera	11.90073	1.423065	0.741257	6.101681
Probability	0.002605	0.490891	0.690300	0.047319
Sum	0.092168	-0.141014	0.167207	-0.066269
Sum Sq. Dev.	0.016941	0.031229	0.027485	0.018273
Observations	112	112	112	112

Table 28a: New Zealand: Nzx 50 Index

Sample: 1 120

	SUMMER07	SUMMER08	SUMMER09	SUMMER10
Mean	-0.000331	0.001543	-0.001406	4.29E-05
Median	-9.75E-05	-0.002293	-0.000491	0.000104
Maximum	0.016629	0.504384	0.044421	0.012851
Minimum	-0.025888	-0.048182	-0.143475	-0.026030
Std. Dev.	0.007045	0.048978	0.016423	0.005586
Skewness	-0.388532	9.110515	-5.319323	-1.126333
Kurtosis	4.532269	94.20457	48.40246	6.723113
Jarque-Bera	14.75838	43251.39	10872.82	94.68035
Probability	0.000624	0.000000	0.000000	0.000000
Sum	-0.039732	0.185190	-0.168742	0.005146
Sum Sq. Dev.	0.005907	0.285465	0.032096	0.003713
Observations	120	120	120	120

Table 28b: New Zealand: Nzx 50 Index

Sample: 1 135

	WINTER07	WINTER08	WINTER09	WINTER10
Mean	0.000368	-0.000638	0.001361	-8.89E-05
Median	0.000965	-0.000634	0.001789	0.000616
Maximum	0.022607	0.023393	0.024029	0.013504
Minimum	-0.024913	-0.033949	-0.020681	-0.019712
Std. Dev.	0.007164	0.010213	0.008923	0.006383
Skewness	-0.313684	-0.246715	-0.102174	-0.591450
Kurtosis	5.010207	3.429245	2.690152	3.616141
Jarque-Bera	23.28124	2.245554	0.723260	9.339126
Probability	0.000009	0.325375	0.696540	0.009376
Sum	0.046358	-0.080402	0.171489	-0.011199
Sum Sq. Dev.	0.006415	0.013038	0.009951	0.005093
Observations	126	126	126	126

Table 29a: Argentine T-Test

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
return2010	Equal variances assumed	,717	,398	-,147	250	,884	-,0004736	,0032291	-,0068333	,0058861
	Equal variances not assumed			-,145	176,891	,885	-,0004736	,0032760	-,0069387	,0059915

Table 29b: Mann-Whitney Test

Test Statistics[a]	
	return2010
Mann-Whitney U	7133,000
Wilcoxon W	15518,000
Z	-1,384
Asymp. Sig. (2-tailed)	,166

a. Grouping Variable: group

Table 29c: Two-Sample Kolmogorov-Smirnov Test

Test Statistics[a]		
		return2010
Most Extreme Differences	Absolute	,108
	Positive	,108
	Negative	-,018
Kolmogorov-Smirnov Z		,858
Asymp. Sig. (2-tailed)		,453

a. Grouping Variable: group

Table 29d: Wald-Wolfowitz Test

Test Statistics[b,c]				
		Number of Runs	**Z**	**Asymp. Sig. (1-tailed)**
return2010	Minimum Possible	98[a]	-3,654	,000
	Maximum Possible	144[a]	2,156	,984

a. There are 25 inter-group ties involving 69 cases.
b. Wald-Wolfowitz Test
c. Grouping Variable: group

Table 30a: Australian T-Test

Independent Samples Test										
		Levene's Test for Equality of Variances		**t-test for Equality of Means**						
		F	**Sig.**	**t**	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Std. Error Difference**	**95% Confidence Interval of the Difference**	
									Lower	**Upper**
return2010	Equal variances assumed	12,273	,001	,540	254	,590	,0006404	,0011871	-,0016973	,0029782
	Equal variances not assumed			,544	241,097	,587	,0006404	,0011763	-,0016766	,0029575

Table 30b: Mann-Whitney Test

Test Statistics[a]	
	return2010
Mann-Whitney U	7860,500
Wilcoxon W	16638,500
Z	-,546
Asymp. Sig. (2-tailed)	,585

a. Grouping Variable: group

Table 30c: Two-Sample Kolmogorov-Smirnov Test

Test Statistics[a]		
		return2010
Most Extreme Differences	Absolute	,136
	Positive	,136
	Negative	-,108
Kolmogorov-Smirnov Z		1,088
Asymp. Sig. (2-tailed)		,187

a. Grouping Variable: group

Table 30d: Wald-Wolfowitz Test

Test Statistics[b,c]				
		Number of Runs	**Z**	**Asymp. Sig. (1-tailed)**
return2010	Minimum Possible	97[a]	-3,996	,000
	Maximum Possible	135[a]	,768	,779

a. There are 23 inter-group ties involving 65 cases.
b. Wald-Wolfowitz Test
c. Grouping Variable: group

Table 31a: Brazil T-Test

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
return2010	Equal variances assumed	3,274	,072	,045	253	,964	,0000708	,0015784	-,0030377	,0031794
	Equal variances not assumed			,045	249,387	,964	,0000708	,0015678	-,0030170	,0031587

Table 31b: Mann-Whitney Test

Test Statistics[a]	
	return2010
Mann-Whitney U	7886,000
Wilcoxon W	16664,000
Z	-,394
Asymp. Sig. (2-tailed)	,693

a. Grouping Variable: group

Table 31c: Two-Sample Kolmogorov-Smirnov Test

Test Statistics[a]		
		return2010
Most Extreme Differences	Absolute	,104
	Positive	,104
	Negative	-,081
Kolmogorov-Smirnov Z		,830
Asymp. Sig. (2-tailed)		,496

a. Grouping Variable: group

Table 31d: Wald-Wolfowitz Test

Test Statistics[b,c]				
		Number of Runs	Z	Asymp. Sig. (1-tailed)
return2010	Minimum Possible	104[a]	-3,058	,001
	Maximum Possible	148[a]	2,470	,993

a. There are 26 inter-group ties involving 76 cases.
b. Wald-Wolfowitz Test
c. Grouping Variable: group

Table 32a: Indonesia T-Test

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
return2010	Equal variances assumed	,102	,749	-1,014	251	,312	-,0029310	,0028914	-,0086255	,0027636
	Equal variances not assumed			-,991	170,910	,323	-,0029310	,0029569	-,0087677	,0029058

Table 32b: Mann-Whitney Test

Test Statistics[a]	
	return2010
Mann-Whitney U	7769,000
Wilcoxon W	15272,000
Z	-,382
Asymp. Sig. (2-tailed)	,703

a. Grouping Variable: group

Table 32c: Two-Sample Kolmogorov-Smirnov Test

Test Statistics[a]		
		return2010
Most Extreme Differences	Absolute	,066
	Positive	,041
	Negative	-,066
Kolmogorov-Smirnov Z		,527
Asymp. Sig. (2-tailed)		,944

a. Grouping Variable: group

Table 32d: Wald-Wolfowitz Test

Test Statistics[b,c]				
		Number of Runs	Z	Asymp. Sig. (1-tailed)
return2010	Minimum Possible	114[a]	-1,683	,046
	Maximum Possible	150[a]	2,859	,998

a. There are 31 inter-group ties involving 85 cases.
b. Wald-Wolfowitz Test
c. Grouping Variable: group

Table 33a: South Africa T-Test

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	95% Confidence Interval of the Difference Upper
return2010	Equal variances assumed	,982	,323	-,029	256	,977	-,0000491	,0017106	-,0034177	,0033194
	Equal variances not assumed			-,029	239,951	,977	-,0000491	,0017211	-,0034396	,0033413

Table 33b: Mann-Whitney Test

Test Statistics[a]	
	return2010
Mann-Whitney U	7536,000
Wilcoxon W	16447,000
Z	-1,296
Asymp. Sig. (2-tailed)	,195

a. Grouping Variable: group

Table 33c: Two-Sample Kolmogorov-Smirnov Test

Test Statistics[a]		
		return2010
Most Extreme Differences	Absolute	,146
	Positive	,146
	Negative	-,095
Kolmogorov-Smirnov Z		1,173
Asymp. Sig. (2-tailed)		,127

a. Grouping Variable: group

Table 33d: Wald-Wolfowitz Test

Test Statistics[b,c]				
		Number of Runs	Z	Asymp. Sig. (1-tailed)
return2010	Minimum Possible	94[a]	-4,480	,000
	Maximum Possible	142[a]	1,514	,935

a. There are 33 inter-group ties involving 86 cases.
b. Wald-Wolfowitz Test
c. Grouping Variable: group

Table 34a: New Zeland T-Test

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	95% Confidence Interval of the Difference Upper
return2010	Equal variances assumed	2,672	,103	,100	254	,921	,0000738	,0007411	-,0013857	,0015332
	Equal variances not assumed			,100	252,888	,920	,0000738	,0007381	-,0013799	,0015274

Table 34b: Mann-Whitney Test

Test Statistics[a]	
	return2010
Mann-Whitney U	8109,500
Wilcoxon W	15859,500

Table 34b: Mann-Whitney Test - continued

Z	-,126
Asymp. Sig. (2-tailed)	,900

a. Grouping Variable: group

Table 34c: Two-Sample Kolmogorov-Smirnov Test

Test Statistics[a]		
		return2010
Most Extreme Differences	Absolute	,097
	Positive	,094
	Negative	-,097
Kolmogorov-Smirnov Z		,772
Asymp. Sig. (2-tailed)		,591

a. Grouping Variable: group

Table 34d: Wald-Wolfowitz Test

Test Statistics[b,c]				
		Number of Runs	**Z**	**Asymp. Sig. (1-tailed)**
return2010	Minimum Possible	96[a]	-4,121	,000
	Maximum Possible	166[a]	4,654	1,000

a. here are 44 inter-group ties involving 126 cases.
b. ald-Wolfowitz Test
c. rouping Variable: group