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The Impact of Whistleblowing Legislation on Developed and Emerging Markets

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THE CARL AND WINIFRED LEE HONORS COLLEGE
CERTIFICATE OF ORAL DEFENSE OF HONORS THESIS

Catherine Koh, having been admitted to the Carl and Winifred Lee Honors College in the spring of 2011, successfully completed the Lee Honors College Thesis on April 27, 2012.

The title of the thesis is:

The Impact of Whistleblowing Legislation on Developed and Emerging Markets

A handwritten signature in cursive script, reading "David A. Burnie", written over a horizontal line.

Dr. David A. Burnie, Finance and Commercial Law

A handwritten signature in cursive script, reading "Judith Swisher", written over a horizontal line.

Dr. Judith Swisher, Finance and Commercial Law

A simple, stylized handwritten signature, possibly reading "Jim DeMello", written over a horizontal line.

Dr. Jim DeMello, Finance and Commercial Law

WESTERN MICHIGAN UNIVERSITY

HONORS THESIS

The Impact Of Whistleblowing Legislation On
Developed And Emerging Markets

Catherine Koh

4/27/2012

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Abstract

This paper intends to study the impact of whistleblowing legislations and on developed and emerging markets. The main reason the study is carried out is because there is lack of research and literature conducted on this topic areas. The testing of the relationship between how whistleblowing affects the equity markets in developed and emerging countries is conducted through a multi-regression analysis across four parameters (i) the weekly historical adjusted returns of the countries' indices around the time the legislation was proposed or passed, (ii) the occurrence of the event which is the week when the legislation was promulgated or enacted, (iii) the whistleblowing scores of each country taken from Global Integrity Report, and (iv) the types of market the country is classified as – emerging market or developed market (classification from?).

The findings from this research indicated that there is no significant correlation between the occurrence of the legislation's enactment and the adjusted returns. However, there were some interesting findings from the results of the multi-regression analysis. The first is there is a significant inverse relationship between adjusted returns and the whistleblowing score, in which countries with higher whistleblowing scores had lower adjusted returns. The second finding is that there is positive relationship between the adjusted returns and the types of market, whereby emerging markets have stronger correlation to positive adjusted returns in comparison to the returns for developed markets.

There are, however, some drawbacks to this study. The first is that the results could be biased due to sampling errors in which the samples especially from the emerging markets. Also, the samples could not be randomly selected as there were insufficient data to fulfil the required parameters. This consequently led to limitations due to small sample size such as increased variability in data results. The second drawback is that the Global Integrity Report scores on whistleblowing measures do not measure the effectiveness of the legislation per se as it includes scores on other whistleblowing enforcements.

1. Introduction

According to the Congressional Research Service, whistleblowing is defined as “making a disclosure evidencing illegal or improper government (and corporate) activities” (Whitaker, 2007). The literature on the effectiveness of whistleblowing legislation in countries, specifically developed countries, is vast as the subject is of great interest to many parties, both academicians and practitioners. For example, the Sarbanes-Oxley Act of 2002 (SOX) has significantly impacted corporate governance for publicly held corporations in which recent research results have indicated that the costs of compliance with the provisions of SOX could be substantial (Eaton & Akers, 2007). Problems exist in the government and nonprofit sectors just as they do in the corporate sector. In 2002, the United Way scandal came to the public's attention. Its aftermath has had a dramatic impact on fundraising (Eaton & Akers, 2007). In addition, it is also clear when there is an absence or lack of enforcement of whistleblowing legislation in a country. An example of this ineptness is the latest scandal by Olympus Corporation (Kelton, 2012). This case served as an uncanny reminder about the Enron scandal in the U.S., where six Olympus executives were being charged for hiding \$1.5 billion in losses for about 13 years. If Japan had an effective whistleblowing program like that of the Dodd-Frank (U.S.), this corruption would undoubtedly not have taken over a decade to be revealed. Why it has taken this long is because Olympus had an internal “hotline” for whistleblowers which was designed and monitored by the very same executives allegedly involved in this crime.

However, there haven't been any studies carried out to ascertain whether there is an impact of these legislations on the movements of equity markets across countries from emerging and developed markets. Thus, the purpose of this paper is to study the impact of whistleblowing legislation on emerging and developed markets.

Hypotheses

First Null Hypothesis ($H_{0,1}$): There is no significant impact of whistleblowing legislations on emerging and developed equity markets.

Second Null Hypothesis ($H_{0,2}$): There is no significant relationship between the whistleblowing score and market returns.

Third Null Hypothesis ($H_{0,3}$): There is no significant relationship between the types of market on the market returns.

First Alternative Hypothesis ($H_{1,1}$): There is significant impact of whistleblowing legislations on emerging and developed markets.

Second Alternative Hypothesis ($H_{1,2}$): There is significant relationship between the whistleblowing score and market returns.

Third Alternative Hypothesis ($H_{1,3}$): There is significant relationship between the types of market on the market returns.

2. Data and Methodology

A model was created in this experiment using raw data to draw a connection between the enactment of whistleblowing legislations and movements in the sample equity markets. A sample of countries was collected from both emerging and developed markets based on the S&P Global BMI Equity Indices. The S&P Global BMI (Broad Market Index), consisting of the S&P Developed BMI and S&P Emerging BMI, is a “comprehensive, rules-based index measuring global stock market performance” (S&P Global BMI: Equity Indices, 2011). The S&P Global BMI encapsulates about 10,000 companies in 46 countries, and is calculated daily in six standard currency offerings plus the local currencies: USD, Euro, GBP, JPY, AUD, CAD, and LCL. The S&P Global BMI represents the only global index suite with a transparent, modular structure that has been fully float adjusted since 1989. All 46 constituent countries are classified as either developed or emerging. The developed countries are congregated together under the S&P Developed BMI subset, and the emerging countries are grouped in the S&P Emerging BMI subset. Country classification is dependent on the following factors: macroeconomic conditions; political stability; legal property rights and procedures; trading and settlement processes and conditions; and feedback from institutional investors.

Three main criteria used in this study to select the countries are (i) formal dates of when the whistleblowing legislation was either enacted or promulgated in the country, (ii) the availability of the sample countries’ whistleblowing measures from Global Integrity Report, and (iii) the historical closing prices of the respective stock index or exchange. Based on these three criteria, the sample employed in this study consists of 11 countries – 4 emerging markets and 7 developed markets. Table 1 shows the list of countries with the proposed or enactment date, title of legislation, and the stock exchange/index studied:

Table 1: Criteria of Sample Countries

| Countries | Promulgated Date | Effective Date | Legislation/Act | Stock Exchange/Index |
|--------------------------|------------------|-------------------|--|--|
| Emerging Markets | | | | |
| India | | August 9, 2010 | Whistleblowers Protection Bill 2010 | National Stock Exchange India |
| Indonesia | | November 13, 2006 | Witness Protection Act 2006 | Jakarta Stock Exchange |
| Malaysia | June 2, 2010 | June 10, 2010 | Whistleblower Protection Act 2010 | Kuala Lumpur Stock Exchange |
| South Africa | | August 7, 2000 | Protected Disclosures Act [No 26 of 2000] | Dow Jones South Africa Index |
| Developed Markets | | | | |
| Canada | January 31, 2001 | | Public Service Whistleblowing Act | Toronto Stock Exchange Composite Index |
| England | July 2, 1998 | July 2, 1999 | Public Interest Disclosure Act 1998 | FTSE 100 |
| France | | November 13, 2007 | Anti-Corruption Act No. 2007-1598 | ParisINDSBF120 |
| Israel | | June 17, 2008 | Protection of Workers Law | Tel Aviv 100 IND |
| Japan | May 25, 2004 | April 1, 2006 | Whistleblower Protection Act 2004 | Nikkei 225 |
| South Korea | | 29 February, 2008 | Anti-Corruption & Civil Rights Commission (ACRC) | MSCI South Korea Index |
| United States | January 2, 2002 | July 29, 2002 | Sarbanes-Oxley Act | S&P 500 |

2.1 Establishing the parameters of the experiment

i. Adjusted Returns of Indices

The historical prices for each stock index are collected for the time period when the legislation was proposed and enacted. To account for any movements from the acknowledgement of the news, 12 weeks of the index returns prior and after the formal dates are included in the sample. An additional 12 weeks of returns preceding the study window is used to calculate expected average return which will be employed in adjusting the sample returns to account for any variations.

ii. Occurrence of Event

An event is the proposal and passing of whistleblowing legislation in a specific country. To facilitate a regression analysis in order to determine the relationship between the adjusted returns and how it responds to the event of the legislation being passed, a binary number of ‘1’ is given to indicate the presence of the event (date legislation enacted/proposed)

and a binary number of ‘0’ is assigned to the returns on the remaining dates without the occurrence of an event.

iii. Whistleblowing Score

All sample countries that met the criteria of selection have a whistleblowing measure score assigned by the Global Integrity Report’s Integrity Scorecard. The scorecard indicators assess the “existence, effectiveness, and citizen access to key governance and anti-corruption mechanisms through 320 actionable indicators” (Integrity Scorecard, 2011). These measures including the whistleblowing measure are scored by a lead in-country researcher and blindly reviewed by a panel of peer reviewers, a mix of other in-country experts and outside experts (Integrity Scorecard, 2011). The score for the year when the legislation was passed in each respective country is used; otherwise, the scores from the nearest year(s) are applied. In addition, India and Japan have two scores because the duration from the proposal and the enactment of the legislation was long enough to coincide with two Global Integrity Reports. Table 2 shows the sample countries and their whistleblowing scores.

Table 2: Whistleblowing Scores of Sample Countries

| Countries | Whistleblowing Scores |
|---------------|-----------------------|
| India | 69 & 73 |
| Indonesia | 59 |
| Malaysia | 75 |
| South Africa | 50 |
| Canada | 71 |
| England | 69 |
| France | 67 |
| Israel | 63 |
| Japan | 9 & 67 |
| South Korea | 90 |
| United States | 69 |

iv. Market Types

The purpose of distinguishing between emerging markets and developed markets is to discern if there are any differences of impact on the equity markets in emerging countries and developed countries. A binary number of ‘1’ is given to emerging markets and a binary number of ‘0’ is assigned to developed markets.

2.2 Measuring the significance between the parameters and market types

Each country and its respective parameters were aligned longitudinally in a matrix and a regression analysis was conducted to establish a correlation between the adjusted

returns and the rest of the parameters by running a three independent variable on the dependent variable regression.

Consequently, the adjusted returns in the week of the occurrence were extracted for each country and measured against its market type (0 = developed markets, 1= emerging markets) to examine if there is a correlation between the market type and the adjusted return when the legislation was passed.

3. Empirical Results and Discussion

In Table 3, the results from the multiple regression analysis shows that there is a minor positive correlation of 15.56% and that only 2.42% of the variance in the observed values of the dependent variable is explained by the model.

Table 3: Multi-regression Statistic Analysis on the Three Criteria and Adjusted Returns

| <i>Regression Statistics</i> | <i>Value</i> |
|------------------------------|--------------|
| Multiple R | 0.15564832 |
| R Square | 0.0242264 |

Table 4: Multi-regression Coefficient Analysis on the Three Criteria and Adjusted Returns

| | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> |
|-----------------------------|---------------------|-----------------------|---------------|----------------|
| Intercept | 0.00824439 | 0.003433695 | 2.401026325 | 0.016747808 |
| Occurrence of Event | 0.00324082 | 0.007026051 | 0.461257534 | 0.6448333 |
| Whistleblowing Score | -0.0001288 | 5.47629E-05 | -2.352842307 | 0.019053541 |
| Market Type | 0.00823737 | 0.003127936 | 2.633483805 | 0.008737929 |

From Table 4, it is observed that the occurrence of event variable has least relative influence on the adjusted returns as denoted by its t-stat value and P-value which indicates the standard error for the occurrence for event variable is too large to consider its coefficient statistically correlated to the movements in adjusted returns of equity markets variable. In addition, the P-value for the first variable signifies that there is a 64.48% chance that the relationship emerged randomly and that only there is only a 35.52% chance the relationship is real. From this result, the model fails to reject the null hypothesis ($H_{0,1}$) and that there is no impact of whistleblowing legislation across both emerging and developed markets.

However, this experiment has also presented some interesting findings which can be observed from Table 4. The first finding is that the adjusted returns are inversely related to the coefficient of whistleblowing score of the countries. This indicates that countries with a higher whistleblowing measure score, which indicates better effectiveness of the legislation, has lower adjusted returns during the stated time frame when the legislation was put into place. In addition, this correlation is corroborated by its large t-stat and its P-value which shows that there is only a 1.9% chance that the relationship emerged randomly and 98.1% chance that the relationship of countries with higher whistleblowing score correlates to lower adjusted returns is real. Therefore, the second null hypothesis ($H_{0,2}$) is rejected

Another interesting find is that there is a positive relationship between the adjusted returns and the types of market whereby emerging markets '1' has more positive returns against the developed markets '0' which act as a benchmark for market returns. This relationship is also corroborated by the t-stat value and P-value in which there is a 0.87% chance that the relationship emerged randomly and a 99.13% chance that the relationship is real. This agrees with the notion that emerging markets have stronger growth in comparison to the developed markets. Also emerging markets returns in this context adapt positively, which may be a sign of improving market conditions and efficiency in concert with the legislation. Thus, they second null hypothesis ($H_{0,3}$) is rejected.

Table 5 displays the number of observations for occurrence which is 15. Out of 15 occurrences, 8 are positive returns (53.33%) and 7 are negative returns (46.67%). Across both markets however, 5 occurrences are from the emerging market and 10 occurrences are from the developed market. Out of the 5 occurrences from the emerging markets, 2 are positive returns (40%) and 3 are negative returns (60%), whereas 6 out of the 10 occurrences from the developed market are positive returns (60%) and 4 are negative returns (40%). An additional step was taken to see if is a correlation between the types of market and the adjusted returns on the day of occurrence.

Table 5: Summary of Positive and Negative Returns during the Occurrence of the Event for Market Types

| | N | No. of Positive Returns | % Positive | No. of Negative Returns | % Negative |
|-----------|----|-------------------------|------------|-------------------------|------------|
| Total | 15 | 8 | 53.33% | 7 | 46.67% |
| Emerging | 5 | 2 | 40.00% | 3 | 60.00% |
| Developed | 10 | 6 | 60.00% | 4 | 40.00% |

Table 6 and Table 7 show the summary of the regression analysis between these two variables.

Table 6: Regression Statistics Analysis on the Adjusted Returns and the Types of Market

| <i>Regression Statistics</i> | |
|------------------------------|-----------|
| Multiple R | 0.0580582 |

Table 7: Regression Coefficient Analysis on the Adjusted Returns and the Types of Market

| | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> |
|--------------------|---------------------|-----------------------|---------------|----------------|
| Intercept | 0.00645658 | 0.006305019 | 1.02403878 | 0.324495778 |
| Market Type | 0.00228989 | 0.010920613 | 0.209685507 | 0.837163499 |

From the regression results, there is a small positive correlation of 0.058 between the adjusted returns in the week of the occurrence and the types of the market. This shows a weak relationship between the types of markets the adjusted returns when the legislation was proposed or enacted.

4. Conclusion

A multiple regression analysis was conducted to determine the relationship of the whistleblowing measure score (the occurrence when the legislation was proposed or passed '1'), and the type of markets (0 = developed markets, 1 = emerging markets) on the movements in the adjusted returns across markets. The correlation is small indicating a weak positive correlation between the variables of 15.56%. The null hypothesis (H_0) is failed to be rejected as there is an even weaker correlation between the adjusted returns and the occurrence of the event. Nonetheless, the results have also pointed to an interesting discovery that there is a significant inverse relationship between the whistleblowing measure score and the adjusted returns which rejects the second and third null hypotheses.

5. Drawbacks

There are several drawbacks to this study. The first is sampling error in which the samples were not randomly selected which could lead to biased results. This bias is more

significant when it comes to drawing samples from the emerging markets as unavailability of data has hindered the freedom of random selection. For example, several emerging countries that were initially selected like Brazil, China, and Romania had to be dropped as these countries do not have either the whistleblowing legislation or the historical prices data. This leads to a restrictive sample size which results in findings that aren't representative of the population, thereby impacting the potential correlation between the enactment of the legislation and the movement in the financial markets. The biggest problem with a small sample size is that the variability would be higher than when a larger sample size is employed, thus yielding less accurate results as the results from smaller sample sizes move further away from the entire population.

A second drawback to this study is the accuracy of implementing the Global Integrity Report's whistleblowing measure score in this study because it does not quantify the effectiveness of the legislation per se but of other alternative whistleblowing enforcements such as the usage of external or internal hotlines. Thus, this impairs the correlation between the actual effectiveness of whistleblowing legislations on market returns.

6. References

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