Tobin's Q of Honda Motor Company, Limited and its Determinants from 2013 to 2017

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12 May 2019

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ABSTRACT

A firm's market capitalization can be influenced by internal or external factors. This may be caused by and linked to corporate governance failures and the changes of macroeconomic factors. This paper attempted to investigate the internal determinants (corporate governance index, return on assets, return on equity, Altman Z) and external determinants (gross domestic product, unemployment rates and exchange rate) of Tobin's Q and how they influence Tobin's Q of Honda Motor Company, Limited from 2013 to 2017. The importance of corporate governance will also be delivered indirectly in this study. Ordinary Least Square analysis (OLS) was used to study the significance of independent variables towards Tobin's Q. The findings showed that Altman Z (internal determinant) was positively significant to the Tobin's Q ratio and influenced Tobin's Q the most. This study also suggested the firm to focus on its corporate governance principle, which is transparency to avoid bankruptcy.

Keywords*: Tobin's Q, market capitalization, Altman Z, corporate governance*

1.0 INTRODUCTION

1.1 Background of Company

Honda Motor Company Ltd. is a leading Japanese automobile company that formally established in 1948 and its founders are Soichiro Honda and Takeo Fujisawa. The headquarters of the company are in Tokyo, Japan. Honda develops and produces range of products including motorcycles, automobiles and power products such as lawnmowers, marine engines, snow throwers and generators. Their best-selling automobiles in the world namely Honda Civic and Honda Accord are always the best midsize cars for the public. Their Honda Clarity Plug-in Hybrid Electric Vehicle (PHEV) also awarded Japan Car of the Year 2018-2019 Award recently. Today, Honda Motor Company has expanded become a public multinational automobile company that owns many subsidiaries around the world such as North America, Asia, Europe and others. ("The Honda Time Machine", 2019)

In the year of 2017, Honda Motor Company formulated its 2030 vision, that is "Serve people worldwide with the 'joy of expanding their life's potential'". By having this vision, Honda promised to further advance the existing strengths of Honda in technology and manufacturing across their products such as automobiles, motorcycles and power products and also earn 28 million customers per year in markets around the world. Besides, Honda will also create "solutions" which include "Mono-zukuri", the art of making things, and "Koto-zukuri" which means enhance the user experience through brand storytelling about the art of making things. ("2030 Vision", 2019)

The board structure of Honda Motor Company is unitary board. Honda consists only a board which is the Board of Directors. In June 2017, Honda adopted a "Audit and Supervisory Committee" system that consists of directors to assign the authority to the directors from the Board of Directors and at the same time separate the supervisory function and business execution function of the firm. Today, Honda existing committee includes Board of Directors, Audit and Supervisory Committee, Directors, Corporate Auditors, Managing Officers and Operating Officers. Besides, Honda also strives to enhance its corporate governance. Honda's basic principles are to strengthen the trust of their shareholders, customers and society; encourage timely, decisive and risk-considered decision-making; sustain and enhance the corporate value over the mid- to

long-term; and become “a company that society wants to exist”. (“Honda Corporate Governance”, 2019)

The aims of this study are to investigate the determinants of the Tobin’s Q value of Honda Motor Company Ltd. from 2013 to 2017 and how the determinants influence Tobin’s Q. Through this research, we can also increase our understanding of the importance of corporate governance indirectly.

1.2 Scandal of Company

Unfortunately, the scandal of selected Honda vehicles that equipped with defective Takata airbag inflators has gone viral all around the world starting from the year of 2016. As of February 2018, the defective airbag inflators issue had brought to 24 deaths and over hundreds of injuries worldwide. The root cause of the problem is Takata airbags that use ammonium nitrate-based propellant without a chemical drying agent will react according the environmental moisture, high temperatures, and age can improperly inflate the airbags and even injured the occupants.

The worsening of this issue indicates that Honda Motor Company disobeyed one of the four pillars of corporate governance, that is transparency. Transparency in the four pillars of corporate governance refers to openness and willingness by the company to provide clear information to shareholders and other stakeholders (Cadbury Report, 1991). A company should ensure timely, accurate disclosure on all material matters, including the financial situation, performance, ownership and corporate governance. Both Honda Motor Company and Takata Corporation failed to report the defects and alert the public in a timely manner led to the increasing of injuries and deaths (The New York Times, 2014), reputation of the company being influenced and facing a huge loss as the Honda had the responsibility to recall the automobiles with defective airbags for free repairing.

1.3 Research Questions

1. What are the internal factors that influence the Tobin's Q of Honda Motor Company Ltd. from 2013 to 2017?
2. What are the external factors that influence the Tobin's Q of Honda Motor Company Ltd. from 2013 to 2017?
3. What are the internal and external factors that influence the Tobin's Q of Honda Motor Company Ltd. from 2013 to 2017?

1.4 Research Objectives

The study aim is to determine the determinants that will affect the Tobin's Q value which is the market capitalization of Honda Motor Company, Limited. There are three objectives in this study. The objectives of this study are:

1. To investigate the internal factors that influence the Tobin's Q of Honda Motor Company Ltd. from 2013 to 2017.
2. To investigate the external factors that influence the Tobin's Q of Honda Motor Company Ltd. from 2013 to 2017.
3. To investigate the internal and external factors that influence the Tobin's Q of Honda Motor Company Ltd. from 2013 to 2017.

2.0 LITERATURE REVIEW

This part reviewed related literature in the areas of Tobin's Q and corporate governance. Secondary resources that related to Tobin's Q, corporate governance and scandals, corporate governance and performance, corporate governance and bankruptcy, corporate governance and Tobin's Q and corporate governance and macroeconomic are found in books, journals and other relevant sources.

2.1 Tobin's Q

Tobin's Q is defined as market value of firm divided by the replacement cost of assets of the firm. Tobin's Q ratio is important in corporate finance and the investment decision making. Tobin's Q ratio can be said that it is a type of market based valuation that measures the performance of a firm and the market capitalization of the firm. Company that achieves high q-ratio shows that its excellent can be maintained (Manuel L. Jose, Carol Lancaster & Jerry L. Stevens, 1996). There are several internal and external determinants that affected market capitalization of a firm. According to Joseph Wolfe (2003), Tobin's Q and the Altman Z are moderately and strongly related to each other when comparison made between them. Altman Z had a positive significant coefficient towards market capitalization indicates that if the firm has low financial strength, the firm will likely to have lower stock prices which consistent with a lower capitalization (Nicholas Apergis, John Sorros, Panagiotis Artikis, Vasilios Zisis, 2011). For the external determinant of Tobin's Q, Timothy Sykes (2018) said when unemployment rate increases, the income generated will be limited and thus the purchasing power of investors will be weakened. This will lead to decreasing in the number of outstanding shares and the market value of the firm.

2.2 Corporate governance and scandals

According to Adolf A. Berle and Gardiner C. Means (1932), corporate scandals arise although we assume that corporate managers with the responsibilities of acting in shareholders' best interest, they are still capable of acting on their own. In order for one or more individuals to behave unethically, their actions must be ignored or otherwise

facilitated by negligence on the part of other company members. It is ineffective corporate governance that always enables scandals to occur.

Corporate governance is about enhancing transparency and ensuring the fairness and accountability of corporation towards shareholders and other stakeholders to build trust and confidence in corporations. It is a condition to the integrity and credibility of financial institutions, individual companies, stock exchanges and the entire market economy (Justin O' Brien, 2005). According to Borgia. F. (2005), Information about the performance of the corporation, corporate objectives and predictable risk factors are needed by investors to monitor their investment. Transparency may not lead to immediate success, but lack of transparency can surely lead to a swift failure. In a capitalist market system, transparency is not a luxury but it is now a basic requirement of the governance system. An opaque event can damage a corporation or even destroy it.

2.3 Corporate governance and performance

Although larger board size facilitates key board functions, these boards will usually suffer from coordination and communication problems and thus will lead to board effectiveness and performance decline. Limiting board size seems to be a good idea to improve performance of the firm because poor communication and decision-making of larger groups will lead to undermine the effectiveness of larger groups (Lipton and Lorsch, 1992; and Jensen, 1993).

In the research, it was found that independent board of directors, nominating committees, and compensation committees are associated with good firm performance. Regulators may wish to consider requiring a separate corporate governance committee that will carry out meeting at least once a year and a provision limiting a firm's option burn rate (Lawrence D. Brown & Caylor, M. L. ,2004). Outsiders are usually more independent than insiders. They will provide better monitoring, but are less informed about the firm's activities. Larger board size also has its own benefits. Larger board size can increase the number of non-executive directors and have greater collective information which is valuable for the monitoring function (Lehn et al., 2004).

2.4 Corporate governance and bankruptcy

According to Edward Altman (1993), companies that go bankrupt are always big companies with large scale of business. Besides, after third round of robustness check, Darrat, A. F., Gray, S., Park, J. C. & Wu. Y (2016) found that there was a related cause and effect between corporate governance and bankruptcy. The importance of corporate governance was relatively increased with time to expose to bankruptcy. This implied that corporate governance was an important determinant for bankruptcy. Besides, the results done by Kaouthar Lajili & Daniel Zeghal (2010) has indicated that interactions between corporate governance characteristics could have a significant impact on the bankruptcy filing decision.

2.5 Corporate governance and Tobin's Q

It was found that the corporate governance mechanisms such as high concentration of shareholding, the increasing in the number of outsiders and the increasing in issuing shares to foreign investors showed a statistically and economically significant and have positive influence on market valuation. This paper also claimed that a good corporate governance should consist of mechanism that can guarantee the finance suppliers to get an adequate return on investment that they made. (Chong En Bai, Qiao Liu, Joe Lu, Frank M. Song, and Junxi Zhang, 2004). On the other hand, another research carried out by Sanjai Bhagat and Brian Bolton (2007) showed that stock ownership of board members and separation of CEO and Chairperson are significantly and positively correlated with better operating performance, consistent with market capitalization of firm.

2.6 Corporate governance and Macroeconomics

According to Zuliu Hu and Li Li (1998), market participants will usually adhere to government release of economic data due to stock market is very sensitive to macroeconomics and changing over time. In the research regarding the relationship between macroeconomics and corporate governance reforms in Turkey in 1999 and 2011 crisis, researchers Ugur and Ararat (2006) found that the stability of macroeconomics can affect the investment of firm in corporate governance quality positively. On the other hand, macroeconomic volatility can have negative effects on corporate governance quality as it will lower shareholders' loyalty towards the firm. The reduced of shareholders' loyalty will then lead to fall of the market value of firm. Hence, this paper also suggested some initiatives which can improve the corporate governance quality. The suggested initiatives were conduct a rule-based macroeconomic framework and the government supposed to introduce regulatory reforms. According to Dignam A. and Galanis M. (2008), the conditions of macroeconomic will matter the outcomes of corporate governance system and recognize the interdependent relationship between micro-level corporate structure and macroeconomic factors. Thus, changes in macroeconomic conditions can alter the corporate governance system of firm.

3.0 METHODOLOGY

Sound knowledge of research methodology is crucial for a valid study. Research methodology is important as it enables us to develop a conceptual framework that is sound and has merits for the research endeavour with confidence (Ranjit Kumar, 2019).

Quantitative approaches are used in this research. A quantitative approach is used to test for confirmation or disconfirmation of the hypothesis (Newman, I., Benz, C. R., & Ridenour, C. S, 1998). Quantitative research is based on the measurement of quantity. It is used in the phenomena that can be expressed in terms of quantity (C.R. Kothari, 2004). The following are the quantitative approaches that have been used to complete this research.

3.1 Data Sampling

Sampling acts as a tool to collect and gather the data. The sample of this study is Honda Motor Company, Limited. All the financial and non-financial information regarding this company was extracted from the annual reports from 2013 to 2017 and the official website of Honda Motor Company, Limited. Financial information in income statements and balance sheets is required to calculate the financial performance of the company such as return on assets and return on equity, the market capitalization of company such as Tobin's Q ratio, and the chance of bankruptcy which is Altman Z. On the other hand, non-financial information is used to analyze the corporate governance index. For the macroeconomic factors, the historical market share price from 2013 to 2017 are determined from Yahoo Finance. Gross domestic product (GDP) per capita, unemployment rate and exchange rate from 2013 to 2017 are also collected to complete this study.

3.2 IBM Statistical Package for the Social Sciences (SPSS)

The data analysis of this study was done by using IBM Statistical Package for the Social Sciences (SPSS) Statistics version 25. In this research, IBM SPSS Statistics was used to compute descriptive statistics, correlation and coefficient between independent variables and dependent variable based on quantitative data extracted from annual reports and official websites.

3.3 Data Analysis

There are 4 internal factors and 3 external factors in this study. Internal factors consist of corporate governance index (CGI), return on assets (ROA), return on equity (ROE) and Altman Z. On the other hand, external factors consist of gross domestic product (GDP), unemployment rate and exchange rate.

Tobin's Q was used as the dependent variable. It was measured by market value of a company divided by its assets replacement cost. The formula is as below:

$$\text{Tobin's Q} = \frac{\text{Total Market Value of Firm}}{\text{Total Assets of Firm}}$$

Ordinary Least Square analysis (OLS) in Multiple Linear Regression analysis in SPSS is used to study the significance of independent variables against dependent variable. The following linear regression model were derived for the internal factors, external factors and both internal and external factors that influence the Tobin's Q.

Model 1: Linear Regression Model of Tobin's Q with internal factors.

$$\text{Tobin's Q}_{\text{Internal Factors}} = \alpha + \alpha_1 \text{CGI} + \alpha_2 \text{ROA} + \alpha_3 \text{ROE} + \alpha_4 \text{Altman Z} + \varepsilon$$

Model 2: Linear Regression Model of Tobin's Q with external factors.

$$\text{Tobin's Q}_{\text{External Factors}} = \alpha + \alpha_1 \text{GDP} + \alpha_2 \text{Unemployment rate} + \alpha_3 \text{Exchange Rate} + \varepsilon$$

Model 3: Linear Regression Model of Tobin's Q with internal factors and external factors.

$$\text{Tobin's Q}_{\text{Internal + External}} = \alpha + \alpha_1 \text{CGI} + \alpha_2 \text{ROA} + \alpha_3 \text{ROE} + \alpha_4 \text{Altman Z} + \alpha_5 \text{GDP} + \alpha_6 \text{Unemployment rate} + \alpha_7 \text{Exchange Rate} + \varepsilon$$

4.0 ANALYSIS AND FINDINGS

All the financial data are extracted from annual reports of Honda Motor Company Ltd. and Yahoo Finance from the year 2013 until 2017. The research is done for 3 years before and 1 year after the scandal as the scandal was happened in 2016.

Year	Corporate Governance Index	ROA	ROE	Tobin's Q	Altman Z-Score	GDP per capita (%)	Unemployment rate (%)	Exchange rate (%)
2013	0.6604	0.0288	0.0779	0.4462	2.9188160	2.00	4.00	105.30
2014	0.6604	0.0390	0.1028	0.4235	2.7630950	0.40	3.60	119.70
2015	0.6604	0.0305	0.0789	0.3422	2.3511850	1.40	3.40	120.30
2016	0.6604	0.0223	0.0601	0.2784	2.1076100	1.00	3.10	116.90
2017	0.6770	0.0358	0.0931	0.3047	2.5159860	1.70	2.80	112.70

Table 4.1: Analysis data

(Source: The information above is based on the annual reports of Honda Motor Company Ltd. and Yahoo Finance from the year 2013−2017)

4.1 Corporate governance index

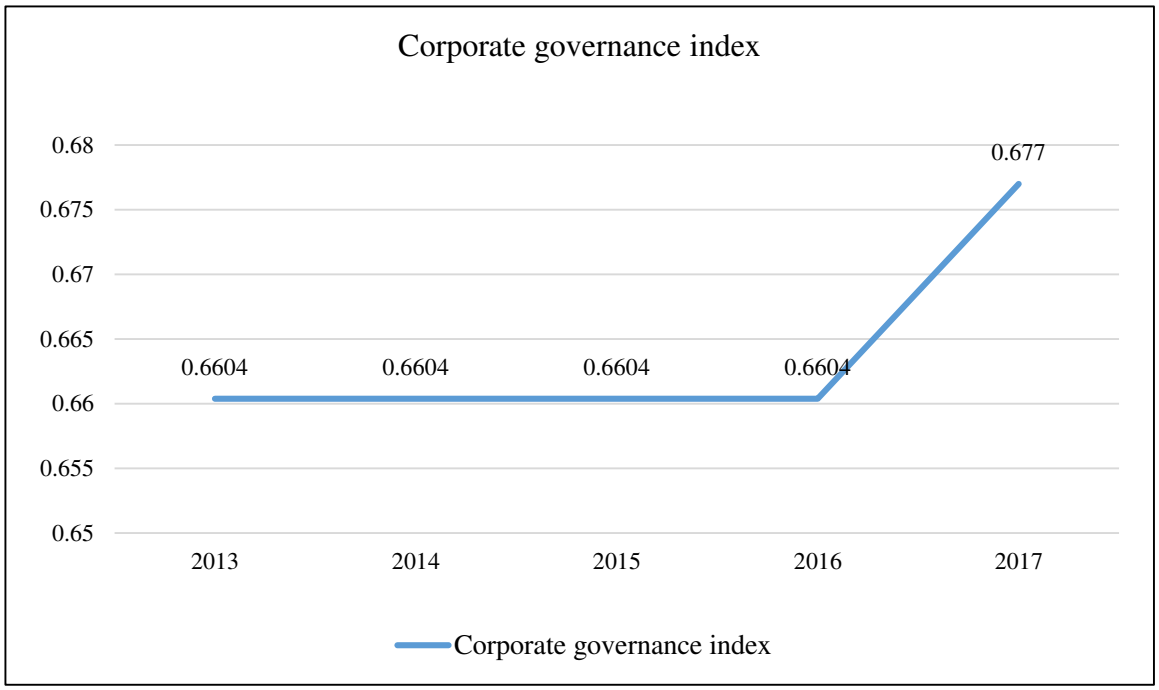

Figure 4.1: Corporate governance index of Honda Motor Company Ltd. 2013-2017

Corporate governance index combines a numbers of good indicator measures of corporate governance. The measures of good indicators consist of board structure index (independence elements and committee elements), board procedure index (general procedure elements and audit committee procedure elements), disclosure index (financial disclosure elements, non-financial disclosure elements, disclosure reliability elements), ownership structure index, shareholder rights index and related party index (RPT volume elements). The corporate governance index shows constant value which is 0.6604 from the year 2013 to 2016 and increased 2.51% become 0.6770 in 2017. Probably, this is because there is a little change in Honda company as Honda has increased the number of outside directors in the board from 2 to 5 outside directors in 2017.

4.2 Return on Assets (ROA)

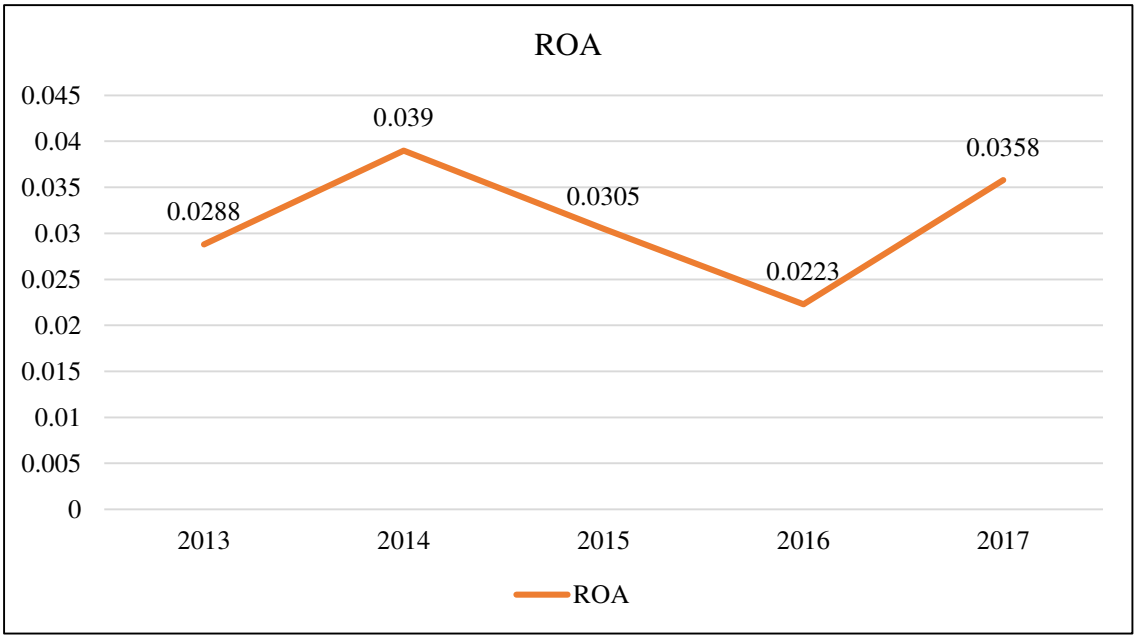

Figure 4.2: Return on assets of Honda Motor Company Ltd. 2013-2017

Return on assets (ROA) is the profitability ratio that measures a company's ability to generate earnings relative to its expenses and other costs. ROA of Honda Motor Company Ltd. showed fluctuating data from 2013 to 2017. ROA is a ratio that indicates how well a company is able to utilize its assets. It measures the net income produced by total assets in a period. Based on the result above, the highest ROA of Honda from 2013 to 2017 is 3.90% in the year of 2014 while the lowest ROA is 2.23%

in the year of 2016. This indicates that Honda is not effective in managing its assets to generate net income in 2016 after the happening of the scandal.

4.3 Return on Equity (ROE)

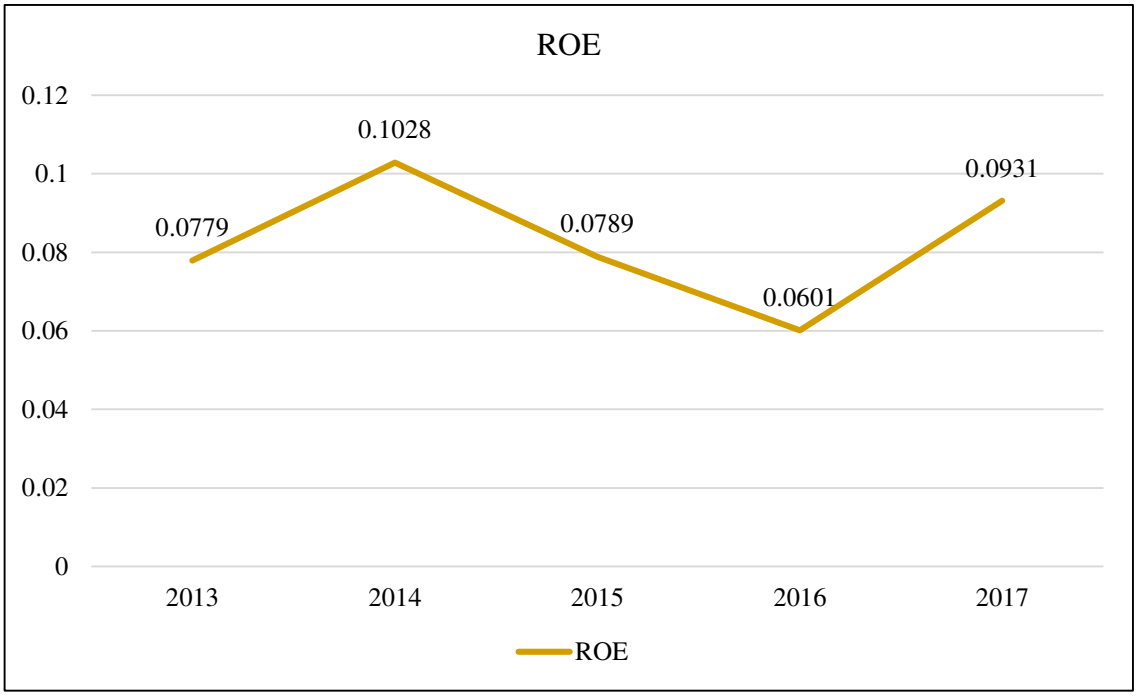

Figure 4.3: Return on equity of Honda Motor Company Ltd. 2013-2017

ROE is a profitability ratio that measures how effective and the ability of a company to generate profits from its shareholders' investments in the company. It concerns the company's shareholders the most. Based on the result above, the ROE shows fluctuating trend from 2013 to 2017. The highest ROE is 10.28% in the year of 2014 whilst the lowest ROE was recorded at 6.01% in the year of 2016. This indicates that Honda is not effective in managing its shareholders' equity to produce earnings in 2016 after the happening of the particular scandal. From fluctuating ROE from 2013 to 2017, we can conclude that the profitability of Honda was not stable due to the effect of Takata airbags scandal.

4.4 Tobin’s Q ratio

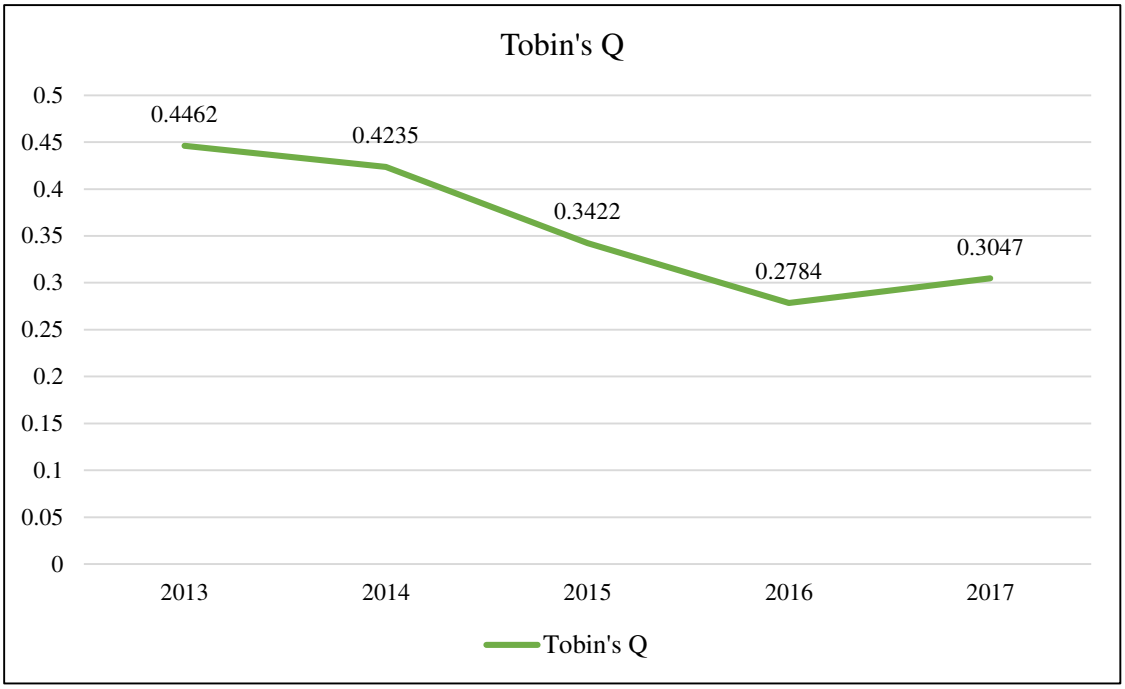

Figure 4.4: Tobin’s Q of Honda Motor Company Ltd. 2013-2017

Tobin's Q ratio is the market value of a company divided by its assets replacement cost. The graph above shows Tobin’s Q value of Honda Company from 2013 to 2017. It shows an unstable trend. Tobin’s Q ratio of Honda Motor Company Ltd. kept decreasing from 2013 until 2016 and increasing back in the year of 2017. Tobin’s Q ratio of Honda is 0.4462 in 2013 decreased 0.1678 become the lowest, 0.2784 in 2016 and slightly increased 0.0263 become 0.3047 in 2017. Overall, we know that Tobin’s Q ratios of Honda from 2013 to 2017 are between 0 and 1. Thus, we can conclude that Honda Motor Company was undervalued and it costed more to replace its assets than it is worth.

4.5 Altman Z-scores

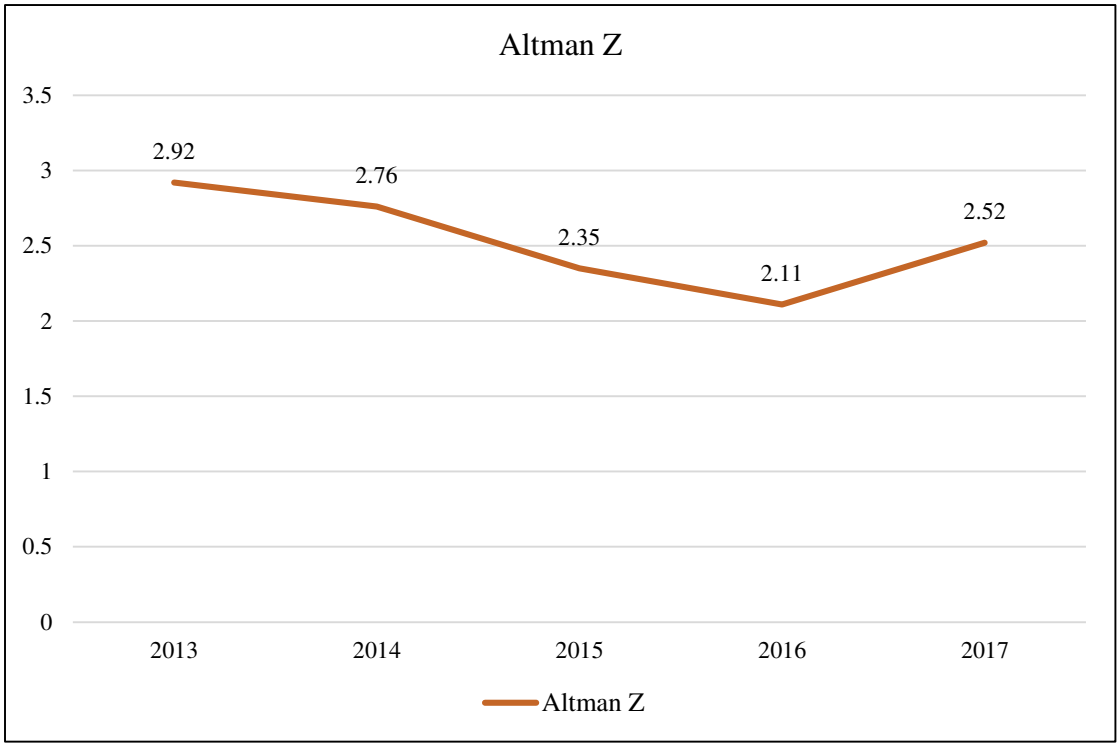

Figure 4.5: Altman Z-scores of Honda Motor Company Ltd. 2013-2017

Altman Z-score is used to measure the likelihood that a company will go bankrupt within 2 years. According to Altman (1983), Z-score for non-manufacturer industrial and emerging market credits of greater than 2.6 is indicated as 'safe' zone, Z-score between 1.1 and 2.6 is indicated as 'grey' zone and Z-score less than 1.1 is in 'distress' zone. As we can see, the Altman Z-score of Honda in 2013 and 2014 are greater than 2.6 which are 2.92 and 2.76 respectively. This means that Honda company was in the "safe" zone in 2013 and 2014. The Altman Z-score of Honda in 2015, 2016 and 2017 which are 2.35, 2.11 and 2.52 respectively. This shows that Honda Company was in "grey" zone in that 3 years. In 2016, Honda's Altman Z-score depicted the least, which is 2.11 compared to other years.

4.6 Gross Domestic Product (GDP per capita)

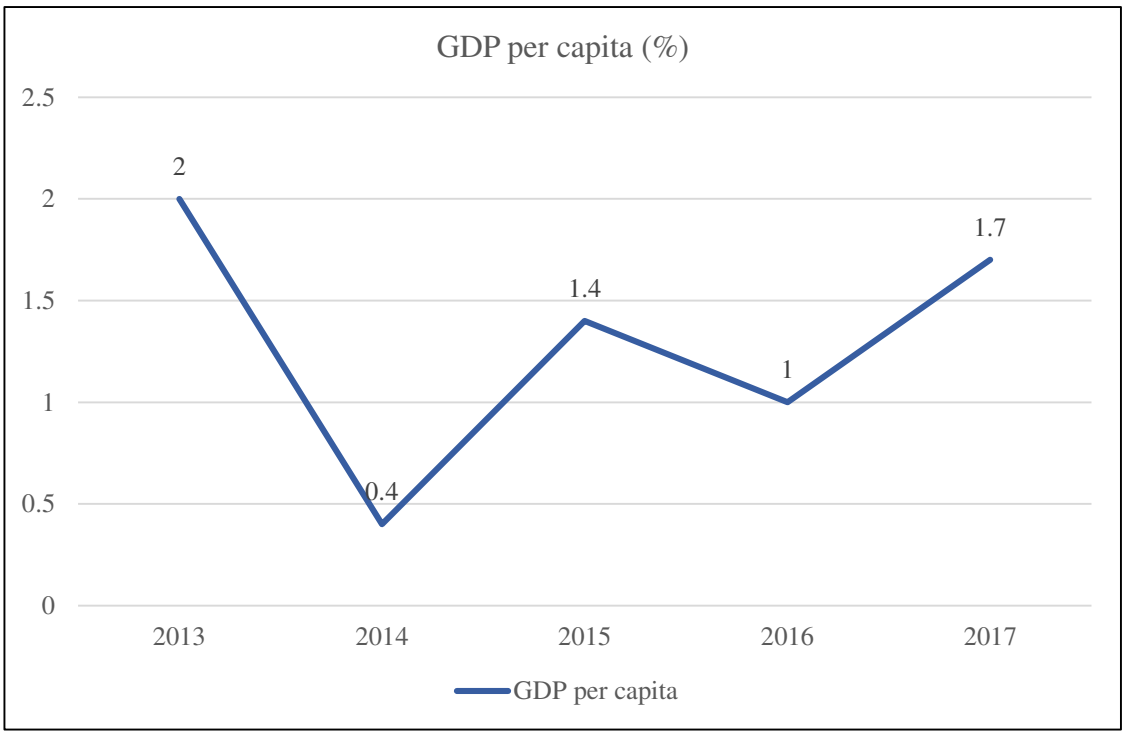

Figure 4.6: Gross Domestic Product 2013-2017

Gross domestic product (GDP) is a measurement of economic activity. GDP growth also known as economic growth. GDP is the monetary value of the finished goods and services produced within a country's borders in a specific time period. GDP from 2013 to 2017 showed a fluctuating trend. In 2013, the GDP per capita is 2.0. It decreased become 0.4 in 2014 and increased become 1.4 in 2015. The GDP decreased again become 1.0 in 2016 and increased back to 1.7 in 2017. This means that the economic growth between 2013 and 2017 in Japan was unstable and inconsistence.

4.7 Unemployment rate

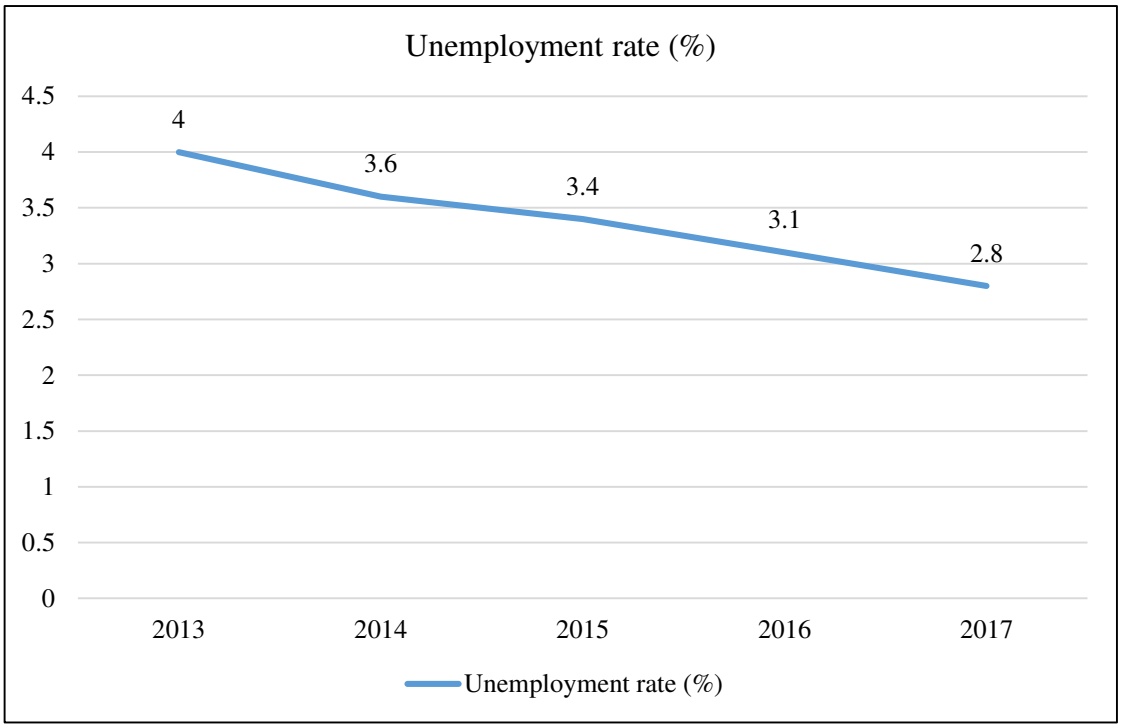

Figure 4.7: Unemployment rate 2013-2017

Unemployment rate is the percentage of the number of unemployed person in the total labour force. Workers who are jobless are considered as unemployed person. Figure 4.7 shows that the unemployment rate has a decreasing trend. The highest unemployment rate was depicted in 2013 which was 4.0%. It decreased by 1.2% become 2.8% in the year of 2017, which is the lowest unemployment rate between these 5 years. The decreasing trend of unemployment rate in Japan shows that the number of people who is jobless was becoming less from 2013 to 2017.

4.8 Exchange rate

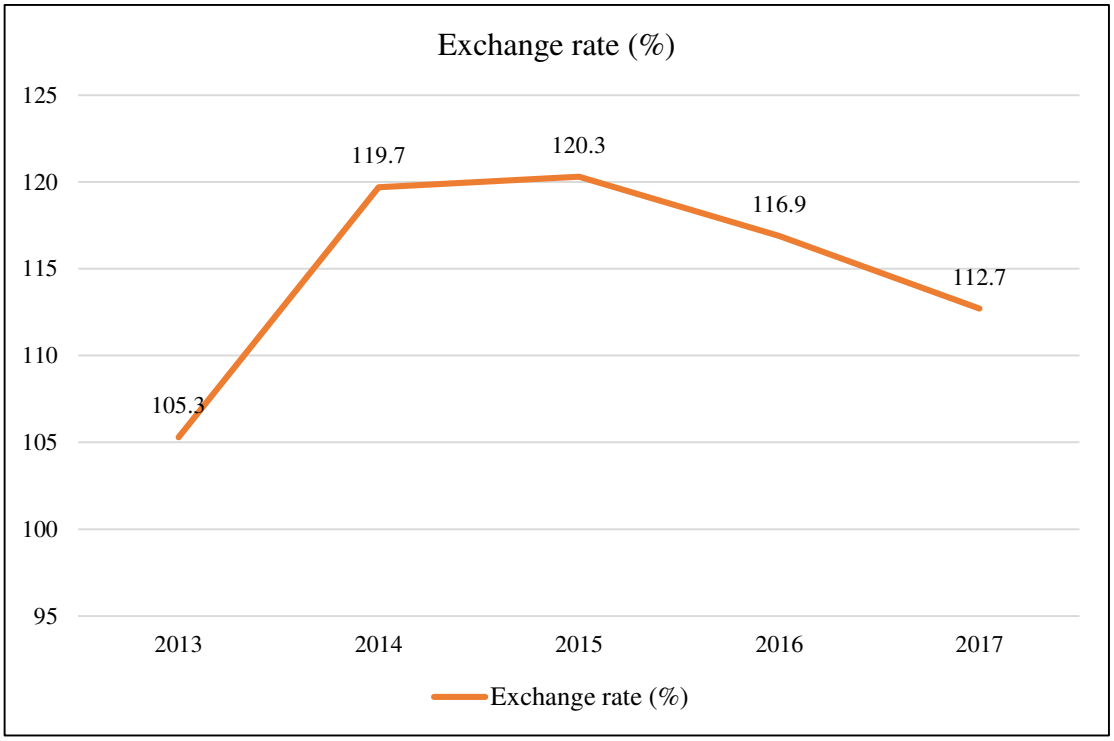

Figure 4.8: Exchange rate 2013-2017

Exchange rate is the value of one currency for the purpose of conversion to another. Exchange rate also can be said that it is the comparison of currencies between two countries. Exchange rates will not remain constant. Determinants such as interest rate, inflation, political stability and economic performance can influence the exchange rate. The graph above shows an unstable trend of exchange rate of Japanese Yen to U.S. Dollar from 2013 to 2015. In 2013, the exchange rate of Japanese Yen to U. S. Dollar was 105.3%. It then increased become 119.7% in 2014 and increased again become 120.3% in 2015. After 2015, the exchange rate of Yen to Dollar was decreasing. The exchange rate dropped 3.4% become 116.9% from 2015 to 2016. It then dropped again 4.2% become 112.7% from 2016 to 2017. The highest exchange rate was 120.3% in 2015 and the lowest exchange rate was 112.7% in 2017.

4.9 Descriptive Statistics

Descriptive Statistics

	Mean	Std. Deviation	N
Tobin's Q	.359000	.0732994	5
Corporate Governance Index	.66371031720	.007453559627	5
ROA	.031280	.0064697	5
ROE	.082560	.0162812	5
Altman Z	2.531338400	.3225239188	5
GDP per capita (%)	1.300	.6245	5
Unemployment rate (%)	3.380	.4604	5
Exchange rate (%)	114.980	6.1881	5

Table 4.2: Descriptive Statistics

Mean is the average of the numbers. In this case, mean represents the average of data among the five particular researched years. Standard deviation is a type of statistical term that measures the dispersion around an average, which is mean. It also measures the volatility of the mean. In general, the higher the value of the standard deviation, the more volatile the mean, and vice versa.

The mean value of Tobin's Q is 0.3590 while the standard deviation of Tobin's Q is 0.0733. The mean value of Tobin's Q that is between 0 and 1 indicates that on average the replacement cost of the firm's assets (1 yen) is greater than the market value of the stocks (0.36 yen), which means the market value of the firm's stocks are undervalued.

The value of corporate governance index on average is 0.6637 and the standard deviation is 0.0075. The higher mean value of corporate governance index shows that the company has better performance. Since the standard deviation value is low, thus we can conclude that the average of corporate governance index of the firm is not volatile and the company performance is quite good although its corporate governance index is less than 1.

The value of return on assets (ROA) on average is 0.0313 while its standard deviation is 0.0065. The mean value of ROA indicates that on average the firm generates 0.03 yen of income from 1 yen of its assets. Its seems that Honda is not using their assets well in generating profits. The average of ROA in that particular 5 years is not volatile as the standard deviation value is the smallest.

The mean value of return on equity (ROE) is 0.0826 while the standard deviation is 0.0163. The mean value of ROE indicates that on average, for every yen that the shareholders invest, the company can generate 0.08 times of it in their profits. The low value of standard deviation (0.0163) for average return on equity indicates that there is only 1.63% of variation for ROE of Honda within the 5 years.

The mean value of Altman Z is 2.5313. According to Altman (1983), Z-score for non-manufacturer industrial and emerging market credits of greater than 2.6 is indicated as 'safe' zone, Z-score between 1.1 and 2.6 is indicated as 'grey' zone and Z-score less than 1.1 is in 'distress' zone. The Altman Z-score of Honda on average shows that Honda can be categorized in grey zone, which means that there is a good chance for the company to go bankrupt within the next two years of operations. The standard deviation of the mean Altman Z-score within 5 years is 0.3225. This shows that on average there is 32.25% of variation of Altman Z-score of Honda within that 5 years.

For the macroeconomic factors, the value of gross domestic product (GDP) per capita on average is 1.30%. This means that on average the economy of Japan has grown by 1.30% within the period of 5 years (2013 to 2017). The standard deviation of GDP per capita on average is 0.63%. This indicates that the variation of mean of GDP in Japan is small within the year of 2013 to 2017. The mean value of unemployment rate is 3.38% and its standard deviation is 0.46%. Since unemployment rate on average is small, this indicates that the economy in Japan was performing well as jobless people being less within 2013 to 2017. The value of exchange rate on average is 114.98% and its standard deviation is 6.19%. This shows that the variation of the mean of exchange rate caused the exchange rate from 2013 to 2017 become flexible, which is the exchange rates rise or decline based on various economic factors.

4.10 Correlations

Correlations

		Tobin's Q	Corporate Governance Index	ROA	ROE	Altman Z	GDP per capita (%)	Unemployment rate	Exchange rate
Pearson Correlation	Tobin's Q	1.000	-.414	.408	.461	.917	.021	.904	-.364
	Corporate Governance Index	-.414	1.000	.391	.362	-.027	.358	-.704	-.206
	ROA	.408	.391	1.000	.997	.564	-.264	.003	.180
	ROE	.461	.362	.997	1.000	.614	-.268	.056	.134
	Altman Z	.917	-.027	.564	.614	1.000	.206	.699	-.550
	GDP per capita (%)	.021	.358	-.264	-.268	.206	1.000	.078	-.775
	Unemployment rate	.904	-.704	.003	.056	.699	.078	1.000	-.357
	Exchange rate	-.364	-.206	.180	.134	-.550	-.775	-.357	1.000
Sig. (1-tailed)	Tobin's Q	.	.244	.248	.218	.014	.487	.018	.274
	Corporate Governance Index	.244	.	.258	.275	.483	.277	.092	.370
	ROA	.248	.258	.	.000	.161	.334	.498	.386
	ROE	.218	.275	.000	.	.135	.332	.465	.415
	Altman Z	.014	.483	.161	.135	.	.370	.095	.168
	GDP per capita (%)	.487	.277	.334	.332	.370	.	.450	.062
	Unemployment rate	.018	.092	.498	.465	.095	.450	.	.277
	Exchange rate	.274	.370	.386	.415	.168	.062	.277	.

Table 4.3: Correlations

Pearson correlation is used to measure and determine the statistical relationship between the dependent variable, which is Tobin's Q and the independent variables, which are corporate governance index, return on assets (ROA), return on equity (ROE), Altman Z-score, gross domestic product (GDP) per capita, unemployment rate and exchange rate. Table 4.3 above shows the correlations of dependent variable and its independent variables.

Basically, Pearson correlation that is positive means that the independent variable and the dependent variable are positively linear related while Pearson correlation value that is negative means that independent variable and dependent variable are negatively linear related. Pearson correlation which has the value of zero means that both of the variables do not have any relation or in other words, absence of relationship. Significant value (sig.) also known as P-value, a number between 0 and 1 that tells the significance of the independent variable to the dependent variable. According to R.A. Fisher (1958), the cut-off mark of P-value is 0.05 and $P < 0.05$ is rated as two stars or moderate. Thus, it can be said that $P < 0.05$ is statistically significant. $P < 0.001$ is attached with three stars, which is statistically highly significant while $P < 0.10$ only attached with one star indicates that P-value which is less than 0.10 is counted as weak significance. P-value which is more than 0.10 is not significant.

The result shows that the Pearson correlation of corporate governance index is -0.414 while its P-value shows 0.244. This means that corporate governance index is negatively correlated to Tobin's Q of Honda Motor Company. The negatively correlation between corporate governance index and Tobin's Q shows that when corporate governance index increases, Tobin's Q will decrease and vice versa. Besides, corporate governance is also insignificant to Tobin's Q as its P-value is more than 0.10.

Pearson correlation of ROA is 0.408 and the Pearson correlation of ROE is 0.461. The P-value of ROA and ROE are 0.248 and 0.218 respectively. This indicates that both ROA and ROE are positively correlated to Honda's Tobin's Q but does not significant to the Tobin's Q value as their P-value is more than 0.10.

Pearson correlation of Altman Z-score depicted at 0.917. This means that Altman Z is positively correlated to Tobin's Q as when Altman Z increases, Tobin's Q will also increase and vice versa. They are directly proportional to each other. The P-value of Altman Z is 0.014. This shows that Altman Z is statistically significant to Tobin's Q as its P-value is less than 0.05 (2 stars). The relationship between Tobin's Q and Altman Z was supported by another researcher, Joseph Wolfe. According to Joseph Wolfe's research on "The Tobin's Q as a

Company Performance Indicator" (2003), he proved that Tobin's Q and the Altman Z are moderately and strongly related to each other when a comparison is made between them.

For macroeconomics, the Person correlation of gross domestic product (GDP) is 0.021 and its P-value is 0.487. This indicates that GDP is positively correlated with Tobin's Q as when GDP increases, the Tobin's Q increases too, and when GDP decreases, the Tobin's Q will also decrease. Its P-value which is more than 0.10 shows that GDP is insignificant to contribute to Tobin's Q. The Person correlation of unemployment rate is 0.904 and its P-value is 0.018. This indicates that unemployment rate is positively correlated with Tobin's Q as when unemployment rate increases, the Tobin's Q increases too and when unemployment rate decreases, the Tobin's Q will decrease too. The P-value, 0.018 which is less than 0.05 shows that GDP is moderately significant to the Tobin's Q. The Person correlation of exchange rate is -0.364 and its P-value is 0.274. This indicates that exchange rate is negatively correlated with Tobin's Q as when exchange rate increases, the Tobin's Q will decrease, and when exchange rate decreases, the Tobin's Q increases. They inversely proportional to each other. Its P-value which is more than 0.10 shows that it is not significant to contribute to Tobin's Q.

4.11 Model Summary

Model Summary[c]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.917[a]	.842	.789	.0336900	
2	.997[b]	.994	.987	.0083313	2.324
a. Predictors: (Constant), Altman Z					
b. Predictors: (Constant), Altman Z, Corporate Governance Index					
c. Dependent Variable: Tobin's Q					

Table 4.4: Model Summary

Based on Table 4.4, this model summary would able to explain the dependent variable which is Tobin's Q with the adjusted R square. Adjusted R square is based on the sample size, n and the predictors, p.

The adjusted R-square of Model 1 in Table 4.4 is 0.789 which is of 78.9%. This shows that by using Altman Z as predictor, it is able to explain 78.9% of the variance in the Tobin's Q of Honda Motor Company from 2013 to 2017. Meanwhile, the remaining 21.1% of adjusted R square remains unknown and this implies that the variance in the Tobin's Q of Honda from 2013 to 2017 are unable to be explained by Altman Z.

Besides, the adjusted R-square of Model 2 in Table 4.4 is 0.987 which is of 98.7%. This shows that by using Altman Z and corporate governance index as predictors, 98.7% of the variance in the Tobin's Q of Honda Motor Company from 2013 to 2017 can be explained well. The remaining 1.3% of adjusted R square is unknown. This implies that only 1.3% of the variance in the Tobin's Q of Honda from 2013 to 2017 are unable to be explained by Altman Z and corporate governance.

Table C.3 in Appendix C shows the model summary of external factors that influence the Tobin's Q of Honda Motor Company. Based on the table, the adjusted R-squared for Model 1 is 0.755. This means that by using unemployment rate as the predictor, it is able to explain 75.5% of the variance in Tobin's Q of Honda Motor Company from 2013 to 2017. The remaining 24.5% of adjusted R-squared is unable to be explained by unemployment rate in Japan from 2013 to 2017.

4.12 Coefficients

Coefficients[a]									
	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-.169	.133		-1.268	.294	-.592	.255		
Altman Z	.208	.052	.917	3.992	.028	.042	.375	1.000	1.000
2 (Constant)	2.383	.373		6.381	.024	.776	3.989		
Altman Z	.206	.013	.907	15.954	.004	.151	.262	.999	1.001
Corporate Governance Index	-3.835	.559	-.390	-6.860	.021	-6.241	-1.430	.999	1.001
a. Dependent Variable: Tobin's Q									

Table 4.5: Coefficients

Table 4.5 shows the analysis of coefficients for both internal and external factors that influence Tobin's Q of Honda Motor Company. The analysis on coefficients show how the independent variables, including both internal and external factors influence the dependent variable, which is Tobin's Q of Honda Motor Company, Limited. The coefficient can be determined through the identification of the significance level (Sig.), which also known as P-value. P-value that equals 0.000 implies that the independent variables has most significant influence on dependent variable; $P < 0.001$ implies that the independent variable has strong influence on dependent variable; $P < 0.05$ means the independent variable has moderate significant influence on dependent variable; and $P < 0.10$ indicates that P-value which is less than 0.10 has the least significance influence on dependent variable.

Refers to Model 2 in the table of coefficients above, the t-value of Altman Z is the highest, which is 15.954. This means that Altman Z is highly positively correlated to Tobin's Q and they are directly proportional to each other. Besides, the significance level of Altman Z also showed the highest level on influencing the Tobin's Q as its P-value is 0.004 which is less than 0.05 and close to 0.001. This also implies that any changes in Altman Z will give a big impact to Tobin's Q. According to the research done by Nicholas Apergis, John Sorros, Panagiotis Artikis, Vasilios Zisis (2011), Altman Z had a positive significant coefficient towards market capitalization. This showed that if the firm has low financial strength, the firm will likely to have lower stock prices which consistent with a lower capitalization.

On the other hand, the t-value of corporate governance index is -6.860 while its P-value is 0.021. This shows that corporate governance index is negatively correlated to Tobin's Q, which means they are inversely proportional to each other. Although corporate governance index is negatively correlated to Tobin's Q, its P-value that is less than 0.05 implies that it has moderate significant influence on Tobin's Q.

Based on Model 1 in Table C.2 in Appendix C (Coefficients of external factors that influence Tobin's Q of Honda Motor Company), the value of t of unemployment rate is 3.653. This shows that unemployment rate is positively correlated to Tobin's Q. The P-value of unemployment rate is depicted at 0.035. This indicates that it has moderate significance towards Tobin's Q as its P-value is less than 0.05. According to Zuliu Hu and Li Li (1998), stock market is very sensitive to macroeconomics. Market participants will usually adhere to government release of economic data. The result found here is contrary to Timothy Sykes's sayings. According to Timothy Sykes (2018), when unemployment rate increases, the income generated will be limited and the purchasing power of investors will be weakened. This will lead to decreasing in the number of outstanding shares and the market value of the firm.

5.0 CONCLUSION

In conclusion, the aims of this study are to investigate the determinants of the Tobin's Q value of Honda Motor Company Ltd. from 2013 to 2017 and how the determinants influence Tobin's Q. In order to achieve the objectives of this study, the internal factors (corporate governance index, return on assets, return on equity and Altman Z) and external factors (Gross Domestic Product, unemployment rate, exchange rate) that influence Tobin's Q are investigated.

By referring to the above results, we can conclude that the internal determinant which is Altman Z, has significant relationship with Tobin's Q and influences the Tobin's Q of Honda Motor Company the most from 2013 to 2017. Altman Z is used to predict the probability of the firm to file for bankruptcy. The higher the Altman Z-scores of the firm, the better it is as Altman Z-score which is greater than 2.6 indicates the firm is in 'safe' zone. This has been found true in this research. The research results show that the Altman Z and the Tobin's Q of Honda Motor Company are directly proportional to each other. This implies that if the Altman Z is high, the market capitalization of firm will increase too. In order to seek sustainable growth of the corporate value, Honda Motor Company supposed to pay full attention on the firm's corporate governance to avoid bankruptcy. If the chance of bankruptcy of the firm can be minimized, the market capitalization of the firm can be increased.

Besides, unemployment rate (external factors) also has positively significance towards the Tobin's Q of Honda Motor Company from 2013 to 2017. This indicates that unemployment rate and Tobin's Q are directly proportional to each other. However, unemployment rate supposed to be negatively significance towards the market capitalization. This is because when unemployment rate increases, the income generated will be lower and the purchasing power of investors will be weakened. This will lead to decreasing in the number of outstanding shares and the market value of the firm (Timothy Sykes, 2018). The results of this research regarding unemployment rate towards Tobin's Q is contrary to this statement.

APPENDICES

APPENDIX A (Internal factors and External factors vs Tobin's Q)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.018	1	.018	15.935	.028[b]
	Residual	.003	3	.001		
	Total	.021	4			
2	Regression	.021	2	.011	153.814	.006[c]
	Residual	.000	2	.000		
	Total	.021	4			

a. Dependent Variable: Tobin's Q

b. Predictors: (Constant), Altman Z

c. Predictors: (Constant), Altman Z, Corporate Governance Index

Table A.1: Table of ANOVA

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	Corporate Governance Index	-.390[b]	-6.860	.021	-.979	.999	1.001	.999
	ROA	-.160[b]	-.499	.667	-.333	.682	1.466	.682
	ROE	-.165[b]	-.490	.673	-.327	.623	1.606	.623
	GDP per capita (%)	-.175[b]	-.676	.569	-.431	.958	1.044	.958
	Unemployment rate	.513[b]	3.361	.078	.922	.511	1.955	.511
	Exchange rate	.202[b]	.663	.575	.425	.697	1.435	.697
2	ROA	.094[c]	1.559	.363	.842	.518	1.932	.518
	ROE	.093[c]	1.346	.407	.803	.480	2.085	.480
	GDP per capita (%)	-.032[c]	-.385	.766	-.359	.825	1.211	.825
	Unemployment rate	-.121[c]	-.320	.803	-.305	.041	24.308	.041
	Exchange rate	.085[c]	1.625	.351	.852	.648	1.542	.648

a. Dependent Variable: Tobin's Q

b. Predictors in the Model: (Constant), Altman Z

c. Predictors in the Model: (Constant), Altman Z, Corporate Governance Index

Table A.2: Table of Excluded variables

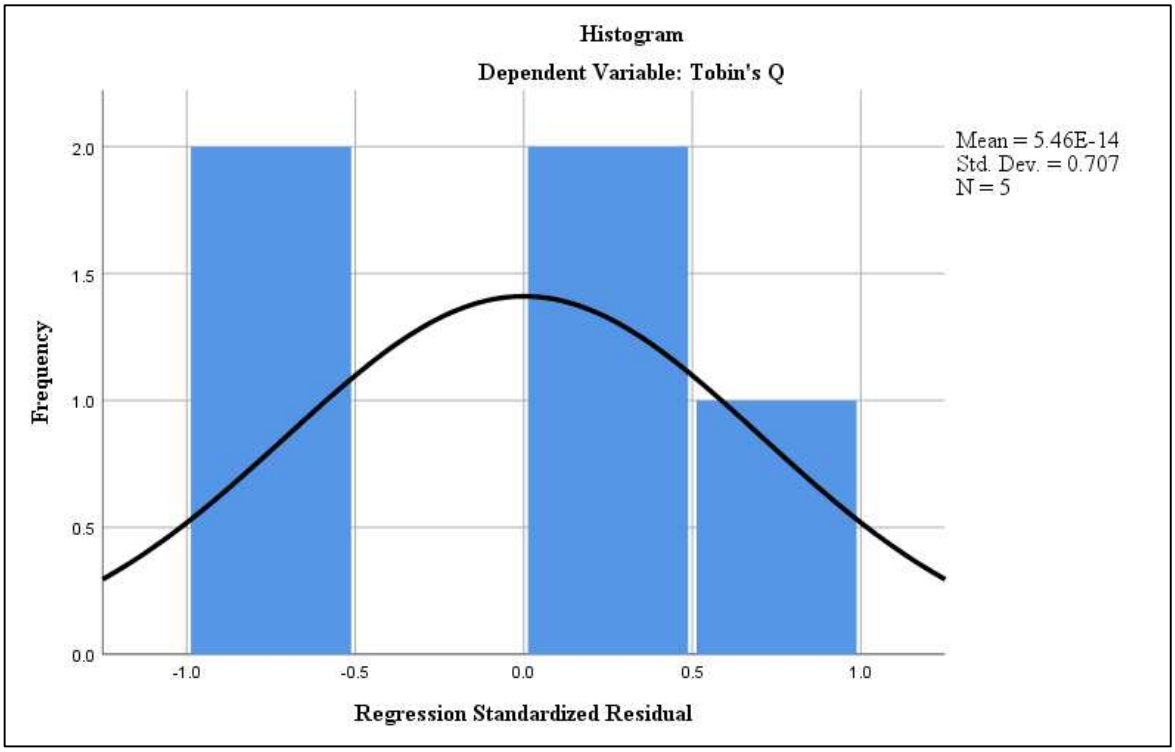

Figure A.1: Histogram

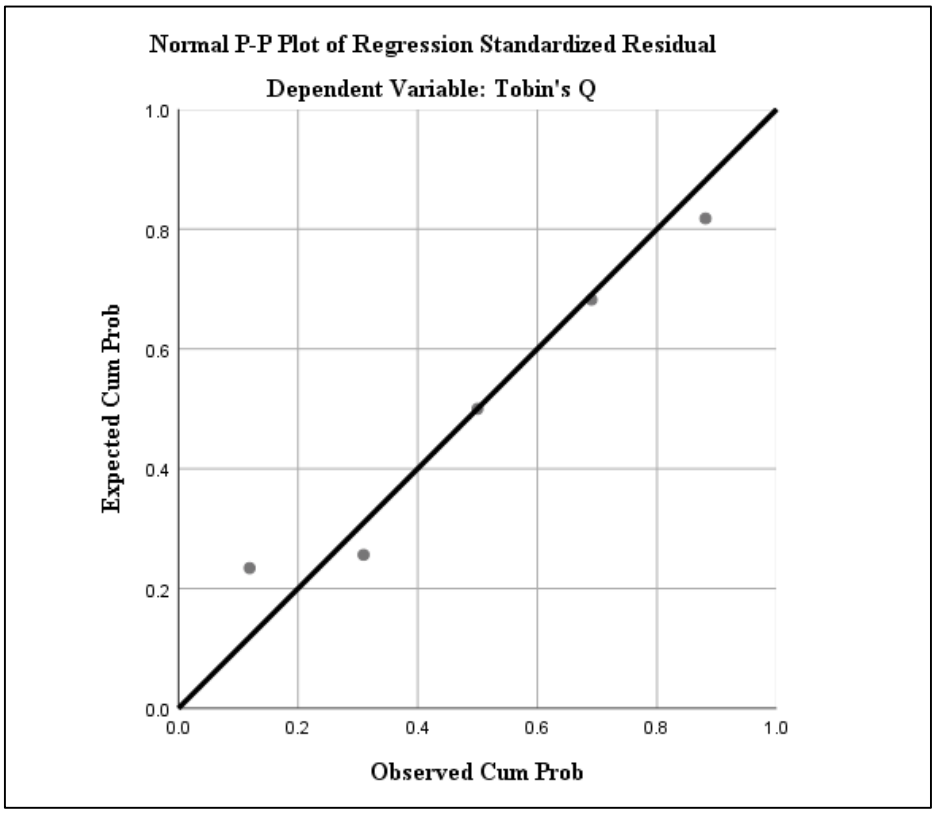

Figure A.2: Normal P-plot of Regression Standardized Residual

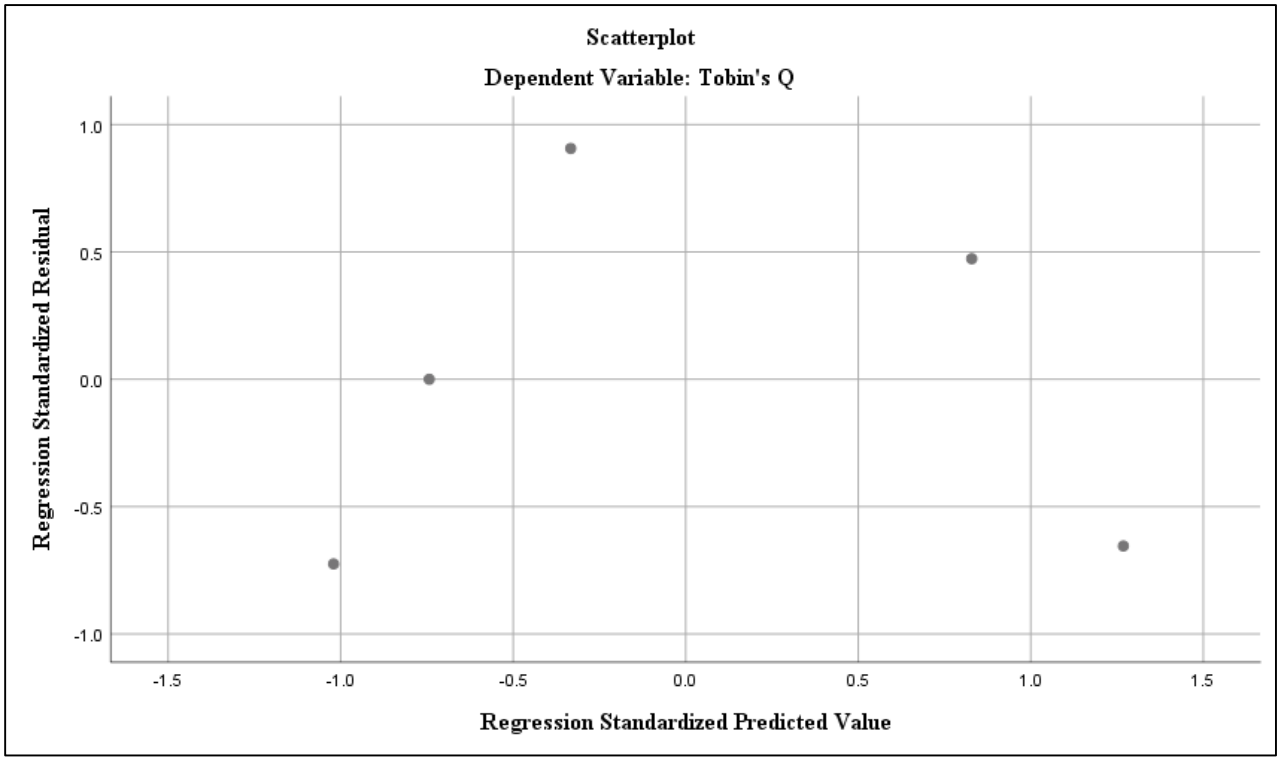

Figure A.3: Scatterplot

APPENDIX B (Internal factors vs Tobin's Q)

Correlations

		Tobin's Q	Corporate Governance Index	ROA	ROE	Altman Z
Pearson Correlation	Tobin's Q	1.000	-.414	.408	.461	.917
	Corporate Governance Index	-.414	1.000	.391	.362	-.027
	ROA	.408	.391	1.000	.997	.564
	ROE	.461	.362	.997	1.000	.614
	Altman Z	.917	-.027	.564	.614	1.000
Sig. (1-tailed)	Tobin's Q	.	.244	.248	.218	.014
	Corporate Governance Index	.244	.	.258	.275	.483
	ROA	.248	.258	.	.000	.161
	ROE	.218	.275	.000	.	.135
	Altman Z	.014	.483	.161	.135	.
N	Tobin's Q	5	5	5	5	5
	Corporate Governance Index	5	5	5	5	5
	ROA	5	5	5	5	5
	ROE	5	5	5	5	5
	Altman Z	5	5	5	5	5

Table B.1: Correlations

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-.169	.133		-1.268	.294	-.592	.255		
	Altman Z	.208	.052	.917	3.992	.028	.042	.375	1.000	1.000
2	(Constant)	2.383	.373		6.381	.024	.776	3.989		
	Altman Z	.206	.013	.907	15.954	.004	.151	.262	.999	1.001
	Corporate Governance Index	-3.835	.559	-.390	-6.860	.021	-6.241	-1.430	.999	1.001

a. Dependent Variable: Tobin's Q

Table B.2: Coefficients

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.917[a]	.842	.789	.0336900	
2	.997[b]	.994	.987	.0083313	2.324

a. Predictors: (Constant), Altman Z

b. Predictors: (Constant), Altman Z, Corporate Governance Index

c. Dependent Variable: Tobin's Q

Table B.3: Model Summary

APPENDIX C (External factors vs Tobin's Q)

Correlations

		Tobin's Q	GDP per capita (%)	Unemployment rate	Exchange rate
Pearson Correlation	Tobin's Q	1.000	.021	.904	-.364
	GDP per capita (%)	.021	1.000	.078	-.775
	Unemployment rate	.904	.078	1.000	-.357
	Exchange rate	-.364	-.775	-.357	1.000
Sig. (1-tailed)	Tobin's Q	.	.487	.018	.274
	GDP per capita (%)	.487	.	.450	.062
	Unemployment rate	.018	.450	.	.277
	Exchange rate	.274	.062	.277	.
N	Tobin's Q	5	5	5	5
	GDP per capita (%)	5	5	5	5
	Unemployment rate	5	5	5	5
	Exchange rate	5	5	5	5

Table C.1: Correlations

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-.127	.134		-.949	.413	-.554	.300		
	Unemployment rate	.144	.039	.904	3.653	.035	.019	.269	1.000	1.000

a. Dependent Variable: Tobin's Q

Table C.2: Coefficients

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.904[a]	.816	.755	.0362631	2.338

a. Predictors: (Constant), Unemployment rate

b. Dependent Variable: Tobin's Q

Table C.3: Model Summary

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