Is Abenomics Driving Outbound Cross-Border Mergers and Acquisitions Activity in Japan?

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Introduction

Japan is currently facing the highest volumes of mergers and acquisitions (M&A) activity in its history[1]. Enormous outbound cross-border deals, like Takeda Pharmaceutical's acquisition of Ireland's Shire PLC, Lixil's acquisition of Germany's Grohe and Softbank's constant strides through the market have attracted headlines beyond Japan's borders, piquing interest from overseas firms to turn their sights toward Japan and visa versa. M&A is a type of business strategy often employed for one or many of the following reasons: obtain better horizontal and/or vertical control within the market, acquisition of intellectual property rights, or increases in compensation/pay, to name a few. While M&A across the globe, especially in the economic powerhouses of Northern America and Europe, has experienced some fluctuating growth over time, Japan has gained increased public attention as deal volumes spiked in 2018. This is highlighted with the outbound (Japanese companies merging/acquiring companies overseas) deals, which have grown in total deal volumes of 48,090 M USD to 146,988 M USD between 2013 and 2018[2] with the largest aggregated deal values in Healthcare, Telecommunications and High Technology sectors[3]. Meanwhile, inbound and domestic deals have experienced flatter rates of deal count and volume[4].

What exactly explains this rapid rise in M&A activity? Many tend to speculate this surge is in part due to decreasing regulatory presence, social factors, such as the fear of declining future growth of Japan's domestic markets (as the population continues to age and shrink) and economic growth – particularly in light of the Abenomics policies implemented in 2012[5] but, regardless, these determinants are not concretely known nor discussed often in academic literature[6]. Among these

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[1] Thompson Reuters, 2018
[2] Woodman, 2018
[3] Thompson Reuters, 2018
[4] Ib id.
[5] Ibid.
[6] Nakamura, 2004

three points, the point regarding Abenomics has been gaining some attention; with seven years have gone by since the beginning of Prime Minister Abe's bold plan, there is growing concern that the positive effects on the economy are beginning to wear off[7]. Moreover, one of Japan's goals was to encourage more overseas investment to better business for Japanese companies[8]. Has Prime Minister Abe's macroeconomic stimulus work led Japan toward more activity? As economic growth begins to slow down, should companies overseas expect to see continued Japanese interest to acquire them? This paper aims to determine whether macroeconomic factors explain the rise in outbound cross-border M&A deal flow.

Literature Review

A. Japanese Mergers and Acquisitions: A brief history

Understanding drivers for M&A, particularly in Japan, is muddled; when observing profit and risk, M&A often does not appear very appealing. A prominent example of the downside risks of M&A is the Japan Post in 2017, when in its first full year it announced a loss after a large write-down for its acquisition of Toll, an Australian logistics group, in 2015[9]. However, one argument overriding this fear is the greater fear of Japan's economic future, which sees a decline of 1000 people a day in its population.[10] This mentality is present amongst the various circles of Japan's elite, and their solution is to look abroad. In an interview with Reuters, Joseph Gallagher, head of Asia Pacific M&A at Credit Suisse stated that there is "an outbound focus where the leaders in particular industries such as financial services, food and beverage, and consumer are looking to expand globally, taking their products, brand, and expertise to other markets" and that domestically we see a "rationalization on big conglomerates focusing more on shareholder value and selling (non-core

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[7] IMF, 2018
[8] Ministry of Economy Trade and Industry [METI], 2008
[9] Financial Times
[10] Reuters

assets)."[11] Mitsuo Sawai, president of Sawai Pharmaceutical, reflects this mindset, stating that his firm acquired the US firm Upsher-Smith Laboratories in order to "expand into the US and build our second pillar of growth for the future while sales of generic drugs are still growing in Japan."[12]. Japanese unfamiliarity with specific markets abroad has made outbound M&A an even more attractive option to enter those markets relative to organic entry. Kensaku Bessho, Head of M&A Advisory Group within Mitsubishi UFJ Morgan Stanley Securities, notes the importance of government policies in dictating outbound M&A, stating that updated Corporate Governance and Stewardship Codes have led to tighter relationships between firms and their shareholders, leading to more disciplined capital allocation and increased attention toward options to remove non-core assets/businesses and engage in M&A abroad[13].

However, there may be something larger at play; conservative, protectionist tendencies attributable to the Japanese are appearing to liberalize and be more accepting of foreign interest. Until recently, it was an accepted norm for Japanese firms to only interest themselves in acquisitions and avoid foreign entry to their firms. Jonathan Rouner, managing director and head of international M&A at Nomura Securities, notes an example: in 1999, Nissan was acquired by French company Renault. Even though it was a partnership that allowed Nissan to remain listed in Japan through the cross-shareholder agreement and preserve ties with shareholders and suppliers, the firm went through a wave of distress over the entry of a foreign firm[14]. Considering this, analysts and Japanese employees alike are beginning to note a deviation from this typical norm, but only a minor one. Yoshihiko Yano, head of M&A at Goldman Sachs Tokyo, notes that "we're beginning to see a more strategic approach to streamlining portfolios, as companies become more comfortable with selling

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[11] Ibid.
[12] Ibid.
[13] Morgan Stanley
[14] Columbia Business School

non-core assets and using the proceeds to make more product purchases."[15] However, as a senior

M&A banker notes, this shift seen in the past 5 years is still slow; it will be long before the cautious

instincts of 'Salaryman CEOs' evaporate, leaving the current situation a "transformation from quite

conservative to a bit conservative". Current Japanese Salaryman culture revolves around conditions

of 'safety'. For example, Japanese firms are notorious for their reluctance to fire employees – job

employment is viewed as stable security. This mentality has cultivated the conservative atmospheres

of many Japanese firms. However, there is little literature on Japanese culture, especially in the

context of M&A decisions; the quantification and measurement of these social effects on M&A

behavior remain unclear. However, the recent high-profile arrest of former Nissan-Renault CEO

Carlos Ghosn has left foreign executives re-questioning opportunities in and from Japan[16].

B. Abenomics: An Effort to Revitalize Japan

It has been noted that this surge in cross-border M&A deals has appeared in the same time

Prime Minister Abe Shinzo came into power om December of 2012 and introduced his 'three

arrows' strategy, Abenomics. Abenomics can quickly be explained by its 'three arrows': Fiscal policy,

monetary policy, and structural reform. Monetary policies involved setting new inflation targets of

2% (it previously was low, and sometimes negative) and were spearheaded by what the Bank of

Japan termed "Quantitative and Qualitative Monetary Easing" (QQME). Fiscal policies involved

releasing massive stimulus packages from as early as 2013. The third arrow is most complicated, as it

involves a range of initiatives ranging from unofficial pressure to increase women in the workforce

to further easing regulations on the financial sector to promote further global economic

participation.

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[15] Financial Times
[16] The Nikkei

Prior to Abe's election, the Japanese macroeconomy was in dire need of revitalization. Following its massive success in the 1980s, Japan faced a series of troubles, starting with the popping of the 80's 'bubble' period, beginning a period known as the 'lost decades'. Japan further suffered losses in 2011 after the events of the Tohoku Earthquake and the subsequent nuclear crisis of the Fukushima power plant. By the time of the 2012 election, the public felt an increased sense of unity and desire to rebuild, a perfect campaign setting for the Liberal Democratic Party (LDP) and Abe (who was running for a second term after his tenure in 2007-'08), who focused on economic and nation-building objectives and ran under the slogan "Take Back Japan"[17]. Once he assumed office, Abe and his government quickly unveiled the basic three arrow framework of Abenomics. What began as a policy package designed to "revive the Japanese economy from two decades of deflation, all while maintaining fiscal discipline"(The Government of Japan) evolved to embody a more socioeconomic and globally focused direction.

The first arrow of Abenomics is monetary policy. Abe immediately focused on monetary easing, setting his target at 2 percent inflation in the first official meeting of the CEFP in January 2013. When the incumbent governor of the BOJ Shirakawa Masaaki stepped down after displaying reluctance to set inflation targets, Abe appointed Kuroda Haruhiko who, at the first BOJ monetary policy committee meeting of his tenure, announced his initiatives to double the money supply and achieve Abe's 2 percent target[18]. In the announcement, BOJ expressed intent to increase JGB purchases to 50 trillion yen a year to encourage lower interest rates and subsequently, more lending. In the following year, Kuroda made the announcement that the BOJ will accelerate asset purchases

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[17] Liberal Democratic Party of Japan
[18] The Guardian

and boost the monetary easing program, a move is widely seen as reactionary to inflation falling back to 1 percent after the consumption tax raise to 8 percent[19].

The second arrow came immediately in the form of a fiscal stimulus package introduced by the Cabinet in January of 2013, a month after Abe assuming power. The second largest package ever in the country's history, it totalled at 20.2 trillion yen ($210 billion), with 10.3 trillion ($116 billion) being directed towards central government expenditures[20]. The Cabinet highlights its aim to "build a nation imbued with the concepts of 'the most business-friendly country in the world'", with a "Hybrid-Economy" driven by trade and industrial investment (The Cabinet, Government of Japan). Objectives to eliminate deflationary expectations, strengthening coordination between the government and the BOJ (stating "aggressive monetary easing by the BOJ with a clear inflation target") and focusing on the foreign exchange market are written as well. Two-thirds of this package was committed to the objective of "Creation of Wealth Through Growth", totalling 12.3 trillion yen, with a majority diverted to stimulating private investment and small-medium sized enterprises, businesses, and the agriculture/forestry/fishery industries. Promotion of these industries as well as the development of frameworks to help strengthen international competitiveness was cited in explaining the implementation of these objectives. Consumption taxes were then raised from 5 to 8 percent during this time. A second stimulus package, much smaller at 3.5 trillion yen ($29 billion) but drawing from unspent past budgets instead of through the issuing of debt, was introduced in 2014 with the hopes of increasing GDP by 0.7 percent[21]. Half of the package is directed toward providing low-income households with subsidies (essentially capturing those who were "left-out" of the first package), with the other half going toward disaster relief.

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[19] Reuters
[20] Government of Japan Cabinet Office
[21] New York Times

The third arrow, structural reform, is the broadest reaching of the three. Most recently the government has been tailoring the third arrow toward creating reform to realize "Society 5.0": a societal goal embodying new technological concepts such as IoT and blockchain, with the economic and communal goal of increasing per capita efficiency and productivity and personalizing each citizen's public needs (such as healthcare)[22]. Though this is the goal, a majority of the third arrow reforms have been focused on deregulation, free-trade, corporate governance, and human capital reform. With deregulation, Abenomics has pushed for lower corporate tax rates with a goal of 20 percent (current levels are in the low 30 percent), development of deregulated special economic zones, and the liberalization of the agricultural and energy sectors (the energy sector, however, has been met with limited success)[23]. Abe has lobbied hard for the Trans-Pacific Partnership (TPP), which would have at its height created the world's largest free trade area with the belief that this would open many more opportunities for Japanese businesses abroad[24]. After the U.S. withdrawal out of the TPP, Japan and the remaining TPP member nations created the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), which has now been implemented in ratified nations since the end of 2018. With corporate governance, Abe's government introduced the Stewardship Code in 2014 (revised in 2017) and the Corporate Governance Code in 2015[25]. These measures introduced steps for firms to be more transparent, unwind cross-shareholdings, enhance board committees with more outside directors, and for asset owners and institutional investors to assume higher levels of fiduciary responsibility. Through these measures, the government aimed to make Japanese firms more accountable and attractive and increase their ROE. Finally, with human capital, Abe pushed to increase female participation in the workforce, labelling the initiative Womenomics. While Abe's government set an example by increasing women participation in its

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[22] Pekkanen, Reed, Scheiner, & Smith, 2018
[23] The Financial Times
[24] Chatzky & McBride, 2019
[25] Takayama & Nakano, 2018

own ranks (7 out of 18 members in the Cabinet are female), women participation in higher

leadership roles is still limited. Though female employment is up to 66.1% as of 2016, 3.7% of

executives are women, with only 27% of Japanese companies having women in any management

level[26].

The results of Abenomics are quite mixed. Overall, as of 2018, the Japanese economy saw

increased nominal GDP, dropping unemployment, the halting of deflation (but not necessarily

'good' rates of inflation, either), higher USD/JPY rates, a much higher Nikkei 225 index, and the

levelling of debt to GDP rates[27]. Though the drop in unemployment (lowest in 23 years at 2.7%),

increase in the Nikkei 225 and levelling of debt/GDP rates is quite significant, they're within

projections or in the case of increasing inflation to 2%, subpar. Many analysts, such as Lecavalier

and Monfort, feel a lot of long-term unease, especially with the 2-percentage point increase in the

VAT on the horizon[28]. They argue that considering Abenomics struggling and having to reform

itself a lot to achieve the numbers seen now, it is not in stable footing to provide a strong direction

regarding more longer-term issues. Moreover, beyond what Abenomics has addressed and done,

there are many more unaddressed hurdles that will come into play in these longer-term issues.

Takenaka Heizo notes that Japan's declining population, increasing income disparity and declining

competitiveness of Japanese human capital has not been concretely addressed[29]. This mixed legacy

further clouds the ultimate analysis of whether Abenomics is to attribute these recent trends in

outbound M&A.

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[26] The Reality Check Team, BBC 2018
[27] Merler, 2018
[28] Lechevalier & Monfort, 2017
[29] Takenaka, 2017

C. The Relationship Between M&A and Abenomics: In Academia

With Abenomics first being implemented in 2013, and with even more policies still being implemented to this day, little academic literature covers the relationship between the macroeconomy and M&A during this period. One paper, Ethan Hallberg's "Mergers & Abenomics: The Determinants of M&A in Japan's New Economy" (2014) directly addresses this subject, and another, Richard Nakamura's "To Merge and Acquire When the Times are Good? The Influence of Macro Factors on the Japanese M&A Pattern" (2004) reviews this relationship over 10 years before Abe's election, and only a few after Japan's "Lost Decade" of the 1990s. Hallberg sought to determine if macroeconomic behaviors in light of these policy shifts have influenced this rise in M&A, observing monthly data from June 1997 to December 2013 with time series analyses divided between the period before Abenomics (June 1997 – December 2012) and since (2013). Hallberg's equation is derived from models from Becketti (1986) and Choi and Jeon (2011), which explored macroeconomic effects on M&A behavior in the United States. He utilizes variables such as the 10 Year JGB Yield, 1-month uncollateralized call rate, Nikkei 225 Close, Capacity utilization operation ratio, Japanese national debt level and JPY/USD spot rate, with lag variables in separate regressions. Unfortunately, his results were not clear, with the total deal value per month not well explained by his variables, and with an unexpected opposite effect of higher interest rates leading to more M&A activity.[30] Moreover, the addition of lag variables to his model, which were shown to have statistical significance in Choi and Jeon's paper, ultimately proved unfruitful. As this paper was written in 2014 with data until 2013, a year after the initiation of Abe's plan, a possible reason to Hallberg's results may be due to the policies not having a substantial effect on either the economy or firms' decisions.

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[30] Hallberg, 2014

In an earlier paper Nakamura (2004) begins to unpack the effects of the macroeconomy on Japanese M&A before Abenomics. At least at this moment in time, Japanese M&A decisions have been made based heavily on ownership structure (such as finding a successor, a problem prevalent in the many family-run businesses in Japan) and timing, rather than on longer-term strategic merits.[31] With literature on Japanese M&A theory limited at the time, Nakamura utilizes Ali-Yrkkö's model of short-run American mergers and acquisitions patterns (Figure 1). Analyzing the period between 1994 and 2002, he creates and utilizes the equation:

$$lnTotM\&A_t = \beta_1 + \beta_2\ lnNomGDP_t + \beta_3\ lnTopix_t + \varepsilon_t,\ \text{where}$$

lnM&A = the total number of M&As (out-in and in-in) in period t,

lnGDP = the Japanese nominal GDP (seasonally adjusted quarterly observations; in 1995 prices, denominated in JPY) in period t-1,

lnTopix = the average Topix index in period t,

While Nakamura's results did not reveal much insight, it did indicate a strong influence of nominal GDP on the total number of M&As, but he notes that a longer time series is necessary to validify a long-run interpretation[32]. With a much longer set of data from the Bloomberg terminal (from 2000s to this year), this paper can seek to incorporate longer time series data to provide better insight in light of Nakamura's findings as well as provide more clarity from Hallberg's analysis. Moreover, while the two papers combined outbound and inbound M&A, this paper hopes to provide clarity by observing just outbound M&A, isolating certain effects that may have been muddled by including inbound effects.

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[31] Nakamura, 2004
[32] Ib Id.

Data and Analysis

    A. Method and Hypothesis

Though Abe's administration has been implementing several changes in policy, I believe macroeconomic variables will continue to explain a small effect on cross-border outbound M&A activity. Beyond the macroeconomy, fundamental changes in Japanese culture (such as the wide dissolution of the large keiretsu groups of Japanese companies [connected through family ties]) have widely been speculated to have influenced the behavior of contemporary Japanese firms. Structural reforms (mentioned in the 'third arrow' section) are also frequently cited as potential determinants of this surge in activity. Some of these reforms (such as relaxing regulations on due diligence) are harder to capture in the macroeconomy.

As there are no definitive models addressing Japanese macroeconomic effects on outbound M&A, the model in this paper seeks to consolidate elements of the models above. Much of the model applied to this analysis is derived from Hallberg's model, which itself is inspired by the Becketti's, Choi and Jeon's U.S. M&A models. The new model incorporates the following variables from Hallberg's example: the 10-year JGB Yield (reflective of interest rate), the JPY/USD Spot Rate, the Nikkei 225 Close, and the National Debt. Real GDP and population data were included, while capacity utilization operating ratio and call rate were removed. A term indicating the Abe period is included to capture the effects of Abe policy (Q1 2013 to Q3 2018). Interaction terms with the Abe variable are included to capture effects during the Abe period and better compare the differences between variable effects before and during Abenomics. A dummy variable for the financial crisis of 2007 (indicated between the Q4 2007 and Q2 2009) is included. The model is:

$$M\&A = \beta_1 + \beta_2 JGB10Year + \beta_3 USD/JPY\ Spot\ Rate + \beta_4 Nikkei225Close + \beta_5 NationalDebt + \beta_6 JPRealGDP + \beta_7 Population + \beta_8 Crisis + \delta_0 Abe + \delta_1 Abe*JGB10Year + \delta_2 Abe*USD/JPY\ Spot\ Rate + \delta_3 Abe*Nikkei225Close + \delta_4 Abe*NationalDebt + \delta_5 Abe*JPRealGDP + \delta_6 Abe*Population + \varepsilon t$$

The time frame is from the first quarter of 2001 to the second quarter of 2018 (no reliable M&A data was available pre-2000), with observations viewed at Quarters. Separate analyses will be conducted for pre-Abe and Abe periods within each regression (marked by the first rollout of his policies in late December 2012, or in the model, signified at the first quarter of 2013). Lag variables of 1, 2, and 3 years are included in the analysis as well. All volume regressions are conducted utilizing robust regressions to compensate for heteroskedasticity (Figure 5).

The choice of 10 Year JGB Bond Yield and Real GDP variables are quite straightforward choices for representing the macroeconomy. The JGB reflects interest rates, which also hold a consistent record amongst M&A literature as an influential variable[33]. Real GDP represents the macroeconomy, and the interest rate has also been an oft-cited influential variable in M&A models. With domestic American and inbound M&A's, these two variables have shown negative and positive relationships with M&A activity (count, volume) respectively. This paper hopes to shed more light on their specific effects on outbound behaviors. The Nikkei 225 Index Close (replacing the S&P 500 utilized in previous models) is intended to reflect security market conditions and reflect positive correlations with M&A. National Debt, (substituting for non-financial U.S. debt utilized by Becketti) is utilized to reflect the belief held by Becketti and Hallberg that increases in its value imply decreases in available liquid assets for corporate acquisitions, with it being the most important determinant in deal count from Hallberg's analysis[34]. The inclusion of the USD/JPY spot rate is intended to shed light on determining whether Japanese firms are inclined to acquire assets abroad at cheap prices (often referred as Foreign Direct Investment (FDI) "fire sales"[35]). The population is included, considering the notion that a declining Japanese population (i.e. the addressable market for

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[33] Choi and Jeon, 2010
[34] Becketti, 1986
[35] Fransson, 2010

domestically-footed firms) will shrink and therefore present fewer natural opportunities to grow. A declining population may indicate increases in outbound M&A. Foreign variables (especially those such as the S&P 500, or foreign interest rates) are not included in this model to isolate domestic macroeconomic effects. The Crisis dummy variable (proven to have a significant effect on M&A by Hallberg) is intended to capture the likely effects of the financial crisis on firm behaviors.

Because I am using *completed* M&A deals, the delay between the moment when a firm makes the decision to acquire and the moment when the deal is completed must be considered. The "moment" of the decision to acquire is arbitrary: some consider it to be at the point of submission of the (first if repeated) Letter of Intent (LOI) or the moment of the public announcement itself. If announcement were to be used as a benchmark, typically actions required between the two periods of announcement and completion include regulatory approval, contract approval, and planning for integration of logistical components and human resources. While this process domestically can be completed within a time period as short as a month, they occasionally take much longer. The fact that all deals being observed in this model are cross-border, the logistical barriers to completion are only multiplied, which likely increase the overall announcement – completion gap. The United States, for example, employs the Committee on Foreign Investment in the US (CFIUS) for additional screening of cross border deals. Therefore, it is possible that a few deals take more than a year from the "moment" a firm decides to acquire and when completion is recorded. First explored by Choi and Jeon (2010), lag variables of 1, 2, and 3 years will help to account for this potential difference in time. 2 and 3-year lags are expected to have minimal effect, as most deals take a shorter amount of period overall, and longer deals are likely to be dropped. This inclusion will also provide insight into whether statistical significance found in these variables with American M&A (Choi and Jeon) will also be observed in Japanese M&A.

With the Abenomics policies in mind, I expect to see a positive relationship between the Abe variable and M&A count and volume. Of the above variables in the model, I expect the JGB, Spot Rate, and population variables to be most likely in influencing M&A deals. In theory, JGBs should have a negative relationship with M&A deal size and count, as a lower interest rate should incentivize firms to borrow more as the cost of borrowing is decreased. Spot rates, on a similar line of logic, should have a negative relationship with M&A deals. As the rate drops, Japanese firms can buy foreign assets more cheaply, which should incentivize more firms to engage in M&A. For both the spot rate and the JGB, it is unclear whether their effects would be stronger with deal count or volume. However, from the limited insights derived from past literature, it may be more likely to find correlations between deal count and these two variables. If the hypotheses raised by past literature are to be believed, the population should have a negative relationship with M&A. The declining population should be an incentive for firms to re-evaluate domestic markets and seek overseas market expansion targets. National debt levels should return a negative correlation with M&A. A rising debt level suggests higher government spending, which will crowd-out private investments, therefore likely to reduce M&A count and volume. The Nikkei 225 Close and real GDP, both general indicators of economic and financial health within Japan, should observe positive correlations with M&A behavior. A high/increasing Nikkei 225 and GDP suggest improving the performance of domestic firms, which would suggest they have a better ability to pursue opportunities abroad. With an increasing number of large public firms making M&A moves, the Nikkei, reflecting security market conditions, may have a particularly strong effect on deal volume.

B. Data

For this analysis, I only include *completed* outbound M&A deals and did not include related investments such as those in the realm of Private Equity. All data in this model apart from that regarding population were obtained from the Bloomberg terminal database. Population data were obtained from Japan's Statistics Bureau of the Ministry of Internal Affairs.

M&A data was collected in the form of individual deals, filtered first by completion, followed by outbound (Acquirer Firm in Japan, Target *not* from Japan). In computing per Quarter volume, individual deal volume data had to be further filtered to include only the transactions where the completion value was recorded. While I was able to collect M&A data to the second quarter of 2019, due to restrictions from other data point collections, the regression can only be performed between the first quarter of 2001 and the second quarter of 2018. The upper bound (2Q 2018) was restricted due to the unavailability of some data points (like population). The lower bound (1Q 2001) was established due to incomplete M&A data in the database. While the U.S. has a longer, more complete set, Japan's M&A dataset on Bloomberg is missing many transactions. From the first quarter of 2001 to the second quarter of 2018, 4,396 completed outbound deals were collected. Other data (JGB, Spot Rate, Nikkei 225, National Debt, Real GDP) reflect the end of quarter statistics. Because Japan does a census every 5 years, the years in between (such as 2011-14) are speculative, the population contains some speculative data. However, all population speculations prior to the most recent census in 2015 are re-calibrated by the Bureau and incorporate the obtained census data before and after the speculative year in question. Only 2016 and onwards, with the 2020 census yet to take part, are "uncalibrated". Although speculative, the error in these population estimates are likely minimal and not a significant concern.

C. Summary Statistics

Summary statistics are displayed in Table 1 for all variables. The dependent variables are quarterly Count and Volume (billions JPY). Of the total 70 observations, 48 are from the period before Abe's election (Q1 2001 – Q4 2012) and 22 are from the period after Abe's election and when Abenomics first was introduced to policy (Q1 2013 – Q2 2018).

Figures 2 and 3 display completed and pending transactions (and up to 2Q 2019 for additional reference). As noted in past literature, there is a noticeable overall increase in Outbound deal count, with sharp increases and decreases; however, the last count values are noticeably low (Figure 3). Deal volumes depict a more clouded narrative, with noticeable highs near 2017 and early 2018 but dips in late 2018 and 2019 (Figure 2). The sharp peaks in the volume data is likely attributable to outlier high-value deals, likely those such as the Takeda-Shire deal. This conflicts with some literature regarding the magnitude of these changes; this may be in part due to the narrow search queries implemented when obtaining this data. This also may be reflective of the possible effect of the announcement – completion time delay. Statistics often reported by media and firms reference announced deal volumes and quantities, not completed. As noted in Figure 3 there have been a number of M&As from early 2015, peaking in 2018, that is pending; in the case of deal volumes and quantities in 2018, it is likely that many of the deals that made headlines and boosted announcement statistics are not completed and are captured by the Pending statistic, so there may be a delayed effect on the count and volumes for this most recent year.

Breusch-Pagan/Cook Weisberg tests were conducted to determine if there are heteroscedastic effects in the regressions. The first analysis, observing in context of deal count, did not show heteroscedasticity (Figure 4), though the second, observing in context of deal volume,

displayed clear signs of heteroscedasticity (Figure 5). As a result, I have incorporated robust regressions when analyzing effects on volume.

It can be observed that the Japanese Debt Level is increasing steadily. From the beginning of our model timeline in 2001 until now, the Debt has reached nearly double of the Japanese GDP (Figure 7). This is reflective of the monetary policy borrowing of the Abenomics policy. The Nikkei close has been recovering steadily since Abe came to power and is at new highs in the 21st century (Figure 10); although it pales in comparison to its performance in the 1980s. It has regained growth that it was beginning to take before the financial crisis in 2007. As noted in past literature, the JCB 10Year Yield dipped negative for a period before assuming a positive, but low magnitude rate (Figure 6). Meanwhile, the spot rate, after dipping to 80 JPY/USD in the 2010-12 period, has seen a general increase since Abe's election, although it is beginning to stagnate (Figure 9). This overall trend may help to inject more dollars into the Japanese economy, which might prove fruitful for *inbound* M&A activity. A concern is a Japanese population (Figure 8), which since 2010 has seen a clear drop and can only understate its own implications addressed in many of the articles covering the Japanese market. With a loss of over one and a half million people in the last 8 years, there are legitimate concerns about the prospects of Japanese consumer markets (from a firm perspective) that not even immigration, which already is a controversial subject, can stop.

Results

A. Regression 1 – Linear Regression for Quarterly Count and Volume

Table 2 contains the results of the first and most basic regression. Both deal count and volumes were analyzed in the pre and post-Abe election period. Count regressions observed a high R-squared value of 0.8846, while the volume regression returned 0.3940.

In the pre-Abe period (2001-2012), Debt, population, and the crisis dummy variable returned strong significance regarding deal count with a p-value under 0.01. It suggests that higher levels of debt, declining population, and periods of a financial crisis (albeit concentrated in the U.S.) led to higher rates of outbound M&A. Meanwhile, after Abe was elected at the end of 2012, only the Nikkei 225 close returning the significance of a p-value below 0.01. The result depicts a negative relationship, where a decline in the Nikkei close is correlated with an increase in outbound deal flow. The Abe variable was negative, suggesting a decrease in M&A count, but not significant. Between the above variables, only the Nikkei close and Population variables returned a statistically significant difference between their betas.

Regarding deal volume, the pre-Abe period observed significance in the Debt and Population variables in the Pre-Abe regression, and the betas maintain the same sign direction as the betas in the count regression. There was no significance to be found with any of the variables in the Abe regression, and the Abe variable, while being positive, is not significant either. No variables returned a statistically significant difference between betas.

B. Regression 2 - Outbound Deal Count, with 1, 2, and 3 Year Lags

In regression 2 (Table 3), lag variables were introduced to outbound deal count analyses. To prevent collinearity 1, 2, and 3-year lags were all independently analyzed in their separate regressions.

With the 1-year lag, the variables explained 93.41% of the deal count. The pre-Abe period expressed a strongly statistically significant, negative relationship between population and count, and a significant positive relationship between 1 Year Nikkei 225 Close Lag and count. On the other end, the post-Abe period returned six significant relationships: three positive correlations from USD/JPY Spot Rate, Spot Rate Lag 1 and Debt, three negative correlations between JGB, Nikkei

225 Close, and 1 Year Close Lag. For the above betas, the differences between betas for JGB, Spot Rate, and Close Lag 1 returned significance.

With the 2-year lag, the variables explained 93.15% of the deal count. The Abe variable has a significant negative relationship with count. The Pre-Abe period continued to return a significant negative relationship between population and count, but none of its 2-year lag variables returned significant results. The Abe period regression saw the Nikkei 225 Close continue to have a significant negative correlation with the count. Spot Rate and Spot Rate Lag also continued to maintain positive correlations with count. Additionally, Real GDP Lag 1 also expressed a positive correlation with count. For the above betas, the differences between betas Population and Real GDP Lag 1 returned significance.

Finally, looking at the 3-year lag, 94.12% of variables explained deal count, the highest of the three lag regressions and of all the count regressions as well. The Abe variable has a significant negative relationship with count. In the pre-Abe data population no longer has a significant effect; rather, JGB Lag 3 and Debt Lag 3 are statistically significant, with JGB having a negative correlation and Debt having a positive one. Looking at the Abe regression, six variables expressed statistical significance. Debt, Spot Rate, Population and Close Lag 1 had a positive correlation, and Nikkei 225 continued to maintain its negative correlation. Debt 3-year lag was negative as well. Interestingly, Abe and Pre-Abe regressions both had significant relationships with their JGB and Debt Lags, and the betas themselves are also significantly different from each other. Oddly, for Abe, the debt lag is negative, while for pre-Abe it is positive. Differences between the betas for Spot Rate, Nikkei Close, Population and Close Lag 3 are also statistically significant.

C. Regression 3 - Outbound Deal Volume, with 1, 2, and 3 Year Lags

In comparison to the count lag regressions, the volume lag regressions have lower R-squared values and fewer significant variables (Table 4). Adjusted R-squared values are not available due to the robust regressions. The Abe variable did not return significance in any of the three regressions.

In the 1-year lag, the variables explained 59.63% of the volume. Pre-Abe variables saw a significant negative relationship between population and volume, like with the regression on the count. The Abe variables saw a positive significant relationship between spot rate and volume, and a negative relationship between real GDP and volume. Only the difference between betas for real GDP returned statistical significance.

In the 2-year lag, the variables explained 61.67% of the volume. Pre-Abe variables observed no significant relationships while the Abe period saw negative significant relationships with JGB Lag 2 and Population Lag 2. A positive significant relationship is seen with population. Only the difference between betas for population and population lag 1 returned statistical significance.

In the 3-year lag, the variables explained 53.30% of the volume. The Pre-Abe variables observed no significant relationships. The Abe period observed three negative relationships with JGB Lag 3, Spot Rate Lag 3, and Population Lag 3. The Nikkei Close Lag 3 returned a positive relationship. These four betas were statistically significant in relation to their pre-Abe counterparts.

Discussion

After running these regressions, a couple of key findings were collected. In terms of the R-Squared, the value consistently was higher for count regressions than that on volume. Often, by comparing Regressions 2 and 3 with each other, the R-squared value of the count regressions were almost *double* that of volume. This may be explained by what has been hinted at in past literature,

particularly in Nakamura's findings. Nakamura stated how current M&A analyses, both in volume and in the count, clumped together every type of firm, from SME's to the large corporations (a recent example being Takeda Pharmaceuticals). While count weighs each business equally, this is not the case for volume, and it may be that because there are varying degrees of the transaction value (from smaller mergers to again the large ones such as Takeda-Shire) being pushed into one statistic, the larger picture becomes muddled. A simpler explanation may have to do with the data itself: as mentioned in the data section, a substantial number of individual deals were removed to calculate volume because they did not report completed value. It is difficult to identify what sort of case(s) would cause a firm to not report value, so further insights are limited. Either way, it is likely that this filtering of deals led to either bias or further disruption of capturing the correct total volume. Therefore, in the way this model was run, deal count was more consistent and hence easier to explain with macroeconomic variables.

Regarding the Abe variable, while for many of the regressions it did not return a significant beta, it returned two significant negative relationships in the 2 and 3-year lag regressions on count (Table 3). This is counter to the hypothesis that Abenomics is explaining an increase in M&A activity. However, to generate a more comprehensive picture it is important to consider the effects on the explanatory variables as well, as discussed below. Overall, while Pre-Abe variables observed more significant instances in the basic regression (Table 2), the lagged regressions (Table 2, 3) returned many of the significant betas. This overall result, paired with many of these betas being significant in relation to their difference relative to the Pre-Abe counterparts, may suggest that the macroeconomy under Abe may be better explaining M&A behavior.

Across all regression types population proved to be one of the most consistent variables, both regarding its negative sign and statistical significance. This is in line with the hypothesis that a

declining population may be an incentive for firms to look abroad to target other (expanding) markets in pursuit of more profit. Most of the statistically significant betas were observed in Pre-Abe regressions and not Abe. However, the two significant betas in the Abe regression were positive, which goes against the larger hypothesis. Moreover, when comparing the population trend in Figure 8 with overall M&A trends in Figures 2 and 3, one could expect an opposite effect. The population for much of the Pre-Abe period is increasing, even though the beta is negative, and the population for the Abe period is decreasing while reflecting a positive beta.

Regarding the bigger picture of these regressions, a couple of data-oriented reasons may be behind this finding. The amount of observations for the Abe period, 22, is less than half of the number of observations used for the Pre-Abe analysis of 48. This sample may be too small for an accurate analysis to be made, hence the lack of significant betas. Second, the existence of pending deals/the use of completed deals as a metric may have had a detrimental effect in obtaining a clearer image; since not all deals announced during the Abe period have been completed yet, there is the potential (as seen in Figure 3 especially) that deals are not being as well captured as they were before 2013. The number of pending deals Pre-Abe is at zero, while the number has only been increasing in the Abe period.

Two variables, JGB Yield, and Real GDP, while rarely having significant effects, acted accordingly to the hypothesis when they did (Table 3). It was expected there to be a negative correlation between interest rates and M&A deals as it would be cheaper to borrow funds to invest in M&A. It was also to be expected that a higher GDP would be an indicator of better overall economic health, which would prompt more firms to participate, hence the positive correlation. I believe the absence of significance for the majority of the regressions for these two variables can be explained by the extremely low-interest rates and stagnant GDP. As Hallberg noted in his analysis,

interest rates at levels basically negative and near-zero may have a more muddled effect on borrowing, because although the rates are low, one can argue that with the *absence* of a rate at all (if it is at near zero), anticipating borrowing behavior might be more difficult than when working with a higher interest rate that is declining. This may explain why, in the insignificant JGB betas, that some, especially in the Pre-Abe period, reflect positive relationships. On a similar trajectory of thinking, a stagnant GDP that is neither increasing nor decreasing much at all would be difficult to model a growth trend (in this case, M&A) on.

As seen in Hallberg's findings as well, I observed that debt also had a prominent role. However, it returned an opposite relationship to that expected from the hypothesis. While shown in the Pre-Abe period in the regular regression (Table 2), debt also had some significance in the Abe period regression with lags on the deal count. The findings go against the notion of the crowding-out effect, that higher debt levels reflect higher government spending and effectively pushing out private investments. However, increasing debt level may be prompting more firms to invest in other assets, may that be due to fear of the nation accruing such a high level of debt. This is a plausible condition considering Japan's debt to GDP ratio being astoundingly high.

The negative relationship between the Nikkei and M&A count and a positive relationship between the Spot rate and count/volume, on the other hand, are a bit perplexing. While it was expected that a higher Nikkei Index, suggesting the better overall performance of firms, would lead to more M&A, the opposite effect was observed. This is also peculiar because it is only primarily observed in the Abe period, where the Nikkei had the steadiest rate of *growth* in the past two decades. It may be fruitful to take a deeper look into the composition of the index and what firms and/or industries are driving the index to develop possibly more industry-specific reasoning to this phenomenon. Similarly, the spot rate also seems to be an Abe phenomenon. A positive relationship

would seem counter to the logic of the hypothesis, which postulated that being able to purchase more dollars/overseas assets for fewer yen would incentivize more firms to make overseas purchases. Albeit the logic behind this hypothesis, at least in the context of Japanese *outbound* M&A has not been well explored. I believe there may be some legislative reasoning (possibly implemented as part of Abenomics' structural reforms) that disincentivizes firms to acquire assets, particularly through this channel.

The positive relationship between the crisis dummy variable and M&A in the first two regression tests proved to be extremely statistically significant. A potential reason for this relationship may be derived from the idea that there may have been a few Japanese firms (Japan was not *as* impacted by the recession as the U.S. was) that saw the crisis as an opportunity to purchase American firms at a cheaper price.

Finally, with lag variables, it is promising to observe multiple variables holding statistical significance. The particularly strong performance in the count lags helps to confirm the hypothesis that, because firms take time between deciding to acquire and actually completing the deal, factors that influence a decision (like the JGB rate) are observed at the time of the decision, which can be captured by these lags. A firm that decided to acquire 2-3 years ago and are just completing the deal now would have engaged in this activity based on insights it knew 2-3 years ago. The findings of these lags support this hypothesis, but the absence of such significant effects in the volume lags requires more research to understand. Overall, lags help to capture the decision making of firms that are engaged in longer M&A processes (as in those who take considerable time between 'announcement' and completion) and therefore help to build a more accurate model.

Conclusion

This paper updated elements of papers by Hallberg and Nakamura to provide new insight into recent outbound cross-border M&A behavior of Japanese firms, analyzing deal count and deal volumes. Regarding deal count, there were more statistically significant relationships found between macroeconomic factors and outbound behavior before Abe was elected and implemented his Abenomics plan. Factors such as the negative relationship between population and deal count are per the hypothesis that a shrinking population would incentivize firms to investigate other market opportunities outside of their traditional Japanese market (i.e. Shiseido and its VISION 2020 initiative). On the other end, the Nikkei and Spot Rate operated in the opposite direction. Moreover, the role of JGB's was not well established. As some have suggested, it may be due to the radically low rates that the Japanese have been maintaining that creates these deviations from the norm. Disappointingly, even more, most variables returned no statistical significance in their relationship with deal volume, which was the original catalyst of this paper. While there is the possibility that the use of completed deals instead of announced deals may have a hand in this, deal values are fundamentally harder to interpret in relation to macroeconomic variables than that of deal count.

However, the high quantity of significant relationships and high R-squared found in the count lag regression (Table 3) for the post-2013 period provides an interesting future point to better study lag variables and their potential role in M&A, as Choi and Jeon noted in their paper. With 5 years of data since Abe's rise to power, it may be preferable to wait to collect more data; however, with the current analysis at hand, it seems as if that Abenomics (or more specifically, the Abe variable) did not have much effect on either deal volume or count, and that surprisingly, there was a negative relationship in the regressions that did return significance. However, does this discount Abenomics as a driving force for M&A? Not quite. Several variables in the lag regressions returned

statistically significant betas and were significantly different in relation to their Pre-Abe counterparts. Moreover, as mentioned before, much of Abe's policies, especially those of the past 2-3 years, have been more centered on structural reform, focusing on corporate governance, worker well-being, and social support. These effects are almost impossible to capture in my model and others referenced in this paper. With all the elements considered, we can conclude that overall, positive effects were made on Japanese M&A behavior from Abe's new policies.

There needs to be more research into Abenomics to reduce ambiguity in these findings and to create projections on outbound M&A activity in the years to come. Future analyses may find it fruitful to approach this problem through a more behavioral lens to better capture the wider range of Abe's policies. Regarding the quantitative analysis, it may be useful to dismiss the most recent years' worth of data when analyzing M&A, due to the lag between announcement and completion. Moreover, as many deals failed to report completed values, it may also prove interesting to analyze announcement data altogether as another approach. With a more complete dataset and social-oriented approach, future papers may shed even more light on the decision-making behavior of Japanese firms when they engage in outbound M&A and how they ultimately play a part in Shinzo Abe's economic legacy.

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Appendix

Figure 1: Ali-Yrkkö's model of mergers and acquisitions
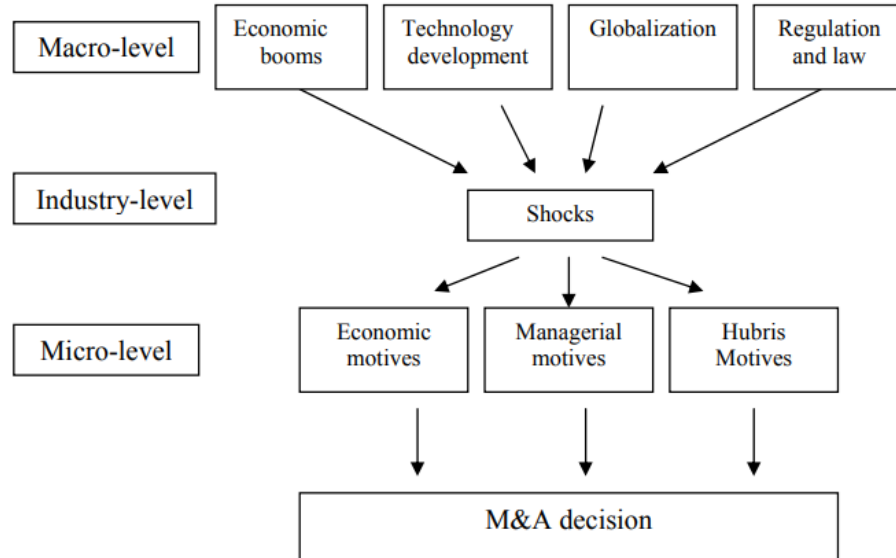
Figure 2: Completed Quarterly Outbound M&A Deal Volumes, (Q1 2001 – Q2 2019)
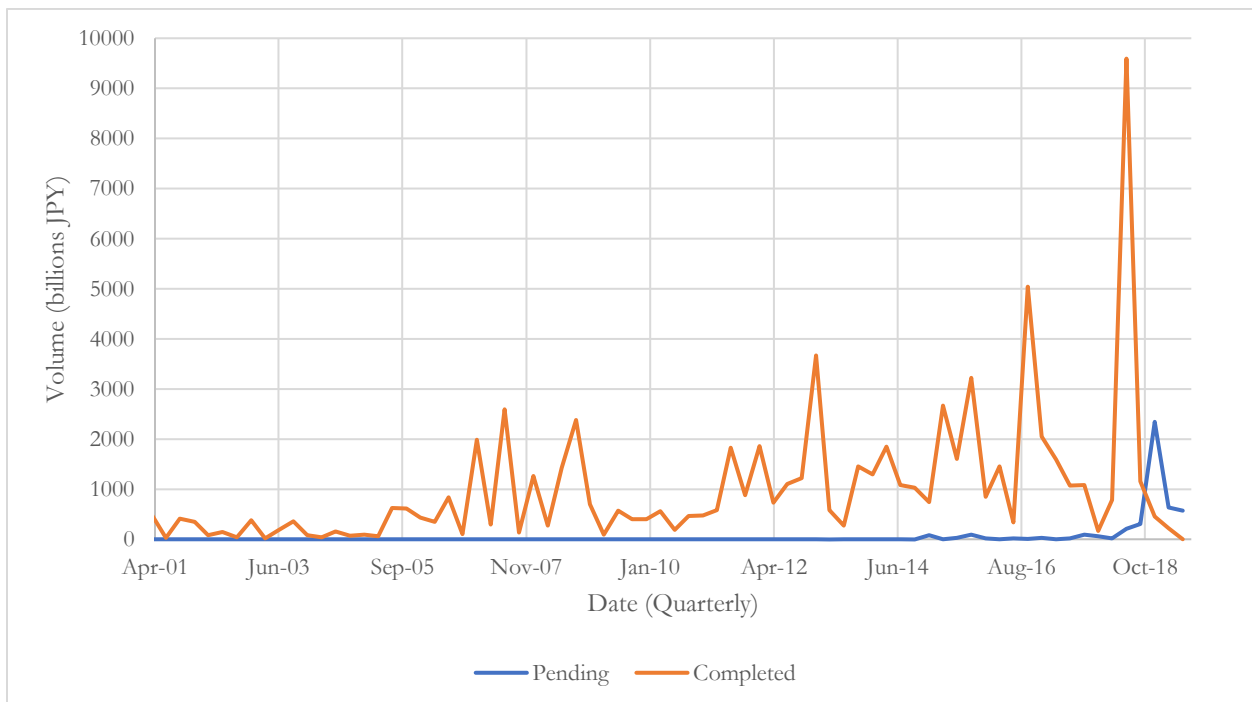
Figure 3: Completed Quarterly Outbound M&A Deal Count, (Q1 2001 – Q2 2019)
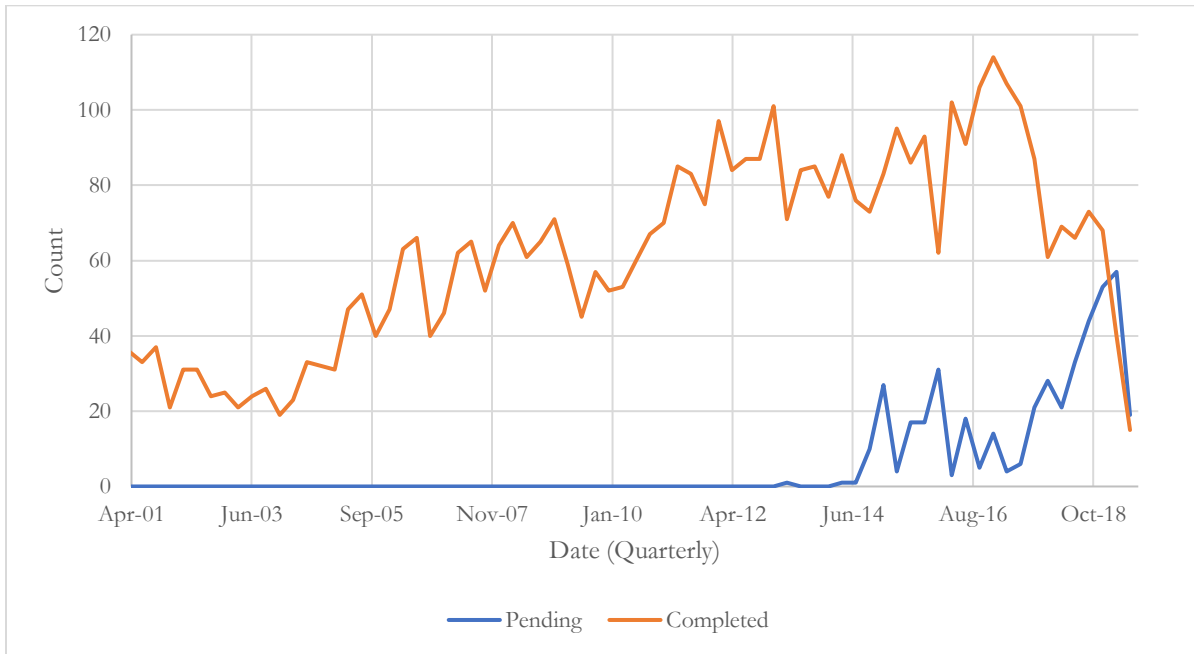
Figure 4: Residual Plot for Observations Across 18 Years of Data
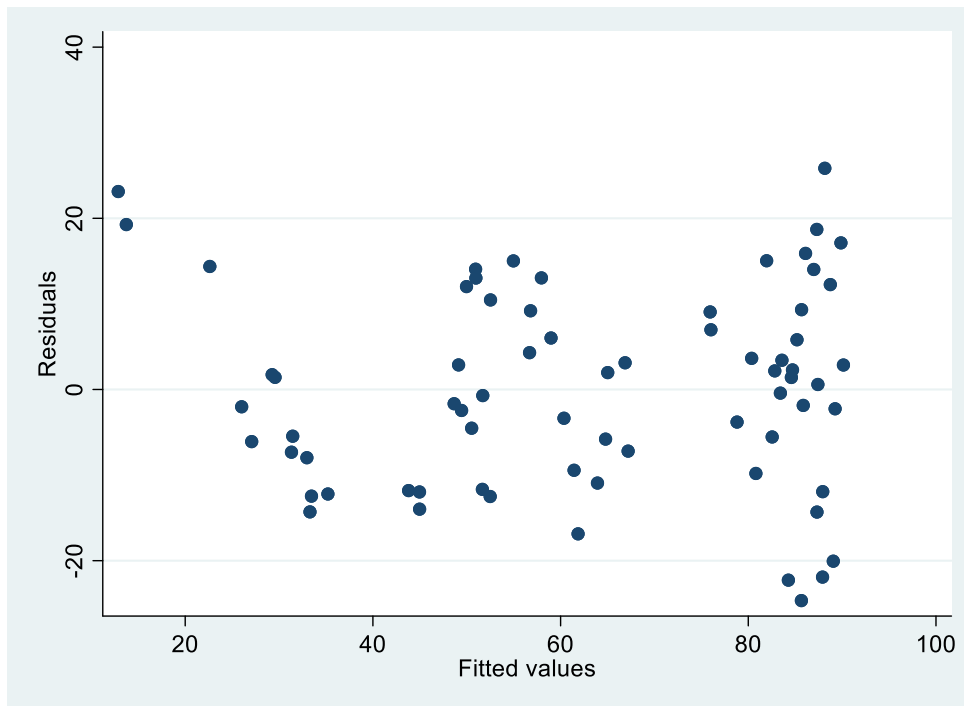
Per the Breusch-Pagan / Cook-Weisberg test for heteroscedasticity, the null of homoscedasticity is not rejected at P = 0.5809

Figure 5: Residual Plot for Volume Across 18 Years of Data
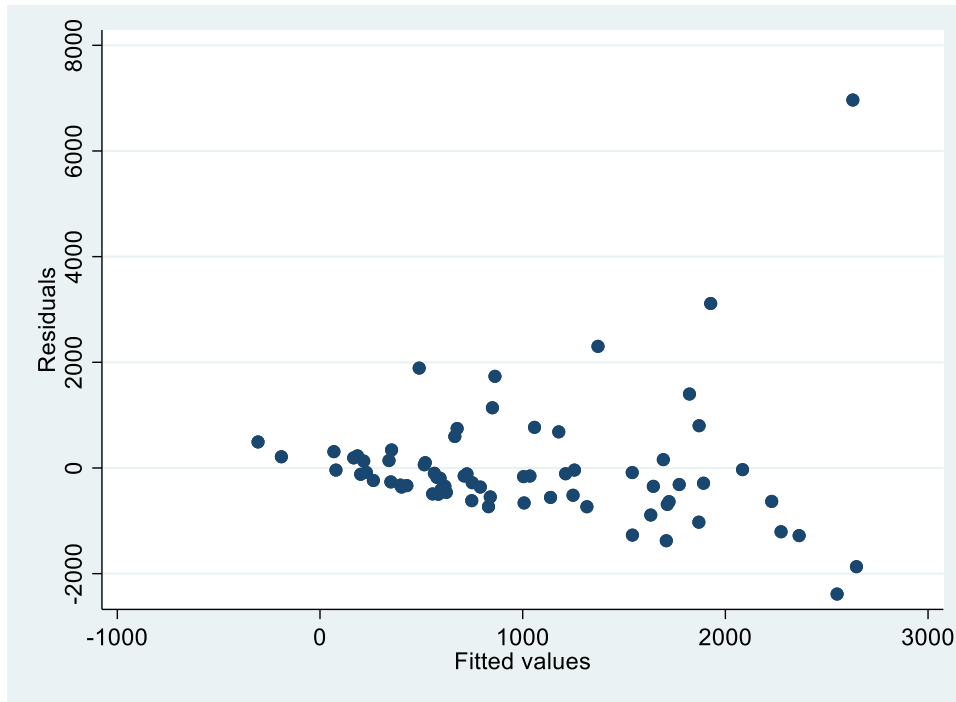
Per the Breusch-Pagan / Cook-Weisberg test for heteroscedasticity, the null of homoscedasticity is rejected at P = 0.0000. This

is heteroskedastic, as shown in the spread.

Figure 6: 10 Year JGB Yield (Q1 2001 – Q2 2018)

Figure 7: Japan's National Debt and Real GDP (Q1 2001 – Q2 2018)

Figure 8: Population of Japan (Q1 2001 – Q2 2018)

Figure 9: USD/JPY Spot Rate (Q1 2001 – Q2 2018)

Figure 10: Nikkei 225 Index Close (Q1 2001 – Q2 2018)

Table 1: Summary Statistics

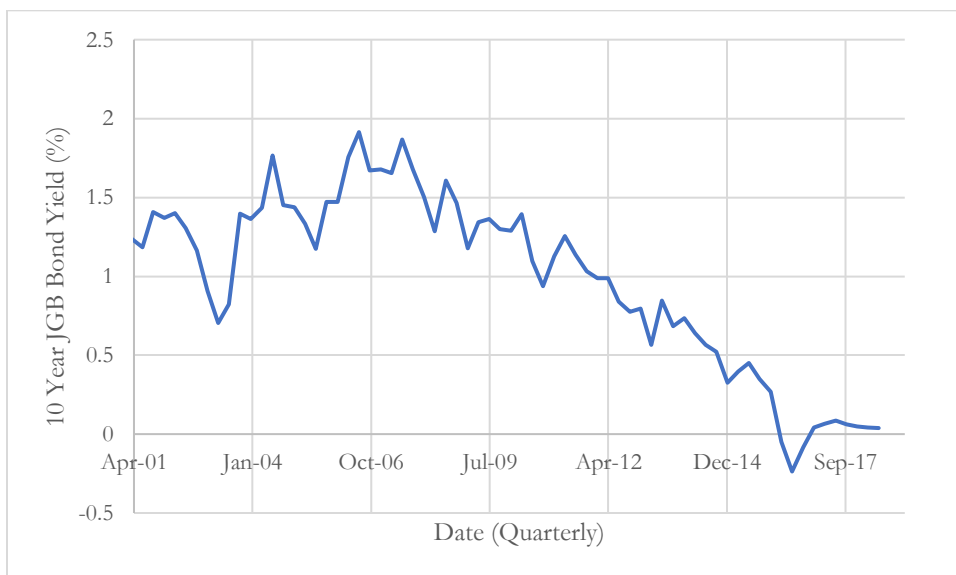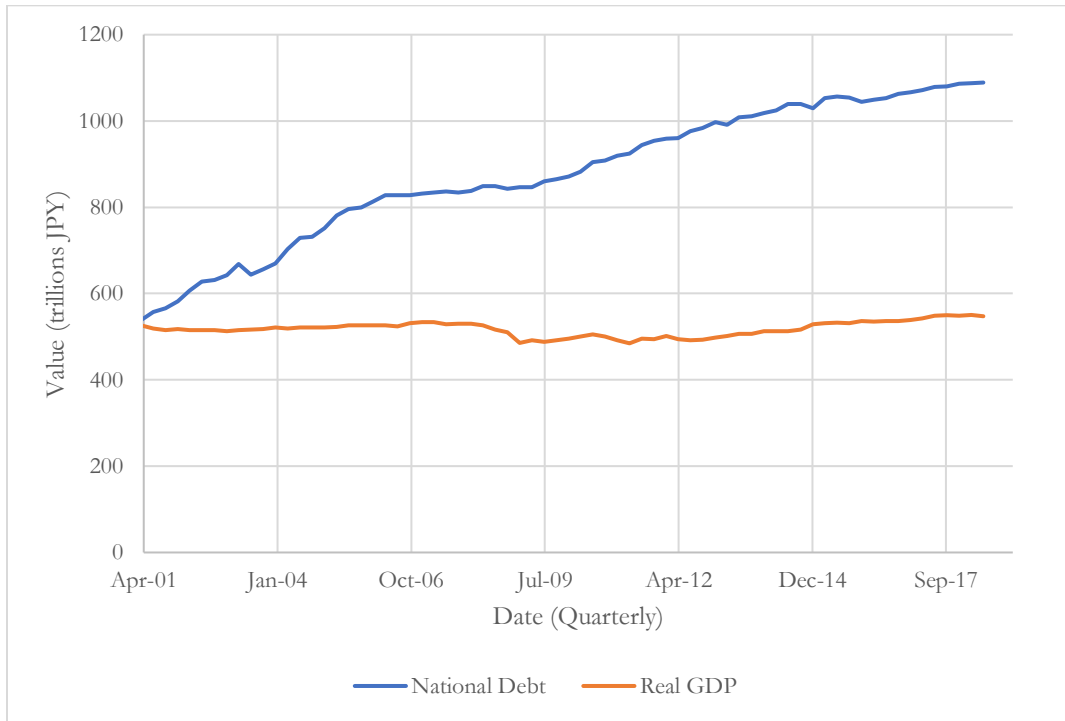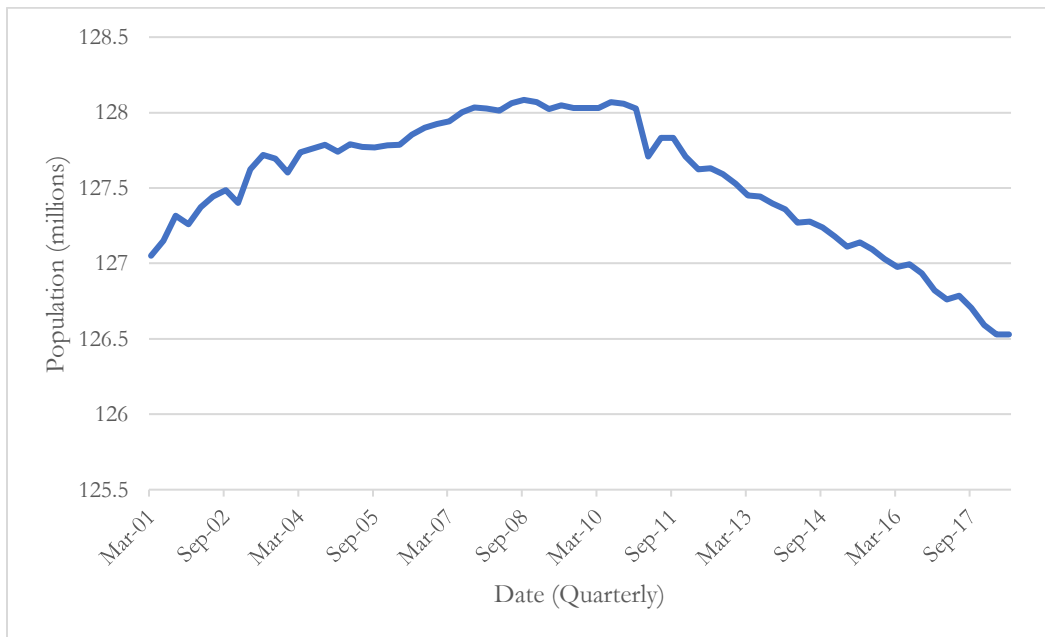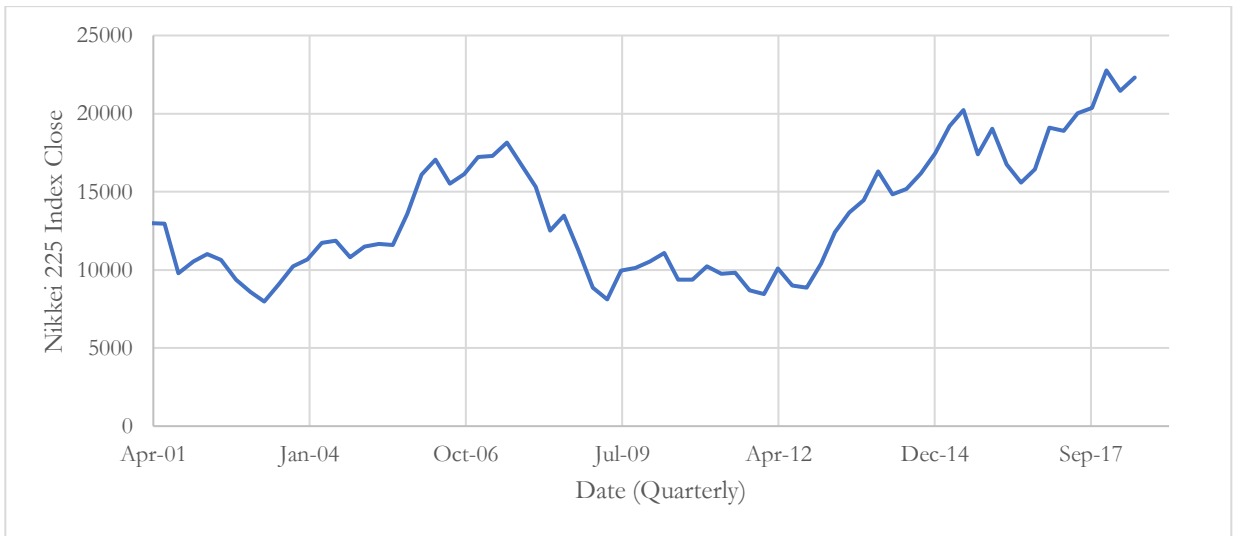| Variable	Mean	Standard Error	Standard Deviation	Min	Max
Count	62.800	3.018	25.252	19.000	114.000
Volume (billions JPY)	1026.102	168.010	1405.673	22.307	9593.230
JGB Yield (%)	0.987	0.067	0.560	-0.237	1.914
Debt (trillions JPY)	877.061	18.845	157.671	538.386	1088.985
Spot Rate (USD/JPY)	106.423	1.702	14.241	76.917	132.732
Nikkei 225 Close	13516.570	478.566	4003.971	7972.710	22764.940
Japanese Real GDP (trillions JPY)	517.968	2.043	17.090	484.692	550.454
Japanese Population (millions JPY)	127.534	0.052	0.438	126.529	128.084

70 Observations, 48 Pre-Abe, 22 Post-Abe

Table 2: Regression 1 – Linear Regression for Quarterly Count and Volume, Pre and Post Abe's December 2012 Election (First Abenomics Legislature passed January 2013)

Variables	Regression on Count (1)			Regression on Volume (2)		
	Abe	Pre-Abe	P-Value	Abe	Pre-Abe	P-Value
JGB Yield	15.27	-1.492	0.5730	-3011.8	4.912	0.4589
	(24.73)	(9.37)		(3979.50)	(416.20)	
Debt	0.421	**0.174***	0.5440	56.74	**7.951***	0.4512
	(0.31)	(0.04)		(42.93)	(2.68)	
USD/JPY Spot Rate	1.11	-0.205	0.1095	50.38	25.79	0.8121
	(0.63)	(0.29)		(97.77)	(18.63)	
Nikkei 225 Close	**-0.0125***	0.00196	0.0022	0.132	-0.00932	0.8423
	(0.00)	(0.00)		(0.70)	(0.08)	
Real GDP	1.068	-0.159	0.2096	-282.7	2.295	0.2010
	(0.89)	(0.22)		(219.20)	(12.04)	
Population	48.6	**-41.47***	0.0567	-4797.5	**-1657.0****	0.7250
	(43.27)	(9.48)		(8808.80)	(659.40)	
Crisis		**13.70***			540.1	
		(4.70)			(333.00)	
Abe	-7136.7			690668.8		
	(5716.40)			(1207405.30)		
Constant	**5292.2***			**202168.2****		
	(999.80)			(76955.20)		
N	70			70		
R²	0.8846			0.3940		
Adjusted R²	0.8552					

* p<0.1, ** p<0.05, *** p<0.01

Each regression is displayed in two columns, with the beta values reflecting the respective effect from the two periods.
P-Values from a T-Test conducted on the differences between Pre-Abe and Abe betas. Null Hypothesis: Beta$_{Abe}$ = Beta$_{Pre-Abe}$

Table 3: Regression 2 - Outbound Deal Count, with 1, 2, and 3 Year Lags

Variables	Regression on Count with 1 Year Lag (1)				Regression on Count with 2 Year Lag (2)				Regression on Count with 3 Year Lag (3)		
	Abe	Pre-Abe	P-Value		Abe	Pre-Abe	P-Value		Abe	Pre-Abe	P-Value
JGB Yield	**-98.41***	7.066	0.0083		-16.71	3.039	0.5884		30.3	3.473	0.3048
	(34.39)	(9.45)			(32.06)	(9.73)			(21.30)	(8.43)	
Debt	**0.692*	0.0714	0.0064		0.755	0.0769	0.6032		**1.077***	0.00593	0.1624
	(0.41)	(0.09)			(0.52)	(0.06)			(0.38)	(0.07)	
USD/JPY Spot Rate	**3.130***	-0.278	0.0008		**1.242*	0.00962	0.1910		**2.313** *	-0.069	0.0062
	(0.79)	(0.30)			(0.71)	(0.34)			(0.71)	(0.25)	
Nikkei 225 Close	**-0.00937*	-0.000668	0.0642		**-0.0106**	0.00032	0.0352		**-0.0152***	-0.000318	0.0023
	(0.00)	(0.00)			(0.00)	(0.00)			(0.00)	(0.00)	
Real GDP	-1.361	-0.00901	0.2586		0.0775	0.104	0.9832		2.008	0.279	0.1206
	(1.12)	(0.21)			(1.20)	(0.23)			(1.01)	(0.25)	
Population	-230.4	**-37.67***	0.1944		140.9	**-28.08**	0.0751		**179*	-19.21	0.0760
	(144.80)	(11.66)			(90.13)	(12.29)			(106.10)	(14.43)	
JGB Lag 1	4.991	1.781	0.9168	Lag 2	-29.67	-5.093	0.5344	Lag 3	-34.04	**-19.55**	0.6087
	(25.73)	(9.49)			(34.95)	(10.29)			(23.55)	(8.85)	
Debt Lag 1	0.321	0.0861	0.5899	Lag 2	-0.331	0.0935	0.3898	Lag 3	**-1.023***	**0.167***	0.0005
	(0.41)	(0.08)			(0.48)	(0.06)			(0.30)	(0.06)	
Spot Rate Lag 1	**1.342*	-0.317	0.0749	Lag 2	**2.007*	-0.23	0.0667	Lag 3	-2.046	-0.254	0.1483
	(0.74)	(0.30)			(1.03)	(0.35)			(1.12)	(0.28)	
Close Lag 1	**-0.0151***	**0.00262*	0.0006	Lag 2	-0.00604	0.000902	0.1687	Lag 3	**0.0168***	0.000434	0.0031
	(0.00)	(0.00)			(0.00)	(0.00)			(0.00)	(0.00)	
RGDP Lag 1	-0.418	0.115	0.6216	Lag 2	**1.741*	-0.317	0.0440	Lag 3	0.423	-0.212	0.4768
	(1.00)	(0.23)			(0.86)	(0.28)			(0.72)	(0.30)	
Population Lag 1	233.7	-0.814	0.1869	Lag 2	27.2	1.065	0.7493	Lag 3	-76.2	0.596	0.3206
	(174.90)	(1.03)			(81.23)	(1.11)			(76.40)	(1.18)	
Crisis		-2.881		Crisis		9.343		Crisis		-0.228	
		(7.08)				(6.45)				(5.68)	
Abe	-682.2				**-22829.7***				**-14455.4*		
	(9,519.10)				(7,882.90)				(7,556.00)		
Constant		**4821.1***		Constant	**3496.2**		Constant	2334.3		
		(1323.60)			(1430.40)				(1625.60)		
N	70				70				70		
R²	0.9341				0.9315				0.9412		
Adjusted R²	0.8942				0.8900				0.9057		

* p<0.1, ** p<0.05, *** p<0.01

Each regression is displayed in two columns, with the beta values reflecting the respective effect from the two periods.
P-Values from a T-Test conducted on the differences between Pre-Abe and Abe betas. Null Hypothesis: Beta$_{Abe}$ = Beta$_{Pre-Abe}$

Table 4: Regression 3 - Outbound Deal Volume, with 1, 2, and 3 Year Lag

Variables	Regression on Volume with 1 Year Lag (1)			Regression on Volume with 2 Year Lag (2)			Regression on Volume with 3 Year Lag (3)		
	Abe	Pre-Abe	P-Value	Abe	Pre-Abe	P-Value	Abe	Pre-Abe	P-Value
JGB Yield	-2216.9	335.7	0.6483	3679.6	310.9	0.5382	-638.8	495.9	0.7352
	(5407.50)	(738.30)		(5359.20)	(502.50)		(3210.60)	(517.60)	
Debt	17.73	2.662	0.6835	-77.91	0.517	0.4961	-16.86	9.425	0.8409
	(86.05)	(6.75)		(80.89)	(3.46)		(74.21)	(7.86)	
USD/JPY Spot Rate	**241.9***	32.68	0.1548	-94.22	55.19	0.3306	121.3	21.96	0.6837
	(137.00)	(26.55)		(140.40)	(33.45)		(239.50)	(20.70)	
Nikkei 225 Close	-0.266	-0.117	0.7691	0.683	-0.117	0.2857	0.593	-0.033	0.4862
	(0.46)	(0.11)		(0.72)	(0.11)		(0.87)	(0.11)	
Real GDP	**-419.6****	11.62	0.0389	-237.6	9.985	0.3060	-418.9	12.05	0.1842
	(201.20)	(12.73)		(236.90)	(18.37)		(317.30)	(20.67)	
Population	-29455.2	**-1751.9****	0.1932	**28606.5***	-1324	0.0479	32110.8	-1727.1	0.1331
	(20912.80)	(805.30)		(14596.70)	(997.20)		(21927.00)	(1611.60)	
JGB Lag 1	7513.7	-103.3	0.2505 Lag 2	**-15570.4****	-313.7	0.0256 Lag 3	**-5940.7***	298.4	0.0908
	(6400.60)	(771.10)		(6497.80)	(653.80)		(3297.60)	(843.70)	
Debt Lag 1	131.7	8.126	0.1297 Lag 2	70.35	7.212	0.4628 Lag 3	31.16	-1.443	0.6476
	(79.24)	(6.24)		(84.70)	(5.38)		(70.27)	(5.16)	
Spot Rate Lag 1	23.6	10.46	0.9368 Lag 2	-34.57	-8.92	0.8963 Lag 3	**-411.4***	-23.48	0.0807
	(162.20)	(16.84)		(190.30)	(26.10)		(214.10)	(20.04)	
Close Lag 1	-1.514	-0.00338	0.1324 Lag 2	0.396	0.0622	0.5729 Lag 3	**2.128***	0.0694	0.0897
	(0.97)	(0.10)		(0.55)	(0.13)		(1.16)	(0.14)	
RGDP Lag 1	377.5	0.921	0.1738 Lag 2	-8.765	-30.83	0.8639 Lag 3	150.3	-1.803	0.2355
	(270.40)	(18.68)		(123.20)	(19.81)		(119.20)	(24.34)	
Population Lag 1	28260.1	-48.37	0.3300 Lag 2	**-18649.9***	106.1	0.05 Lag 3	**-24747.5***	22.77	0.0911
	(28729.30)	(77.83)		(9301.50)	(73.07)		(14329.50)	(94.49)	
Crisis		168.8	Crisis		282	Crisis		525.7	
		-585.90			-504.70			-482.60	
Abe	12672.1			-1113854.5			-797294.3		
	-1,593,844.20			-1,444,276.60			-1,322,847.70		
Constant	**212446.1***		0.9803 Constant	157329.6		Constant	205352.2		
	(118325.80)			(115581.90)			(115581.90)		
N	70			70			70		
R²	0.5963			0.6167			0.5530		

* p<0.1, ** p<0.05, *** p<0.01

Each regression is displayed in two columns, with the beta values reflecting the respective effect from the two periods.
P-Values from a T-Test conducted on the differences between Pre-Abe and Abe betas. Null Hypothesis: Beta$_{Abe}$ = Beta$_{Pre-Abe}$