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How Is Policy Normalization by the Bank of Japan Affecting the Link Between Monetary Policy and Stock Prices*

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Abstract

In 2013 the Bank of Japan (BoJ) began multiplying the monetary base. In 2016 it fixed the uncollateralized overnight call rate at -0.1% and the 10-year Japanese government bond (JGB) rate in a narrow band around zero. In 2021 it allowed JGB rates to increase. In 2024 it began increasing target rates for the overnight call rate. This paper investigates how monetary policy impacts stock returns both during the ultra-low and negative interest rate era and as the BoJ began normalizing monetary policy. Using Krippner's (2013) shadow monetary policy rate to measure monetary policy, the results indicate that expansionary monetary policy did little to raise stock returns before 2021. After August 2021, however, contractionary monetary policy lowered returns on many stocks.

Keywords: Bank of Japan, Monetary policy, Stock returns

JEL classification: E52, E58

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1. Introduction

The Bank of Japan (BoJ) implemented quantitative and qualitative easing (QQE) in 2013. It also set a two percent inflation target. The monetary base increased fourfold over the next ten years. The BoJ initiated yield curve control (YCC) in 2016. YCC involved fixing the uncollateralized overnight call rate at negative 0.1 per cent and establishing a band of 25 basis points around zero for 10-year Japanese government bonds (JGBs).

BoJ Governor Ueda (2025) signaled that the BoJ would abandon ultra-low interest rates and normalize monetary policy if a virtuous cycle between wages and prices developed. In this cycle, as the labor market tightens and nominal wages rise, consumer spending increases. This in turn raises prices and triggers further wage increases. Believing that inflationary dynamics had improved, the BoJ raised its target for the overnight call rate to 0.25% in July 2024, 0.50% in January 2025 and 0.75% in December 2025. It also allowed the interest rate of 10-year JGBs to rise from zero in August 2021 to over two percent in March 2026.

In countries where interest rates are positive, central bank interest rate increases often lower stock prices. For instance, Bernanke and Kuttner (2005) reported that an unexpected 25-basis-point increase in the Federal Reserve's target for the federal funds rate decreases aggregate stock returns by one percent. They also found that many individual industries are affected by funds rate changes. As Bernanke and Kuttner discussed, the impact of interest rates on stock prices constitutes a key channel of monetary policy transmission.

Many studies have investigated how BoJ policies affected stock returns and the economy as the BoJ fought deflation. Fukuda (2015) examined how monetary policy news related to Abenomics affected Nikkei 225 futures (N225) prices. He reported that three major monetary policy events increased N225 prices. The first was future Prime Minister Abe's announcement of

unlimited monetary expansion on 15 November 2012. The second was BoJ Governor Kuroda's announcement of QQE on 4 April 2013. The third was the announcement that QQE would be extended on 31 October 2014. Fukuda also found that foreign investors purchased Japanese stocks more aggressively than domestic investors between December 2012 and May 2013.

Honda and Inoue (2019) examined the impact of the introduction of the negative interest policy on 28 January 2016 on stock prices. They focused on the reaction over the subsequent three days. They argued that this reaction is less contaminated by factors other than monetary policy. They found that the Nikkei 225 stock index increased. They also found that real estate and security and commodity futures stocks gained and that banking stocks lost.

Ueda (2013) investigated how monetary policy affected asset prices during the Abenomics period. He used both daily and monthly data and examined how monetary policy events impacted the TOPIX stock index, 10-year JGBs, and the yen/dollar exchange rate. The daily regressions included the S&P500, 10-year US Treasury rates, and the dollar/euro exchange rate as control variables. The monthly regressions included the S&P500, 10-year US Treasury rates, the dollar/euro exchange rate, the JP Morgan Global Manufacturing Purchasing Managers Index, and US initial unemployment claims as control variables. Ueda reported that certain key dates such as the BoJ's announcement on 4 April 2013 that it would implement QQE were associated with increases in the TOPIX Index and depreciations of the yen relative to the dollar.

Li et al. (2026) employed wavelet analysis to examine links in both the time and frequency domains between monetary policy, inflation, and stock prices. They reported that during the 2008-2009 Global Financial Crisis the coherence statistic indicated that Japanese interest rate cuts impacted stock returns over the six-to-sixteen-month horizon. They also found

that during the period after the COVID-19 pandemic, Japanese monetary transmission to stock returns persisted at long horizons.

Inoue and Okimoto (2022) used a global vector autoregression model to investigate how unconventional monetary policy affected stock returns and other variables over the 2009-2019 period. Since interest rates were sometimes zero or negative over this period, they measured monetary policy using Krippner's (2013) shadow short-term rate. Krippner built on Black's (1995) method to construct a shadow term structure and a shadow short rate. Inoue and Okimoto reported that a 25-basis point drop in the shadow rate is associated on impact with a 3.2% increase in Japanese aggregate stock prices.

Fukuda (2025) investigated the short and long run effects of unconventional monetary policy on the Japanese economy. He used quarterly data over the 1999Q1 to 2023Q4 period and impulse-response functions from a structural vector autoregression. He also employed Krippner's (2013) shadow rate to measure unconventional monetary policy during this ultra-low-interest rate period. He reported that a contractionary monetary policy shock (a positive innovation in the shadow rate) was associated with a decrease in the GDP gap that was different from zero using 90% confidence intervals from the 10th to the 19th quarters. He also found that a positive innovation in the shadow rate increased total factor productivity growth beginning after 10 quarters. The TFP response remained positive and significant using 90% confidence intervals until the 25th quarter. He reported that the findings were robust to using different measures of monetary policy, TFP, and the output gap, to other arrangements of the variables in the recursive ordering, to including additional variables, and to using other econometric techniques. He posited that the ultra-low-interest rate environment may have led to a misallocation of funds that reduced long run productivity.

This paper uses Krippner's shadow rate and daily data to investigate how Japanese monetary policy impacts stock returns. It examines three periods. The first is from 2013 to 2017 when Abenomics and QQE emerged. The second is from 2017 to 2021 and includes the COVID-19 pandemic episode. The third begins in August 2021 as interest rates on 10-year JGBs turned positive. The findings indicate that monetary policy mattered much more for stock returns during the period beginning in August 2021 when interest rates were positive than during the earlier periods. These results indicate that, in a positive interest rate environment, the impact of interest rates on stock prices can help to transmit monetary policy shocks.

The next section presents the data and methodology. Section 3 contains the results. Section 4 concludes.

2. Data and Methodology

To identify the impact of monetary policy shocks on Japanese stock returns, Krippner's (2013) shadow rate is used. Many authors (e.g., Fukuda, 2025, Inoue and Okimoto, 2022, and Yoshida and Zhai, 2025) have found that Krippner's rate is a useful measure of monetary policy.

Several control variables are used. These include the yield on 10-year inflation linked bonds, the breakeven inflation rate (the difference between the yield on 10-year JGB nominal bonds and the yield on 10-year inflation-linked bonds), the spot price of Dubai crude oil, the yen/dollar nominal exchange rate, and the return on the world stock market. Monetary policy shocks are often accompanied by shocks to other variables such as the exchange rate.

Controlling for the impact of other variables on stock returns helps to yield consistent estimates of the impact of monetary policy on stock returns.¹

To avoid bi-directional causality, returns on individual Japanese companies are used as dependent variables. Oil prices, exchange rates, returns on the world stock market, and the other variables are determined in global markets. While there may be some feedback from individual Japanese companies to these macroeconomic variables, these should be second order compared to the impact of the macroeconomic variables on firm stock returns.

For the left-hand side variables, daily data on returns on each of 230 Japanese firms are used. These are chosen from leading Japanese sectors. In cases where returns are unavailable at the beginning of the sample period, these stocks are dropped. This leaves stock returns on 218 Japanese companies with data available at the beginning of the period.

The estimated equations take the form:

$$\Delta R_{i,t} = \alpha_0 + \beta_1 \Delta Link_t + \beta_2 \Delta Breakeven_t + \beta_3 \Delta Dubai_t + \beta_4 \Delta \left(\frac{Yen}{Dollar} \right)_t + \beta_5 \Delta World_t + \beta_6 \Delta Shadow \quad (1)$$

where $\Delta R_{i,t}$ is the daily stock return for Japanese firm i , $\Delta Link_t$ is the change in the yield on 10-year inflation-linked bonds, $\Delta Breakeven_t$ is the change in the breakeven rate, $\Delta Dubai_t$ is the change in the log of the spot price for Dubai crude oil, $\Delta \left(\frac{Yen}{Dollar} \right)_t$ is the change in the log of the nominal yen per dollar exchange rate, $\Delta World_t$ is the return for the world stock market, and $\Delta Shadow_t$ is the change in Krippner's (2013) shadow BoJ monetary policy rate.

¹ Monetary policy and the exchange rate are interrelated. Exploratory regressions indicates that Krippner's (2013) shadow rate contains much independent information that is not included in the exchange rate. These regression results are available on request.

The sample period starts at the beginning of January 2013. This coincides with the start of Prime Minister Abe's term. It extends to the end of 2025. Because investors' responses to macroeconomic variables may have changed over this time, the sample is divided into three equal sub-sample periods. The first extends from 1 January 2013 to 26 April 2017. This was the period when Abe's economic policies and ultra-expansionary BoJ policies impacted markets. The second extends from 27 April 2017 to 20 August 2021. The period includes both the negative interest period and the time when COVID-19 buffeted the world economy. The third period extends from 23 August 2021 to 17 December 2025. This includes the period when 10-year JGB rates rose from zero in August 2021 to 2% in December 2025. It also includes the period when the BoJ raised its target for the uncollateralized overnight call rate from below zero in 2024 to 0.5% in 2025.

Data on stock returns, the yield on 10-year inflation-linked bonds, the breakeven rate, the spot price for Dubai crude oil, the nominal yen per dollar exchange rate, and the return on the world stock market come from the LSEG Datastream database. Data on the shadow BoJ interest rate comes from Leo Krippner's website.² Augmented Dickey-Fuller tests permit rejection of the null hypothesis that the variables in equation (1) have unit roots. Least squares can thus be used to estimate the model.

3. Results

In 11% of the cases the coefficients on the shadow interest rate are significant at the 5% level. These statistically significant values are reported in Table 1. In 86% of the cases the coefficients on the yen/dollar exchange rate are significant at the 5% level. These are reported in

² The URL is <https://www.ljkmfa.com/>.

Table 2. In all of these cases a weaker yen increases stock returns. The adjusted R-squared values across all of the regressions averages 0.14. This is good for stock return data. Detailed regression results are available on request.

Table 1 shows that during the 1 January 2013 to 26 April 2017 period, ten firms benefited from contractionary monetary policy and only one was hurt. During the 27 April 2017 to 20 August 2021 period, 28 firms benefited from contractionary monetary policy and none were harmed. During the 23 August 2021 to 17 December 2025 period, four firms benefited from contractionary monetary policy and 29 were harmed.

To help understand the impact of the shadow interest rate on stock returns, it is useful to examine the link between the shadow rate and the rate on 10-year JGBs. Regressing the change in the 10-year JGB rate on the change in the shadow rate over the first period yields:

$$\Delta JGB_t = -0.0008 + 0.321^{***} \Delta Shadow \quad (2)$$

(0.0005) (0.035)

Adjusted $R^2 = 0.130$, S.E. of regression = 0.017, Sample = 1/01/2013 - 4/26/2017, *** = significant at 1% level. HAC standard errors in parentheses.

The results over the second period are:

$$\Delta JGB_t = 0.0000 + 0.218^{***} \Delta Shadow \quad (3)$$

(0.0003) (0.033)

Adjusted $R^2 = 0.069$, S.E. of regression = 0.011, Sample = 4/27/2017 - 8/20/2021, *** = significant at 1% level. HAC standard errors in parentheses.

The results over the third period are:

$$\Delta JGB_t = 0.0000 + 0.598^{***} \Delta Shadow \quad (4)$$

(0.0007) (0.091)

Adjusted $R^2 = 0.185$, S.E. of regression = 0.022, Sample = 8/21/2021 - 12/17/2025, *** = significant at 1% level. HAC standard errors in parentheses.

Not only were 10-year JGB rates positive and rising over the 21 August 2021 to 17 December 2025 period, they were also more closely linked to the shadow rate than in previous periods. The coefficient on the shadow rate in the third period (equation 4) is almost twice as large as in the first period (equation 2) and almost three times as large as in the second period (equation 3). This suggests that monetary policy since August 2021 has been working more as it does in economies without ultra-low interest rates. Contractionary monetary policy since 2021 raises longer-term interest rates and decreases stock prices for many firms.

As Fukuda (2025) discussed, ultra-low interest rates may interfere with the allocation of funds. Unproductive firms can continue borrowing and operating in this environment. As interest rates have risen since 2021, interest rate increases can reduce firm profitability. This helps explain why contractionary monetary policy harmed many firms over the last subsample period.

Evidence by Ueda (2013), Honda and Inoue (2019), and others point to expansionary monetary policy events during the Abenomics period raising stock prices. However, many of these events such as the announcement of QQE on 4 April 2013 and the introduction of the negative interest rate policy on 28 January 2016 were associated with yen depreciations. Ueda and Honda and Inoue did not control for the value of the yen in their work. It is possible that the stock market was reacting to the yen depreciation more than to expansionary monetary policy itself. The results here using multiple regressions indicate that the weak yen was a more important influence in raising stock prices before 2021 than expansionary monetary policy.

In Table 1, increases in the shadow rate benefit banks in six cases, insurance companies in four cases, and financial firms in two cases. Banks and financial firms profit from the difference between the interest rate they earn on assets and the interest rate they pay on liabilities (the net interest margin). Investigating net interest margins for the 120 largest global banks, Petrić et. al. reported that increases in the spread between long- and short-term interest rates raise the net interest margin. Regressing the change in the spread between the 10-year JGB rate and the overnight rate on the change in the shadow rate over the 1 January 2013 to 17 December 2025 period yields a coefficient of 0.35 and a t-statistic of 19. Thus contractionary monetary policy as measured by an increase in the shadow rate increases interest rate spreads and raises banks' profit margins. It thus follows that banks gain from interest rate increases. Higher interest rates can benefit insurance companies by giving them higher investment incomes.

Table 1 also reports the impact of shadow rate changes on the aggregate Japanese stock market. For each time period, these are reported in the last row. The regression coefficient for the last period equals -0.035 with a probability value of 0.065. In the second period the coefficient is positive. It equals 0.033 with a probability value of 0.096. In the first period it is insignificant. In the period after 20 August 2021 a 100 basis point increase in the shadow rate is associated with a 3.5% drop in the aggregate Japanese stock market. This is close to the multiplier of about 4 that Bernanke and Kuttner reported for the impact of changes in the federal funds rate on aggregate U.S. stock prices.

The important implication of these results is that monetary policy transmission in Japan since 2021 is functioning as it does in countries with positive interest rates. Contractionary monetary policy lowers stock returns for many firms. By reducing consumers' wealth and firms' access to capital, it can then reduce consumption and investment.

4. Conclusion

In 2013 the BoJ began multiplying the monetary base. In 2016 it fixed the overnight call rate at -0.1% and the 10-year JGB rate in a narrow band around zero. In 2021 it began allowing JGB rates to increase. In 2024 it began increasing target rates for the overnight call rate.

This paper investigates how monetary policy impacts stock returns both during the ultra-low and negative interest rate era and as the BoJ normalized monetary policy. Using Krippner's (2013) shadow monetary policy rate to measure monetary policy, the results indicate that expansionary monetary policy did little to raise stock returns before 2021. On the other hand, a weaker yen raised returns on most of the stocks examined. After August 2021, however, monetary policy affected stock returns as it does in countries with positive interest rates. Contractionary monetary policy lowered returns on many stocks. An exception was banking, where interest rate increases raise the net interest margin and thus banks' profitability.

In countries where the link between monetary policy and stock returns is well established, researchers have investigated why monetary policy affects stock returns. For instance, Knox and Vissing-Jorgensen (2025) examined whether investors reacted to news of changes in the Federal Reserve's reaction function, information that monetary policy conveys about the state of the economy, or pure monetary policy shocks. Gürkaynak, Sack & Swanson (2005) used data over 30-minute windows to examine how U.S. monetary policy news (changes in the federal funds rate target and the path of future interest rates) impact stock returns. If the Bank of Japan continues normalizing monetary policy, it would be fruitful to pursue similar studies to shed light on the links between Japanese monetary policy and stock returns.

Table 1. The Exposure of Japanese Firms to Krippner's Shadow Monetary Policy Rate

(1)	(2)	(3)	(4)
Firm	Industry	Shadow Rate Coefficient	Standard Error
Sample Period: 1 January 2013 to 26 April 2017			
ANA	Airlines	0.0447**	0.0209
Daiichi Life	Insurance	0.0719**	0.0297
Hoya	Health Care	0.0433	0.0190
Ibiden	Electronic Components	0.0658**	0.0311
Itochu	Industrial Goods & Services	0.0514**	0.0244
Japan Oil Exploration	Oil: Crude Production	0.0606**	0.0306
Kurita Water	Elec. Equip: Pollution Control	0.0412**	0.0198
Sapporo Holdings	Beverages	-0.0715***	0.0256
Sumitomo Chemical	Basic Materials	0.0840***	0.0290
Aggregate Market	NA	0.0077	0.0130
Sample Period: 27 April 2017 to 20 August 2021			
Acom	Consumer Lending	0.0676**	0.0296
Daiichi Life	Insurance	0.1420***	0.0439
Daiichikoshō	Recreational Services	0.0848**	0.0355
Denso	Auto Parts	0.0681**	0.0333
Eneos	Oil Refining and Marketing	0.0914**	0.0394
Food & Life Companies	Restaurants & Bars	0.1431***	0.0530
Fujita Kankō	Hotels & Motels	0.1086***	0.0422
Hitachi Construction Machinery	Machinery: Construction	0.1002**	0.0397
Inabata	Plastics	0.0666**	0.0303

Itochu	Diversified Industrial	0.0814***	0.0272
JAL	Airlines	0.1130***	0.0393
Komatsu	Industrial Engineering	0.0909**	0.0409
Konica Minolta	Elec. Office Equip	0.0975**	0.0470
Kotobuki Spirits	Food Products	0.1703**	0.0489
Marubeni	Industrial Suppliers	0.0878**	0.0410
MitsubishiUFJ	Banks	0.0864***	0.0327
Mitsui Matsushima	Oil, Gas, Coal	0.0778**	0.0385
Mitsui OSK	Marine Transport	0.0944**	0.0458
Mizuho Financial Group	Banks	0.0639**	0.0322
MS&AD Insurance Group	Financials	0.0576**	0.0269
Nippon Steel	Basic Resources	0.0864**	0.0374
Sankyo	Travel & Leisure	0.0486**	0.0245
Seiko	Luxury Items	0.0779**	0.0378
Shimizu	Construction	0.0761**	0.0329
Sumitomo Mitsubishi Financial Group	Banks	0.0784***	0.0292
T&D Holdings	Insurance	0.1491***	0.0449
Taisei	Construction	0.0741**	0.0335
Tokio Marine Holdings	Financials	0.0595**	0.0297
Yamato	Delivery Services	0.1079**	0.0454
Aggregate Market	NA	0.0328*	0.0197
Sample Period: 23 August 2021 to 17 December 2025			
Aeon	Consumer Staples	-0.0775***	0.0278
Amana	Machinery: Specialized	-0.0620**	0.0308
As One	Medical Equip	-0.0908***	0.0417
Azbil	Elec. Equip:Gauges	-0.1240***	0.0318
Bandai Namco	Toys	-0.0660**	0.0315
Blue Zone Holdings	Drug/Grocery	-0.0408**	0.0176
Chugai Pharmaceuticals	Health Care	-0.0864**	0.0344
Cosmos	Oil Refining and Marketing	-0.07489**	0.0371

Dai Nippon	Industrial Support Services	-0.0502**	0.0238
Denso	Auto Parts	-0.0681**	0.0347
GMO Payment Gateway	Industrial Support Services	-0.1950***	0.0485
Ibiden	Electronic Components	-0.1230**	0.0540
Japan Elevators Holding Service	Industrial Suppliers	-0.1529***	0.0443
Keyence	Electrical & Electronic Equipment	-0.1597***	0.0369
Kikkoman	Food Products	-0.0725**	0.0330
Kubota	Machinery: Agricultural	-0.0915**	0.0408
Kurita Water	Elec. Equip: Pollution Control	-0.0827**	0.0333
LY	Consumer Digital Services	-0.1112***	0.0381
Max	Machinery: Tools	-0.0709**	0.0322
Mitsubishi Logistech	Machinery: Construction	-0.0983**	0.0473
MitsubishiUFJ	Banks	0.1262***	0.0373
Mizuho Financial Group	Banks	0.0996***	0.0318
Nikkon Holdings	Trucking	-0.0525**	0.0248
Nippon Sanso Holdings	Chemicals	-0.0950***	0.0358
Noevir	Cosmetics	-0.0552**	0.0241
OBIC Business Consultants	Software	-0.1076***	0.0394
Otsuka Holdings	Pharmaceuticals	-0.0598**	0.0249
Rinnai	Household Appliances	-0.0603**	0.0251
Secom	Industrial Support Services	-0.0502**	0.0238
SMC	Machiner: Industrial	-0.1102***	0.0425
Sumitomo Mitsubishi Financial Group	Banks	0.0911***	0.0346
T&D Holdings	Insurance	0.0882**	0.0445
Terumo	Medical Equip	-0.0885***	0.0312
Unicharm	Drug/Grocery	-0.0753***	0.0260
Yokogawa Electric	Elec. Equip: Gauges	-0.0642**	0.0317

Aggregate Market	NA	-0.0350*	0.0191
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Notes: Column (3) reports the coefficient on Krippner's (2013) shadow BoJ monetary In a regression of the return on daily stock returns for the firms listed in column (1) on the shadow rate, the change in the yield on 10-year inflation-linked bonds, the change in the breakeven rate, the change in the log of the spot price for Dubai crude oil, the change in the log of the nominal yen per dollar exchange rate, and the return on the world stock market. Column (4) reports heteroskedasticity and autocorrelation corrected standard errors. *** (**) [*] denotes significance at the 1% (5%) [10%] level.

Table 2. The Exposure of Japanese Firms to the Yen/Dollar Exchange Rate

(1)	(2)	(3)	(4)
Firm	Industry	Shadow Rate Coefficient	Standard Error
Sample Period: 1 January 2013 to 26 April 2017			
ABC-Mart	Apparel Retail	0.4221***	0.0867
Acom	Consumer Lending	1.3926***	0.1603
Aeon	Consumer Staples	0.7981***	0.0748
Aiful	Consumer Lending	1.4896***	0.2446
Aiichi Steel	Iron & Steel	1.0582***	0.116
Ajinomoto	Food Producers	0.8724***	0.0897
Amana	Machinery: Specialized	1.3526***	0.1023
Amano	Elec. Equip:Controllers	0.8769***	0.0986
ANA	Airlines	0.7183***	0.0692
As One	Medical Equip	0.5781***	0.0897
Asahi Group Holdings	Beverages	0.9564***	0.0851
ASAHI KASEI	Chemicals	1.1477***	0.0961
Asics	Personal Goods	1.0608***	0.1328
Astellas	Pharmaceuticals	0.9222***	0.0901
Azbil	Elec. Equip:Gauges	0.7658***	0.0657
Blue Zone Holdings	Drug/Grocery	0.7635***	0.086
Bridgestone	Tires	0.2844***	0.1012

Bunka Shutter	Building Materials	1.0747***	0.102
Canon	Elec. Office Equip	0.8497***	0.0569
Capcom	Electronic Entertainment	0.6164***	0.1069
Casio	Consumer Electronics	1.2933***	0.109
Central Japan Railway	Industrial Transport	1.0543***	0.0948
Chubu Electric Power	Electricity	0.6106***	0.0928
Chugai Pharmaceuticals	Health Care	0.9732***	0.1288
Citizen Watch	Luxury Items	1.5823***	0.1139
Cosmos	Oil Refining and Marketing	1.0182***	0.2142
Dai Nippon	Industrial Support Services	1.0328***	0.0763
Daicel	Plastics	1.3258***	0.102
Daifuku	Machiner: Industrial	1.4088***	0.1285
Daiichi Life	Insurance	1.5436***	0.1238
Daiichikoshoh	Recreational Services	0.5229***	0.0859
Daiwa	Home Construction	1.206300514	0.0963
Denso	Auto Parts	1.5347***	0.0853
DMG Mori	Machinery:Tools	1.7589***	0.1151
Dowa	Nonferrous metals	1.2535***	0.1242
East Japan Railway	Industrial Transport	0.8898***	0.0856
Ebara	Machiner: Industrial	1.0551***	0.1011
Eneos	Oil Refining and Marketing	0.7322***	0.0935
Fanuc	Industrial Engineering	1.092***	0.1214
Fast Retailing	Apparel Retail	1.4783***	0.1124
Fujifilm	Elec. Office Equip	1.1276***	0.0876
Fujijura	Electrical & Electronic Equipment	1.3265***	0.1015
Fujita Kanko	Hotels & Motels	1.2222***	0.1491
Glory	Machinery: Specialized	0.9799***	0.0854
GMO Payment Gateway	Industrial Support Services	0.64289***	0.1635
GNI Group	Biotechnology	1.0632***	0.3179

Goldwin	Personal Goods	0.9164***	0.1388
Hitachi	Diversified Industrial	1.3851***	0.0984
Hitachi Construction Machinery	Machinery: Construction	1.3875***	0.1076
Hochiki	Elec. Equip:Controllers	0.6525***	0.0974
Hokuetsu	Industrial Materials	1.1727***	0.1086
Hokuriku	Electricity	0.8054***	0.0901
Honda	Automobiles	1.3240***	0.0814
Horiba	Elec. Equip:Gauges	1.0745***	0.1055
Hoshizaki	Machiner: Industrial	0.9052***	0.0962
Hoya	Health Care	0.9294***	0.0909
Ibiden	Electronic Components	1.2357***	0.1209
Idemitsu	Oil Refining and Marketing	0.6901***	0.1013
Inabata	Plastics	1.1332***	0.1006
Inpex	Oil, Gas, Coal	0.8859***	0.1154
Itochu	Industrial Goods & Services	0.9397***	0.0805
Itoka	Household Furnishings	0.9722***	0.1173
JAL	Airlines	0.6438***	0.0868
Japan Elevators Holding Service	Industrial Suppliers	4.1537***	1.5186
Japan Oil Exploration	Oil: Crude Production	0.9602***	0.1181
Japan Post Bank	Financials	0.6837***	0.1471
Japan Pulp and Paper	Industrial Materials	0.6993***	0.0845
Japan Tobacco	Consumer Staples	0.8811***	0.0922
JVCKENWOOD	Consumer Electronics	1.075*	0.1105
JX Advanced Metals	Industrial Metals&Mines	0.8947***	0.116
Kajima	Construction	0.7412***	0.106
Kamei	Oil, Gas, Coal	1.0639***	0.0929
Kansai Electric	Electricity	0.6273***	0.1345
Kao	Personal Products	0.7881***	0.0954
Kawasaki Kisen	Marine Transport	1.2476***	0.1053
Keisei Electric	Railroads	1.0051***	0.0791

Keyence	Electrical & Electronic Equipment	1.0077***	0.0986
Kikkoman	Food Products	1.2039***	0.0857
Kirin	Beverages	0.9708***	0.0937
Kobayashi Pharmaceuticals	Personal Products	0.6065***	0.0917
Kobe Steel	Industrial Metals&Mines	1.5809***	0.1221
Kokuyo	Industrial Suppliers	0.7846***	0.0854
Komatsu	Industrial Engineering	1.0929***	0.097
Konami	Electronic Entertainment	0.8504***	0.093
Konica Minolta	Elec. Office Equip	1.4281***	0.0957
Kose	Cosmetics	0.8963***	0.1123
Kotobuki Spirits	Food Products	0.5459***	0.1138
Kubota	Machinery: Agricultural	1.4666***	0.1145
Kumiai Chemical	Fertilizer	1.1599***	0.1169
Kurita Water	Elec. Equip:Pollution Control	0.7809***	0.0717
Kusuri no aoki	Drug Retailers	0.4288***	0.1426
Kyocera	Electronic Components	1.3213***	0.0929
LY	Consumer Digital Services	0.7474***	0.0986
Makita	Machinery:Tools	0.9281***	0.0992
Marubeni	Industrial Suppliers	0.9605***	0.0778
Matsuda Sangyo	Nonferrous metals	0.6840***	0.0817
Matsukiyohara	Drug Retailers	0.7786***	0.1016
Max	Machinery:Tools	0.5879***	0.0663
Meiji Holdings	Food Producers	0.6998***	0.1062
Mitani Sekisan	Cement	0.7844***	0.1384
Mitsubishi	Diversified Industrial	0.9057***	0.0822
Mitsubishi Estate	Real Estate	1.2607***	0.1091
Mitsubishi HC	Consumer Lending	1.2875***	0.1198
Mitsubishi Heavy	Industrial Engineering	1.4483***	0.1218
Mitsubishi Logistech	Machinery: Construction	1.2437***	0.1317

MitsubishiUFJ	Banks	1.3600***	0.1207
Mitsui	Industrial Goods & Services	0.8197***	0.0723
Mitsui Fudosan	Real Estate	1.4528***	0.123
Mitsui Kinzoku	Nonferrous metals	1.2698***	0.1091
Mitsui Matsushima	Oil, Gas, Coal	0.6631***	0.1031
Mitsui OSK	Marine Transport	1.4540***	0.1024
Mizuho Financial Group	Banks	1.1739***	0.0988
Mizuno	Recreational Products	0.7932***	0.0944
Modec	Oil Equipmnr and Services	0.97355***	0.1404
MS&AD Insurance Group	Financials	1.5587***	0.1112
Murata	Electronic Components	1.5289***	0.1082
Nexon	Electronic Entertainment	1.0935***	0.1558
Nichirei	Food Products	0.7031***	0.1127
Nintendo	Consumer Discretionary	1.0748***	0.1449
Nippon Light Metal Holdings	Aluminum	1.0851***	0.0875
Nippon Sanso Holdings	Chemicals	1.3757***	0.1154
Nippon Steel	Basic Resources	1.3544***	0.0954
Nippon Yusen	Marine Transport	1.2897***	0.0946
Nissui	Farming & Fishing	0.7377***	0.1179
Nitto Boseki	Industrial Materials	1.5071***	0.1144
Nitto Denko	Basic Materials	1.3766***	0.1148
Noevir	Personal Goods	0.6523***	0.0871
Noritz	Household Appliances	0.8414***	0.0773
Oji Holdings	Basic Resources	1.1655***	0.0833
Okamura	Household Furnishings	0.7913***	0.1138
Olympus	Medical Equip	1.3186***	0.1042
Oreintal Land	Consumer Discretionary	0.7325	0.071
Organo	Elec. Equip:Controllers	0.5768***	0.0831
Oriental Land	Recreational Services	0.7325***	0.071

Osaka Steel	Iron & Steel	0.9282***	0.1131
Otsuka Holdings	Pharmaceuticals	0.7255***	0.101
Paltac	Personal Products	0.5831***	0.0954
Panasonic	Consumer Discretionary	1.3626	0.1073
Rakuten	Consumer Digital Services	0.8008***	0.1167
Resort Trust	Hotels & Motels	1.1912***	0.14
Rinnai	Household Appliances	0.7878***	0.0943
RoundOne	Recreational Services	0.5684***	0.1225
Sakata Seed	Farming & Fishing	0.7477***	0.0927
Sangetsu	Household Furnishings	0.7609***	0.1073
Santec Holdings	Elec. Equip:Other	0.8649***	0.2006
Sapporo Holdings	Beverages	0.9900***	0.1055
Secom	Industrial Support Services	1.0328***	0.0763
Seiko	Luxury Items	1.4803***	0.1566
Seino	Delivery Services	1.1571***	0.0922
Sekiguchi	Home Construction	1.1088***	0.1011
Seven&i holdings	Consumer Staples	0.91338***	0.0814
Shimamura	Apparel Retail	0.5481***	0.0843
Shimano	Recreational Products	1.5560***	0.1409
Shimizu	Construction	0.8555***	0.0904
Shinetsu Chemicals	Basic Materials	1.1973***	0.0978
Shinseido	Cosmetics	0.9222***	0.106
Shionogi	Pharmaceuticals	0.9938***	0.1155
SMC	Machiner: Industrial	1.2468***	0.1015
Sompo	Insurance	1.4149***	0.0977
Sony	Consumer Electronics	1.1809***	0.1139
Sotetsu	Travel and Tourism	0.2032***	0.0748
Sumitomo Bakelite	Plastics	0.9718***	0.0852
Sumitomo Chemical	Basic Materials	1.4395***	0.1046
Sumitomo Electric Industry	Auto Parts	1.5333***	0.0879

Sumitomo Forest	Home Construction	0.9830***	0.0913
Sumitomo Metal&Mining	Industrial Metals&Mines	1.0201***	0.113
Sumitomo Mitsubishi Financial Group	Banks	1.3449***	0.11
SUMITOMO OSAKA CEMENT	Cement	0.6581***	0.0804
Sumitomo Realty & Development	Real Estate	1.5560***	0.1409
Suzuki	Automobiles	1.2345***	0.1103
T&D Holdings	Insurance	1.4621***	0.1271
Taiheiyo Cement	Cement	0.9972***	0.1083
Taisei	Construction	0.7100***	0.0971
Takeda	Health Care	0.7748***	0.089
TDK	Electrical & Electronic Equipment	1.4158***	0.113
Terumo	Medical Equip	1.2958***	0.0881
Tokio Marine Holdings	Financials	1.3714***	0.1014
Toppan Holdings	Industrial Support Services	1.0581***	0.0689
Toray Industries	Chemicals	1.0365***	0.0742
Toyota Industries	Auto Parts	1.5012***	0.0807
Toyota Motors	Automobiles	1.3972***	0.0785
Tsuruha	Drug Retailers	0.4670***	0.105
UACJ	Aluminum	0.9780***	0.1326
Unicharm	Drug/Grocery	0.7864***	0.0995
Wakitech	Machinery: Construction	0.9058***	0.1157
West Japan Railroads	Railroads	0.8280***	0.0786
Yakult	Food Producers	0.9603***	0.1067
Yamabiko	Machinery: Agricultural	1.2880***	0.1568
Yamaha	Recreational Products	1.5560***	0.1409
Yamato	Delivery Services	1.1077***	0.094
Yamato Kogyo	Iron & Steel	1.0581***	0.1193
Yokogawa Electric	Elec. Equip:Gauges	1.3400***	0.107
Zorirushi	Household Appliances	0.5230***	0.1449

Aggregate Market	NA	1.0657***	0.0560
Sample Period: 27 April 2017 to 20 August 2021			
Acom	Consumer Lending	0.7504***	0.1377
Aeon	Consumer Staples	0.4443***	0.1093
Aiful	Consumer Lending	0.6883***	0.1492
Aiichi Steel	Iron & Steel	0.6519***	0.133
Amana	Machinery: Specialized	0.8340***	0.1333
Amano	Elec. Equip:Controllers	0.5913***	0.1531
ANA	Airlines	0.5431***	0.1624
As One	Medical Equip	0.4196**	0.171
Asahi Group Holdings	Beverages	0.5201***	0.132
ASAHI KASEI	Chemicals	0.8629***	0.1484
Asics	Personal Goods	0.5373**	0.2202
Astellas	Pharmaceuticals	0.5160***	0.1254
Azbil	Elec. Equip:Gauges	0.4665***	0.1246
Bunka Shutter	Building Materials	0.4036***	0.0985
Canon	Elec. Office Equip	0.6853***	0.148
Casio	Consumer Electronics	0.5256***	0.1824
Central Japan Railway	Industrial Transport	0.5829***	0.1454
Chubu Electric Power	Electricity	0.2639**	0.1268
Chugai Pharmaceuticals	Health Care	0.5723***	0.143
Citizen Watch	Luxury Items	0.7842***	0.1598
Cosmos	Oil Refining and Marketing	1.3342***	0.2092
Dai Nippon	Industrial Support Services	0.4730***	0.1112
Daicel	Plastics	0.5762***	0.1199
Daifuku	Machiner: Industrial	0.6328***	0.1852
Daiichi Life	Insurance	1.1085***	0.1644
Daiichikosho	Recreational Services	0.4083***	0.1552
Daiwa	Home Construction	0.5707***	0.1434

Denso	Auto Parts	0.7138***	0.1185
DMG Mori	Machinery:Tools	1.2519***	0.202
Dowa	Nonferrous metals	0.8242***	0.164
East Japan Railway	Industrial Transport	0.5684***	0.1354
Ebara	Machiner: Industrial	1.0088***	0.1518
Eneos	Oil Refining and Marketing	0.9282***	0.1287
Fanuc	Industrial Engineering	0.9087***	0.1618
Fujifilm	Elec. Office Equip	0.5317***	0.1391
Fujijura	Electrical & Electronic Equipment	1.2577***	0.1628
Fujita Kanko	Hotels & Motels	0.6763***	0.1888
Glory	Machinery: Specialized	0.6283***	0.1215
GNI Group	Biotechnology	0.7813**	0.3097
Goldwin	Personal Goods	0.5135***	0.1888
Heiwa	Travel and Tourism	0.3962***	0.1272
Hitachi	Diversified Industrial	0.9253***	0.1466
Hitachi Construction Machinery	Machinery: Construction	0.9111***	0.1516
Hochiki	Elec. Equip:Controllers	0.6586***	0.1768
Hokuetsu	Industrial Materials	0.5300***	0.1531
Hokuriku	Electricity	0.2692**	0.1355
Honda	Automobiles	0.8325***	0.1316
Horiba	Elec. Equip:Gauges	0.7856***	0.1543
Hoshizaki	Machiner: Industrial	0.5070***	0.167
Hoya	Health Care	0.4015**	0.1573
Ibiden	Electronic Components	0.5201**	0.2076
Idemitsu	Oil Refining and Marketing	1.0551***	0.1326
Inabata	Plastics	0.7712***	0.1386
Inpex	Oil, Gas, Coal	0.9147***	0.1765
Itochu	Industrial Goods & Services	0.6120***	0.1046

Itoka	Household Furnishings	0.5581***	0.2003
JAL	Airlines	0.5214***	0.1782
Japan Oil Exploration	Oil: Crude Production	0.8669***	0.1706
Japan Pulp and Paper	Industrial Materials	0.4079***	0.1505
Japan Tobacco	Consumer Staples	0.3251***	0.1042
JVCKENWOOD	Consumer Electronics	0.7958***	0.1587
Kajima	Construction	0.6183***	0.1313
Kamei	Oil, Gas, Coal	0.7216***	0.1899
Kansai Electric	Electricity	0.3284***	0.1213
Kao	Drug/Grocery	0.3368***	0.1188
Kawasaki Kisen	Marine Transport	0.5271***	0.1729
Keisei Electric	Railroads	0.4836***	0.1492
Keyence	Electrical & Electronic Equipment	0.6932***	0.1355
Kikkoman	Food Products	0.7032***	0.1391
Kirin	Beverages	0.4090***	0.1198
Kobayashi Pharmaceuticals	Personal Products	0.4301***	0.1616
Kobe Steel	Basic Resources	1.1334***	0.1933
Kokuyo	Industrial Suppliers	0.4308***	0.1316
Komatsu	Industrial Engineering	0.7568***	0.1303
Konami	Electronic Entertainment	0.4553**	0.1853
Konica Minolta	Elec. Office Equip	1.0155***	0.2069
Kose	Cosmetics	0.3810**	0.1676
Kotobuki Spirits	Food Products	0.6022**	0.2562
Kubota	Machinery: Agricultural	0.5713***	0.1386
Kumiai Chemical	Fertilizer	0.7098***	0.1828
Kurita Water	Elec. Equip: Pollution Control	0.3444**	0.1667
Kyocera	Electronic Components	0.5753***	0.1315
Makita	Machinery: Tools	0.6383***	0.1754
Marubeni	Industrial Suppliers	0.9685***	0.132
Matsuda Sangyo	Nonferrous metals	0.2622**	0.132
Matsukiyohara	Drug Retailers	0.4928***	0.1725

Max	Machinery:Tools	0.5863***	0.127
Meiji Holdings	Food Producers	0.2862***	0.1028
Mitani Sekisan	Cement	0.4149**	0.1739
Mitsubishi	Diversified Industrial	0.5584***	0.0958
Mitsubishi Estate	Real Estate	0.5231***	0.1423
Mitsubishi HC	Consumer Lending	0.7777***	0.1243
Mitsubishi Heavy	Industrial Engineering	0.7446***	0.1207
Mitsubishi Logistech	Machinery: Construction	1.0110***	0.2183
MitsubishiUFJ	Banks	0.9413***	0.1436
Mitsui	Industrial Goods & Services	0.6461***	0.1017
Mitsui Fudosan	Real Estate	0.6182***	0.1629
Mitsui Kinzoku	Nonferrous metals	0.9004***	0.1855
Mitsui Matsushima	Oil, Gas, Coal	0.5900***	0.1331
Mitsui OSK	Marine Transport	0.8616***	0.1746
Mizuho Financial Group	Banks	0.7597***	0.1605
Mizuno	Recreational Products	0.5596***	0.1334
Modec	Oil Equipmnr and Services	0.9138***	0.2305
MS&AD Insurance Group	Financials	0.6033***	0.1038
Murata	Electronic Components	0.5801***	0.1399
Nintendo	Consumer Discretionary	0.2838**	0.1387
Nippon Light Metal Holdings	Aluminum	0.7742***	0.1579
Nippon Sanso Holdings	Chemicals	0.5357***	0.1938
Nippon Steel	Basic Resources	0.9361***	0.1811
Nippon Yusen	Industrial Transport	0.7506***	0.1461
Nissui	Farming & Fishing	0.6765***	0.1276
Nitto Boseki	Industrial Materials	0.5776***	0.2011
Nitto Denko	Basic Materials	0.6948***	0.1486
Noevir	Cosmetics	0.5231***	0.1353
Noritz	Household Appliances	0.4707***	0.1824

OBIC Business Consultants	Software	0.4223**	0.1956
Oji Holdings	Basic Resources	0.7417***	0.1401
Okamura	Household Furnishings	0.7188***	0.1412
Olympus	Medical Equip	0.5057**	0.2173
Oriental Land	Consumer Discretionary	0.3702***	0.1253
Osaka Steel	Iron & Steel	0.4147**	0.1733
Otsuka Holdings	Pharmaceuticals	0.3641**	0.1709
Paltac	Personal Products	0.3641**	0.1709
Panasonic	Consumer Discretionary	0.6810***	0.1376
Rakuten	Consumer Digital Services	0.7083***	0.1735
Resort Trust	Hotels & Motels	0.6151***	0.1483
Rinnai	Household Appliances	0.4170***	0.1395
RoundOne	Recreational Services	0.9058***	0.2673
Sakata Seed	Farming & Fishing	0.5228***	0.1583
Sangetsu	Household Furnishings	0.5204***	0.1251
Santec Holdings	Elec. Equip:Other	0.9482***	0.2944
Sapporo Holdings	Beverages	0.6136***	0.1238
Secom	Industrial Support Services	0.4730***	0.1112
Seiko	Luxury Items	0.5370***	0.1473
Seino	Delivery Services	0.4504***	0.133
Sekiguchi	Home Construction	0.5102***	0.1213
Shimano	Recreational Products	0.5300***	0.1925
Shimizu	Construction	0.5347***	0.11
Shinetsu Chemicals	Basic Materials	0.7183***	0.1461
Shinseido	Cosmetics	0.6335***	0.1452
Shionogi	Pharmaceuticals	0.4254***	0.1361
SMC	Machiner: Industrial	0.7845***	0.1361
Sompo	Insurance	0.5965***	0.1533
Sony	Consumer Electronics	0.7095***	0.1426
Sotetsu	Travel and Tourism	0.2686**	0.1374

Sumitomo Bakelite	Plastics	0.9788***	0.1993
Sumitomo Chemical	Basic Materials	0.9968***	0.1349
Sumitomo Electric Industry	Auto Parts	0.8249***	0.1355
Sumitomo Forest	Home Construction	0.4160***	0.1263
Sumitomo Metal&Mining	Industrial Metals&Mines	0.5413***	0.1739
Sumitomo Mitsubishi Financial Group	Banks	0.7675***	0.1207
SUMITOMO OSAKA CEMENT	Cement	0.5225***	0.1208
Sumitomo Realty & Development	Real Estate	0.5300***	0.1925
Suzuki	Automobiles	0.4502**	0.1909
T&D Holdings	Insurance	1.1165***	0.1581
Taiheiyo Cement	Cement	0.7192***	0.1627
Taisei	Construction	0.4421***	0.1185
Takeda	Health Care	0.2653**	0.1309
TDK	Electrical & Electronic Equipment	0.7025***	0.1909
Terumo	Medical Equip	0.3522**	0.1385
Tokio Marine Holdings	Financials	0.6644***	0.1203
Toppan Holdings	Industrial Support Services	0.6280***	0.1342
Toray Industries	Chemicals	0.5292***	0.1464
Toyota Industries	Auto Parts	0.7327***	0.1114
Toyota Motors	Automobiles	0.7326***	0.1008
UACJ	Aluminum	0.8302***	0.187
Wakitech	Machinery: Construction	0.6147***	0.1429
West Japan Railroads	Railroads	0.6374***	0.152
Yakult	Food Producers	0.4006***	0.1508
Yamabiko	Machinery: Agricultural	0.7833***	0.1665
Yamaha	Recreational Products	0.5300***	0.1925
Yamato	Delivery Services	0.3643**	0.1506
Yamato Kogyo	Iron & Steel	0.7438***	0.1597

Yokogawa Electric	Elec. Equip:Gauges	1.0099***	0.1908
Zorirushi	Household Appliances	0.4034***	0.1275
Aggregate Market	NA	0.5420***	0.0197
Sample Period: 23 August 2021 to 17 December 2025			
ABC-Mart	Apparel Retail	0.1739**	0.0678
Acom	Consumer Lending	0.4938***	0.078
Aeon	Consumer Staples	0.1569**	0.0692
Aiful	Consumer Lending	0.5448***	0.0817
Aiichi Steel	Iron & Steel	0.4923***	0.1183
Ajinomoto	Food Producers	0.3129***	0.088
Amana	Machinery: Specialized	0.6311***	0.096
Amano	Elec. Equip:Controllers	0.2752***	0.0739
ANA	Airlines	0.2503***	0.0622
Asahi Group Holdings	Beverages	0.3561***	0.0651
ASAHI KASEI	Chemicals	0.4878***	0.0826
Asics	Personal Goods	0.5423***	0.1691
Astellas	Pharmaceuticals	0.4547***	0.0785
Azbil	Elec. Equip:Gauges	0.4501***	0.0934
Bunka Shutter	Building Materials	0.3509***	0.0778
Canon	Elec. Office Equip	0.7680***	0.0803
Capcom	Electronic Entertainment	0.2415**	0.1046
Casio	Consumer Electronics	0.3087***	0.0936
Central Japan Railway	Industrial Transport	0.2767***	0.0713
Chubu Electric Power	Electricity	0.2801***	0.0769
Chugai Pharmaceuticals	Health Care	0.3113***	0.1088
Citizen Watch	Luxury Items	0.6051***	0.0876
Cosmos	Oil Refining and Marketing	0.6433***	0.1122
Dai Nippon	Industrial Support Services	0.3442***	0.0547
Daicel	Plastics	0.6336***	0.0988

Daifuku	Machiner: Industrial	0.4036***	0.1388
Daiichi Life	Insurance	0.6082***	0.1219
Daiichikosho	Recreational Services	0.3673***	0.076
Daiwa	Home Construction	0.3645***	0.0737
Denso	Auto Parts	0.7733***	0.121
DMG Mori	Machinery:Tools	0.6552***	0.1329
Dowa	Nonferrous metals	0.4757***	0.0884
East Japan Railway	Industrial Transport	0.1920***	0.059
Ebara	Machiner: Industrial	0.6543***	0.1404
Eneos	Oil Refining and Marketing	0.5960***	0.0814
Fanuc	Industrial Engineering	0.5008***	0.1114
Fujifilm	Elec. Office Equip	0.4859***	0.1261
Fujijura	Electrical & Electronic Equipment	1.2626***	0.172
Fujita Kanko	Hotels & Motels	0.4027***	0.1385
Glory	Machinery: Specialized	0.4317***	0.0823
Goldwin	Personal Goods	0.2112**	0.1046
Hamamatsu Photonics	Semiconductors	0.1953**	0.0932
Hitachi	Diversified Industrial	0.6834***	0.1194
Hitachi Construction Machinery	Machinery: Construction	0.7477***	0.1192
Hochiki	Elec. Equip:Controllers	0.5525***	0.0896
Hokuetsu	Industrial Materials	0.2964***	0.1104
Hokuriku	Electricity	0.2336***	0.0852
Honda	Automobiles	0.8858***	0.112
Horiba	Elec. Equip:Gauges	0.5025***	0.1069
Hoshizaki	Machiner: Industrial	0.3226***	0.0766
Hoya	Health Care	0.3712***	0.1242
Ibiden	Electronic Components	0.6713***	0.1895

Idemitsu	Oil Refining and Marketing	0.5596***	0.0863
Inabata	Plastics	0.4760***	0.0679
Inpex	Oil, Gas, Coal	0.6888***	0.1081
Itochu	Industrial Goods & Services	0.5379***	0.0948
Itoka	Household Furnishings	0.4742***	0.1416
JAL	Airlines	0.3022***	0.071
Japan Elevators Holding Service	Industrial Suppliers	0.2245**	0.1099
Japan Oil Exploration	Oil: Crude Production	0.6925***	0.1055
Japan Pulp and Paper	Industrial Materials	0.3849***	0.0889
Japan Tobacco	Consumer Staples	0.5403***	0.0769
JVCKENWOOD	Consumer Electronics	0.3994**	0.1606
Kajima	Construction	0.5013***	0.0755
Kamei	Oil, Gas, Coal	0.5250***	0.0918
Kansai Electric	Electricity	0.3152***	0.1034
Kao	Drug/Grocery	0.1479**	0.0733
Kawasaki Kisen	Marine Transport	0.4765***	0.1525
Keisei Electric	Railroads	0.3347***	0.0883
Keyence	Electrical & Electronic Equipment	0.4407***	0.1113
Kikkoman	Food Products	0.4987***	0.0967
Kirin	Beverages	0.2659***	0.0456
Kobe Steel	Basic Resources	0.4514***	0.1107
Kokuyo	Industrial Suppliers	0.3712***	0.0762
Komatsu	Industrial Engineering	0.7422***	0.0961
Konami	Electronic Entertainment	0.6286***	0.1115
Konica Minolta	Elec. Office Equip	0.6024***	0.1119
Kotobuki Spirits	Food Products	0.3314***	0.1126
Kubota	Machinery: Agricultural	0.5130***	0.1045
Kumiai Chemical	Fertilizer	0.4607***	0.0906
Kurita Water	Elec. Equip: Pollution Control	0.4741***	0.0957
Kyocera	Electronic Components	0.5251***	0.079

Makita	Machinery:Tools	0.4166***	0.1598
Marubeni	Industrial Suppliers	0.7075***	0.1098
Matsuda Sangyo	Nonferrous metals	0.2308**	0.1071
Matsukiyohara	Drug Retailers	0.2694***	0.0791
Max	Machinery:Tools	0.3730***	0.0777
Mitani Sekisan	Cement	0.3050**	0.1309
Mitsubishi	Diversified Industrial	0.6941***	0.0964
Mitsubishi Estate	Real Estate	0.5027***	0.0978
Mitsubishi HC	Consumer Lending	0.4834***	0.0629
Mitsubishi Heavy	Industrial Engineering	0.8250***	0.1214
Mitsubishi Logistech	Machinery: Construction	0.5506***	0.1352
MitsubishiUFJ	Banks	0.5661***	0.1065
Mitsui	Industrial Goods & Services	0.6982***	0.1198
Mitsui Fudosan	Real Estate	0.6760***	0.0939
Mitsui Kinzoku	Nonferrous metals	0.5788***	0.1041
Mitsui Matsushima	Oil, Gas, Coal	0.4310***	0.1531
Mitsui OSK	Marine Transport	0.2985***	0.1039
Mizuho Financial Group	Banks	0.5674***	0.1013
Mizuno	Recreational Products	0.4585***	0.1187
Modec	Oil Equipmnr and Services	1.0356***	0.1492
MS&AD Insurance Group	Financials	0.6256***	0.0989
Murata	Electronic Components	0.6003***	0.1425
Nexon	Electronic Entertainment	0.2800**	0.1238
Nintendo	Consumer Discretionary	0.4934***	0.0998
Nippon Light Metal Holdings	Aluminum	0.3694***	0.0784
Nippon Sanso Holdings	Chemicals	0.4787***	0.1028
Nippon Steel	Basic Resources	0.4047***	0.0908
Nippon Yusen	Industrial Transport	0.3575***	0.1142
Nissui	Farming & Fishing	0.3034***	0.0729

Nitto Boseki	Industrial Materials	0.8986***	0.1624
Nitto Denko	Basic Materials	0.7926***	0.1324
Noevir	Cosmetics	0.1695***	0.0626
Noritz	Household Appliances	0.2944***	0.0561
Oji Holdings	Basic Resources	0.2800***	0.0663
Okamura	Household Furnishings	0.4274***	0.1146
Olympus	Medical Equip	0.5321***	0.1013
Organo	Elec. Equip:Controllers	0.5212***	0.1397
Osaka Steel	Iron & Steel	0.3017**	0.1186
Otsuka Holdings	Pharmaceuticals	0.5270***	0.0856
Paltac	Personal Products	0.3261***	0.0753
Panasonic	Consumer Discretionary	0.5847***	0.1138
Resort Trust	Hotels & Motels	0.4028***	0.0769
Rinnai	Household Appliances	0.2472***	0.0842
Rohm	Semiconductors	0.2429**	0.105
RoundOne	Recreational Services	0.6648***	0.1363
Sakata Seed	Farming & Fishing	0.4407***	0.0845
Sangetsu	Household Furnishings	0.3223***	0.0644
Santec Holdings	Elec. Equip:Other	0.9829***	0.1845
Sapporo Holdings	Beverages	0.3471***	0.0806
Secom	Industrial Support Services	0.3442***	0.0547
Seiko	Luxury Items	0.6956***	0.0969
Seino	Delivery Services	0.2798***	0.0616
Sekiguchi	Home Construction	0.3924***	0.0771
Seven&i holdings	Consumer Staples	0.3067**	0.1376
Shimamura	Apparel Retail	0.2080***	0.0751
Shimano	Recreational Products	0.6026***	0.1141
Shimizu	Construction	0.4796***	0.0852
Shinetsu Chemicals	Basic Materials	0.2407**	0.1216
Shionogi	Pharmaceuticals	0.2841***	0.0843
SMC	Machiner: Industrial	0.4762***	0.1242
Sompo	Insurance	0.5912***	0.0973

Sony	Consumer Electronics	0.5232***	0.1242
Sumitomo Bakelite	Plastics	0.6728***	0.1059
Sumitomo Chemical	Basic Materials	0.4464***	0.102
Sumitomo Electric Industry	Auto Parts	0.8598***	0.1097
Sumitomo Mitsubishi Financial Group	Banks	0.5256***	0.1077
SUMITOMO OSAKA CEMENT	Cement	0.3142***	0.085
Sumitomo Realty & Development	Real Estate	0.6026***	0.1141
Suzuki	Automobiles	0.8238***	0.1015
T&D Holdings	Insurance	0.5756***	0.1314
Taiheiyo Cement	Cement	0.5434***	0.0832
Taisei	Construction	0.5425***	0.0961
Takeda	Health Care	0.3837***	0.0668
TDK	Electrical & Electronic Equipment	0.6903***	0.1458
Terumo	Medical Equip	0.5660***	0.0878
Tokio Marine Holdings	Financials	0.6864***	0.1215
Toppan Holdings	Industrial Support Services	0.5933***	0.0916
Toray Industries	Chemicals	0.4348***	0.0903
Toyota Industries	Auto Parts	0.8118***	0.1316
Toyota Motors	Automobiles	0.8975***	0.1063
UACJ	Aluminum	0.4969***	0.1197
Wakitech	Machinery: Construction	0.4240***	0.0723
West Japan Railroads	Railroads	0.3015***	0.0648
Yamabiko	Machinery: Agricultural	0.6492***	0.121
Yamaha	Recreational Products	0.6026***	0.1141
Yamato	Delivery Services	0.1493**	0.0716
Yamato Kogyo	Iron & Steel	0.4921***	0.0982
Yokogawa Electric	Elec. Equip: Gauges	0.7620***	0.0932
Zorirushi	Household Appliances	0.2476***	0.0955

Aggregate Market	NA	0.4660***	0.0654
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Notes: Column (3) reports the coefficient on the log of the yen/dollar nominal exchange rate in a regression of the return on daily stock returns for the firms listed in column (1) on the change in the log of the nominal yen per dollar exchange rate, Krippner's (2013) shadow BoJ monetary policy rate, the change in the yield on 10-year inflation-linked bonds, the change in the breakeven rate, the change in the log of the spot price for Dubai crude oil, and the return on the world stock market. Column (4) reports heteroskedasticity and autocorrelation corrected standard errors. *** (**) [*] denotes significance at the 1% (5%) [10%] level.

References

- Bernanke, B. and Kuttner, K. 2005. What Explains the Stock Market's Reaction to Federal Reserve Policy? *Journal of Finance*, 60, 1221-1257.
- Black, F., 1995. Interest Rates as Options. *Journal of Finance* 50, 1371–1376.
- Fukuda, S. 2015. Abenomics: Why Was it so Successful in Changing Market Expectations? *Journal of the Japanese and International Economies* 37, 1-20.
- Fukuda, S. 2025. Short-run and Long-run Consequences of Unconventional Monetary Policy in Japan. *Journal of the Japanese and International Economies* 77, Article Number 101375.
- Gürkaynak, R.S., Sack, B.P., and Swanson, E.T. 2005. Do Actions Speak Louder than Words? The Response of Asset Prices to Monetary Policy Actions and Statements. *International Journal of Central Banking* 1, 55–93.
- Honda, Y. and Inoue, H. 2019. The Effectiveness of the Negative Interest Rate Policy in Japan: An Early Assessment. *Journal of the Japanese and International Economies* 52, 142-153.
- Inoue, T., and Okimoto, T. 2022. International Spillover Effects of Unconventional Monetary Policies of Major Central Banks. *International Review of Financial Analysis* 79, Article Number 101968.
- Knox, B., and Vissing-Jorgensen A. 2025. The Effect of the Federal Reserve on the Stock Market: Magnitudes, Channels, and Shocks. *Annual Review of Financial Economics* 17, 267-294.
- Krippner, L. 2013. Measuring the Stance of Monetary Policy in Zero Lower Bound Environments. *Economics Letters*, 118, 135-138.
- Li, Y., Lau, W., and Ng, K. 2026. From Crisis to Crisis: The Roles of Interest Rate and Inflation In Shaping Stock Returns in Selected Advanced Economies. *International Review of Economics & Finance* 104, Article Number 104804.
- Petralia, K., Philippon, T., Rice, T., and Veron, N. (eds). 2019. *Geneva 22: Banking Disrupted? Financial Intermediation in an Era of transformational Technology*. Paris & London: CEPR Press.
- Ueda, K., 2013. Response of Asset Prices to Monetary Policy under Abenomics. *Asian Economic Policy Review* 8, 252–269.
- Ueda, K. 2025. Japan's Labor Market under Demographic Decline: Evolving Dynamics and Macroeconomic Implications. Remarks at the Jackson Hole Economic Policy Symposium, 23

August. Available at: https://www.boj.or.jp/en/about/press/koen_2025/ko250824a.htm .

Yoshida, Y., and Zhai, W. 2025. Can Exchange Rate Pass-throughs Be Perverse? A Robust Multiple-prior Bayesian SVAR Approach. *Journal of International Money and Finance* 154, Article Number 103312.