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Has Japanese Intervention in the Foreign Exchange Market been Effective?

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Abstract: Japanese yen has dropped sharply in 2026. It fell to the lowest level in 40 years against the US dollar. Japan and the US financial authorities performed huge-scale intervention in the foreign exchange market to curb the yen's depreciation, however, opinions remain divided regarding the effectiveness. This study empirically examines the effectiveness of the intervention from the 2000s employing a portfolio balance approach. It finds that interventions in the foreign exchange market by Japanese financial authorities have been successful; however, their effects were limited to the very short term of only a few days. Furthermore, it is unlikely that the foreign exchange market focuses on the portfolio balance approach; instead, it has been confirmed that speculative sentiment drives market transactions. On the other hand, the market may well be factoring in risk premiums when trading currencies. While it is difficult to determine whether an intervention is a success or a failure, the increasing scale of market trading makes it challenging to achieve significant results from such interventions.

Keywords: exchange rate, foreign exchange market, intervention, Japanese yen, portfolio balance approach.

INTRODUCTION

In 2026 Japanese yen has depreciated hugely. Yen depreciated to the lowest level in 40 years against the US dollar. It has been said that the depreciation caused serious domestic inflation through import prices rising. In the past, a weak yen was sometimes welcomed in Japan as a positive factor for the economy. Indeed, the stock prices of export-oriented companies - specifically large corporations in Japan's case - did at times rise alongside the depreciation of the yen. Recently, however, attention has increasingly focused on the adverse effects of a weak yen, such as rising import costs that severely impact small and medium-sized companies and consumers. Japanese financial authorities performed huge-scale intervention in the foreign exchange market in July 2026 to suppress the yen's depreciation with the US financial authorities, but the opinions remain divided regarding the effectiveness of intervention.

This study examines empirically the effectiveness of the intervention in the foreign exchange market from the 2000s employing a portfolio balance approach. Interventions in the foreign exchange market by Japanese financial authorities have seemed to be successful; however, their effects were limited to a very short period. Surely, from the end of April 2026 to the beginning of May, the financial authorities intervened in the foreign exchange market and could cause yen's appreciation, however, the movements have not been sufficient. After one month or so, the yen again depreciated and fell to about the previous level. In July 2026, Japanese and U.S. financial authorities conducted a coordinated

intervention to halt the depreciation of the yen. However, despite the scale, the effect did not last. Yen showed rebounding from appreciation to depreciation against the US dollar.

In this study, the effectiveness of intervention in the foreign exchange market from the year 2000 to June 2023 is examined. In addition to a simple analysis - namely, directly evaluating the relationship between the intervention amount and the exchange rate - the effects of the intervention are examined using the portfolio balance approach.

It is structured as follows. Following section 1, section 2 reviews existing studies for intervention in the foreign exchange market related with this study. Section 3 provides theoretical models to analyze the effectiveness of intervention in the foreign exchange market. Section 4 provides empirical methods to examine the effectiveness of intervention. Also, the empirical results are provided and are analyzed in section 4. Finally, this study provides a brief summary.

EXISTING STUDIES FOR INTERVENTION IN FOREIGN EXCHANGE MARKET

The effectiveness of foreign exchange market intervention has been analyzed and examined across numerous theoretical and empirical studies from the past in academic fields. As financial markets became increasingly internationalized in the 1980s, the movements of exchange rate are focused and intensified, sparking vigorous debate regarding the impact of interventions. In recent years, the expansion of financial markets and the increased speed of trading have led to greater volatility in exchange rates and stock prices, further heightening interest in the effectiveness of interventions. However, consensus has not been obtained yet by now. There still a lot of opinion about the effectiveness of intervention by financial authorities.

[1] used a portfolio model and provides evidence that intervention in foreign exchange market was a significant tool that was effective at adjusting exchange rates. [2] showed that intervention could be an effective method when a signal of intervention on the market is announced. [3] employed GARCH models and found that the Croatian central bank could affect exchange rate successfully. [4] revealed that the announcements of intervention increase the exchange rate influence of 3.9 basis points per €10 million in the case of Czech koruna–euro exchange rate.

[5] showed that interventions in foreign exchange market in the mid-1980s decreased exchange rate volatility, but for the 1977–1994 period, interventions increased the volatility, and vice versa. [6] found that intervention was unsuccessful at reducing volatility in the market. [7] showed that intervention in the market of Columbia was successful for the period of 2004-2006, on the other hand, the intervention was unsuccessful at reversing or slowing down domestic currency appreciation.

[8] provided empirical results that sterilized intervention influences the exchange rate effectively in the short term. [9] applied the framework developed in [8] to daily exchange rate data and on the US and Japan’s financial authority interventions. [10] found that interventions move exchange rates 2% and reduce its volatility 3%. [11] showed the importance of coordination among countries to promote the effectiveness of intervention in the market. [12] showed that foreign exchange intervention is an effective instrument to stabilize exchange rates.

[13] revealed that when intervention is successful, the exchange rate goes back on the next day. The effect of intervention is decreased after that intervention is conducted. [14] found that interventions lasted for five days.

[15] provided evidence of the effectiveness of foreign exchange interventions on some economies that inflation-targeting is employed. [16] suggested that the disclosure of intervention amounts contributed to successful stabilization.

While skepticism toward intervention was prevalent at the time, results have varied depending on factors such as timing, target countries and currencies, and prevailing economic conditions - complicating the issue beyond the fundamental question of how to measure effectiveness. Consequently, no consensus has yet been reached in the academic field. This study analyzes the effectiveness of interventions in foreign exchange market by Japanese monetary authorities regarding the recent yen-dollar exchange rate, employing the portfolio balance approach as the theoretical framework for exchange rate determination.

THEORETICAL ANALYSIS

Portfolio Balance Approach

This study, at first, directly and empirically examines the effects of intervention. Also, regression analyses are performed while employing the portfolio balance approach as the theory of exchange rate determination. While theories such as purchasing power parity, monetary approach, and interest rate parity exist as ones of exchange rate determination, the portfolio balance approach analyzes exchange rate determination as an equilibrium in asset markets.

Although similar to interest rate parity, it differs by incorporating realistic investor behaviors, such as asset risk premiums; consequently, it assumes imperfect substitutability between domestic and foreign assets. In recent years, this theory has been highly acclaimed as a framework for explaining exchange rate determination. Given current trends in financial markets, it appears to align well with real-world conditions. However, some question its validity when applied to the determination of exchange rates over the very short term.

Basic Model

This study utilizes the following model. The conditions for uncovered interest rate parity and covered interest rate parity are: $(s^e - s)/s = i - i^*$, and $(f - s)/s = i - i^*$, respectively, where s^e, s, and f represent the expected spot exchange rate, the spot exchange rate, and the forward exchange rate, while i and i* denote Japanese and US short-term interest rates. In general, two currency-denominated bonds do not tend to be perfect substitutes; thus, uncovered interest rate parity does not typically hold in its strict form, and a risk premium exists. The risk premium represents the deviation from the one that uncovered interest rate parity theory produces.

The portfolio balance approach for exchange rate determination is used for estimation. While based on interest rate parity conditions, this approach - unlike the

monetary approach, for instance - focuses on interest rates and risk premiums. This can be expressed by the equation: $i - i^* - (s^e - s)/s = (i - i^* - (f - s)/s) - (s^e - f)/s$. Here, the left-hand side is the deviation from that one uncovered interest rate parity theory produces, the term in parentheses on the right-hand side represents the deviation from the one from covered interest rate parity theory calculates, and the second term on the right-hand side is the risk premium. In this analysis, the deviation from the theory of interest rate parity is regressed by the intervention amount, while including a constant term that is interpreted as the risk premium.

EMPIRICAL ANALYSIS

According to the previous section, empirical analysis is conducted to evaluate the effectiveness of intervention in foreign exchange markets. Initially, the effect of intervention is evaluated directly. The regression equation is (1).

$$\log (s_{t+1}/s_t) = a_1 + a_2 \text{INTERVENTION} \quad (1)$$

Dependent variable is the change rate of yen-dollar daily exchange rate. The data is from NIKKEI TELECOM (Japanese newspaper company) and the central rate of the day. INTERVENTION is from Ministry of Finance (Japan) and the amount is 100 million yen. The US dollar bought/the Japanese yen sold case is plus and the opposite case is minus. The sample is from the beginning of 2000 to June 30, 2023. The regression method is OLS (Ordinary Least Squares) and VAR (Vector Autoregression). The latter case is employed to analyze the impulse response of intervention to exchange rate.

The results of the equation are shown in Table 1 and the impulse response is shown in Figure 1.

Table 1: The effect of intervention on exchange rate.

Method	OLS	VAR
C	1.46E-05 (0.393)	3.38E-05 (0.909)
INTERVENTION	1.50E-07*** (6.793)	
INTERVENTION (-1)		-0.031** (-2.369)
$\log (s_{t+1}/s_t)$ (-1)		-3.29E-08 (-1.484)
Adj.R-squared	0.008	0.001
F-statistic (Prob.)	46.149 (0.000)	4.266
D.W.	2.053	
Akaike criterion	-8.952	-8.944
Schwartz Criterion	-8.949	-8.948

Note. ***, **, and * are significant at 1, 5, 10% respectively. Parentheses are t-value.

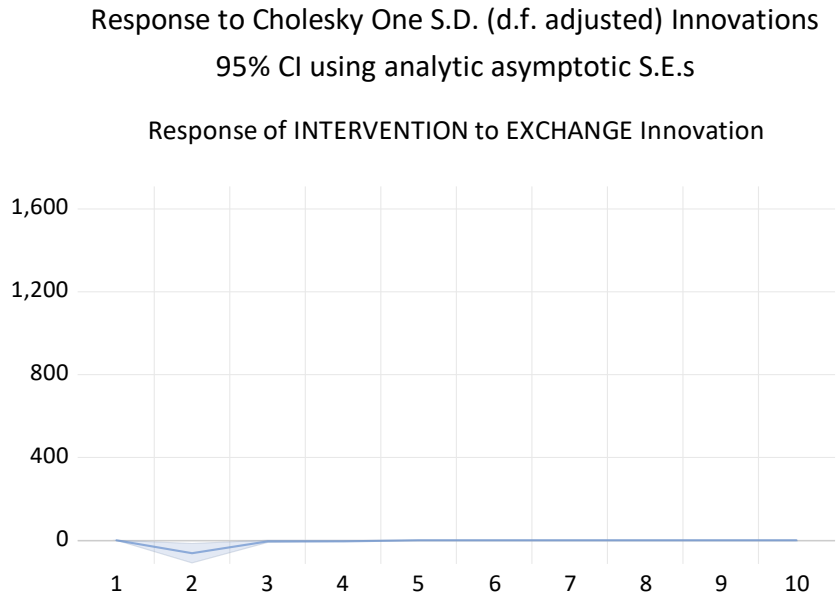

Figure 1: Response of intervention to exchange rate.

The results are clear. Intervention in the foreign exchange market to halt appreciation or depreciation of the yen is effective. However, the effect of the intervention lasts only a few days, as shown Figure 1. In fact, in most cases, the intervention is carried out over a period of several days rather than just a single day.

Figure 1 shows that intervention often initially moves in the direction opposite to the monetary authorities' intentions. However, once the intervention becomes known to the market (as it is not always announced immediately), the exchange rate has tended to move as the authorities intended. Nevertheless, the scale of intervention has increased, and there is room for debate regarding whether the results justified that scale. There is also room for skepticism concerning the duration of the intervention's effects. After setting a time lag for changes in the exchange rate, the regression using the estimation formula is conducted. The time lags were 1 day, 7 days, and 14 days.

Table 2 is the result.

Table 2: The effect of intervention on exchange rate.

Time lag	1 day	7 day	14 day
C	3.11E-05 (0.835)	0.000* (1.832)	0.000** (2.561)
INTERVENTION	-4.59E-08** (-2.078)	4.62E-08 (0.820)	-5.99E-08 (-0.750)
Adj.R-squared	0.000	0.000	-0.000
F-statistic (Prob.)	4.322 (0.037)	0.672 (0.412)	0.562 (0.453)
D.W.	2.061	0.307	0.151
Akaike criterion	-8.944	-7.073	-6.373
Schwartz Criterion	-8.942	-7.071	-6.371

Note. ***, **, and * are significant at 1, 5, 10% respectively. Parentheses are t-value.

As a result, only the first day showed a significant outcome. However, the coefficient was negative, indicating a change in the exchange rate in the opposite direction than expected by the financial authorities. As mentioned earlier, this could be because the market might not have recognized the intervention. On the other hand, before interventions, there are often repeated statements by relevant officials from the financial authorities suggesting intervention, and rate checks on financial institutions are frequently conducted.

Considering these conditions, it's possible that some transactions are being made with speculative intent instead of exchange rate theory. Therefore, using the portfolio balance approach, which is one of the representative theories for determining exchange rates, the existence of a risk premium is examined. If there is a strong motive for speculative trading, this approach could be considered the best way to analyze it.

The equation is (2) according to the previous section.

$$i - i^* - \log(st+n/st) = b1 + b2\text{INTERVENTION} \quad (2)$$

Instead of $(s^e - s)/s$, $\log(st+n/st)$ as it is quite difficult to set expected exchange rate. However, the time span is not so long, so it would be adequate. Also, instead of $(i - i^* - (f - s)/s) - (s^e - f)/s$, b1 is used for estimation. It is the term of risk premium. N denotes 1, 7, 14 day respectively. One reason why forward exchange rate is not used for estimation is data availability.

The estimated results are in Table 3a and Table 3b.

Table 3a: The effect of intervention on exchange rate.

Interest rate	1 month	1 month	3 month
Method	OLS	GMM	OLS
C	-1.881*** (-7.7.25)	-1.698*** (-16.707)	-2.259*** (-5.323)
INTERVENTION	-1.881 (-0.561)	-0.002 (-0.959)	3.13E-05 (0.124)
Adj.R-squared	-0.000	-0.037	-0.000
F-statistic (Prob.)	0.315 (0.574)		0.015 (0.900)
J-statistic		0.000	
D.W.	1.981	1.978	1.995
Akaike criterion	8.625		9.736
Schwartz Criterion	8.628		9.739

Note. ***, **, and * are significant at 1, 5, 10% respectively. Parentheses are t-value.

Table 3b: The effect of intervention on exchange rate.

Time lag	1 day	1 day	7 day	7 day	14 day	14 day
Interest rate	1 month	3 month	1 month	3 month	1 month	3 month
Risk premium	-1.881*** (-7.725)	-2.259*** (-5.324)	-1.881*** (-7.726)	-2.259*** (-5.324)	-1.881*** (-7.727)	-2.260*** (-5.324)
INTERVENTION	-8.10E-05 (-0.560)	3.15E-05 (0.125)	-8.11E-05 (-0.561)	3.14E-05 (0.124)	-1.881 (-0.560)	3.16E-05 (0.125)
Adj.R-squared	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000

F-statistic (Prob.)	0.3143 (0.575)	0.015 (0.900)	0.315 (0.574)	0.015 (0.900)	0.314 (0.575)	0.015 (0.900)
D.W.	1.981	1.995	1.981	1.995	1.981	1.995
Akaike criterion	8.625	9.736	8.625	9.736	8.625	9.736
Schwartz Criterion	8.628	9.739	8.628	9.739	8.628	9.739

Note. ***, **, and * are significant at 1, 5, 10% respectively. Parentheses are t-value.

Almost all of the results are expected. Even though the portfolio risk premium approach theory doesn't hold, the existence of a risk premium is acknowledged. It seems that the market trades more with speculative motives than strictly following theory. While the details of the risk premium couldn't be verified, it's likely that market participants are factoring it into their trades in some way. It's also noted that the portfolio risk premium model isn't suitable for ultra-short-term predictions, and it can be inferred that market participants, including financial authorities, generally act reasonably as a whole.

CONCLUSION

This study empirically examines the effectiveness of the intervention from the 2000s employing portfolio balance approach. Interventions in the foreign exchange market by Japanese financial authorities have been successful; however, their effects were limited to the very short term.

Furthermore, it is unlikely that the market focuses on the portfolio balance approach; instead, it has been confirmed that speculative sentiment drives market movements. On the other hand, the market may well be factoring in risk premiums when trading. While it is difficult to determine whether an intervention is a success or a failure, the increasing scale of market trading makes it challenging to achieve significant results from such interventions.

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