



# Exchange rate rebounds after foreign exchange market interventions<sup>☆</sup>



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## HIGHLIGHTS

- There are the rebounds in the exchange rate after foreign exchange intervention.
- When intervention is strongly effective, the exchange rate rebounds at next day.
- The effect of intervention is reduced slightly by the rebounds.

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## ABSTRACT

This study examined the rebounds in the exchange rate after foreign exchange intervention. When intervention is strongly effective, the exchange rate rebounds at next day. The effect of intervention is reduced slightly by the rebound after the intervention. The exchange rate might have been 67.12–77.47 yen to a US dollar without yen-selling/dollar-purchasing intervention of 74,691,100 million yen implemented by the Japanese government since 1991, in comparison to the actual exchange rate was 103.19 yen to the US dollar at the end of March 2014.

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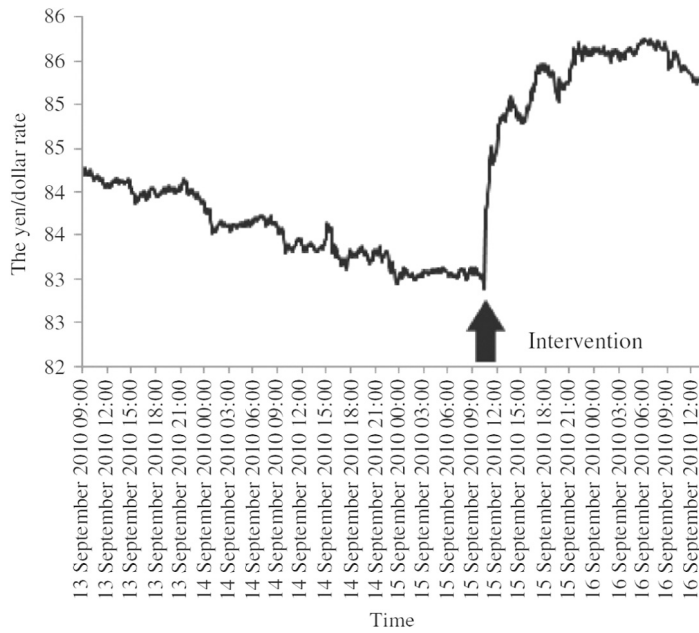
## 1. Introduction

This study examined the effects of exchange-rate rebounds after foreign exchange intervention. Exchange rates fluctuate because of changes in the supply–demand balance of currencies. If government or central bank intervenes in the foreign exchange market without prior announcement, the exchange rate will be moved by the intervention. Subsequently, market participants who have observed the authorities' intervention will react and the exchange rates will fluctuate according to the information related to the intervention. Fig. 1 presents trends in the Japanese yen per US dollar exchange rate around September 15, 2010. The Japanese government intervened in the foreign exchange market on September 15, 2010 by buying US dollars for 2124.9 billion yen.<sup>1</sup> Fig. 1 shows that the yen-selling/dollar-purchasing intervention depreciated the yen. When the exchange market is given a shock by such an intervention, verifying the effect of the intervention is important. It is also important to observe how the exchange rate changes after the intervention. Fig. 2 is a conceptual diagram of a case in which the exchange rate has fluctuated as a result of a foreign exchange intervention. We consider that the yen-selling/dollar-purchasing intervention at the time  $t$  has weakened the yen rapidly. In the left diagram of Fig. 2, the exchange rate just shifted, as shown by Path A. Path B in the right diagram, however, shows a rebound in the exchange rate to a

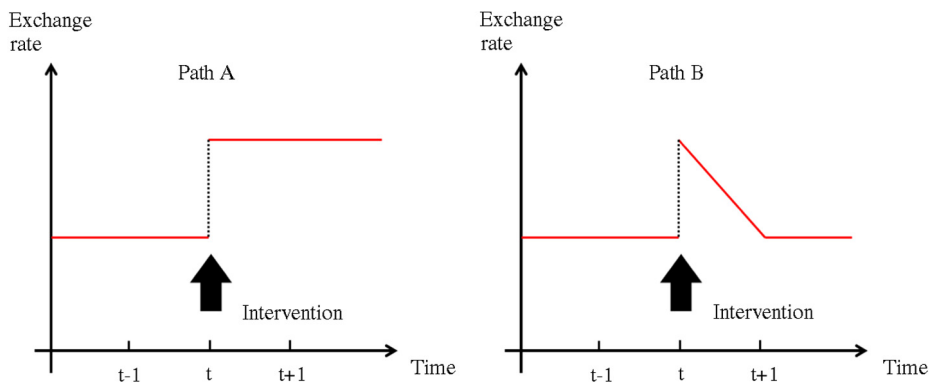
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<sup>1</sup> See Ref. [1] for details of this intervention.



**Fig. 1.** Yen–dollar rates and intervention. The intervention conducted on September 15, 2010. The horizontal axis shows Japan time. The vertical axis shows the yen–dollar exchange rate (Bid, 5 min).  
 Source: Hoshikawa and Yamaguchi [1].



**Fig. 2.** Foreign exchange intervention at time  $t$  and exchange rate trend.

stronger yen after the intervention. Whether a rebound in the exchange rate like Path B on the right of Fig. 2 follows a foreign exchange intervention is important when examining the intervention effects because such a rebound seemingly reduces the importance of the intervention. Examples of survey-based studies of foreign exchange intervention include Sarno and Taylor [2] and Takagi [3]. Studies of exchange-rate rebounds are not common despite numerous studies done on foreign exchange intervention.

The following reviews a scatter diagram of data related to exchange-rate rebounds after intervention. Fig. 3 presents the amounts of intervention (horizontal axis, in hundred million yen) and rates of foreign exchange fluctuations (vertical axis, logarithmic difference). The amount of intervention is a positive value when a yen-selling/dollar-purchasing intervention is implemented and a negative value when a yen-buying/dollar-selling intervention is implemented. Data for days on which no intervention took place were excluded. When the amount of intervention is a positive value, the exchange rate appears likely to move to the positive side i.e., a weaker yen, because of the yen-selling/dollar-purchasing intervention. Fig. 4 is a graph of exchange rate fluctuations on the days following a foreign exchange intervention and the amounts of intervention on the respective preceding days. The exchange rates on the days following a positive intervention, i.e., a yen-selling/dollar-purchasing operation, appear to move somewhat to the negative direction in comparison to Fig. 3. Figs. 3 and 4, however, reveal no clear relation.

In this study, we modified the methods presented by Hoshikawa and Yamaguchi [1] and examined the extent of exchange-rate rebounds after foreign exchange interventions. The preceding study investigated the extent of exchange rate fluctuations attributable to foreign exchange intervention and the virtual exchange rate that would have resulted without

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