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Foreign exchange intervention when interest rates are zero: Does the portfolio balance channel matter after all?



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ABSTRACT

This paper provides an empirical investigation of transmission channels of central bank foreign exchange intervention when interest rates are zero and traditional monetary policy options are constrained. The paper develops empirically testable hypotheses regarding the functioning of the intervention transmission channels under study. These hypotheses evolve around whether or not the market is aware or unaware of intervention. Official daily data on interventions in the JPY/USD market during the 1999 to 2004 Japanese zero-interest rate period facilitate the analysis. The results of the analysis are consistent with the suggestion that intervention when interest rates are zero works through the portfolio-balance channel.

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1. Introduction

Previous studies have established that interventions in the JPY/USD exchange rate market during the 1999 to 2004 zero-interest period were, on average, effective in influencing daily exchange rate

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movements (e.g. [Fatum and Hutchison, 2010](#), [Ito, 2005](#), and [Iwata and Wu, 2012](#)).¹ With Japanese interest rates remaining at the lower bound throughout this prolonged period of frequent and often large-scale interventions, and all interventions in the JPY/USD market carried out as unilateral sales of JPY by the Japanese monetary authorities, it is not possible for these interventions to send a signal of a future decrease in interest rates.² The Japanese zero-interest rate period, therefore, provides a unique institutional background for investigating the effectiveness of sterilized intervention when monetary policy options are constrained and, as a consequence, the signaling channel of intervention, often viewed as a particularly important transmission channel, is not fully operational. No previous study attempts to assess through which of the four traditional transmission channels (the signaling channel, the portfolio balance channel, the coordination channel, and the noise-trading channel, all of which are described in detail in the next section) sterilized intervention during the Japanese zero-interest rate period might work. To do so this paper develops testable hypotheses regarding the functioning of the intervention transmission channels under study. These hypotheses evolve around whether or not the market is aware or unaware of intervention. In turn, an established methodology for distinguishing between interventions of which the market is aware and interventions of which the market is unaware is employed in order to test these hypotheses in a GARCH time-series modeling framework. The results of the analysis do not suggest that market awareness of intervention plays a role in regards to the relative influence of intervention when interest rates are at the lower bound, thereby providing evidence consistent with a hypothesis suggesting that intervention works through the portfolio-balance channel (as effectiveness through this channel should not be influenced by whether or not the market is aware of an intervention operation). Whereas this study develops transmission channel hypotheses around the response of exchange rate returns to detected versus undetected intervention, a related strand of the literature on intervention transmission channels focuses on the exchange rate risk premium. For example, [Baillie and Osterberg \(1997a\)](#) extend the inter-temporal asset pricing model of [Hodrick \(1989\)](#) to allow intervention to directly influence the risk premium while [Ghosh \(1992\)](#) uses a standard monetary model augmented to include a risk premium that is positively correlated with the ratio of home to foreign assets. Both studies find some evidence consistent with the proposition that the portfolio-balance channel of intervention is operative.

It has been debated whether or not Japanese interventions during the zero-interest rate period are sterilized, i.e. independent of monetary policy, or unsterilized, i.e. monetary policy by another name and thus in this context an integral part of the Japanese quantitative easing. For example, as noted by [Spiegel \(2003\)](#), the media have characterized these interventions as unsterilized based on the observation that the Japanese money supply continued to increase during this time-period of relatively frequent interventions oftentimes carried out in large amounts. However, [Spiegel \(2003\)](#) points out, the foreign exchange intervention carried out on behalf of the Japanese Ministry of Finance does not prevent the Bank of Japan from pursuing its domestic money supply objectives by adjusting its other transactions accordingly. He also notes that there is little correlation between intervention and money supply at the daily frequency. This is consistent with [Fatum and Hutchison \(2005\)](#) who show that the Japanese interventions during the zero-interest rate period are not significantly linked to changes in the monetary base, i.e. the interventions do not appear to be systematically connected to the coinciding path of quantitative monetary easing. Moreover, as discussed in [Ito \(2005\)](#), the Japanese institutional framework for intervention, where government bonds with 3-month maturity (so-called Fiscal Bills) are issued in order to fund the JPY necessary for carrying out interventions, guarantees that all interventions are eventually sterilized. Perhaps most importantly, as pointed out by [Christiano \(2000\)](#) and others, in a zero-interest rate environment where domestic bonds and domestic money

¹ The September 2010 intervention that followed 6½ years of no intervention since March 2004 (when what [Taylor, 2006](#) and others refer to as the “great intervention” ended abruptly) marked the return of Japan to an active intervention policy. These more recent Japanese interventions are part of a new intervention regime that should not be considered in conjunction with the 1999 to 2004 interventions.

² Despite the post-global financial crisis developments where countries such as Denmark and Switzerland have lowered selected policy interest rates below zero, during the 1999 to 2004 Japanese zero-interest rate period it seems implausible that market participants would consider Japanese intervention sales of JPY as signals of a future decrease of Japanese policy interest rates into negative territory.

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