



ELSEVIER

Contents lists available at ScienceDirect

Journal of International Money and Finance

journal homepage: www.elsevier.com/locate/jimf



Evaluating foreign exchange market intervention: Self-selection, counterfactuals and average treatment effects

Rasmus Fatum^a, Michael M. Hutchison^{b,*}

^a School of Business, University of Alberta, Edmonton, Alberta T6 G 2R6, Canada

^b Department of Economics, University of California, Santa Cruz, CA 95064, USA

A B S T R A C T

JEL Classification:

E58

F31

G15

Keywords:

Foreign exchange intervention

Bank of Japan

Self-selection

Matching methods

Estimating the effect of official foreign exchange market intervention is complicated by the fact that intervention at any point entails a “self-selection” choice made by the authorities and that no counterfactual is observed. To address these issues, we estimate the “counterfactual” exchange rate movement in the absence of intervention by introducing the method of propensity-score matching to estimate the “average treatment effect” (ATE) of intervention. To derive the propensity scores we estimate central bank intervention reaction functions. We estimate the ATE for daily official intervention in Japan over the January 1999–March 2004 period. This sample encompasses a remarkable variation in intervention frequencies as well as unprecedented frequent intervention towards the latter part of the period. We find that only sporadic and relatively infrequent intervention is effective.

© 2010 Elsevier Ltd. All rights reserved.

1. Introduction

Intervention is not a random occurrence but a process where officials “self select” in deciding when to intervene. Since an exchange rate movement at any given point in time coincides with either intervention or no intervention, we cannot observe both what is the exchange rate movement coinciding with intervention and what would have been the “counterfactual”, i.e. what would have been the exchange rate movement if intervention had not occurred when in fact it did. In other words, the counterfactual is not directly observable and, as such, this constitutes a missing data problem.

* Corresponding author. Tel.: +1 831 459 2600; fax: +1 831 459 5077.

E-mail address: hutch@ucsc.edu (M.M. Hutchison).

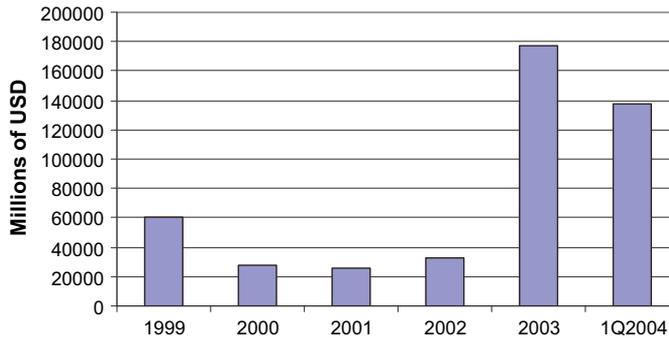


Fig. 1. Official Japanese Intervention 1999–2004. Notes: a) Yearly aggregates of daily intervention in the JPY/USD exchange rate market. The daily intervention data obtained from the Japanese Ministry of Finance data bank. b) There has been no Japanese intervention since March 2004.

These inherent issues of self-selection and missing data complicate the assessment of the effects of intervention. Following the modern literature on treatment effects, we address the issue of self-selection and the missing counterfactual by estimating the “average treatment effect” (ATE) of intervention in the JPY/USD exchange rate over the 1999–2004 period using a propensity-score matching methodology.

The approach taken here to evaluate the effectiveness of intervention, while addressing the aforementioned methodological issues, is to postulate a counterfactual and, in turn, match pairs of observations (or an average of control observations) of exchange rate movements – each pair consisting of an exchange rate movement coinciding with intervention and one that coincides with no intervention – on similar observable characteristics. Although the JPY appreciated strongly against the USD over our sample period, intervention may still have been effective in reducing the magnitude of this appreciation. This highlights the necessity of estimating a relevant counterfactual. We consider intervention as a “treatment” and, using matched counterfactuals, investigate the exchange rate movements with and without intervention in otherwise identical circumstances (as far as can be determined by observable market characteristics that lead up to the decision by the central bank to intervene). By using similar economic circumstances that lead to intervention (similar probabilities of intervention) for “matching up” observations that differ only in whether intervention occurs or not, we are able to address the missing observations and the sample selection bias issues.

Our sample of official daily Japanese intervention in the JPY/USD exchange rate market over the January 1999–March 2004 period constitute a fascinating and unprecedented period in the history of foreign exchange market intervention and fits our methodological framework perfectly.¹ First, the magnitude of intervention was extremely large. Japanese foreign exchange market intervention jumped in 2003, shown in Fig. 1, with the official selling of JPY 20.2 trillion (USD 177 billion) in exchange for USD. Massive intervention operations in support of the USD continued in the first quarter of 2004, during which time the authorities sold another JPY 14.8 trillion (USD 139 billion). Although Japan has been the most active amongst the larger industrial economies in its foreign exchange market operations during the past decade and more, the recent magnitude dwarfs the previous experience. Second, there are distinct periods of intervention frequency during this sample period. Fatum and Hutchison (2005) and several others observe that a sharp departure from past Japanese intervention policy began in early 2003 when the frequency of interventions jumped dramatically. Official intervention continued in the first quarter of 2004 and, in fact, this quarter stands out with an intervention frequency of 73% of business days. Moreover, Fatum and Hutchison (2005) demonstrate that

¹ See Humpage (2003) and Sarno and Taylor (2001) for recent surveys of the intervention literature. See Neely (2005) for a critical assessment and a very useful overview of recent studies of intervention.

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات