

Strategies of exchange rate policy in G3 economies

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Abstract

The paper argues that communication has become the primary policy tool for G3 monetary authorities to influence exchange rates. It analyses the strategies policy-makers pursue through communication and actual interventions with regard to exchange rate trends, monetary policy and coordinated interventions.

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1. Introduction

Monetary authorities have two direct policy instruments to influence exchange rates: actual interventions, i.e. open-market purchases or sales of foreign exchange, and oral interventions, i.e. public statements about the desired level or direction of the exchange rate. Much of the literature on G3 exchange rate policies in recent years has continued to focus on the effectiveness of official intervention in foreign exchange markets. However, G3 exchange rate policies have undergone a fundamental regime change in the 1990s as US and euro area authorities have basically abandoned actual interventions in 1995. The objective of the paper is to document this regime change and to analyze and characterize the intervention strategies G3 policy-makers have pursued.

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2. The regime shift in exchange rate policy

A stylized fact of key importance for exchange rate policy is that monetary authorities in the United States and in the euro area conducted frequent actual interventions before 1995 but abandoned such interventions in August 1995. Since 1995, both authorities intervened only during two short episodes (see [Table 1](#)). Among G3 authorities, only the Japanese have intensified their actual interventions in recent years, in size as well as in magnitude. Given this fundamental regime shift, at least for the United States and the euro area, it is somewhat puzzling why the literature on exchange rate policy continues to focus almost exclusively on the role of actual interventions,¹ when in fact such interventions have all but stopped in these economies. In contrast, there is only little work so far on the role and effectiveness of communication as a policy tool for exchange rate policy.

The behavior of monetary authorities reveals that increased communication on exchange rates has replaced the actual intervention policies in the United States and in the euro area. The methodology developed in [Fratzscher \(2004\)](#) is employed here to measure oral interventions, which extracts all statements about exchange rates by the relevant policy-makers in the G3 economies since 1990 from a commonly used wire service, Reuters News. These statements are transformed into an indicator function IO_t with $IO_t = 1$ if the statement supports a stronger domestic currency, $IO_t = -1$ if it promotes a weaker currency, and $IO_t = 0$ if there is no statement on any given day during the sample period 1990–2003.

Two search criteria are used to extract statements; first, the name or title of the relevant policy-maker, and second, the word “exchange rate” or the name of the domestic currency. Exchange rate policy in the United States and Japan lies in the realm of the finance ministries, so that the statements extracted are therefore for the secretary and his deputy in each country. By contrast exchange rate policy is the domain of the central banks in the euro area, and the policy-makers for whom statements are extracted are the members of the Bundesbank Zentralbankrat before 1999 and the ECB Governing Council since 1999.² A more detailed analysis and explanation of the database is available in [Fratzscher \(2004\)](#).

Looking at the oral intervention data (see [Table 2](#)) reveals that there has been a marked shift towards a “strong-dollar policy” in the United States since 1993. Policy-makers in the euro area have also pursued a “strong-euro policy”, although they were less adamant about this policy in some periods, including the first months after the introduction of the euro in 1999. By contrast, Japan altered its communication policy about the yen several times in the 1990s and 2000s, promoting a strong yen in the early 1990s and briefly in 1998, while otherwise arguing for a weaker yen during the past 14 years.

What explains this regime change? Two findings that emerge from the literature on foreign exchange interventions go a long way in understanding the observed regime shift: the uncertain effectiveness, and the time consistency problem of actual interventions. A key finding regarding the former is that actual interventions tend to be more successful if they are publicly announced and if they are coordinated. However, the time consistency problem states that publicly announced interventions may trigger speculative behavior, which may make the actual intervention costly and possibly counterproductive ([Flood and Marion, 2000](#)). This time consistency problem may partly explain why most actual interventions are in fact conducted in secret ([Sarno and Taylor, 2001](#)). By contrast, oral interventions

¹ See [Sarno and Taylor \(2001\)](#) and [Edison \(1993\)](#) for surveys of the literature on actual interventions.

² There were relatively fewer additional statements on exchange rates by central bank officials in the United States and Japan, and by finance ministry officials in the euro area. Adding such statements, however, does not significantly alter the empirical results presented below.

Table 1
G3 actual FX interventions (IA), 1990–2003

	US Federal Reserve			Bundesbank/ECB			Bank of Japan		
	All interventions			All interventions			All interventions		
	All	Buy FX	Sell FX	All	Buy FX	Sell FX	All	Buy FX	Sell FX
<i>Number of intervention days</i>									
1990–2003	84	27	57	87	43	44	278	251	27
1990–1994	74	25	49	79	39	40	131	104	27
1995–1998	9	1	8	4	4	0	59	59	0
1999–2003	1	1	0	4	0	4	88	88	0
<i>Magnitude of interventions (average, USD million)</i>									
1990–2003	284	202	323	1591	2589	617	1554	1697	223
1990–1994	203	125	242	1709	2811	634	385	427	223
1995–1998	821	833	819	419	419	–	1706	1706	–
1999–2003	1500	1500	–	n/a	–	n/a	3192	3192	–

Sources: US Federal Reserve, Bundesbank, ECB, Bank of Japan.

have the advantage of avoiding the time consistency problem and are not “costly” in financial terms, although they pose other challenges related to signaling and credibility issues.

3. Pattern and conditions for the effectiveness of interventions

Foreign exchange interventions by monetary authorities tend to have an objective. What is this purpose and objective? The literature has focused on three broad characteristics of foreign exchange interventions with regard to: exchange rate developments, monetary policy, and the coordination of interventions. First, interventions have been shown to focus on achieving a particular level, reducing deviations from what authorities believe are sustainable levels or lowering volatility. In particular, actual interventions often attempt to “leaning-against-the-wind” in that they try to reverse a particular trend (Edison, 1993; Sarno and Taylor, 2001).

Second, other studies in the literature have shown that actual interventions may sometimes be used to signal the timing and direction of future monetary policy or to reverse undesired currency effects of past monetary policy decisions (Lewis, 1995; Kaminsky and Lewis, 1996; Bonser-Neal et al., 1998). Third, actual interventions have been argued to be coordinated across countries with the aim of raising their

Table 2
G3 oral FX interventions (IO), 1990–2003

	USA		Euro area		Japan	
	Strengthen	Weaken	Strengthen	Weaken	Strengthen	Weaken
<i>Number of intervention days</i>						
1990–2003	125	30	77	37	66	71
1990–1994	18	15	13	4	34	16
1995–1998	31	5	3	15	16	4
1999–2003	76	10	61	18	16	51

Sources: Reuters News, author’s categorization.

effectiveness (Bonser-Neal and Tanner, 1996). But coordination may not only occur across countries. Since I analyze in this paper not only actual interventions but in particular oral interventions, the coordination may also imply that interventions are coordinated domestically in that several actual or oral interventions occur in a short period of time.

A logit analysis is conducted in order to identify whether there is a systematic pattern of oral interventions and of actual interventions. In this analysis, the dependent variable is the intervention itself, where $Y_t=1$ for those days when an intervention occurred and $Y_t=0$ when no intervention occurred. The explanatory variables X_t are those related to exchange rate developments, monetary policy conditions and coordination. The logit model is defined as:

$$Pr(Y = 1) = F(X\beta) = \frac{e^{X\beta}}{1 + e^{X\beta}}. \quad (1)$$

From the logit model, I derive odds ratios that indicate whether an intervention is more likely to occur under condition X_1 than under X_0 :

$$\frac{Pr(Y = 1 | X_1)}{Pr(Y = 1 | X_0)} = e^{(X_1 - X_0)\beta}. \quad (2)$$

If this odds ratio is larger than one, then an intervention is more likely to occur when conditions X_1 are present compared to X_0 . When the odds ratio is smaller than one, then this is accordingly less likely. In case of a dummy variable, such that $X_1: X=1$ and $X_0: X=0$, the odds ratio simplifies to e^β . Table 3 shows the odds ratios e^β for the various hypotheses related to exchange rates, monetary policy and coordination that have been discussed above. Note that the null hypothesis for each of the tests is $e^\beta=1$. Three key results emerge.

First, with regard to exchange rates, G3 monetary authorities seem to have been conducting “leaning-against-the-wind” actual interventions (model 1). The US Federal Reserve has been intervening to strengthen the US dollar 4.8 times more often when the US dollar was depreciating compared to when it was appreciating. By contrast, the Bank of Japan also frequently conducted “leaning-against-the-wind” actual interventions, but they took the opposite direction: a Bank of Japan actual intervention to weaken the yen was about 5 times more likely when the yen had been appreciating (odds ratio of 0.187 in model 1). The most systematic “leaning-against-the-wind” actual intervention behavior is found for Germany, where the Bundesbank has been intervening against the exchange rate trend both when the DM was depreciating and when it was appreciating.

For actual interventions, there is also evidence that all of the G3 central banks intervened more frequently when the deviation of the domestic currency was large from its average PPP level over the sample³ (model 2) and in periods of high exchange rate volatility (model 3).

An important finding is that for oral interventions, there is much less evidence that authorities have been using public statements in a systematic manner to the same extent that actual interventions have been used. Most importantly, there is no empirical evidence that German/euro area authorities’ oral interventions were leaning either against the wind or with the wind. For the United States and Japan, there is some evidence for the leaning-against-the-wind hypothesis, though the strength of this behavior is substantially smaller for oral intervention policy than for actual interventions. Finally, there is also less

³ PPP deviations are measured as deviations from the average real exchange rate against the US dollar for Japan and Germany/euro area, and a trade-weighted real exchange rate against the yen and the euro for the United States.

Table 3
Systematic pattern and purpose of FX interventions

	Exchange rates				Monetary policy						Coordination								
	(1) Past exchange rate trend		(2) Deviation from PPP		(3) Exchange rate volatility		(4) Direction of monetary policy		(5) Change in next monetary policy meeting		(6) Change in last monetary policy meeting		(7) Coordination with past IO/IA		(8) Coordination with domestic IO/IA		(9) Coordination with foreign IO/IA		
	X_1 : depreciation	X_1 : large deviation	X_1 : high	X_1 : tightening	X_1 : same direction	X_1 : same direction	X_1 : coordination	X_1 : coordination	X_1 : coordination	X_0 : appreciation	X_0 : small deviation	X_0 : low	X_0 : easing	X_0 : not same direction	X_0 : not same direction	X_0 : no coordination	X_0 : no coordination	X_0 : no coordination	
	Odds ratio	S.E.	Odds ratio	S.E.	Odds ratio	S.E.	Odds ratio	S.E.	Odds ratio	S.E.	Odds ratio	S.E.	Odds ratio	S.E.	Odds ratio	S.E.	Odds ratio	S.E.	
<i>A. Oral interventions</i>																			
United States IO ^{US}	All	1.406**	0.234	0.862	0.143	1.205	0.210	1.441**	0.242	1.512*	0.341	1.720**	0.380	3.033***	0.502	1.090	0.287	1.723***	0.301
	Strengthen	1.481**	0.275	0.800	0.148	0.995	0.198	1.885***	0.345	1.466	0.384	1.798**	0.476	3.814***	0.709	0.846	0.271	1.850***	0.354
	Weaken	1.115	0.410	1.171	0.429	2.386**	0.876	0.325**	0.175	1.623	0.712	1.531	0.605	1.068	0.427	2.225*	1.023	1.211	0.502
Germany/euro area IO ^{GE/EA}	All	0.975	0.185	2.001***	0.392	1.174	0.237	0.881	0.186	1.971**	0.550	1.910**	0.544	3.559***	0.679	0.608	0.213	1.755***	0.339
	Strengthen	0.901	0.208	2.989***	0.761	1.008	0.254	1.245	0.301	2.218**	0.864	2.612**	1.047	4.376***	1.020	0.498	0.232	1.519*	0.362
	Weaken	1.144	0.374	0.946	0.310	1.551	0.518	0.345**	0.166	1.731	0.685	1.413	0.577	2.189**	0.732	0.852	0.452	2.263**	0.740
Japan IO ^{JA}	All	0.654**	0.116	1.035	0.180	1.680***	0.301	0.941	0.270	0.629	0.325	0.411	0.243	2.853***	0.500	2.102***	0.385	2.061***	0.363
	Strengthen	1.355	0.342	0.463***	0.125	2.578***	0.642	2.278***	0.697	17.279***	15.809	0.877	0.912	3.199***	0.798	1.273	0.362	1.743**	0.441
	Weaken	0.310***	0.085	2.146***	0.543	1.063	0.279	0.589	0.388	0.160*	0.162	0.326	0.235	2.448***	0.590	3.081***	0.746	2.332***	0.561
<i>B. Actual interventions</i>																			
United States IA ^{US}	All	1.616**	0.391	1.051	0.247	2.162***	0.510	0.405***	0.129	0.412**	0.174	1.189	0.412	12.675***	3.132	0.728	0.203	5.486***	1.572
	Strengthen	4.832***	1.882	1.588	0.472	1.768*	0.526	0.571	0.204	1.188	0.768	1.784	1.130	34.337***	10.874	0.939	0.308	1.604	0.847
	Weaken	0.884	0.149	0.490*	0.207	2.987***	1.162	0.169**	0.124	0.221**	0.135	1.002	0.419	1.325	0.866	0.425	0.231	16.928***	6.643
Germany/euro area IA ^{GE/EA}	All	0.930	0.296	1.590	0.511	9.728***	3.862	4.380***	1.944	0.977	0.443	0.813	0.398	12.315***	4.083	0.992	0.353	8.737***	2.963
	Strengthen	2.328**	0.992	0.857	0.341	10.120***	5.049	5.554***	2.116	0.199	0.203	0.572	0.352	29.678***	12.172	0.783	0.366	1.228	0.897
	Weaken	0.079**	0.082	7.060**	5.397	8.759***	5.714	3.073**	1.663	4.425**	2.805	2.203	1.910	1.299	0.953	1.455	0.814	15.334***	5.691
Japan IA ^{JA}	All	0.256***	0.038	5.322***	0.846	1.509***	0.197	0.284***	0.089	1.371***	0.303	0.528**	0.166	1.630**	0.393	1.500***	0.195	5.461***	0.910
	Strengthen	1.155	0.379	0.091***	0.055	1.169	0.410	0.708	0.428	1.889***	0.303	0.505**	0.158	26.271***	8.829	2.388***	0.780	1.817	0.969
	Weaken	0.187***	0.032	17.024***	4.446	1.558***	0.217	0.128***	0.046	0.956	0.772	0.535**	0.169	0.799	0.556	1.367**	0.192	5.967***	1.028

***, **, * indicate significance at the 99%, 95%, 90% levels, respectively.

- (1) “Depreciation” and “appreciation” mean that IO or IA occur when exchange rate has been depreciating or appreciating over past 2 weeks.
- (2) “Large deviation” means that IO or IA occur when level of exchange rate deviates more than its period median from the PPP exchange rate; “small deviation” implies the opposite.
- (3) “High” means that IO or IA occur in periods when exchange rate volatility is high, i.e. above its median value, in the past 2 weeks, and “low” when the intervention happens during periods of low volatility.
- (4) “Tightening” and “easing” mean that IO or IA occur during a period when monetary policy rates are being raised and lowered, respectively.
- (5) “Same direction” means that IO or IA occur in the same direction of the change in the next monetary policy meeting, i.e. an intervention to strengthen the domestic currency when the central bank will raise interest rates in the next meeting or an intervention to weaken it when the central bank will lower interest rates.
- (6) “Same direction” means that IO or IA occur in the same direction of the change in the last monetary policy meeting, i.e. an intervention to strengthen the domestic currency when the central bank has raised interest rates in the last meeting or an intervention to weaken it when the central bank has lowered interest rates.
- (7) Coordinated intervention means that, in case of IO, IO is preceded by at least one other domestic IO in same direction in previous 2 weeks. In case of IA, it implies that IA is preceded by at least one other domestic IA in same direction in previous 2 weeks.
- (8) Coordinated intervention means that, in case of IO, IO is preceded by at least one IA in same direction in previous 2 weeks. In case of IA, it implies that IA is preceded by at least one IO in same direction in previous 2 weeks.
- (9) Coordinated intervention means that, in case of IO, IO is preceded by at least one IO in same exchange rate direction by foreign authority in previous 2 weeks; and analogously in case of IA.

evidence that G3 oral interventions reacted to large currency deviations and to high market volatility to the same extent as actual interventions have done.

Second, with regard to monetary policy, the overall finding is that both oral interventions and actual interventions have been consistent with the monetary policy cycle and changes in the G3 economies. In most cases, interventions to strengthen the domestic currency have occurred in periods of rising interest rates, and those to weaken the currencies in times of falling interest rates (model 4). There is also evidence for the signaling hypothesis in that actual and oral interventions have tended to occur more frequently before monetary policy changes, and that these interventions were consistent with monetary policy decisions (model 5). Finally, I do not detect evidence for the “leaning-against-the-wind” hypothesis of monetary policy, found in [Lewis \(1995\)](#) and [Kaminsky and Lewis \(1996\)](#) for the 1980s. In other words, monetary policy changes do not lead to more frequent interventions in the opposite direction, e.g. an attempt to strengthen the exchange rate after lowering interest rates, if interest rates have been changed in the last monetary policy meeting (model 6).

Third, there is ample proof that interventions tend to be coordinated, both domestically and across countries. There is particularly strong evidence that oral interventions and actual interventions have been clustered in time, i.e. many of them occur within a few days or weeks of other such domestic interventions (model 7). Both actual and oral interventions are also frequently coordinated across the G3 economies (model 9). Moreover, oral interventions are frequently followed within days by actual interventions, and vice versa, in Japan (model 8). By contrast, oral interventions do not seem to be much coordinated with actual interventions in the United States and in Germany/the euro area. This is likely to reflect the fact that the United States and Germany/the euro area have basically stopped conducting actual foreign exchange interventions in 1995.

4. Conclusions

The objective of the paper has been to analyze the strategies pursued by G3 policy-makers with their oral and actual interventions. Overall, oral and actual interventions indeed follow a particular pattern related to exchange rate developments, monetary policy and coordination. However, a key finding is that actual intervention policies seem to be systematic to a sometimes substantially larger extent than oral intervention policies are. More generally, actual and oral interventions tend to (a) follow a leaning-against-the-wind pattern against the exchange rate trend; (b) be more frequent when exchange rate deviations and volatility are high; (c) are mostly consistent with and supportive of monetary policy changes, both before and after these changes occur; and (d) are coordinated domestically and internationally. Moreover, differences exist in intervention policies across countries: US and German/euro area authorities have tended to intervene to strengthen their domestic currencies and react more strongly when these are weak, whereas Japan has mostly pursued the opposite strategy.

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