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**Article**

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# Foreign exchange market interventions: a frequently used and effective tool

By Lukas Menkhoff and Tobias Stöhr

Is it common for central banks to intervene in foreign exchange markets in order to influence exchange rates? And if so, is it effective? From a German perspective, these questions seem surprising, since the European Central Bank (ECB) does not intervene in foreign exchange markets—rather, it lets the exchange rates float freely. The situation is very different in the emerging countries: according to the present analysis, central banks in these countries intervene in the foreign exchange market on almost one out of every three days.

This study draws upon both confidential and publicly available data on foreign exchange market interventions from 33 countries—including industrialized, emerging, and developing countries—between 1995 and 2011. According to these data, central banks primarily bought foreign currencies to build foreign exchange reserves. The average intervention volume on days when interventions took place was close to 50 million USD; projected onto the GDP of the European Monetary Union, this would equal roughly two billion USD. On average, interventions lasted for five days, but could also be significantly shorter or longer. Most interventions were carried out against the existing exchange rate trends. Measured against the standard success measures—without taking control variables into account—interventions were successful in 60 to 90 percent of the cases. These success rates are significantly higher than the likelihood of these exchange rates improving on their own. FX interventions are thus a non-negligible tool when it comes to economic policy strategies.

Concerns about the deceleration or even the reversal of globalization are on the rise. U.S. President Donald Trump's inaugural address this past January, with its ostentatious emphasis on the slogan "America First," made it clear that such concerns must be taken seriously; meanwhile in Europe, several parties have expressed similar sentiments with their political agendas. Clearly, many constituents believe that national institutions urgently need to regain control of national concerns—and foreign exchange market interventions (FX interventions) are an economic policy instrument that can serve this purpose.

## Foreign exchange markets also contribute to globalization

Foreign exchange markets function as an important "lubricant" for economic globalization. When goods, services, or assets (such as stocks) are traded at the international level, an exchange of foreign currencies usually also takes place. In this way, foreign exchange market activities can serve as a kind of common denominator of international economic exchange. If globalization were to decelerate, for example, foreign exchange market activity would also decrease. An especially abrupt or one-sided deceleration could quickly be labeled a "currency war."<sup>1</sup> One possible instrument in such conflicts is FX intervention, which can be viewed as a critical "weapon" in a currency war.

Based on a DIW Berlin working paper,<sup>2</sup> the following analysis investigates the mechanics, usage, and impact of this tool.

<sup>1</sup> See Barry Eichengreen, "Currency wars or international policy coordination?" *Journal of Policy Modeling* 35 (2013): 425–33; Olivier Blanchard, "Currency wars, coordination, and capital controls," Peterson Institute for International Economics Working Paper (2016): 16–9.

<sup>2</sup> Marcel Fratzscher, Oliver Gloede, Lukas Menkhoff, Lucio Sarno, und Tobias Stöhr, "When is foreign exchange intervention effective? Evidence from 33 countries," DIW Discussion Paper 1518 (revised) (2017).

## Characteristics of FX intervention

Interventions in foreign exchange markets are similar to interventions in other markets, such as the fixing of minimum or maximum prices. They thus constitute a normal economic policy instrument. An FX intervention generally consists of buying or selling the corresponding foreign currency in order to influence its price formation. For Germany, the major foreign currencies are the U.S. dollar followed by the British pound and the Swiss franc. These currencies are bought and sold on the foreign exchange market with supply and demand determining the price—that is, the exchange rate.

Most of this trading takes place on the cash market. Accordingly, the transactions are executed and settled on the spot.<sup>3</sup> They can also take place on the futures market, where orders are placed instantly but transactions are not carried out until a later date. There are not only diverse market segments, but also a number of different actors. Typically, central banks operate directly and on their own accounts, either as independent institutions (like the European Central Bank, ECB) or on behalf of the treasury, as is the case in most emerging and developing countries. However, other government agencies—such as state-owned enterprises or funds—frequently get involved as well. This may happen if the aim is to conceal the interventions.

Such attempts at opacity are rather unusual, but they do highlight the channels through which these kinds of interventions can influence foreign exchange markets. A cover-up implies that market players are clearly trying to hide the fact that an intervention is taking place, which may be the case if the intervention does not fit within the framework of the general economic policy, for example.<sup>4</sup> In any event, it is necessary to assume that the transaction as such has the power to influence the market outcome. This is not obvious, however, when the orders of magnitude are taken into account: the foreign exchange market is the most liquid of all financial markets, which means that a single transaction has only a very small impact on the market price. Influencing the price merely by altering the supply or demand of a currency is thus quite difficult, and it is assumed in economics that the typical intervention volume of a central bank—at least in the larger markets—is not high enough to have a sustainable impact on a currency. This may not be the case, however, in narrow markets in emerging or developing countries.<sup>5</sup>

<sup>3</sup> For more on recent developments, see Dietrich Domanski, Emanuel Kohlscheen, und Ramon Moreno, "Foreign exchange market intervention in EMEs: What has changed?" *BIS Quarterly Review*, September (2016): 65–79.

<sup>4</sup> For a short discussion, see Domanski et al. (2016), *supra*.

<sup>5</sup> See Lukas Menkhoff, "Foreign exchange intervention in emerging markets: A survey of empirical studies," *The World Economy* vol. 36 (2013): 1187–1208.

A FX intervention can influence the market via three channels: the *portfolio balance channel*, the *signaling channel*, and the *coordination channel*.<sup>6</sup>

## Interventions influence portfolio balance

The idea behind the *portfolio balance channel* is not too far off from the concept of direct price manipulation through the altering of supply and demand. For this channel, it is argued that investors are striving for an optimal distribution of their portfolios among various currencies, and the intervention of the central bank disrupts the equilibrium in domestic investors' portfolios. Using the above example: when the central bank purchases securities from these investors in the domestic currency and sells them in a foreign currency, the composition of the portfolio also changes. If no new information has appeared apart from that, then investors are paying higher prices for a commodity that has become scarcer—domestic securities—and thus the domestic currency tends to appreciate. The mechanism operates through changes in demand that cannot be met by corresponding supply because domestic and foreign securities are not regarded as perfect substitutes.

## Interventions function as signals

While the research results on the portfolio balance channel paint a mixed picture, it is agreed that the most important FX intervention channel is the *signaling channel*. The basic idea is that the central bank uses interventions to introduce new information into the market. What distinguishes this action from the mere disclosure of such information is the fact that it is backed by money (the intervention amount), which tends to impart a greater degree of credibility.

Skeptics object to the perceived importance of this information transmission by claiming that an intervention is not actually an effective way of disseminating information. According to them, a central bank's main focus lies in monetary policy, primarily in maintaining monetary stability, while the foreign exchange market plays more of a secondary role. While this description applies to some central banks—such as the ECB—exchange rates do play a central role in the economic policy of many other countries. There is an economic interest in influencing the exchange rate, and all actions that contribute to it can be relevant to market participants.

There are different levels of intensity among interventions. A low-intensity intervention may simply signify

<sup>6</sup> See Lucio Sarno and Mark P. Taylor, "Official intervention in the FX markets: Is it effective and, if so, how does it work?" *Journal of Economic Literature* vol. 34 (2001): 839–868.

that the central bank is paying attention to the foreign exchange market, which implies that current developments are cause for concern. When a central bank increases the intensity, a single intervention will typically herald a sequence of subsequent interventions. Furthermore, the intervention volume and possible coordination with other countries may contain signals. Combining intervention and other monetary policy measures will have more serious consequences. For one, selling foreign currency can decrease the domestic money supply, because the intervention is not sterilized.<sup>7</sup> Secondly, the monetary policy impulse could also directly affect the exchange rate if it involved an interest rate hike alongside the sale of foreign currency. Finally, it is also conceivable that governments would resort to measures that restrict free market transactions, such as capital controls.

### Interventions coordinate market participants

FX intervention’s third channel of influence is called the *coordination channel*.<sup>8</sup> According to this effect, an intervention causes market participants in an uncertain environment to start aligning their transactions with the “benchmark” of the central bank. The background of this concept are persistent deviations from long-term equilibrium exchange rates in which it is unclear when a return to the “fundamental value” will occur. In such situations, the central bank can use interventions to coordinate the investment decisions in the private sector. In this respect, the coordination channel is a variant of the signaling channel.

### Stylized facts for FX interventions

The three abovementioned channels can shed light on the efficacy of FX interventions. As well, the results of surveys conducted among central banks indicate that most of them use this instrument and, fittingly, believe it to be effective (Table 1).<sup>9</sup>

At the same time, empirical literature on FX interventions is very limited, primarily due to a lack of data availability. Because most central banks do not publish their intervention data, the empirical literature consists predom-

Table 1

### Central banks’ evaluation of FX intervention efficacy

Share of affirmative responses from central banks

Effectiveness	
Intervention successful	ca. 70%
Intervention partially successful	ca. 20%
Views on mechanisms behind effectiveness	
Intervention effective through portfolio balance channel	29%
Intervention effective through signalling channel	70%
Intervention effective through coordination channel	70%

Notes: Central banks’ participation in the survey was voluntary. Cited studies are based on the responses of 19 and 22 central banks, respectively.

Sources: Mohanty and Berger (2013) in question 1; otherwise Neely (2008).

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inantly of studies on the situations in individual countries—and because interventions are determined quite significantly by each country’s respective policy objectives and institutional environments, the findings from country-specific studies cannot always be generalized.

Against this background, a recent study that is largely based on confidential intervention data from central banks is of particular interest.<sup>10</sup> These data provide a series of findings in aggregate form that—when measured against the current body of knowledge—can be viewed as stylized facts<sup>11</sup> that impart information about the frequency, direction, volume, sequence, and exchange rate trends of interventions (Box 1).

### Fact 1: FX interventions are used frequently

From Germany’s perspective—with regard to its own central bank, the ECB, and the major central banks in the neighboring countries—FX interventions are considered exceptional (Switzerland, which uses interventions to stabilize the exchange rate of the Swiss franc against the euro, provides one example).<sup>12</sup> This impression is inaccurate, however, because the situation is very different in many of the emerging countries: a look at the activities of 33 central banks between 1995 and 2011 reveals that central banks in the emerging countries intervened in about 19 percent of the days under observation.<sup>13</sup>

<sup>7</sup> When we speak of using foreign exchange market interventions as a monetary policy instruments, we are referring to “sterilized” interventions. This means that the change in foreign exchange reserves is compensated for in order to leave the domestic money supply unchanged. Only then can interventions be considered an economic policy instrument that acts independently of the interest rate or money supply changes resulting from the monetary policy.

<sup>8</sup> Stefan Reitz and Mark P. Taylor, “The coordination channel of foreign exchange intervention: A nonlinear microstructural analysis,” *European Economic Review* vol. 52 (2008): 55–76.

<sup>9</sup> See Madhusudan S. Mohanty and Batel Berger, “Central bank views on foreign exchange intervention,” *BIS Papers* no. 73 (2013), pp. 55–74, as well as Neely, Christopher, “Central bank authorities’ beliefs about FX intervention,” *Journal of International Money and Finance* vol. 27 (2008): 1–25.

<sup>10</sup> The data used in the following are based on Fratzscher et al. (2017), supra.

<sup>11</sup> “Stylized facts” are descriptive characterizations of typical correlations.

<sup>12</sup> In fact, the major industrialized countries also had a successful history of interventions in the 1980s. See Jeffrey Frankel, “The Plaza Accord, 30 Years Later,” *NBER Working Paper* 21813 (2015).

<sup>13</sup> Interventions now take place primarily in emerging markets. See Domanski et al. (2016), supra or Menkhoff (2013), supra.

Box 1

Data

The dataset contains daily information on the net volume of sterilized interventions. It comprises 33 countries, 21 of which provided their data exclusively and confidentially for this analysis; the data from the other 12 countries are publicly available. The data come from highly developed economies as well as emerging countries and a few developing countries. The countries examined here are: Argentina, Australia, Azerbaijan, Bolivia, Chile, Costa Rica, Denmark, the European Monetary Union, Georgia, Hong Kong, Iceland, Israel, Japan, Canada, Kenya, Kyrgyzstan, Colombia, Croatia, Mexico, Moldova, New Zealand, Norway, Peru, Poland, Slovakia, South Africa, Sweden, Switzerland, Czech Republic, Turkey, Venezuela, the UK, and the U.S. For nine of these countries, the maximum data period runs from January 1995 to December 2011; in all but one of the remaining cases, the data cover at least ten years. Overall, more than 113,000 trading days are covered.<sup>1</sup>

<sup>1</sup> For more details, see Fratzscher et al. (2017), supra.

Here, there are also considerable differences depending on the exchange-rate regime. In a *free-floating regime*, which applies to the euro area, interventions take place on only nine percent of the observation days. This is also true in *broad-band regimes*. But the behaviors are quite different in *narrow-band regimes*: if a central bank wants to keep the exchange rate within a two-percent range against a reference currency (usually the U.S. dollar), then it will presumably intervene more frequently than would be necessary if it did not have an explicit exchange rate target. Under this monetary regime, interventions take place on around 34 percent of all days.

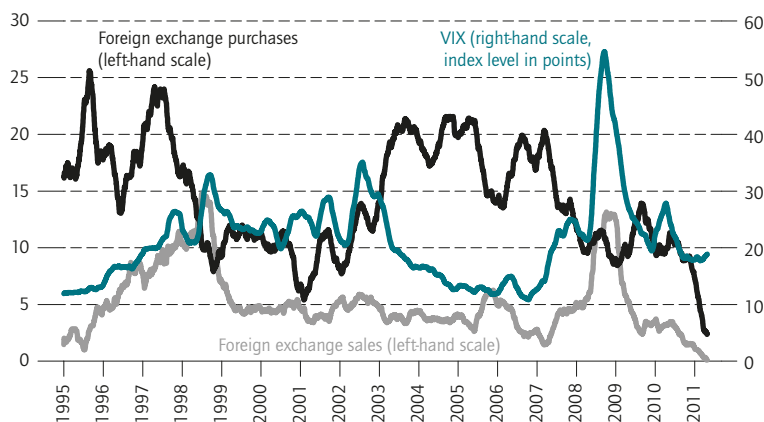
**Fact 2: Foreign currency purchases dominate observation period**

In the dataset mentioned above, 76 percent of the interventions involved purchases of foreign currencies—that is, transactions that aim to weaken the domestic currency against a reference currency. Such transactions can help strengthen the export potential of the central banks’ own economies. The frequent purchases of foreign currencies in the observation period between 1995 and 2011 were also likely part of deliberate attempts to build currency reserves. From a historical point of view, the sharp increase in foreign exchange reserves is rather surprising, since most countries would usually devalue their currency against the U.S. dollar or a “hard” currency—like the Deutsche mark in the past or the euro today—from time to time to support their own currency and continually mitigate this process with sales of foreign exchange reserves.

Figure 1

**Central bank FX intervention and volatility in financial markets**

Share of Intervening central banks, in percent



Note: All values smoothed using a centered six-month moving-average process.

Source: Authors’ own calculations.

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During the financial crisis, high financial market volatility was associated with high levels of FX market activity.

Considerable heterogeneity lurks behind the findings on most of the purchases, both between countries as well as over the course of time. Among the 33 countries surveyed, it was apparent that eight central banks never bought foreign currencies during the entire observation period. Another eight countries never sold foreign currencies. Over time, there are clear deviations from the average purchase rate of 76 percent. In two phases, a larger share of central banks actually showed a preference for supporting their own currencies over buying foreign currencies. These phases coincide with periods of relative instability in the global economy (Figure 1).<sup>14</sup>

<sup>14</sup> This is illustrated in Figure 1 by the changes in the VIX—a widely used volatility index—which is plotted on the right axis. In the period under review, the VIX takes on the highest value during the major financial crisis. Other crises, such as the beginning of the euro crisis, are also recognizable here.

**Fact 3: A central bank’s average volume on an intervention day amounts to just under 50 million USD**

According to the dataset, the average daily intervention volume of a central bank amounts to nearly 50 million USD. The scatter here is also considerable, however. For example, the volume depends on the size of the national economy; from this perspective, the volume amounts to roughly .02 to .05 percent of the country’s GDP (from free-floating regimes up to narrow-band regimes). For Germany, this means that the calculated average volume would amount to roughly 600 million USD per day (with free-floating exchange rates); for the euro area, it would be roughly three times as much, or nearly two billion USD.

There are other intervention volume determinants apart from the size of the economy, such as the urgency or desired strength of the intervention impulse. In Japan, which publishes its data, smaller interventions occur significantly more frequently than do larger ones (Figure 2). As well, the volume on the first day of an intervention is usually stronger than it is on the following days, when it starts to decrease (Figure 3).<sup>15</sup>

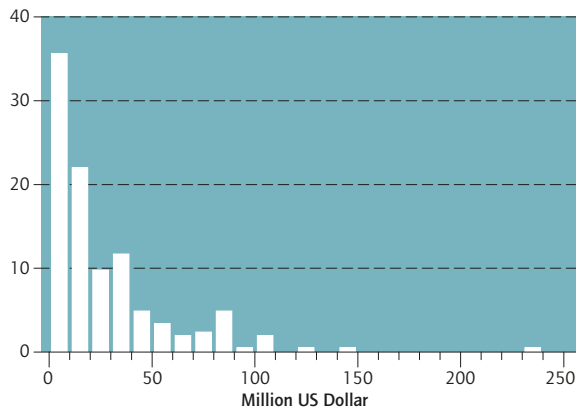
**Fact 4: The average intervention sequence lasts five days**

As suggested above, interventions typically do not take place on one day, but rather occur over the course of several days. Among the foreign currency purchases that dominated during the observation period, 69 percent of the purchase days followed a day in which a purchase had already taken place. If the three previous days are factored in, 87 percent of the cases had at least one purchase in this three-day window, with an overall average of 1.95 purchases. For sales, these values are slightly lower. Since interventions are carried out in clusters, it is necessary to delineate whether an intervention is “new” or part of an existing sequence. In the literature, a distance of ten trading days is often considered sufficient for defining a new intervention period.<sup>16</sup>

Under this definition, the average intervention period lasts roughly six days for purchases (which happen more frequently) and just under three days for sales. Interventions do not take place every day, however—and though they can go on for quite a long time, such cases are quite rare (Figure 4). The most common intervention length is one day; such interventions are mainly carried in nar-

Figure 2

**Daily intervention volumes in Japan, 1995–2011**  
Share of respective volumes, in percent



Note: Distribution of daily intervention volumes for Japan between 1995 and 2011. Intervention volumes of 0 are not plotted.

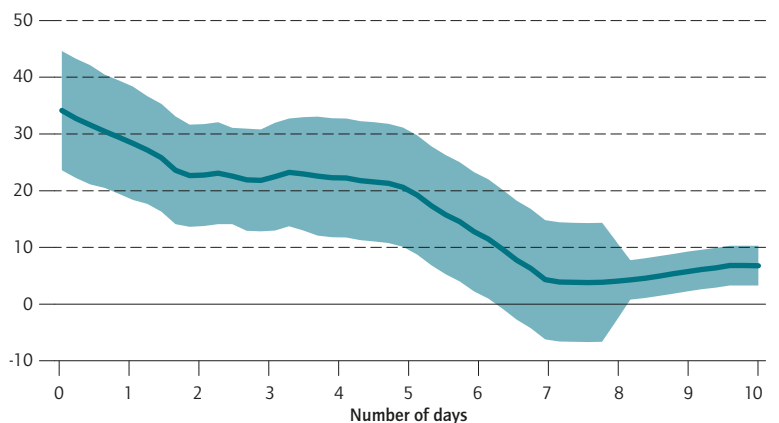
Source: Authors’ own calculations based on publicly available data for Japan.

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In most of the Bank of Japan’s interventions, the amounts were rather small.

Figure 3

**Average daily intervention volume during intervention episodes in Japan**  
in million USD



Note: Locally smoothed distribution of average intervention volumes per day during episodes. 95% confidence interval in light green. Number of observable cases decreases as duration of intervention episode increases.

Source: Authors’ own calculations based on publicly available data for Japan.

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The longer an intervention lasted, the lower the average daily intervention volume.

<sup>15</sup> Based on a standard definition of intervention episodes, we can assume that the following days are always part of the same episode.

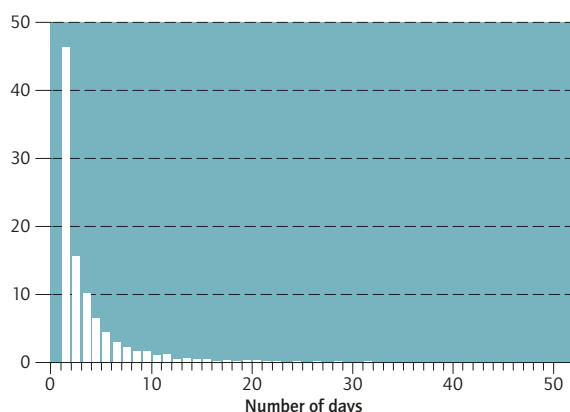
<sup>16</sup> For example, see Marcel Fratzscher, “Oral interventions versus actual interventions in FX markets—an event study approach,” *Economic Journal* 118 (2008): 1079-106.



Figure 4

### Duration of foreign exchange intervention in 33 countries

Share of FX interventions with respective duration, in percent



Notes: Distribution excludes the longest-lasting share of interventions to improve readability of the graph.

Source: Authors' own calculations.

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The vast majority of interventions lasted only one day

row-band regimes that frequently intervene in different directions.

### Fact 5: Interventions are usually carried out against the exchange rate trend

A fifth fact concerns the relationship of interventions to exchange rates. In line with central banks' intentions, interventions are mostly carried out against existing trends. To prove this empirically, we measure the exchange rate changes for the ten days preceding an intervention period. Interventions do not emerge independently of these trends, but rather are carried out against them two-thirds of the time and in line with them in the remaining cases.

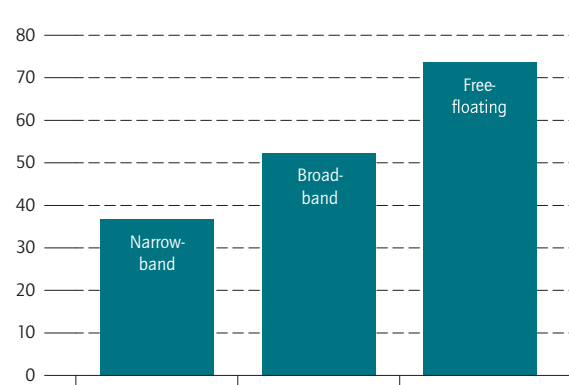
For this fact as well, interesting differences can be observed depending on the exchange-rate regime.<sup>17</sup> The share of intervention episodes that went against the trend in free-floating regimes dominates, with around 75 percent (Figure 5). This rate is roughly twice as high as in narrow-band regimes.

<sup>17</sup> Regimes defined here according to Carmen M. Reinhart and Kenneth S. Rogoff, "The modern history of exchange rate arrangements: A reinterpretation," *Quarterly Journal of Economics* 119 (2004): 1-48.

Figure 5

### Share of interventions against existing trend

Share according to exchange rate regime, in percent



Notes: A 10-day trend is used. Exchange rate regime classification according to Reinhart and Rogoff's (2004) "coarse grid" definition.

Source: Authors' own calculations.

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In free-floating regimes, banks mostly intervene against the existing exchange rate trend.

### Measuring interventions' efficacy

To examine the effectiveness of FX interventions, adequate measures are necessary. It is not always possible to schematically determine what these intentions are because interventions' objectives can differ considerably. Nevertheless, event studies use three generally accepted measures for determining the effectiveness of interventions (Box 2): the *event criterion*, the *direction criterion*, and the *smoothing criterion*.<sup>18</sup> All three criteria are based on the assumption that the central banks are intervening against the existing exchange rate trend (which tends to be the case). The three criteria differ in how they measure success: the event criterion focuses on the most immediate success while the smoothing criterion is more concerned with longer-term success. In the order mentioned above, the criteria go from hardest to softest. Here, only the two "extreme" criteria—the event criterion and the smoothing criterion—are taken into account.

The event criterion is considered to have been met if the implicitly intended change in the exchange rate (which can be ascertained from the direction of the intervention) is achieved during the intervention period. The smoothing criterion is considered fulfilled if the exchange rate

<sup>18</sup> See Rasmus Fatum and Michael H. Hutchison, "Is sterilised FX intervention effective after all? An event study approach," *Economic Journal*, 113 (2003): 390-411.

change during and one week after the intervention period is smaller than in the five preceding days. To make this criterion meaningful, we apply it only to interventions that go against the trend of the previous five days. This means that fewer cases are observed than for the other criteria.

A new criterion is necessary to do justice to narrow-band regimes, where the goal is less about fundamentally changing the exchange rates and more about stabilizing them. We therefore introduce the *stabilization criterion*. According to this criterion, an intervention is successful when the exchange rate is kept within a narrow band of two percentage points both throughout the intervention period and in the two weeks thereafter.

### Placebo exchange rate changes as the benchmark

One problem with the empirical application of the above-mentioned success criteria is determining an appropriate benchmark. Since exchange rates fluctuate daily no matter what, it is important to consider the counterfactual, i.e. what would have changed if no intervention had taken place? For the event criterion, it can be assumed that exchange rates follow a random walk, and in this respect the probability of a change in the desired direction without an intervention is 50 percent. Thus measurable success only exists if the event criterion is fulfilled in significantly more than 50 percent of the cases.

For the stabilization criterion, a benchmark is more difficult to determine. In exchange rate band regimes, it can be assumed in most cases that this criterion will be met even when no intervention takes place. Consequently, the bar for what constitutes a “successful” intervention needs to be set higher. In order to determine a benchmark value, the phases without interventions are taken as reference, and the success criterion is determined for these time periods. This *placebo rate* clearly exceeds 50 percent for the narrow-band regimes and amounts to 77 percent in this specific case. Thus even without the intervention of the central bank, no further action is needed to fulfill the stabilization criterion.

### Effectiveness compared to placebo rates

Accordingly, it is important not to measure interventions against a simple 50 percent probability, but rather against the benchmark of placebo rates: that is, its chance of success in artificially generated episodes without any actual intervention. These are calculated separately for the three major exchange-rate regimes (free-floating, broad-band, and narrow-band). Not every criterion is relevant to every regime: for example, placebo rates for the event criterion are taken into account exclusively in free-floating

#### Box 2

#### Event studies for measuring the causal effects of FX intervention

Traditionally, time-series analyses have been the most commonly used method in empirical macroeconomics. This approach comes with disadvantages, however, when applied in complex economic contexts, since in these cases, a large number of determinants are often acting simultaneously on the measured dependent variable (such as the exchange rate). If it is not possible to take all confounding factors into account—say, because the necessary data do not exist—the direct effect of these confounding factors on the exchange rate complicates the measurement process. In addition, an intervention might actually represent a central bank’s response to these confounding factors. In this case, the confounding factor acts simultaneously on both the exchange rate and the intervention activity and creates a correlation of both measures. The effect of an intervention in this instance is not statistically “identified” and the study’s findings end up highly distorted.

This is why event studies, as one example, are preferred over time-series analyses for identifying the impact of interventions. In event studies, only a narrow time window (such as a few days) is observed around an event so that the intervention is isolated from other events.

regimes, since the changes in exchange rate developments are really only important in these contexts. The stabilization criterion, on the other hand, is likely to be more important for the broad- and narrow-band regimes. Placebo rates for the smoothing criterion are reported for all three regimes, since this objective can usually be assumed even if the smoothing criterion is not applicable in a specific country (Table 2).

It is evident that FX interventions are almost always effective, with two key results attesting to their efficacy. Firstly, interventions are successful in free-floating regimes according to the event criterion because the exchange rate moves in the desired direction in 61 percent of the cases as opposed to the placebo rate of 48 percent. In addition, the exchange rate is almost always smoothed—but this is also less difficult to achieve, since the smoothing criterion can be fulfilled even if the event criterion is not. Secondly, according to the stabilization criterion, interventions are successful in narrow-band regimes because the exchange rate is kept within the band in 84 percent of the cases as opposed to the placebo rate of 77 percent. Here, the successful smoothing is not only more striking, but also easier to achieve than in a free-



Table 2

**FX intervention success rate by exchange rate regime and success criterion**

Exchange Rate Regime	Free-floating		Broad-band		Narrow-band	
	Event	Smoothing	Smoothing	Stabilization	Smoothing	Stabilization
Share of Successful Episodes	61.1%	88.3%	79.1%	34.8%	78.1%	84.0%
Placebo Success Rate	48.1%	40.1%	39.6%	49.5%	34.2%	76.8%
p-value	0.006	0.000	0.000	1.000	0.000	0.000

Note: p-values for a one-sided hypothesis test that interventions do not have a higher success rate than placebo episodes.

Source: Fratzscher et al. (2017).

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floating regime. Since smoothing also works very well in broad-band regimes, the “failure” of the FX intervention to stabilize the exchange rates in this context remains an exception. However, this is also due to the fact that the corresponding criterion is too narrowly interpreted, because stabilization in a narrow two-percent band is usually not attempted in broad-band regimes.

### Conclusion: FX intervention is a frequently used and effective instrument

On a global scale, interventions in foreign exchange markets are just one of several normal monetary policy instruments; the fact that the ECB or the U.S. Federal Reserve System rarely make use of them does not make them irrelevant.

The present study indicates that in all countries surveyed, interventions take place every five days on average, mostly in the form of foreign currency purchases; the average daily net volume amounts to nearly 50 million USD. An intervention sequence typically last for about five days and is mostly carried out against the exchange rate trend. The dispersion around the mean values is quite significant, however, and thus it ultimately comes down to an analysis of each individual country and its respective situation.

It is difficult to intervene against a market fundamental. In open foreign exchange markets there are there-

fore limits to the efficacy of intervention. It is possible, however, for central banks to use interventions to influence the basic environment.

The fact that the different criteria tend to confirm the efficacy of FX interventions should not be mistaken for a guarantee of success. Success reflects the qualified decision of a central bank regarding when and how it intervenes. These decisions do not follow a simple scheme; rather, they are based on the specific experiences and expectations as well as the credibility of the respective monetary policy actors.

In any case, it is only logical that we not neglect the FX intervention instrument overall; rather, it should be deliberately taken into account for economic policy strategies. Using the language of the currency war, it can be seen as a “powerful weapon.” Correspondingly, the International Monetary Fund (IMF) has started taking FX interventions seriously again over the past few years; among other things, this is reflected in the numerous new IMF documents devoted to this subject.<sup>19</sup>

<sup>19</sup> See, for example, Oliver Blanchard, Gustavo Adler, and Irineude de Carvalho Filho, “Can foreign exchange intervention stem exchange rate pressures from global capital flow shocks?” *NBER Working Paper* 21427 (2015); Atish R. Ghosh, Jonathan D. Ostry, and Marcos Chamon, “Two targets, two instruments: Monetary and exchange rate policies in emerging market economies,” *Journal of International Money and Finance*, 60 (2016): 172–96.

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