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Exchange Rate Changes and Net Positions of Speculators in the Futures Market

- Economists, taking a cue from currency traders, are looking at transaction-related data sets to enhance their understanding of short-term exchange rate dynamics. One such data set, often cited by private sector analysts, is the net positions of speculators in the futures market.
- The authors' analysis of weekly net position data from the Chicago Mercantile Exchange since 1993 reveals a strong contemporaneous relationship between weekly changes in speculators' net positions and exchange rate moves. Specifically, by knowing the actions of futures market speculators over a given week, an observer would have a 75 percent likelihood of correctly guessing an exchange rate's direction over that same week.
- However, net positions do not appear to be useful for anticipating exchange rate moves over the following week.
- Policymakers can use net position data as a quantitative measure to complement their broader assessments of foreign exchange activity.

1. Introduction

When pressed to explain short-term exchange rate movements, economists typically point to the seminal article by Meese and Rogoff (1983).[1] The authors conclude that exchange rate models do a poor job of tracking movements over short horizons. So, while the variables in macroeconomic models—such as interest rates, prices, and GDP—can explain exchange rate changes over medium and long horizons, they are not useful for tracking rate changes on a daily, weekly, or monthly basis. After twenty years, the Meese and Rogoff article for the most part still defines the conventional wisdom in this field of economics.[2]

Currency traders and other market participants who focus on the short-term horizon look beyond macroeconomic models. They search for signs of short-term changes in the demand for currencies, using any available measures of market transactions and behavior. Indeed, over the past few years, this focus on transaction-related data sets has led some economists to consider using such data to model short-term exchange rate dynamics.

This approach to understanding exchange rate movements may also be of interest to policymakers, who want to understand what drives the changes over relatively short periods. While one can cite the major economic, financial, and

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political developments over such intervals, these factors alone generally do not explain exchange rate movements very well. Accordingly, any publicly available data that can shed light on short-term changes in demand merit examination.

In this article, we pursue a transaction-oriented line of research to help track short-term exchange rate movements. By examining a publicly available data set well known to currency market analysts—net positions held by speculators in the futures market—we are able to document a strong empirical relationship between changes in speculators' net positions and changes in exchange rates. We find that by knowing what speculators on the Chicago Mercantile Exchange did over the course of a week, an observer would have a 75 percent chance of guessing correctly an exchange rate's direction *during that same week*. We also provide evidence that the connection between net positions and exchange rates is strong and stable: From 1993 to 2003, weekly changes in the net positions of speculators can track 30 to 45 percent of exchange rate movements of the major currencies over the same week. We do not find, however, that the position data can predict the exchange rate changes over the following week.

To add some perspective to our findings, we present a framework in which speculators in the futures market are constantly interpreting public and private information about ongoing shifts in foreign currency demand as they develop their directional views. We argue that net positions change when speculators, acting on their interpretation of public and private information, bet that underlying demand will move exchange rate values from their prevailing levels. The strong correlation with exchange rate movements suggests that the behavior of these speculators reflects, to an extent, the broader speculative community that interprets and influences short-term price dynamics.

2. An Alternative Data Set

The empirical failure of macroeconomic models to explain exchange rate movements over daily, weekly, or monthly intervals has spurred efforts by economists to find new data that might offer insight into how currency markets set prices in the short term. One data set frequently cited in private sector market commentary is the net positions of speculators on the futures market published by the U.S. Commodity Futures Trading Commission (CFTC) in its weekly Commitments of Traders report. This report, released on Fridays, states the positions held at the end of the preceding Tuesday. Armed with these data, private sector analysts consider whether speculators have increased or decreased their net positions in a particular currency and, in conjunction with other information, often make a judgment about how the change relates to recent trends and future movements in exchange rates.[3] Implicit in the commentary of private sector analysts is the belief that tracking speculators helps those trying to understand exchange rate dynamics and that changes in the position data of the Commitments of Traders report are a good proxy for changes in speculators' short-term directional views.[4]

The empirical failure of macroeconomic models to explain exchange rate movements over daily, weekly, or monthly intervals has spurred efforts by economists to find new data that might offer insight into how currency markets set prices in the short term.

The question from an economist's perspective is whether these data do a good job of tracking short-term exchange rate movements and whether the moves are predictive. Specifically, is there a meaningful relationship between the net positions held by speculators and exchange rates, and if there is, how strong is it? Before addressing these questions, we describe net position data in more detail.

3. The Futures Market for Foreign Exchange

The Chicago Mercantile Exchange operates markets where participants can buy and sell futures contracts for major currencies. Such contracts require one firm to supply and another to accept the foreign currency at a future date at an agreed-to price against the dollar (the futures price).[5] The firm supplying the foreign currency, or taking a short position, gains if the currency depreciates against the dollar relative to the futures price. The one buying the foreign currency, or taking a long position, gains if the currency appreciates. Participants in the futures market can use these contracts either to speculate or to hedge. Speculators' potential gains and losses from taking a position are straightforward. For those using the market to hedge, a futures contract is a form of insurance against an adverse currency swing. For example, a firm that would lose money in its business operations because of a currency appreciation would take a long position. The business loss from the currency's rise would then be offset by profits from having a long position in the futures market.

The CFTC compiles data on long and short positions of "commercial" and "noncommercial" firms along with data on firms taking positions that are too small to classify (categorized as "nonreportable"). The CFTC describes commercial traders generally as hedgers, or firms using futures to hedge their business operations and thus not necessarily motivated by a directional view of the exchange rate. Noncommercial traders are described as speculators, or firms taking positions in the futures market not as a hedge but as speculation on exchange rate movements.[6]

The distinction between commercial and noncommercial traders is based on how firms identify themselves to the CFTC, which in turn monitors firms to verify their self-designation.[7] The more diverse group is that of commercial traders, which is made up of banks, hedge funds, and nonfinancial corporations that use the futures market to hedge their business activities. It is important to note that according to the CFTC, this group also includes currency dealers that are not necessarily participating in the market to hedge or to speculate. Instead, such currency dealers act as market makers, taking up imbalances that arise in the futures market, and then manage their risk exposure to currency swings by taking an offsetting action in the cash market.[8] Dealers often play the role of market makers because their access to narrower spreads in the interdealer market makes it profitable to participate in the futures market with its larger spreads.

The more homogenous group is that of noncommercial traders. This group, which includes commodity trading advisors, speculates on the futures market using its own funds and investors' funds. Commodity trading advisors and other noncommercial accounts are seen as being profit-driven and as acting on their views of the market's short-term direction. As a consequence, market analysis of position data almost exclusively focuses on noncommercial positions, which are called "speculative."[9]

Because every purchase of a futures contract is matched by a sale, the sum of all positions in the futures market is always zero. This means that the sum of all long contracts equals the sum of all short contracts. It also means that the CFTC breakdown of the net positions of commercial and noncommercial firms adds up to zero. (Net position is defined here as long contracts in the foreign currency minus short contracts in the foreign currency.) More formally, assuming that the small nonreporters are allocated into the two categories:

net position of noncommercial accounts
+ *net position of commercial accounts* = 0.

If commercial accounts are defined as primarily dealers and hedgers, while noncommercial accounts are defined as speculators, then one could rearrange and relabel the above relationship as follows:

net position of speculators =
-(*net position of dealers* + *net position of hedgers*).

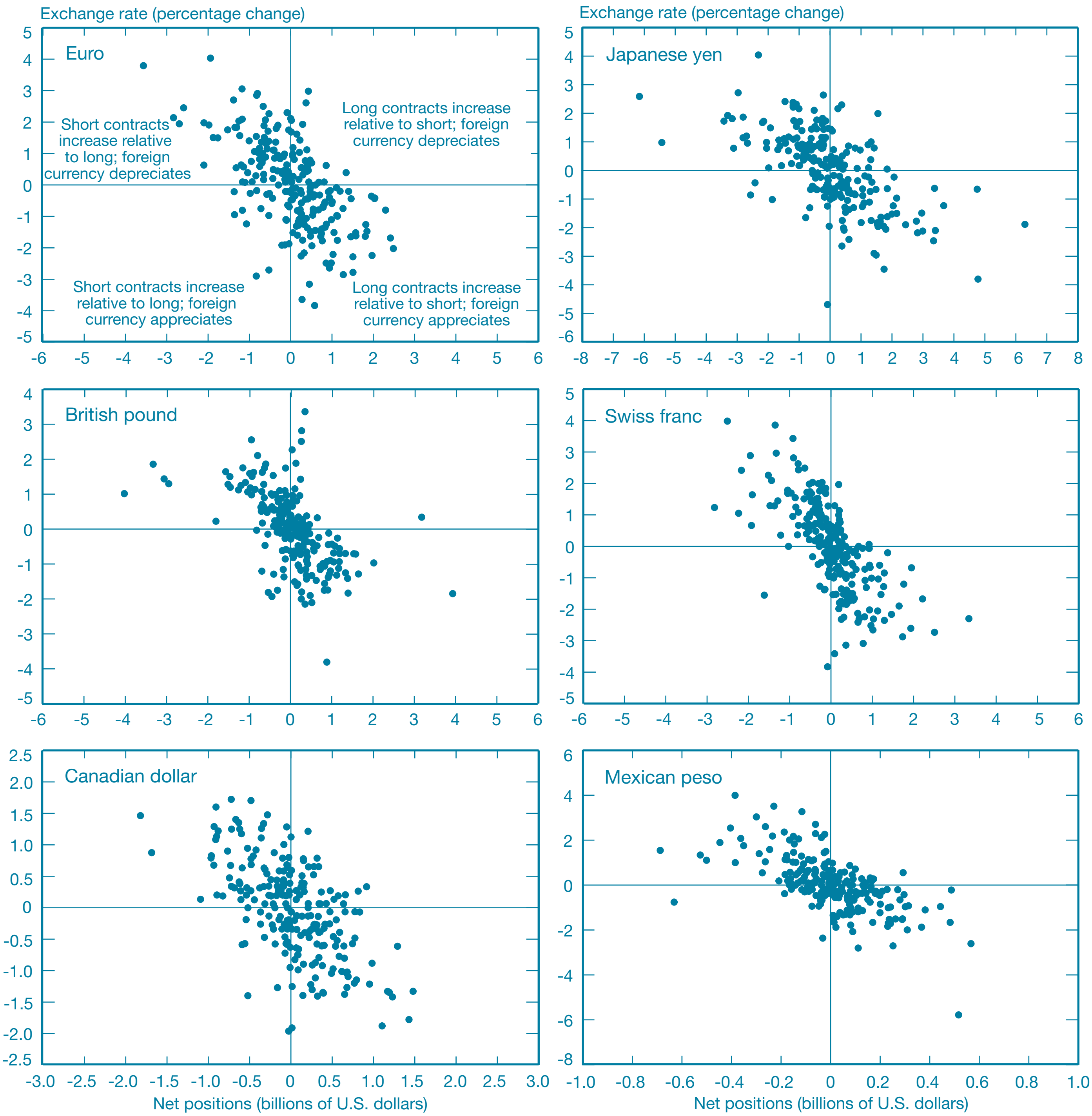
Our focus going forward is on the net positions of speculators as measured by the noncommercial position data. Hedgers' net positions would certainly also be of interest, but the CFTC data are limited in this regard because currency dealers and hedgers are grouped together as commercial firms.

4. Net Positions and Exchange Rates

The first step in evaluating the strength of any relationship between net position data and exchange rates is to look for visual evidence. Plotting the levels of net positions against exchange rate levels reveals no obvious pattern. However, a fairly clear relationship emerges when looking at changes in the two variables. The chart depicts weekly percentage changes (Tuesday to Tuesday) in exchange rates versus the U.S. dollar plotted against changes in net positions for six foreign currencies from January 2000 through May 2003.[10] To interpret the chart, note that an observation in the upper-left quadrant of each panel represents a week when speculators, as a group, increased their holdings of short contracts in the foreign currency relative to long contracts, and the foreign currency depreciated relative to the dollar in the same week. Similarly, the lower-right quadrant shows speculators increasing the long foreign currency positions relative to short positions during a week when the foreign currency appreciated, also suggesting a move in a consistent direction. Observations in the other two quadrants suggest speculators moved in a direction inconsistent with the contemporaneous change in the currency over the same week.

For the six foreign currencies, it is clear that the vast majority of observations are in the upper-left and lower-right quadrants.[11] Indeed, when expanding the data set to the beginning of 1993, we find that weekly observations land in those two quadrants in all the currencies covered in the futures market about 75 percent of the time (Table 1). For example, knowing the direction of the change in speculators' net positions in the yen-dollar futures market would have allowed someone to guess correctly the direction of the yen 74 percent of the time during this period. The other currencies range between 75 percent (for the German mark) and 72 percent (for the Mexican peso).

Exchange Rates and Net Positions
Weekly Data from January 2000 to May 2003



Sources: Bloomberg L.P.; Federal Reserve Bank of New York.

Notes: An observation in the upper-left quadrant represents a week when speculators increased their holdings of short contracts relative to long contracts in the foreign currency, and the foreign currency depreciates relative to the U.S. dollar in the same week. Similarly, the lower-right quadrant shows speculators increasing long positions during a week when the foreign currency appreciates, also suggesting a move in a consistent direction. Observations in the other two quadrants (lower left and upper right) suggest speculators moved in a direction that is inconsistent with the contemporaneous change in the currency over the same week. Quandrant designations in the euro panel apply to all panels. Exchange rates are the percentage change in foreign currency per dollar multiplied by 100. Net positions are the dollar change in long minus short positions of speculators (noncommercial and nonreporting firms), in billions of U.S. dollars. Measuring net positions by number of contracts (instead of U.S. dollars) yields essentially the same pattern.

Table 1

Success Rate of Position Data Tracking the Direction of Exchange Rate Changes

Share of Total

Currency	Success (Percent)	Failure (Percent)
Japanese yen	74	26
Euro	74	26
German mark	75	25
British pound	74	26
Swiss franc	73	27
Canadian dollar	74	26
Mexican peso	72	28

Sources: Bloomberg L.P.; Federal Reserve Bank of New York.

Notes: The data are weekly from January 5, 1993, through May 20, 2003, with shorter periods for the peso (January 1996 through May 2003), the mark (January 1993 through December 1998), and the euro (January 1999 through May 2003). A tracking success is defined as a week when noncommercial and nonreporting firms went more long (more short) and the foreign currency appreciated (depreciated). A tracking failure occurs when these firms went more long (more short) and the foreign currency depreciated (appreciated).

Regressions using these data measure the strength of this relationship (see Table 2 for descriptive statistics of the data). The regressions take the following form:

$$dfx_t = \alpha_1 dsp_t + \varepsilon_t .$$

The left-hand-side variable, *dfx*, is the percentage change in the foreign currency per dollar exchange rate. The variable *dsp* is the change in the net foreign currency position of speculators (long contracts in the foreign currency minus short contracts), in billions of dollars. A negative coefficient means that an increase in the number of long positions relative to the number of short positions is correlated with an appreciation of the foreign currency relative to the dollar.[12]

The visual impressions from the chart are confirmed by the regression results using weekly data from January 1993 to May 2003 (Table 3), with changes in net position data capturing around 30 to 45 percent of contemporaneous exchange rate movements as measured by the adjusted R^2.[13, 14] The regressions for the British pound, the Canadian dollar, the euro, the Mexican peso, and the Swiss franc achieve the best fit, with R^2s near .40.[15] The fits are not quite as tight for the Japanese yen (.34) and the German mark (.30).[16]

The coefficients on net positions can be interpreted as the average percentage change in the exchange rate when there is a \$1 billion swing in net positions.[17] For example, the coefficient estimate of -0.72 for the yen-dollar exchange rate means that a \$1 billion shift to more long (or more short) yen positions by speculators is correlated with a 0.72 percent appreciation (or depreciation) of the yen against the dollar. To put this relationship into context, recall from Table 2 that the standard deviation of weekly changes in net positions for the yen is \$1.3 billion. The coefficient estimates for the other currencies are between 0.6 and 0.9, with the exception of the Swiss franc at 1.18 and the Mexican peso at 4.56 (Table 3). The larger estimate for the peso is consistent with a particular dollar amount having a bigger effect in a much smaller and less liquid market.

The regressions show a strong contemporaneous relationship in weekly changes, which raises the question of whether one variable moves ahead of the other. The conventional approach to answering this type of question is to test whether the two variables "Granger-cause" each other. The test is based on a

Table 2

Descriptive Statistics

Currency	Mean (Absolute Value)	Median (Absolute Value)	Standard Deviation	Maximum	Minimum
Change in foreign currency/U.S. dollar (percent)					
Japanese yen	1.2	0.9	1.6	6.2	-8.6
Euro	1.1	0.9	1.4	4.1	-3.8
German mark	1.1	0.8	1.4	5.2	-6.2
British pound	0.8	0.7	1.1	6.5	-3.7
Swiss franc	1.2	0.9	1.5	7.1	-6.4
Canadian dollar	0.6	0.4	0.8	3.0	-3.3
Mexican peso	0.8	0.5	1.4	7.0	-5.6
Change in net positions of speculators (billions of U.S. dollars)					
Japanese yen	0.9	0.6	1.3	-6.3	6.1
Euro	0.7	0.6	1.0	-2.5	3.6
German mark	0.9	0.6	1.3	-4.9	4.5
British pound	0.7	0.4	1.0	-3.8	6.3
Swiss franc	0.6	0.3	0.8	-4.3	3.8
Canadian dollar	0.4	0.3	0.5	-1.8	2.5
Mexican peso	0.1	0.1	0.2	-0.6	0.7

Sources: Bloomberg L.P.; Federal Reserve Bank of New York.

Notes: The data are weekly from January 5, 1993, through May 20, 2003, with shorter periods for the peso (January 1996 through May 2003), the mark (January 1993 through December 1998), and the euro (January 1999 through May 2003). Percentage change values are multiplied by 100. Position data are short minus long positions for noncommercial and nonreporting firms. The mean and median calculations are for the absolute value of the changes in exchange rates and positions.

Table 3

Regression Results: Exchange Rates against Net Positions

Currency	Net Position	AR(1)	Diagnostics R^2	Standard Error	Serial
Japanese yen	-.72				
	(.05)		.34	1.32	.76
Euro	-.88				
	(.10)		.36	1.13	.61
German mark	-.62				
	(.10)		.30	1.20	.00
	-.66	-.26			
	(.09)	(.06)	.35	1.17	.80
British pound	-.74				
	(.03)		.43	0.85	.03
	-.74	-.10			
	(.04)	(.05)	.43	0.85	.52
Swiss franc	-1.18				
	(.06)		.43	1.14	.00
	-1.18	-.12			
	(.06)	(.04)	.44	1.14	.37
Canadian dollar	-.86				
	(.05)		.36	0.60	.00
	-.85	-.16			
	(.05)	(.06)	.38	0.59	.07
Mexican peso	-4.56				
	(.50)		.39	0.90	.00
	-4.56	-.15			
	(.47)	(.09)	.40	0.88	.68

Sources: Bloomberg L.P.; Federal Reserve Bank of New York.

Notes: The table reports ordinary least squares estimates. The left-hand-side variable is the weekly percentage change of the foreign currency per dollar measured at the end of each Tuesday multiplied by 100. Net position is the weekly change in net positions (long minus short contracts in the foreign currency) of noncommercial and nonreporting firms, in billions of dollars. AR(1) is the first-order autoregressive term used in equations with evidence of serial correlation. The regressions do not include a constant term, which was never statistically significant. The three diagnostic values are the adjusted R^2, the standard error of the regression, and the probability value of the Breusch-Godfrey Lagrange multiplier test for first-order residual serial correlation. An AR(2) term was also needed for the peso. It had a coefficient of 0.09 with a standard error of .07. Standard errors of the coefficient estimates are shown in parentheses, corrected for heteroskedasticity (as suggested by a Lagrange multiplier test of residuals) for the yen, mark, Canadian dollar, and peso using the Newey-West procedure. The estimation period is January 5, 1993, through May 20, 2003. The regressions had 540 observations, with shorter periods for the peso (January 1996 through May 2003), the mark (January 1993 through December 1998), and the euro (January 1999 through May 2003).

regression of a variable on lags of itself and lags of the other variable. The probability values are all above .05, suggesting that Granger causality is not evident (Table 4) and that position data do not help predict exchange rate changes over the following week.

Furthermore, tests for the basic form of trend-following behavior do not find that past exchange rate movements anticipate how speculators change their net positions, with the exceptions of the Canadian dollar and the Swiss franc. However, closer examination of these two currencies suggests that the statistical strength of the relationship is not

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meaningful. Regressions of changes in net positions on lagged exchange rate changes and net position changes yield very small R^2s of .07 for the Canadian dollar and .04 for the Swiss franc, meaning that very little about changes in net position can be attributed to past exchange rate movements.[18]

It is important to note that Granger causality tests help us to understand the nature of the data discussed here, but, as we note later, they are not the final word on whether one variable moves in anticipation of the other. In particular, the tests can miss any relationship that might exist over a shorter horizon, such as minute-to-minute or hour-to-hour or a relationship of a more complicated nature.

In summary, our regression results show a strong contemporaneous connection between speculators' net positions and exchange rates. That is, over weekly intervals, net positions and exchange rates move together in a reliable and stable fashion. However, position data do not appear to be useful in anticipating exchange rate changes in the following week.

TABLE 4
Granger Causality Tests

Currency	F-Statistic	Probability
Japanese yen		
Hypothesis 1: Exchange rates do not anticipate positions	1.17	0.31
Hypothesis 2: Positions do not anticipate exchange rates	0.21	0.81
Euro		
Hypothesis 1: Exchange rates do not anticipate positions	0.14	0.87
Hypothesis 2: Positions do not anticipate exchange rates	0.31	0.73
German mark		
Hypothesis 1: Exchange rates do not anticipate positions	0.46	0.62
Hypothesis 2: Positions do not anticipate exchange rates	0.07	0.93
British pound		
Hypothesis 1: Exchange rates do not anticipate positions	2.33	0.10
Hypothesis 2: Positions do not anticipate exchange rates	0.73	0.48
Swiss franc		
Hypothesis 1: Exchange rates do not anticipate positions	3.14	0.04
Hypothesis 2: Positions do not anticipate exchange rates	1.03	0.36
Canadian dollar		
Hypothesis 1: Exchange rates do not anticipate positions	3.78	0.02
Hypothesis 2: Positions do not anticipate exchange rates	2.10	0.12
Mexican peso		
Hypothesis 1: Exchange rates do not anticipate positions	0.33	0.72
Hypothesis 2: Positions do not anticipate exchange rates	0.94	0.39

Sources: Bloomberg L.P.; Federal Reserve Bank of New York.

Notes: The F-statistic is from a Granger regression equation with two lags on both variables. Probability denotes the corresponding probability values. A probability value near or below .05 suggests the hypothesis can be rejected. The data sample is weekly from January 5, 1993, through May 20, 2003, with shorter periods for the peso (January 1996 through May 2003), the mark (January 1993 through December 1998), and the euro (January 1999 through May 2003).

5. Possible Explanations for the Correlation between Net Positions and Exchange Rates

One interpretation of our results is that they reflect a tendency for speculators to react to currency movements after the fact. For example, it is possible that speculators tend to go long (short) after the currency appreciates (depreciates), so that at a weekly interval, one would find the strong contemporaneous relationship documented in the previous section. The economic logic behind such simple trend-following behavior, though, is hard to accept even with the Granger causality results for the Canadian dollar and Swiss franc. Specifically, in efficient markets, exchange rate movements over the previous minute, hour, day, or week have no new information about future exchange rate movements. Thus, basic trend-following behavior does not make economic sense for speculators as a whole, though more sophisticated trend-following models indeed drive some speculators. The nature of exchange rate dynamics would therefore argue against simple trend-following behavior as the source of the measured contemporaneous relationship between positions and exchange rates.[19]

Another explanation for the strong correlation is that the two variables tend to respond jointly to market developments, such as the release of public information. For this argument to hold, exchange rates and net positions need to react at similar speeds since speculators stop changing their positions once currency values reflect this new information.[20] But given the nature of exchange rate determination—with rapid price adjustments possible without the need for trading—it seems likely that spot exchange rates would react to new information well before speculators had a chance to change their futures market positions. In that case, the change in currency values would mitigate the incentive for speculators to change their net positions, calling into question the notion that the observed correlation of net positions and exchange rates occurs because both move together in response to a third factor.

6. Order Flows and the Role of Private Information

Recent research on order flows in currency markets provides a framework that can help explain our findings.[21] Order flow data measure the difference in the amount of buyer-initiated and seller-initiated orders placed in the currency market. Some dealers believe that an increase in buyer-initiated orders relative to seller-initiated orders suggests an underlying increase in the demand for a currency.

Economists who have gathered order flow data (which are not publicly available) have found that order flows, like net positions, have a strong contemporaneous relationship with short-term exchange rate changes. One recent study by Evans and Lyons (2002) found that the daily differences between buyer- and seller-initiated orders capture roughly 45 to 65 percent of contemporaneous daily exchange rate movements for the mark and the yen.[22]

The explanation given for the success of order flow data in tracking exchange rates starts with the assumption that there are two types of information in currency markets: public and private. This is a more expansive assumption than the one used in standard macroeconomic exchange rate models, which only have an explicit role for public information. In those standard models, exchange rates respond immediately when public information ("news") hits the market.[23] But because prices reflect public information without the need for transactions, these models do not address the issue of why certain transactions take place or why transactions might have a role in setting currency values.

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Evans and Lyons assume that currency market participants are heterogeneous and act on their own bits of private information, as well as on public information. Examples of private information include participants' expectations of future economic variables, perceptions of official and private sector demand, and perceptions of developing shifts in global liquidity and risk appetite. For certain types of participants, private models of price behavior and momentum are also a factor. According to this view, order flows are correlated with exchange rates because they are a measure of how market participants act on their private information. Specifically, order flows represent the process through which small bits of private information are revealed to the market as a whole through the sequence of transactions.

An important aspect of this explanation is that order flows to some extent anticipate exchange rate movements. For example, foreign currency buyer-initiated orders exceed seller-initiated orders when the array of participants, on net, are willing to bet that the foreign currency will appreciate. The currency appreciates after a collection of transactions—measured by order flows—reveals these private bits of information to the rest of the market.

The existence of private information might also be used to explain the strong correlation between net positions and exchange rates. Speculators alter their net positions when their interpretation of public and private information indicates that underlying demand will move exchange rates from their prevailing levels. While private information among speculators can and does differ, it is the *aggregate* net changes that these data represent that prove to be correlated with exchange rate movements.

Similar to the explanation for order flows, this explanation is based on the idea that speculators act immediately in advance of exchange rate movements. That is, speculators in the futures market seem to have enough bits of useful private information to allow them, as a group, to change their net positions in a way that anticipates the direction of exchange rates.

7. The Relative Importance of Speculators in the Futures Market

One reason to pay attention to speculators in the futures market is that their actions are often viewed as a proxy for the behavior of speculators worldwide. But are these position changes important enough to cause exchange rate movements? Specifically, do transactions in the futures market that anticipate a foreign currency's depreciation help cause that currency to weaken?

At first glance, the possibility that futures market transactions can move currency values might seem unlikely given the low turnover in net position changes relative to the high turnover of all foreign exchange transactions. The Bank for International Settlements estimates that in April 2001, currency transactions worldwide averaged $354 billion *per day* for the euro-dollar pair and $231 billion for the yen-dollar pair (Table 5).[24] By comparison, the standard deviation of *weekly* changes in speculators' net positions is roughly $1 billion for both the euro and the yen (Table 2).

However, an important qualification must be made. The difference in magnitude between speculators in the futures market and all foreign exchange transactions is perhaps less overwhelming when one considers that a large share of the

Table 5
Exchange Rate Turnover by Currency Pair
Daily Averages in April 2001

Pair	Billions of U.S. Dollars	Percentage of Total
U.S. dollar-euro	354	30
U.S. dollar-Japanese yen	231	20
U.S. dollar-British pound	125	11
U.S. dollar-Swiss franc	57	5
U.S. dollar-Canadian dollar	50	4
U.S. dollar-other	242	21
All currency pairs	1,173	100

Source: Bank for International Settlements (2002).

daily turnover is attributable to a series of risk management transactions between dealers. To illustrate this point using a hypothetical example, Lyons (2001) starts with a dealer who takes a customer order for $10 million of euros. To minimize his exposure to any subsequent price moves, the dealer sells 90 percent of the euros ($9 million) to another dealer. The process repeats itself with that dealer also selling 90 percent of the purchase. This "hot potato" process would lead to $90 million in dealer trades to accommodate the initial customer transaction of $10 million ($9 million/(1-0.9)). The smaller the percentage held by each dealer following each transaction, the higher the transaction turnover. In this case, each dealer holding on to 5 percent would lead the initial $10 million transaction to translate into $180 million in trades.

Lyons' example illustrates that the high volume of foreign exchange transactions is not as overwhelming a factor as it might initially appear when compared with the volume of futures market transactions. This outcome suggests that the global volume by itself does not preclude the possibility that speculators in the futures market help cause currency movements.

8. Usefulness for Policymakers

The information derived from the strong contemporaneous relationship between exchange rates and net position data has at least two potential uses for policymakers. First, it is not unusual for policymakers to be asked to explain recent exchange rate movements. In general, they may describe such movements in the context of changing expectations following specific news and announcements. They may also draw upon evidence about the types of flows that occurred over the interval. Little else can be said to explain robustly the magnitude of short-term price changes. Because changes in net speculative positions in the futures market move with exchange rates, these data can be drawn upon as one piece of the puzzle and can be used to support or reconsider theories about what drove price action over a given period.

Second, policymakers may be able to use position data to help ascertain the changing level of currency market exposures. While policymakers are not expected to predict short-term exchange rate movements, they are often expected to help ensure the orderly functioning of markets. To do so requires a fairly current understanding of how market positioning is evolving. Futures market position data can provide policymakers with a quantitative measure to complement their broader assessments.

9. Conclusion

Currency traders recognize that in efficient markets, publicly available information cannot predict short-term exchange rate movements. They nevertheless seek data to help them understand what is driving the market at any given time. Variables that economists view as fundamental to dictating currency values—such as relative output and inflation rates along with interest rate differentials—are constantly analyzed and forecast. In addition, market participants examine various transaction data to gauge demand changes. This article has looked at one such publicly available data set—the net positions of speculators in the futures market.

We find a strong and stable contemporaneous connection between changes in speculators' positions and exchange rate moves, with net positions tracking 30 to 45 percent of weekly exchange rate movements of the major currency pairs over a ten-year period. One explanation for our results is that changes in net positions reflect the actions of speculators, who—reacting to their own interpretation of public and private information—bet that underlying demand will move exchange rates from their prevailing values. The results suggest that position data merit inclusion in policy analysis and in ongoing research on exchange rate dynamics.

Endnotes

1. See Meese and Rogoff (1983).

2. One recent paper (Clarida et al. 2003) asserts that it is possible to improve upon the random-walk model using a sophisticated statistical technology that relies on forward rates. The authors provide no economic explanation for their results. Also see the survey of exchange rate models in Flood and Taylor (1996).

3. For example, on May 27, 2003, a Citigroup publication attributed the continued depreciation of the U.S. dollar to the speculative community (Saywell 2003). Specifically noting changes in these net position data, the report stated that "the combination of positive portfolio and speculative flows has been explosive for the euro." This type of reference to speculative positions in general and to this data series in particular is quite common.

4. Analysts often focus on periods when speculators' net positions are unusually long or short, believing that they expose the market to a change in speculator sentiment.

5. All contracts are standard, listed in foreign currency terms and are versus the U.S. dollar. The Commodity Futures Trading Commission does not supply data on the maturity distribution of contracts.

6. Details on the commercial and noncommercial breakdown are available from the CFTC at <http://www.cftc.gov/opa/backgrounder/opacot596.htm>.

7. The breakdown between commercial and noncommercial likely suffers from various measurement problems. For example, the groupings are based on self-identification of firms by what they tend to do, and do not change based on the purpose of a specific transaction. A commercial firm can make a transaction that would be more typical of a noncommercial firm, yet the trade would still be considered commercial in this data set. Such measurement problems work against finding statistically significant results.

8. Dealer efforts to limit exposure are discussed in Lyons (1995).

9. This designation does not preclude some commercial transactions from being speculative on occasion.

10. The chart quadrants look the same if net positions are denominated in foreign currencies instead of the dollar because the choice of currency does not alter the direction of a change in speculators' positions. The regression results that follow are essentially unchanged if net positions are in foreign currency terms or number of contracts instead of dollars.

11. The Australian dollar is also traded on the futures market but is excluded from this study because of gaps in the data. The available data show a pattern that is very similar to the chart's pattern.

12. The data on the net position changes of commercial firms are the exact opposite of the position data for speculators, so the regression results would be the same for that grouping except that the coefficient estimates would be positive instead of negative. Data for testing the behavior of hedgers (commercial firms excluding dealers) are not available.

13. The estimation periods are shorter for the euro, the German mark, and the Mexican peso. See Table 3 for details.

14. Nonreportable firms are treated as speculators, based on our discussions with market participants. Dropping the nonreportable firms from the group of speculators reduces the R^2s by roughly .05 and marginally reduces the coefficient estimates.

15. An alternative measure of *dsp* would be net positions divided by the sum of short and long contracts. Regressions with this measure lowered the R^2s by .05 to .10.

16. Wang (2003) briefly looks at this relationship. His regressions have similar R^2s using monthly data for four currencies. He attributes the finding to speculators engaging in "herding" behavior.

17. Some currencies have two regressions because there is evidence of serial correlation in the residuals, which raises questions about the standard errors of the estimates. The second regression has an autoregressive term to eliminate this problem.

18. The fitted values of these regressions were used as the position variable in the Table 3 regressions. No measurable relationship was found.

19. Trend following is in practice much more complicated than presented here because models are designed to distinguish between exchange rate changes that reflect valuable information about trends and those changes that have no information content.

20. This discussion adopts arguments made by Lyons (2001).

21. Lyons (2001) has an extensive review of the research on order flows. For an example of similar research conducted by the Federal Reserve Bank of New York, see Osler (2000).

22. Evans and Lyons (2002) regress changes in currency values against contemporaneous changes in interest rate differentials (representing fundamental macroeconomic information) and the daily sum of order flows from an interdealer trading system (Reuters Dealing 2000-I). The results, based on a four-month period in 1996, show that the order flow data captured 65 percent of the mark-U.S. dollar variation and 45 percent of the yen-U.S. dollar variation.

23. A recent empirical examination of the effect of macroeconomic announcements on exchange rates can be found in Andersen et al. (2003).

24. Estimates of foreign exchange turnover appear in Bank for International Settlements (2002). The data include spot, outright forwards, and foreign exchange swap transactions, adjusted for double counting.

References

Andersen, Torben, Tim Bollerslev, Francis Diebold, and Clara Vega. 2003. "Micro Effects of Macro Announcements: Real-Time Price Discovery in Foreign Exchange." American Economic Review 93, no. 1 (March): 38-62.

Bank for International Settlements. 2002. "Foreign Exchange and Derivatives Market Activity in 2001." Triennial Central Bank Survey, March.

Clarida, Richard, Lucio Sarno, Mark P. Taylor, and Giorgio Valente. 2003. "The Out-of-Sample Success of Term Structure Models as Exchange Rate Predictors: A Step Beyond." Journal of International Economics 60, no. 1 (May): 61-83.

Evans, Martin, and Richard Lyons. 2002. "Order Flow and Exchange Rate Dynamics." Journal of Political Economy 110, no.1 (February): 170-80.

Flood, Robert, and Mark Taylor. 1996. "Exchange Rate Economics: What's Wrong with the Conventional Macro Approach?" In J. A. Frankel, ed., The Microstructure of Foreign Exchange Markets, 261-94. NBER Conference Report. Chicago: University of Chicago Press.

Granger, Clive. 1969. "Investigating Causal Relations by Econometric Models and Cross-Spectral Methods." Econometrica 37, no. 3 (August): 424-38.

Lyons, Richard. 1995. "Tests of Microstructural Hypotheses in the Foreign Exchange Market." Journal of Financial Economics 39, no. 2-3 (October): 321-51.

———. 2001. The Microstructure Approach to Exchange Rates. Cambridge, Mass.: MIT Press.

Meese, Richard, and Kenneth Rogoff. 1983. "Empirical Exchange Rate Models of the Seventies: Do They Fit Out of Sample?" Journal of International Economics 14, no. 1-2 (February): 3-24.

Osler, Carol. 2000. "Support for Resistance: Technical Analysis and Interday Exchange Rates." Federal Reserve Bank of New York Economic Policy Review 6, no. 2 (July): 53-68.

Saywell, Steven. 2003. "Current Account and Capital Flow Trends Diverge." CitiFX Views Capital Flow Update: Euro Area, May 27.

Wang, Changyun. 2003. "The Behavior and Performance of Major Types of Futures Traders." Journal of Futures Markets 23, no. 1 (January): 1-31.