

Are Banks' Speculative Profits at the Expense of Traders? A Reply

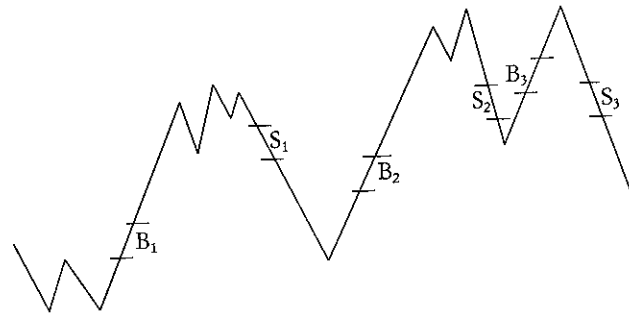
In his note Prof. Grubel criticizes the view "that traders of goods and services 'lose' when banks profit from currency speculation". He proposes, instead, "that these profits should be viewed as a return to a service which the banks as speculators provide to these traders. This service takes the form of more stable exchange rates through time".

This proposition is based upon one central assumption, namely, "that consistent speculative profits of banks are evidence that the speculators have stabilized exchange rates". Grubel thus follows the famous argument by Friedman, that consistently profitable speculation necessarily stabilizes the exchange rate movements. Grubel concedes that there also exist theoretical models where speculation is profitable and destabilizing at the same time. "However, their intuitive appeal is more limited since they tend to be based on a large set of restrictive assumptions about behavior and the formation of expectations" (as opposed to the simple and therefore appealing logic of Friedman's argument). Grubel concludes: "Since both propositions are theoretical and logically correct, it is not possible to consider one to be more realistic than the other. Such a choice can be made only after the different models have been subjected to empirical tests. Unfortunately, neither theories have been tested and probably never will be because of the nature of the models and the absence of relevant data".

I agree completely with Prof. Grubel that the question of whether profitable currency speculation stabilizes or destabilizes the exchange rate movements can only be answered on empirical grounds. One purpose of my study therefore is to provide empirical evidence which may help to discriminate between the two alternatives. I did so by testing the performance of a specific type of currency speculation, namely, those trading systems, that are based on technical analysis. Such tests can help to discriminate between the two alternative views for two

reasons. First, these techniques are widely and increasingly used in practice. Second, "technical" currency speculation is by its essence destabilizing. In order to fully understand the second point one has to keep in mind two characteristics of technical trading systems. First, technical speculation systems are trend-following, *i.e.*, they produce buy signals only when an upward price movement has already taken off and sell signals only when the prices are already falling. Second, due to their technical character technical speculation deliberately ignores market fundamentals. Whether or not an equilibrium exchange rate exists is completely irrelevant for technical currency trading. Such speculators don't think in terms of an equilibrium exchange rate (level) determined by market fundamentals but in terms of disequilibrium exchange rate movements or "runs" (*i.e.*, monotonic or almost monotonic price paths), which they try to exploit profitably.

How does the use of technical currency speculation impact upon exchange rate dynamics? Once an upward (downward) exchange rate movement has gained some momentum technical trading systems begin to produce buy (sell) signals. Since there exist "faster" and "slower" trading systems (depending on the sensibility of the trading system with respect to changes in the direction of exchange rate movements), any relatively persistent upward or downward run is followed by a range of buy and sell signals.¹ A simple chart stylizes these facts (B...buy range, S...sell range):



The actual execution of the trading signals necessarily steepens and extends the current exchange rate movement and might in many cases lead to the development of a persistent exchange rate run which would not have occurred otherwise. In other words: The use of technical trading systems increases the instability of exchange rates by generating or strengthening runs which in turn provide the basis for the profitability of technical currency speculation.

Whereas the use of technical currency speculation is necessarily destabilizing, it is not necessarily profitable (compare, *e.g.*, the ranges S_2/B_3 and

¹ LUKAC, BRORSEN and IRWIN (1988) showed that technical trading systems are significantly more often on the same side of the market than would be randomly expected.

B_3/S_3 in the chart). Tests of the most popular systems like moving average and momentum models for the DM/\$ exchange rate reveal, however, that many of them produce extra profits not only over the overall period since 1973, but also during every sub-period of 18 months. This result suggests that technical (and consequently destabilizing) currency speculation is widely used, at least as *one* basis for trading decisions. There are two reasons for such a conclusion. First, it seems extremely implausible that these high profit opportunities remain unexploited in such a well informed market.² Second, the frequent occurrence of exchange rate runs would remain unexplained if there were no trend-following and consequently trend-extending speculation at work.

Can the results of the technical trading rule tests be reconciled with the proposition that speculation in the foreign exchange market is predominantly stabilizing? One could argue, *e.g.*, that the frequent occurrence of exchange rate runs represents mainly a statistical curiosity which might be profitably exploited by some "noise traders". These "irrational" agents represent, however, only a minority in the market place, so that their activities do not impact significantly upon exchange rate dynamics. Instead, the great majority of the market agents behave "rationally" in the sense of Friedman, thereby stabilizing exchange rate fluctuations. But if this is the case, which pattern of exchange rate dynamics should we expect?

Rational speculators buy a currency whenever its exchange rate lies below its equilibrium level as determined by the "fundamentals" and sell when the contrary is the case. If new information concerning the fundamentals change the expected equilibrium exchange rate, rational speculators would drive the actual rate almost instantaneously towards its new equilibrium level (given the nearly perfect conditions in the foreign exchange market). Furthermore, one should expect "news" concerning the fundamentals to be distributed randomly over time, so that the actual exchange rate should follow a random walk. In such a world systematically profitable speculation that is based only on the information contained in past prices would not be possible. This is nothing else than the proposition that the foreign exchange market is at least weakly efficient (Fama, 1970).

The actual pattern of exchange rate dynamics, however, differs completely from this description of a world where rational and stabilizing currency speculation dominates the market process. First, actual exchange rate fluctuations are characterized by a sequence of persistent runs instead of instantaneous "jumps" towards a presumably new equilibrium. Second, these runs occur frequently enough so that simple trend-following and consequently destabilizing speculation techniques (which use only the information contained in past prices) turn out to be systematically profitable. Hence, the foreign exchange market cannot be considered weakly efficient. Third, the exchange rate does not follow a

² The increasing importance of technical currency speculation is also confirmed by surveys among banks and other professional foreign exchange traders (see SCHULMEISTER, 1987).

random walk, the degree of rejection increasing both over time (particularly during the 1980s) as well as with higher frequency data, such as daily data.³ Fourth, the exchange rate does not oscillate around its theoretical equilibrium path (as determined by purchasing power parity and uncovered interest parity), but deviates persistently from it. These medium-term overappreciations (overdepreciations) of the dollar may be due to the cumulative effect of short-term oriented currency speculation: Over several years, upward runs last on average some days longer than the counter-movements, so that the dollar (over)appreciates in a stepwise process (and *vice versa* in the case of a medium-term overdepreciation). This phenomenon can be explained by the existence of a medium-term expectational bias in favor or against the dollar. If a positive bias prevails currency dealers hold a long dollar position some days longer than a short dollar position which causes the upward runs to last longer than the counter-movements (the opposite holds true if the market expectations are biased against the dollar).⁴

There must be, however, one class of speculators in the market, who do stabilize exchange rate fluctuations insofar as they prevent exchange rate runs from becoming explosive bubble paths (this would occur if there were only trend-following speculators operating in the market). These speculators exploit their knowledge about the behavior of the trend-following speculators (be it technical analysts or more traditional "bandwagonists"). They know that the longer a run lasts the weaker becomes the bandwagon effect and the stronger becomes the cash-in effect. Consequently, these speculators try to figure out when a current run is "mature" for "bursting". In such a situation of an "overbought" ("oversold") dollar these types of speculators attempt to anticipate those "news" which might trigger off a "tilt" of the run. Hence, they buy near

³ In a similar study on stock prices we find that the rejection of the random walk hypothesis is again much stronger with hourly data than with daily data (GOLDBERG and SCHULMEISTER, 1989). This reflects the fact that the time horizon of trend-following speculation techniques has become shorter over time (in other words, the frequency of the price data processed by technical trading systems has increased). This development is facilitated by the improvement of computer networks on the one hand (especially in the strongly expanding futures markets), and the growth of software for the use of technical trading systems on the other hand (see the annual August-edition of *Euromoney* for a documentation of the most recent trends). In interviews with professional traders I was informed that the "fastest" speculation systems now in use check every 9.3 seconds whether an open position should be rolled over or closed or changed to a counter-position (these fully computerized trading systems change open positions up to 60 times per day). The tendency towards the use of "faster" speculation systems can explain why the intra-day volatility of exchange rates has increased so drastically over the last few years. In the case of the stock market the use of "fast" technical trading systems was an important factor for the specific way in which the crash of October 19, 1987 developed (see GOLDBERG and SCHULMEISTER, 1989).

⁴ The fact that agents in the foreign exchange market do not form their expectations according to the theoretical equilibrium conditions is also documented by empirical surveys; they reveal that exchange rate expectations of market agents deviate even further from the values implied by uncovered interest parity than the actually observed rates do (FRANKEL and FROOT, 1987).

the expected end of a downward run and sell near the expected end of an upward run. If these "anticipating" speculators come to similar conclusions concerning the "maturity" of a current run, the aggregate outcome of their individual trading decisions can actually trigger off a "bursting" of the run. Hence, this type of speculation also implies a self-fulfilling feed-back mechanism. Though in effect stabilizing, these "anticipating" speculators are not at all "rational". This is so because they base their decisions not on the equilibrium conditions of the fundamentals, but on the "psychology of the market". These traders can therefore be called speculators of the "second degree" in the sense of Keynes' famous beauty contest example since they don't base their decisions on what they themselves believe, but on what "most nearly corresponds to the average preferences of the competitors as a whole" (Keynes, 1936, p. 156).⁵ Rational speculators, by contrast, basing their decisions on the fundamental equilibrium conditions would have consistently lost money, *i.e.* during the 1980s (betting on either purchasing power parity or uncovered interest parity would have been a disaster).⁶

To summarize: The empirical evidence suggests that the foreign exchange market is increasingly influenced by two types of speculation. The first type is purely trend-following like all trading systems based on technical analysis. These systems extend or even generate persistent exchange rate runs which they exploit profitably at the same time. Because technical trading is only trend-following and ignores all notions of equilibrium or fundamentals this type of speculation has to be considered destabilizing. The second type of speculation aims at anticipating changes in the direction of exchange rate runs. This type of speculation is based on the "psychology of the market", in particular on the experience that the probability of the "bursting" of a run increases with its length. This speculation of the "second degree" in the sense of Keynes can be considered stabilizing insofar as it prevents exchange rate runs from becoming explosive price paths, *i.e.*, bubbles. This second type of speculation does, however, depend on the actual operation of the first destabilizing type: only if the market fluctuates in the form of persistent runs does the speculation of the "second degree" make sense. At the same time the first type of speculation also depends on the second type for a trend-following currency trader can in practice only exist if the exchange rate does not explode. Hence, both types of speculation constitute a system which as a whole has to be considered destabilizing

⁵ Keynes describes explicitly speculators of the third and higher degrees: "We have reached the third degree where we devote our intelligences to anticipating what average opinion expects the average opinion to be. And there are some, I believe, who practise the fourth, fifth and higher degrees" (KEYNES, 1936, p. 156).

⁶ BILSON and HSIEH (1987) have even shown that betting systematically against the interest parity condition would have yielded high extra profits. FRANKEL (1988) demonstrated convincingly that the persistent deviations of the exchange rate from the interest parity condition can also not be explained by a time-varying risk premium.

since it generates exchange rate runs. The fact that such a system keeps these runs within certain limits does not qualify it as stabilizing. In short: This system of currency speculation destabilizes the exchange rate in the first place but it also provides a mechanism that moderates the degree of this destabilization. Both interdependent types of speculation do not operate on the basis of either the existence or the knowledge of fundamentally determined equilibrium exchange rates. They are therefore considered "irrational" by traditional exchange rate theorists. But, "rational" currency speculation would have been consistently unprofitable and thus self-eliminating. Hence, the theoretically "rational" speculator seems to be "irrational" in practice, whereas the so-called "noise-trader" turns out to be a typical "homo oeconomicus" insofar as he earns at least abnormally high profits. On empirical grounds, Friedman's argument seems therefore to be misplaced. One of the major tasks facing the economics and finance profession is to provide a satisfying theoretical explanation of the phenomenon of destabilizing yet profitable speculation.

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