

Fundamental and Technical Analysis Interaction in Foreign Exchange Market

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As in all financial markets, a central question in the foreign exchange market is how market participants and currency traders forecast future market developments. Foreign exchange market participants are often classified according to two different forecasting approaches, fundamental and chartist/technical. According to this distinction, fundamentalists are market participants who predict exchange rates by analysing the underlying economic conditions upon which they assume changes in exchange rates rest. Chartists, in contrast, study only the exchange rate movements themselves and believe that the history of previous data provides indicators for future exchange rates. Chartists employ technical analysis, i.e. the analysis of past exchange rate movements to guide forecasts and trading decisions in the foreign exchange market. Chartism includes the visual search for repeated patterns of data across time.

Standard analysis of exchange rates examines economic fundamentals to explain exchange rate movements, but, in many cases, current fundamentals-based models fail to explain the past adequately, or predict the future reliably. Largely as a result of these failures, researchers have started to look beyond fundamentals to the role of other 'non-fundamentalist' influences on financial markets including the approach to forecasting taken by practitioners.

The basic distinction between chartists and fundamentalists has served as basis for a demonstration of the existence of heterogeneous market expectations in the foreign exchange market (Frankel and Froot). Particularly in the short term, efforts to determine future exchange rates on the basis of economic 'fundamentals' have had little success. MacDonald and Taylor observe that models which are based on a theory of economic fundamentals alone do not offer sufficient explanations of short-term exchange rate movements. Also, Frankel and Froot note that standard macroeconomic analysis, for example, of growth rates or of trade numbers, cannot predict most short-term exchange rate changes. For example, the value of the dollar in 1984/1985 dramatically departed from what fundamental expectations alone would suggest. In response to the evidence that fundamentals alone do not suffice to explain exchange rate behavior, theoretical models that consider the interaction of chartist and fundamentalist expectations have been developed.

Despite the growing awareness of non-fundamental factors in the expectations and decisions of foreign exchange participants, there is a shortage of empirical data on the use of technical analysis in financial markets. A small number of

previous empirical studies on this topic find that the relative importance of fundamental and technical forecasting methods in the foreign exchange market depends on the trading time horizon assumed. Chartism is used mostly for short-term forecasts in the Europe foreign exchange market by Oberlechner, a finding confirmed for Hong Kong by Lui and Mole. Menkhoff finds that also in the German foreign exchange market chartism is used extensively. Previous studies have also shown that the relative importance of chartist and fundamental analysis in the market is subject to a process of change.

Previous findings that foreign exchange market participants do not see fundamental analysis and chartism/technical analysis as mutually exclusive. Among the foreign exchange traders in the European trading centers of Frankfurt, London, Vienna, and Zurich, fundamentalists and chartists do not emerge as separate and distinct groups. Rather, a computation of traders' overall 'fundamentalism versus chartism' approaches results in a bell-shaped distribution of individual forecasting approaches, with a majority of foreign exchange traders using a balanced mix of both forecasting techniques. Only a very small minority of foreign exchange traders demonstrate an exclusively fundamental or exclusively chartist overall forecasting approach.

Table 1
Importance attached to chartist/technical versus fundamental analysis over different forecast horizons by foreign exchange traders

Period	Value
Intraday	3.47
1 week	3.77
1 month	4.40
3 months	5.06
6 months	5.67
1 year	6.35
Longer than 1 year	6.79

Scale: from 0 = pure technical analysis to 10 = pure fundamental analysis

Therefore, rather than being a second-rate forecasting tool employed by a subgroup of market participants who either do not possess the relevant fundamental information or do not know how to interpret this information, chartism seems to be an important forecasting tool employed by a majority of foreign exchange market participants in addition to the analysis of economic fundamentals. Generally, chartism is seen as more important on shorter forecasting horizons, whereas on longer forecasting horizons most market participants put more importance on fundamentals. This finding is consistent with previous survey studies by Taylor

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and Allen (1992) in London, by Menkhoff (1997) in Germany, by Lui and Mole (1998) in Hong Kong, and by Oberlechner in Europe (2001).

The forecasting methods of financial reporters were also examined in this survey because of the interdependent relationship between trading decision-makers and financial news providers in the foreign exchange market. Financial reporters provide trading decision-makers with news and also analyse possible consequences for market participants. Financial reporters place more emphasis on fundamental analysis than do foreign exchange traders on all forecasting horizons investigated. This difference might be explained by the role played in the market by the media which needs to explain to trading participants reasons for past market events and possible future trends. This emphasis might lead to forecasting approaches to the market which are based more on economic fundamentals than are the forecasting approaches of foreign exchange traders. A difference in task might therefore help explain the divergence between a more academic and intellectual discourse on the market among journalists and a more action- and result-oriented discourse among traders. This assumption is supported by the findings on traders' and financial journalists' different perceptions of the role of feelings and of rationality in their own decision-making and in the foreign exchange market. Foreign exchange traders and financial journalists do not differ in their perception of the market on the aggregate level but show a marked difference in their view of the role of feelings versus rationality in their own decisions. In their trading decisions, traders consider feelings to be more influential than rationality, whereas financial journalists consider rationality more important than feelings in their reporting decisions. This difference in perception of one's own decisions may be accounted for by the fact that financial journalists often need to purposefully find rationality when reporting on and explaining the foreign exchange market.

Already Allen and Taylor concluded that their findings indicate that there should be 'ample warning to researchers in financial markets who do not allow for non-fundamental influences'. The present results underscore this conclusion and may even indicate a continued rise in the importance of non-fundamental factors in the foreign exchange market. However, the present results indicating an increased role of chartism need to be interpreted with caution. The shift towards chartist analysis may therefore not only be based on a real change of forecasting approaches but also on these methodological differences. However, Cheung find that foreign exchange traders in the UK indicate that technical-based trading has increased as preferred trading method between 1993 and 1998 while the use of fundamentals-based trading has remained almost unchanged.

One remarkable result of researches comes from a classification of foreign exchange traders according to their forecasting profiles across the seven forecasting horizons examined. A statistical cluster analysis results in four relatively homogenous groups of forecasting styles. Two of these groups, 'chartist, ascending' and 'fundamental, ascending' both show a typical linear trend from chartism in short forecasting horizons to fundamental analysis in extended forecasting horizons. At all forecasting horizons, 'fundamental, ascending' traders attach more importance to fundamental analysis than do 'chartist, ascending' traders. More than two out of five participating

traders (43%) are 'chartist, ascending' traders and less than one of five traders (17%) belongs to the group of 'fundamental, ascending' traders.

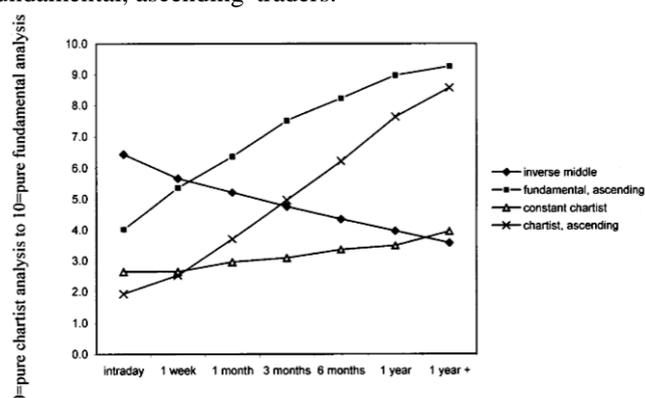


Figure 1. Four forecasting styles

A third group of traders, termed 'constant chartist', applies a clearly more chartist than fundamental approach across all time horizons examined. This group is nearly as large as the group of 'fundamental, ascending' traders (16%). The remaining group of 'inverse middle' traders (23%) shows the most surprising forecasting style. Staying in the middle of the chartism-fundamentalism continuum on all seven forecasting horizons, these traders move from a forecasting approach more fundamental than chartist in intraday forecasts to an approach more chartist than fundamental in long-term forecasts.

Local factors have a significant effect on foreign exchange traders' forecasting approach. This finding supports that expectations and forecasts in the global market are not formed in a homogenous way. Market participants from different trading locations use different forecasting approaches to arrive at their trading decisions. This finding becomes evident both in a comparison of traders' overall forecasting approaches and in the more differentiated comparison of traders' forecasting profiles across the various forecasting horizons examined.

A comparison of overall forecasting approaches held by traders from Frankfurt, London, Vienna, and Zurich reveals significant local differences on shorter forecasting horizons from intraday forecasts to forecasting horizons of 3 months. For example, traders from London are significantly more fundamental than traders from Zurich in intraday, 1 week, and 1 month forecasts, and on a 3 months forecasting horizon, traders from Vienna and traders from Zurich use a significantly more chartist approach than do traders from Frankfurt. A comparison between the larger and smaller trading locations shows that on the shorter forecasting horizons of up to 3 months, traders from Frankfurt and London hold a significantly more fundamental overall forecasting approach than do traders from Vienna and Zurich. Reasons for these differences in forecasting styles between trading centers might be rooted in a variety of factors such as the centers' geographic location, their market size, currencies chiefly traded, or differences in traders' training, and require further examination.

The fact that on the longer forecasting horizons differences in forecasting approaches among different trading centers could not be established to a statistically significant degree might indicate a real convergence of forecasting approaches on extended time horizons. However, the majority of surveyed foreign exchange traders can be assumed to have professional forecasting horizons

which are shorter than some months. It is these professionally relevant shorter forecasting horizons in which significant local differences in forecasting approaches can be found. The convergence of forecasting approaches on longer horizons might therefore also be explained by traders' lower exposure with longer forecasting horizons, a circumstance which might invite the giving of more similar estimates by traders from different trading locations.

Trading location has a significant effect on forecasting style. Findings, already established by a comparison of overall forecasting approaches, could further be corroborated by a detailed analysis of trading styles used in different European trading centers. Most notably, traders from the larger trading locations of Frankfurt and London make more use of a 'fundamental, ascending' forecasting style, and traders from the smaller trading locations of Vienna and Zurich use more a 'chartist, ascending' forecasting style. This finding might be based on a different training of traders or different trading philosophies by market participants in various trading locations. The findings might however also correlate with the observation of some interview participants that the large foreign exchange centers (primarily London but also Frankfurt) are closer to the heart of foreign exchange information than might be Vienna or Zurich. Whatever the explanation for the systematic variations of forecasting styles dominant in different trading locations may be, findings of studies suggest that information in the global foreign exchange market is not processed homogeneously by different parts of the market. They also suggest the importance of an even more differentiated understanding of different forecasting styles among market participants, and of the factors underlying these different styles of forming expectations about the market. Such better understanding might help clarify why currency forecasters hold heterogeneous expectations and why available information is interpreted differently by different forecasters.

The quantitative findings of studies call recurring attention to the importance of a consideration of non-fundamental factors affecting forecasts in the foreign exchange market. These findings are supported by qualitative interview data, where foreign exchange participants discuss chartism repeatedly in order to underscore the importance of behavioral and psychological factors in the foreign exchange market. One trading expert defines charts as 'visual representations of mass psychology'. Traders' examples of psychological motives for, and effects of, the use of chartism in the foreign exchange market serve as illustrations of this mass psychology. Traders often presented psychological reasons as co-determinants of why they use charts. One trading expert related the growing use of charts to the increasing loss of personal contact with other trading agents. In an effort to make up for the loss of personal contact caused by the use of electronic trading devices, traders would turn to charts in order to regain a sense of contact and safety in their trading decisions. Trading participants also reported that they use charts in order to gain more subjective confidence in the correctness of their judgement.

The common use of chartism by foreign exchange decision-makers in the market may generate self-reinforcing market patterns. Such reinforcing patterns on a collective level might endow charts with the power to influence the market by way of a self-fulfilling prophecy. The

concept of the self-fulfilling prophecy was first developed by Merton who characterized the self-fulfilling prophecy as an initially incorrect definition of a situation triggering new actions which then verify the initial false conception. In a recent questionnaire survey of foreign exchange professionals in Germany, Menkhoff argues that chartism may be seen as a form of self-fulfilling prophecy. This dynamic can already be found in Shiller's empirical investigation of investors' motives during the dramatic price drops of crashes in the stock market. Also, many trading strategies based on pseudo-signals, noise, and popular models are correlated, leading to aggregate demand shifts. In the interviews conducted for the Oberlechner study, trading experts themselves noticed the widespread use of charts in the market to effect strongly self-reinforcing patterns. As one trader observed, a foreign exchange trader may use chart analysis as 'insurance' against the large number of other traders who are known to use charts, thereby providing an even stronger reason for other traders to use charts themselves. 'Without the chart system you can't deal anymore because everybody uses it', one trader stated. As a consequence, as another trading expert said, 'if a hundred people believe in something, these hundred people will move the market. So they confirm the chart'. Economists cannot just rely on assumptions and hypotheses about how speculators and other market agents may operate in theory, but should examine how they work in practice, by first-hand study of such markets. The findings of this study shed a differentiated light on the importance of chartism and of fundamental analysis in different locations of the foreign exchange market. Not only is chartism widespread in this market and virtually no foreign exchange traders rate themselves as using fundamental methods exclusively in predicting future exchange rates. Results have also demonstrated a group of markedly different forecasting styles representing different forecasting patterns across the various time horizons examined. This emerging typology of forecasting practitioners in financial markets does not support the assumption that chartist/non-fundamental forecasting methods are used only by a group of ill-informed market participants who run constant danger of being eliminated by rational fundamentalists. A further investigation of local and cultural differences affecting forecasts and decision-making in the foreign exchange market may help shed a more differentiated light on collective market processes. Such research might also be able to explore whether different forecasting styles bring along different information gathering strategies, and different styles of processing information when forming expectations on the market.

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