



# The use of technical analysis by fund managers: International evidence

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## ABSTRACT

The use of technical analysis by financial market professionals is not well understood. This paper thus analyzes survey evidence from 692 fund managers in five countries, the vast majority of whom rely on technical analysis. At a forecasting horizon of weeks, technical analysis is the most important form of analysis and up to this horizon it is thus more important than fundamental analysis. Technicians are as experienced, as educated, as successful in their career and largely just as overconfident in decision-making as others. However, technical analysis is somewhat more popular in smaller asset management firms. What we find most significant is the relation of technical analysis with the view that prices are heavily determined by psychological influences. Consequently, technicians apply trend-following behavior.

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## 1. Introduction

Some decades ago, the use of technical analysis was heavily debated in academia (see Fama, 1970). Since then, however, modern capital market theory has revolutionized fund management, seemingly taking the grounds away for non-fundamental analyses. So it may be puzzling that even a superficial contact with real world fund management already reveals the survival of a prominent non-fundamental kind of analysis, i.e. technical analysis. Interestingly, in academia, forms of this analysis are also seriously analyzed, as shown by articles in leading journals.<sup>1</sup> We can thus conclude that technical analysis is still an issue in financial markets, both in practice and in academia. In contrast to this relevance, however, according to our knowledge, there is no systematic information about the use of technical analysis in fund management. How important is technical analysis nowadays, how do professionals use it and why do professionals use it at all? This paper provides evidence on these questions, based on a broad survey study conducted with 692 fund managers in five markets, namely the US, Germany, Switzerland, Italy and Thailand.

We have deliberately chosen to use data about fund managers in our examination of the use of technical analysis for two reasons. First, fund managers have evolved as the most important group in

modern financial markets when it comes to holdings and transactions (Davis and Steil, 2001), so they are of undisputed empirical importance when it comes to understanding real world markets. Second, fund managers are – in contrast to individual investors – highly qualified market participants; this exempts them from any concerns about a lack of professionalism. Accordingly, if there is evidence that technical analysis plays a significant role in their decision making, this finding is not rooted in the examination of a dubious or marginal group. On the contrary, a use of technical analysis by fund managers would be an important factor to be considered when attempting to reach an appropriate theoretical understanding of financial markets.

We find that technical analysis is highly important as an information category. The share of fund managers that put at least some importance on technical analysis is very large at 87% and a major group (18%) even generally prefers it to other ways of information processing. Nevertheless, technical analysis does not dominate the decision-making of fund managers in general. Fundamental analysis gets the highest relative importance at 68% as compared to 22% for technical analysis and 10% for flows (equal weighting of countries). When we focus on forecasting horizons, however, we find that technical analysis is the most important form of analysis for decisions with forecasting horizons of some weeks, dominating fundamental analysis up to this horizon. So, technical analysis is obviously in wide-spread and relevant use among fund managers.<sup>2</sup> Given this

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<sup>1</sup> To mention some examples: Brock et al. (1992), Blume et al. (1994), Lo et al. (2000), Kavajecz and Odders-White (2004), Nam et al. (2005), Klinger and Kudryavtsev (2008), Friesen et al. (2009), Harris and Yilmaz (2009) or Zhu and Zhou (2009), Chang and Osler (1999), Osler (2003).

<sup>2</sup> The structural information fits well to results from foreign exchange but the overall level is higher in foreign exchange with a share of more than 30% (see Menkhoff and Taylor, 2007).

unexpected fact – from the view of conventional capital market theory – what may the motivation for the application of technical analysis be?

We structure our examination of possible motivations according to three major positions that can be stated with reference to the efficient market hypothesis (EMH) and which are subsequently introduced at length in Section 3. According to *position 1*, arguing from the viewpoint of efficient financial markets, technical analysis is seen as a sign of less than fully rational behavior. A somewhat modified EMH-view, our *position 2*, argues that the use of technical analysis may be a rational response to high information costs. Finally, we reduce the understanding of efficient markets to its minimum condition, i.e. the absence of strategies that generate systematic excess returns, our *position 3*. According to this position, heterogeneous agents possess different sets of information or different beliefs about market processes, the use of technical analysis being a sign of this heterogeneity.

We test these three positions by relating the intensity of the use of technical analysis to fund managers' answers to respective items of the survey. Evidence supports position 3, somewhat supports position 2 but does not support position 1. In order to test position 1, i.e. users of technical analysis are irrational, we relate the use of technical analysis to personal indicators of fund managers, such as experience or the degree of education – without any significant findings. The same non-result is found when we use – for the first time in this literature – indicators of overconfidence in order to test whether users of technical analysis are inferior to non-users. So there is no evidence that technical analysis is preferred by less rational or otherwise inferior fund managers, which is in line with findings from foreign exchange (e.g. Menkhoff, 1998; Cheung et al., 2004). Our most interesting result with respect to position 2 is the fact that technical analysis is more heavily used in smaller fund management firms. As these firms have less capacity to conduct or to buy first-class fundamental research, technical analysis may serve as a second best (cheaper) form of analysis. Finally, regarding position 3, we obtain strong results again, indicating that users of technical analysis share a view about financial markets that is different from non-users. They seem to believe that psychological factors are important and that herding is beneficial.<sup>3</sup> Users of technical analysis consequently react to this view with trend-following behavior (and also by relying more strongly on momentum and contrarian investment strategies).

The remainder of the paper is structured into seven more parts. Section 2 refers our examination of technical analysis to related literature. Section 3 leads into the above-mentioned three positions that guide our discussion. Section 4 presents the data that have been compiled for this study. Section 5 describes the international evidence with respect to the importance of using technical analysis by fund managers. Possible motivations for the important role of technical analysis are analyzed in Sections 6 and 7. Section 8 concludes.

## 2. Literature

The questions whether and, possibly, why fund managers use technical analysis have not been often directly examined before. Therefore, we want to relate our study to literature which indeed provides two motivating lines of research – theoretical and empirical.

From the theoretical side of financial market research, the mainstream models of asset pricing, such as the CAPM, are equilibrium models which do not care much about the process towards an equilibrium (see the Grossman and Stiglitz, 1980, information

paradox). Whenever such a process involves a time-consuming path from one equilibrium to another, a chance to learn efficiently by observing prices and by employing technical analysis for this purpose may evolve (Hellwig, 1982; Treynor and Ferguson, 1985; Brown and Jennings, 1989).

The potential usefulness of technical analysis is even more evident if financial market prices are influenced by non-fundamental behavior, a reasoning which is modeled for example in noise trading models (e.g. De Long et al., 1990). Assuming that non-fundamental behavior is not chaotic but has a systematic component (as behavioral finance does, e.g. Hirshleifer, 2001; Shiller, 2003), technical analysis may be an instrument to appropriately analyze this component. Whereas technical analysis may occur in the general noise trader models, it is a crucial ingredient in the more specific chartist-fundamentalist models, such as Frankel and Froot (1990), Brock and Hommes (1998) or De Grauwe and Grimaldi (2006). These models assume that market participants either prefer chartism (i.e. technical analysis) or fundamentalism (i.e. fundamentalist analysis) and that they may switch between both kinds of analysis according to the profitability of these trading strategies in the preceding period. Simulations of such models create complex price dynamics with outcomes similar to real world financial markets. It is an interesting implication of the chartist-fundamentalist approach that both groups will co-exist and can make money, i.e. also users of technical analysis.

The second line of literature motivating our research is evidence that technical analysis may indeed play a relevant role in fund managers' decision making. A prominent example is the recent debate about momentum trading, i.e. a mechanical investment strategy whose calculus is solely based on past asset returns (e.g. Jegadeesh and Titman, 2001; Griffin et al., 2003; Li et al., 2008). Grinblatt et al. (1995) found for example that most US mutual funds behave in a way consistent with momentum trading. So, backward-looking investment behavior may be a common practice.<sup>4</sup> Interestingly, and in contrast to the scarcity of evidence on the use of technical analysis in fund management, there is plenty of evidence on its use by traders in a particular financial market, the foreign exchange market.<sup>5</sup> A reasonable explanation for this difference may be – as we see later – that technical analysis is even more important in foreign exchange.

## 3. Positions

We have structured the examination into the use of technical analysis by fund managers and their possible motivation for doing so according to three positions already briefly mentioned in Section 1. These positions are stated with reference to the EMH and are developed in the following.

With reference to Fama's (1970) seminal contribution, one might be tempted to say that any use of technical analysis should be taken – in the present world of quite efficient markets – as a sign of limited rationality. Accordingly, there are fully rational users of fundamental analysis and less rational users of technical analysis. Due to their limited rationality, the latter will generate below market returns. This is clearly one way of looking at the wide-spread use of technical analysis and we have named this our *position 1*. However, the finding that most fund managers use this instrument and that it is most important for shorter-term decision-making definitely raises concerns as to whether outright

<sup>4</sup> This is supported by some survey evidence from studies conducted in Germany; see Menkhoff (1998) for fund managers with an international investment focus, Arnsward (2001) for equity fund managers and Menkhoff et al. (2006) for fund managers in equities and bonds.

<sup>5</sup> Studies include Taylor and Allen (1992) on the UK, Menkhoff (1998) on Germany, Cheung and Wong (2000) on Asian markets, Cheung and Chinn (2001) on the US and Cheung et al. (2004) on the UK.

<sup>3</sup> Again, the relation of using technical analysis with believing in an important role of psychology in financial markets is found in foreign exchange too (see Taylor and Allen, 1992).

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