Swedish House of Finance
Institute for Financial Research

Investor Horizons and the Amplification of Market Shocks

Cristina Cella, Andrew Ellul and Mariassunta Giannetti

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Ownership structure and the length of institutional investor trading horizons – specifically whether they are short-term or long-term – may affect stock prices response to market-wide shocks.[1] When stock prices fall dramatically, investors with short trading horizons are inclined or forced to sell to a larger extent than investors with longer trading horizons (De Long et al. 1990). In contrast, investors with longer trading horizons have the possibility of holding onto their shares and "waiting out the storm" for stock prices to slowly recover to their fundamental values. Thus, during episodes of market turmoil, the selling pressure experienced by different stocks may vary depending on the length of their shareholders' investment horizons.

During these episodes, it may also be hard to find potential buyers. As Shleifer and Vishny (1992) show, if buyers in the same industry are distressed, the seller will obtain fire sale prices. Although stocks are fungible, fire sales have been shown to happen also in stock markets (Coval and Stafford 2007) because other investors may not have sufficient buying capital when selling pressure is highest and capital is slow moving (Duffie 2010) or because the stocks sold may have different characteristics from their preferred set. The frictions preventing buying capital to move quickly to temporary undervalued stocks are most significant during episodes of severe market declines, precisely because financial intermediaries and other market participants have problems in raising capital (Duffie 2010).

[1] Investors' trading horizons may depend on preferences, specialisation, or external constraints, such as margin constraints and the responsiveness of funds under management to previous returns.

Thus, when panic selling occurs, there may be both supply and demand effects driving prices below their fundamental values. Crucially, these same forces should draw a wedge between the price reaction of shares held by short-term and long-term institutional investors. Put differently, investors with short trading horizons may amplify the effects of market-wide shocks on the prices of stocks held mostly by short-term investors.

In our paper, we explore this argument. Our empirical strategy is the following.

- First, we ask whether stocks held by short-term investors experience larger drops (negative abnormal returns) subsequently to market-wide shocks.
- Second, we identify whether the selling pressure of short-horizon investors indeed drives prices below their fundamental values, by evaluating whether the stocks held by short-term investors experience larger price reversals.

We investigate the maintained hypothesis by exploring the negative shock caused by Lehman Brothers bankruptcy in September 2008 on all market participants. Following this event, there were massive and widespread price drops with the S&P500 losing close to 30% from the day of Lehman's bankruptcy up to the end of December. This prompted withdrawals from hedge funds and mutual funds, which consequently started to sell billions of dollars of securities to meet redemptions. In the business press, these large sales have often been indicated as the determinants of an "overhang for the market" (Wall Street Journal 2008). Just a few months after the market low, firms such as Bank of America or Dow Chemicals, were up by over 100% (Financial Times 2010).

The long or short of it

We exploit differences in ownership across firms to evaluate to what extent the length of their shareholders' horizon affects the reaction of transaction prices and the subsequent reversals. Our main finding can be vividly summarised in Figure 1. Comparing the evolution of the cumulative abnormal returns of stocks held by short- and long-term investors around the Lehman shock, it emerges clearly that the stocks held to a larger extent by short-term investors experience more severe price drops (larger negative abnormal returns) and larger price reversals.

Figure 1. Mean cumulative abnormal returns of stocks held by long-term and short-term investors

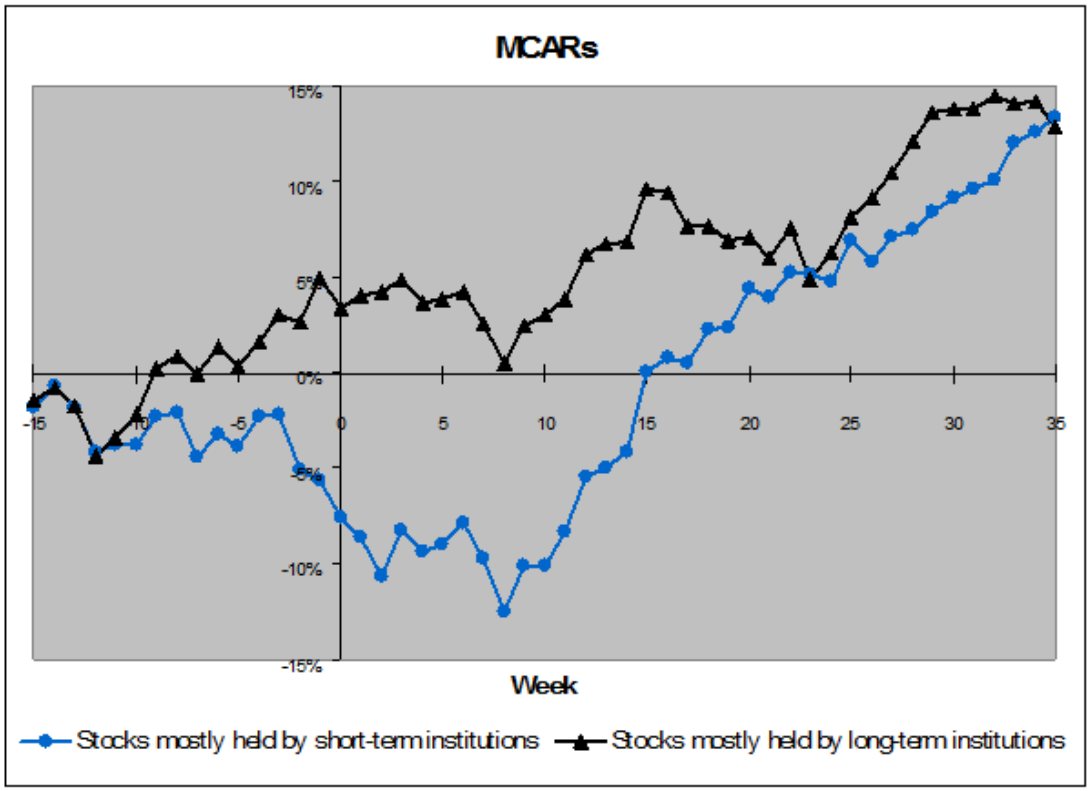

Figure 1 compares the mean cumulative abnormal returns calculated by using the market model of (i) stocks mostly held by institutional investors with a long trading horizon, and (ii) stocks mostly held by institutional investors with short trading horizons. We divide the entire sample in terciles using firms' investor turnover measured by the average investor turnover over the period 1990-2006. A firm is classified as a firm held by long-term institutional investors if it belongs to the first tercile. A firm is classified as a firm held by short-term institutional investors if it belongs to the third tercile. Week 0 is the week when Lehman Brothers' bankruptcy occurred (week beginning on Monday 15 September 2008).

The mean cumulative abnormal returns up to the first five (ten) weeks following Lehman's bankruptcy are almost -9% (-10%) for stocks held by short-term investors compared to approximately 4% (3%) for stocks held by long-term investors. These severe price drops are then completely reversed by week +25. Both price declines and price reversals are smaller for stocks held to a larger extent by long-term investors. These results are fully consistent with our maintained hypothesis that the trading horizon of the institutions holding the stocks acts as an amplifying mechanism.

Moreover, we find that this result does not depend on the firms' different exposure to market factors, to their exposure to innovations in market-wide implied volatility, on firm characteristics, including past returns, size, market-to-book, return volatility, industry, liquidity (and possible changes in liquidity during the crisis period itself), on the momentum effect, or on characteristics of the investors' trading strategies other than their horizon. Our results are unaffected once we consider the stocks' exposure to aggregate liquidity risk and to innovations in market-wide implied volatility as measured by changes in the CBOE Volatility Index (VIX). Innovations in time-varying market volatility, often considered to reflect the probability of a market-wide meltdown, may either change the risk-return trade-off, or the expectations of future returns (Campbell 1996 and Chen 2002). Thus it can be argued that the price dynamics we uncover may just be reflecting differences in the stocks' exposure to the probability of a meltdown. However, since our results are robust to controlling for the stocks' exposure to innovations in the VIX index, we conclude that this alternative channel cannot explain our findings.

Testing causality

Another concern is that active investors trade to generate profits based on valuation beliefs. These may generate two types of problems for our interpretation of the empirical evidence. First, active trading strategies, instead of investors' short trading horizons, may generate selling pressures. Put differently, our proxy for investor horizon may be correlated with omitted factors characterising a firm's shareholders. Second, investors may sell because of rational beliefs on the future performance of the stocks they hold. This could lead to reverse causality.

To test the causal mechanism, we control for differences in shareholders' trading strategies, such as how actively a firm's investors manage their portfolios on average. Most importantly, we recognise that investors trade not only because of valuation beliefs but also because of unanticipated changes of the assets under management. The latter trades do not contain much information and allow a cleaner identification of the effects of investor horizons on the amplification of shocks. We measure the extent to which the market decline may have shortened the investors' horizon by using the correlation between the investor's previous performance and its trading behaviour before our sample period. We surmise that institutional investors with a higher correlation between assets under management and previous performance expect to experience larger outflows during market declines. The expected outflows would significantly shorten these investors' trading horizons. Using this correlation measure as an instrument for investor

turnover, we exploit only the variation in investor turnover that is less likely to be driven by inside information and other features of the active trading strategy.

Thus, using different methodologies, we continue to find that stocks held to a larger extent by short-term investors experience, first, a significantly larger price drop, and, then, a larger price reversal relative to stocks held by long-term investors.

Uncovering the mechanism

We also investigate whether the mechanism behind our interpretation of the results is supported. If our maintained hypothesis is valid, then we should find that short-term investors sell significantly more than long-term investors during our event period. We find clear evidence of such trading behaviour. For example, in the last quarter of 2008, and when the largest price declines were experienced, short-term investors sell almost 21% of their portfolio holdings compared to 7% of the holdings sold by long-term investors. Importantly, short-term investors exhibit a higher propensity to sell all the stocks they hold (even the ones mostly held by long-term investors), suggesting that their behaviour is not driven by the different characteristics of the stocks in their portfolios.

Finally, we find that investors' short trading horizons amplify market-wide negative shocks not only after Lehman's bankruptcy but also during other periods when US markets experience severe declines, indicating that our results are not a one-off.

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