Institutional Trading and Near-Term Stock Returns*

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Abstract

It is common for investment practitioners and commentators to link security returns with the level of institutional demand for these securities. The academic literature on linking (changes in) institutional holdings and subsequent stock returns has now reached critical mass. However, most of the evidence is US based with institutional holdings disclosed on an infrequent (i.e. at most quarterly) basis and reported with a substantial delay. Our paper, on the other hand, uses comprehensive UK institutional holdings data which are disclosed on a monthly basis and in a timelier manner. This allows us to conduct a cleaner analysis and helps gain insight into shorter-term linkages between institutional trading and returns. In contrast to US findings, we find no evidence that institutional trading significantly moves prices in the concurrent month, or that institutional trading positively predicts near-term returns. In fact, portfolios that are long stocks with little institutional trading activity outperform portfolios of actively traded stocks by up to 1 percent per month.

Keywords: institutional investors, stock returns, trading, herding, UK

Few questions in finance are as central as the determinants of asset prices. In particular, the notion that demand for financial assets influences the prices of these assets has been receiving extensive scrutiny in the recent literature. Empirical investigations into the issue have predominantly focused on demand by the largest participants, i.e. institutional investors. Overwhelmingly, these investigations have relied on SEC-mandated quarterly holdings disclosures by US mutual funds and financial institutions. While

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there is evidence of a link between stock returns and institutional trading, infrequent reporting leaves open questions about the timing of the impact.

Our paper contributes to the literature by examining the impact of institutional trading on asset prices in the UK. There are several benefits to using UK data: (1) UK institutional trading is not subject to the tax overhang issue affecting US mutual funds (Barclay, Pearson, and Weisbach, 1998); (2) shareholdings data for UK-registered stocks can be purchased at any time directly from their share registries. As a result, window dressing (Agarwal, Gay, and Ling, 2014) is less of a confounding factor.

We use data from an information provider who collects shareholdings in large UK stocks at the monthly frequency, with a far shorter delay than the 45 days in the case of 13-F filings in the US. This allows us to examine the link between institutional trading and stock returns at a higher level of immediacy than in most of the literature. The only other paper we are aware of that examines comprehensive institutional stockholdings at the monthly frequency looks at a much smaller market than we do, namely Norway (Ødegaard, 2009).

Several papers have documented that significant trading patterns are missed if focusing on quarterly holdings alone. Kacperczyk, Sialm and Zheng (2008) examine the gap between reported mutual fund returns and returns implied by their quarterly reported holdings. They find that this gap can be substantial and that it predicts future performance. This suggests that intra-quarter trades are an important manifestation of investment skill. Puckett and Yan (2011) examine actual intra-quarter trades for a sample of institutions in a proprietary database, Ancerno, and find that they persistently generate abnormal returns. Another notable *work utilizing the Ancerno data is* Chakrabarty, Moulton, and Trzcinka (2017). The paper examines daily US equity trades of 1186 institutional funds between 1999 and 2009, resulting in a sample of over 105 million round-trip trades. The researchers report that 23% of trading volume occurs in trades that are held for less than three months, with a significant number of trades held for less than a month. Contrary to Puckett and Yan (2011), the average returns for short-duration trades are mostly negative, with "the lowest returns occurring in small stocks, value stocks, and low-momentum stocks". The authors ascribe this inconsistency to differences in the definitions of short-term trades used in the two studies. While the former work only examines trades that are initiated and closed entirely within the same

calendar quarter, Chakrabarty, Moulton, and Trzcinka also consider trades that straddle calendar quarters. However, one limitation of the Ancerno data set is its relatively limited institutional coverage. As Puckett and Yan (2011) estimate, Ancerno institutions account for only ten percent of all institutional trading volume.

Our findings can be summarized as follows. Institutional investors do not move UK stock prices; in fact, prices tend to move in the direction opposite to institutional investors' trading. This also holds for returns over the month subsequent to the month when trading activity is measured. Nor do we find evidence that short-term institutions (i.e. those that trade more) are better informed. In fact, portfolios that are long stocks that institutions buy or herd into, significantly underperform those with low values of institutional demand and herding measures. The monthly risk-adjusted return difference between low and high institutional trading portfolios reaches one percent if monthly trading data are used, and around half a percent if using quarterly trading data.

The rest of the paper is organized as follows. Section 1 surveys the literature on the price impact of changes in institutional holdings. Section 2 introduces our data and gives an overview of the institutional environment. Section 3 discusses our methodology and results. Section 4 concludes.

1. Prior literature

There are two key reasons why institutional holdings can be expected to lead to abnormal future investment returns. One is that (some) institutions may possess superior information about future returns and the other is the "price pressure" effect of institutional demand. To distinguish between information and price pressure based explanations, researchers have tested whether there are continuations or reversals in prices following institutional trades, as reversals would be indicative of ephemeral price pressure being at work, while continuations would support the informed trading hypothesis. Prior literature has found both informed trading and price pressure mechanisms to be present, depending on the research setting and the measure of institutional interest used.

Although early studies such as Lakonishok et al (1992) uncovered little if any correlation between institutional trading and future stock returns,

this changed as researchers began to use mutual fund and financial institution-level SEC filings data. Starting with Wermers (1999), who reported that stocks disproportionately bought by mutual funds outperform those disproportionately sold by four percent over the subsequent six-month period, a string of papers have found that institutional activity in a stock predicts its abnormal performance. As it is impractical to include here all of the papers in this burgeoning literature, what follows is a selective sampling of the most notable work.

A plethora of contributions argue that the predictive power of institutional trading is information-based in nature. These include Chen et al. (2000), who find that the difference between abnormal returns to a portfolio of funds' buys and sells is roughly two percent for the following year, Yan and Zhang (2009), who report a similar result for institutions with high portfolio turnover, and Alexander et al. (2007), who estimate that a strategy of purchasing stocks bought by mutual funds that are experiencing heavy outflows and selling stocks bought by funds that are facing heavy inflows – i.e. of copying fund trades that are especially likely to be information-based – generates an annual abnormal return of 3.45%. A number of papers exploit institutional holdings data to further focus on stocks in which institutions' trades are particularly likely to be informed. Thus, Pomorski (2009) shows that common trades made by multiple funds in the same company generate as much as 1.4% in the quarter following the trade. Cohen et al. (2010) report quarterly abnormal returns on the order of 2% to a fund's "best ideas" identified from the weight a stock has in a fund's portfolio. Similarly, Jiang et al. (2014) find that the spread between risk-adjusted returns on stocks most actively held and those least actively held by mutual funds (where "actively" is defined in terms of deviations from benchmark weights), reaches 1.8% per quarter. Wermers et al. (2012) explicitly focus on a mimicking strategy based on efficiently backing out the fund industry's beliefs from funds' portfolio weights and past alphas, and report that the strategy yields risk-adjusted returns on the order of 4% annually. Reca et al. (2011) argue that new positions and complete liquidations of existing positions are more informative than the adjustments to existing positions. Based on this insight they build long-short portfolios that generate an average risk-adjusted abnormal return of 4.4% annually.

In contrast, several contributions provide evidence that challenges the notion that institutions are informed. Jegadeesh and Tang (2010) examine

trading activity and profitability of institutional trades around takeover announcements and find that, on average, such trades are not profitable. The authors conclude that the average fund in their sample does not have superior information in the pre-announcement period.

Using broker-level trading data, Griffin, Shu, and Topaloglu (2012) identify and analyze the profitability of trades likely made by institutions around takeover and earning announcements. Their findings suggest that institutional investors in the aggregate do not trade in the right direction ahead of the two types of announcements. Another study of institutional trading by buy-side investors around sell-side analyst stock recommendations (Busse, Green, and Jegadeesh, 2012) reports that institutional investors appear unable to differentiate between good and bad recommendations. One previously highlighted limitation of the Ancerno data set used by Busse, Green, and Jegadeesh (i.e. Ancerno) is that its coverage is limited to approximately ten percent of all institutional trading volume. Thus, inconsistencies in databases' institutional coverage may help explain why some studies find evidence of institutions being informed, while other studies do not.

Edelen, Ince, and Kadlec (2016) conduct a more in-depth analysis of the relation between institutional investors and stock return anomalies by examining the extent to which institutions adjust their portfolios as stocks take on characteristics associated with one of seven considered anomalies, and whether anomaly returns relate to those actions. The underlying hypothesis of the study, the sophisticated institutions hypothesis, asserts that institutional investors trade in a way that predictably exploits anomaly return. Contrary to this expectation, the researchers find that institutions fail to take advantage of anomalies and, even more puzzling, they typically trade contrary to anomaly prescriptions.

Cao, Han, and Wang (2017) further question the information-based explanation of the predictive power of institutional trading by shedding new light on the role played by institutional investment constraints. In particular, the authors demonstrate that various investment constraints significantly limit the ability of institutional investors to translate valuable information into trading actions.

There are also a number of papers that are more in line with the institutional price pressure hypothesis. These papers show that abnormal returns triggered by institutional trading reverse over the long run (Shu, 2006,

Gutierrez and Kelley, 2009, and Dasgupta et al., 2011). The latter study reports that "*a strategy based upon three-quarter institutional trade persistence yields monthly adjusted returns that vary between 15 and 22 basis points for holding periods of two years or more.*" Another paper (Zhong, 2011) even claims that a strategy based on the concentration of mutual funds in a stock yields a 17% risk-adjusted abnormal return annually. Several studies focus on mutual fund trades that are associated with substantial money flows from funds' investors, and hence are particularly unlikely to be information based. Coval and Stafford (2007) find that money flows into and out of mutual funds create price pressure for stocks that these funds buy or sell, and that "*an investment strategy that short sells stocks most likely to be the subject of widespread flow-induced selling, and buys ahead of anticipated forced purchases, earns average annual abnormal returns well over 10%".* Lou (2012) finds that flow-induced price pressure can be exploited to generate four-factor adjusted returns of 4.4% over the following year, before the performance begins to reverse.

All of the papers cited above examine US data, which raises the specter of data-mining. We are aware of only a small number of papers focusing on the predictive power of institutional interest outside of the US. Kim and Nofsinger (2005) find modest buy-herding by institutions that is followed by return reversal in Japan, where institutions disclose their holdings once a year, and with a three-month delay. Focusing on 180 Shanghai Stock Exchange stocks, Li and Wang (2010) report significant negative relation between institutional trading and stock volatility. Foster, Gallagher, and Looi (2011) examine daily transactions of 34 active Australian equity managers and conclude that institutional trading is not correlated with contemporaneous stock returns. However, the authors report that lagged values of the number of institutions trading are correlated with stock returns. Chiao, Hung, and Lee (2011) examine the cross-sectional relation between stock prices and institutional trading using daily and intraday data on a sample of Taiwanese stocks and find positive correlation between the two. Hau and Lai (2017) study distressed sales by equity funds worldwide, as derived from semi-annual holdings data, and estimate that this effect contributed 10% to the stock market downturn during the recent financial crisis. Using monthly stockholdings in the relatively small Norwegian stock market, Ødegaard (2009) finds that changes in stock ownership in one month do not trigger abnormal returns in the subsequent month. It is, however, important to note that the holdings information he uses is not available to the market, and that holder identities in his data are

anonymized. We are not aware of any papers that examine the impact of changes in a comprehensive set of institutional shareholdings occurring more frequently than quarterly in any major financial market.

2. Data and institutional detail

The advantage of using UK data in studying the asset pricing implications of institutional ownership is that comprehensive institutional stockholdings are available at a higher frequency and in a timelier manner than in the US. Specifically, these data can be obtained from the UK Share Register (UKSR). This process, however, is costly and time consuming (as data are not standardized across different PLC's share registries), and information aggregators face a tradeoff between data frequency and collection cost. Our institutional ownership data come from Factset, a market leader in global equity ownership data.[5] Factset covers ownership of the larger UK stocks on a monthly basis and makes it available to clients within several weeks after month-end, and in the case of stocks with a market capitalization in excess of 10 billion USD, on the first trading day of the month. Factset's consistent monthly coverage begins in February 2004, so that trading activity can be measured starting in March 2004. While Factset's market capitalization cutoff for a stock to be covered at monthly (as opposed to quarterly) frequency varies over time, all of the UK-registered FTSE 100 stocks are, in principle, covered on a monthly basis.[6] These stocks, representing 9,892 stock-months over the 102 month March 2004 – September 2012 period, are eligible for entry into our sample.[7, 8] However, accurate ownership data for inactive, such as delisted or merged, stocks were unavailable through

5 Ferreira and Matos (2008), Hwang (2011), and Erkens, Matos and Schwartz (2012) are examples of major academic studies using Factset's international ownership data; for data description and statistics, see Section 2.1 and Appendix A of Ferreira and Matos' paper.

6 Over the 2004-2012 study period years, non-UK registered FTSE 100 companies are Experian PLC, Glencore International PLC, International Consolidated Airlines Group SA, Polymetal International PLC, Randgold Resources Ltd., Resolution PLC and WPP PLC (which are registered in Ireland, Switzerland, Spain, Russia, Jersey, Guernsey, and Ireland, respectively). Since they are not covered by the UK Share Register, comprehensive monthly institutional holdings data cannot be gathered for these stocks, and we exclude them from our sample. Factset does report partial institutional ownership data for these stocks on a quarterly basis, relying on Regulatory News Service announcements (where ongoing disclosure is required for holders whose ownership exceeds 3 percent of shares outstanding), and by adding up quarterly stockholdings reported by mutual funds belonging to the same investment institution.

7 The FTSE 100 is the most popular UK benchmark for institutional investors. This means that institutional trading activity in these stocks is substantial even when examined at monthly, rather than quarterly, frequency. It also contributes to low trading costs for these stocks, so that trading strategies, including those relying on ownership data, can be implemented relatively cheaply. At the same time, the FTSE 100 accounts for about four-fifth of the total UK market capitalization so, by restricting our sample to these stocks, we sacrifice relatively little in terms of economic significance.

8 Two companies in the FTSE 100 are represented by two classes of shares: Royal Dutch Shell and Schroders. For each of these companies, we retain only the primary share class.

Factset. We have therefore excluded inactive stocks from our final sample, which led to a reduction in the sample size to 8,687 stock-months. Given that our focus is on near-term returns around institutional trades, it is unlikely that the modest survivorship bias in our sample has a significant impact.

Lastly, we have excluded stock-months for which no ownership data are available or for which total reported institutional holdings exceed the numbers of shares outstanding. This resulted in our final sample consisting of 8,241 stock-months.

The key features of our sample are described in Table 1. As monthly ownership data are not available for non-UK registered stocks, our sample covers only 90 of the FTSE100 stocks at the end of 2011. The number of stocks in the sample is smaller for earlier years, dropping to 71 in 2005, due to the aforementioned survivorship bias in the Factset ownership data. Nonetheless, the aggregate market capitalization of our sample exceeds one trillion pounds sterling at all year-ends with the exception of 2008. This is several times greater than for the Norwegian data used by Ødegaard (2009), and represents between 73.3 and 89.0 percent of the FTSE 100 market capitalization, and between 59.1 and 75.6 percent of the entire UK stock market capitalization over the sample period. As in the US, most of the market value of these large public firms is held by financial institutions – ranging from 61.6 percent in 2009 to 66.3 percent in 2006 and 2007. These stocks are actively traded – despite the UK's 0.5 percent stamp duty on stock purchases – with the sample's aggregate sterling trading volume exceeding its aggregate market capitalization in each year of the pre-2009 period. Aggregating monthly holdings changes in our dataset captures the majority of these stocks' entire trading volume (2007 being the only exception) reported for the London Stock Exchange (LSE).[9] Quarterly holdings changes, on the other hand, capture between 64.9 and 81.8 of trading that we can observe with monthly data. In other words, using monthly holdings allows us to identify around a third more trading than using quarterly data. The stocks in our sample are large, with average market value in excess of £10 billion, and the proportion of their shares held by institutions is quite stable at around 70 percent. The average number of institutions holding a stock increases almost monotonically over our sample period from 419.6 in 2005 to 539.4 in 2011. Lastly, the average book-to-market ratio and annual returns largely reflect the performance of the

9 In contrast, Puckett and Yan (2011), who study intra-quarter trading in the US, have trading data covering only 8 percent of the trading volume in the stocks they study.

Table 1. Summary statistics

This table characterizes our sample of FTSE100 stocks at the end of each full calendar year of the February 2004 – August 2012 sample period. London Stock Exchange market capitalization is the total market value of equities listed on the LSE Main Market, retrieved from the LSE website. "Aggregate monthly institutional holdings changes" is the sum of the absolute value of changes in institutional holdings from one month-end to the next. "Aggregate quarterly institutional holdings changes" is the sum of absolute value of changes in institutional holdings from one quarter-end to the next, i.e. without considering intra-quarter changes.

Sample characteristic	2005	2006	2007	2008	2009	2010	2011
Number of stocks	71	72	77	85	90	89	90
Aggregate market capitalization (£m)	1,053,518	1,154,383	1,270,934	933,294	1,309,478	1,450,901	1,307,136
as proportion of FTSE100 market capitalization	0.733	0.749	0.808	0.835	0.890	0.885	0.845
as proportion London Stock Exchange market capitalization	0.591	0.598	0.658	0.725	0.756	0.743	0.717
Aggregate value of institutional holdings	674,155	765,687	842,626	594,557	806,687	929,376	844,925
as proportion of aggregate market capitalization	0.640	0.663	0.663	0.637	0.616	0.641	0.646
Aggregate trading volume (£m)	1,251,297	1,618,958	2,159,162	1,481,414	966,402	934,256	835,104
Aggregate monthly institutional holding changes (£m)	702,857	813,608	926,007	864,554	570,377	793,193	683,960
Aggregate quarterly institutional holding changes (£m)	526,921	595,275	718,463	561,454	466,535	619,404	519,539
as proportion of aggregate monthly institutional holding changes	0.750	0.732	0.776	0.649	0.818	0.781	0.760
Average market capitalization (£m)	14,838	16,033	16,506	10,980	14,550	16,302	14,524
Average proportion held by institutions	0.701	0.707	0.716	0.678	0.678	0.699	0.688
Average number of holding institutions	419.6	454.3	481.8	485.3	517.3	539.8	539.4
Average book-to-market value	0.407	0.394	0.482	0.702	0.523	0.506	0.614
Average annual return	0.256	0.246	0.061	–0.289	0.541	0.225	–0.056

stock market, with 2008 exhibiting both the highest average book-to market ratio (0.702) and the lowest average return (–28.9 percent). This reflection is not perfect, however: for example, the 2009 average return of 54.1 percent is far higher than the FTSE 100's 18.7 percent, with the discrepancy from the value-weighted average due in large part to extraordinarily high returns of several smaller stocks, such as Kazakhmys' 474.8 percent and Vedanta Resources' 334.2 percent, in combination with the previously mentioned survivorship bias in the Factset ownership data.

Table 2 sheds further light on the nature of institutional holdings of the stocks in our sample, focusing for brevity on three years, 2005, 2008, and 2011. Although domestic institutions' number is less than a fifth of the total number of institutions holding large UK stocks, Panel A shows they control more shares than their overseas counterparts, e.g. £478.4 billion in 2011 out of the £844.9 billion total amount held by institutional investors. This is due to the average UK institution's portfolio size being £1,065,4 million, as compared to £119.9 million for US institutions and £320.8 for others. Likewise, UK institutional investors on average hold 30.4 stocks in our sample, as compared to 15.4 for US investors and 18.4 for other investors. Panel B reveals the breakdown of institutional holdings by Factset's institution classification. Over a half of the institutions are investment advisers, and they hold more than twice as much stocks as the other institutional investor categories combined. The most prominent of the remaining institutional categories are mutual funds, pension funds, private banking portfolios, brokers, market makers, and sovereign wealth managers. Given the dominant role of the investment advisor category, and the heterogeneity of the other institutions, we will not classify institutional investors by the nature of their business in our subsequent analyses.

Instead, we distinguish among institutions by following Yan and Zhang (2009) who find that short-term institutions (SIOs), i.e. those which trade more often, have more informative trades in the US than long-term institutions (LIOs). We implement their procedure by calculating the turnover for each institution over the preceding year as the average of the institution's monthly portfolio turnover rates (the minimum of buy and sell volume divided by the average of beginning and end-of-month portfolio values) for the stocks in our sample. While Yan and Zhang define SIOs (LIOs) as each period's top (bottom) tercile of institution by turnover, applying this definition to our sample overwhelmingly populates LIOs with small

institutions with few or no trades, and accounting for less than a tenth of the total institutional shareholdings, while most of the portfolio value ends up with SIOs. In order to sharpen our definition of SIOs so it truly focuses on the most active segment of investors, while extending that of LIOs so we can meaningfully calculate trading based-measures, we define SIOs as the top quartile of institutions by turnover, and LIOs as the remaining institutions. Panel C of Table 2 shows institutional holdings by SIO/LIO type. We do not have enough data for some very small institutions to calculate turnover figures, hence these institutions are left unclassified. Although large in number, they account for only a fraction of one percent of total institutional holdings, and thus we leave these institutions out when calculating trading measures based on the SIO/LIO classification in our subsequent analyses.

While our definitions of short-term and long-term institutions ensure that there are substantially fewer SIOs than LIOs, the two institutional groups have comparable total value of portfolios as of year-end 2005, at £339 billion and £334 billion, respectively. This is due to SIOs' much greater holdings of our sample stocks (on average, 28.8 stocks collectively worth £921 million) than is the case for LIOs (on average, 18.2 stocks collectively worth £329 million). By the end of our sample period, however, much smaller institutions, on average, end up in the'short-term' category, as some very large institutions reduce their relative trading intensity and become classified as long-term. As a result, by 2011, just over a quarter of total institutional holdings are with short-term institutions. In the next section we examine whether, as in the US, short-term institutions appear to be better informed in the UK.

In order to study the link between institutional trading activity and asset prices we quantify institutional trading in a given stock over a given time period in several ways. One measure of the magnitude of institutional trading is $DEMAND$, which is simply the change in the proportion of a stock's shares held by institutions of a given type,

$$DEMAND_{i,t} = \frac{\sum_{j \in institutions} h_{i,j,t}}{\sum_{j \in all\ holders} h_{i,j,t}} - \frac{\sum_{j \in institutions} h_{i,j,t-1}}{\sum_{j \in all\ holders} h_{i,j,t-1}}.$$

where $h_{i,j,t}$ is the number of shares of stock i owned by holder j at the end of period t.

Table 2. Institutional holdings

This table shows institutional holdings of our sample of FTSE100 stocks according to the institution country (Panel A) and the institution's Factset classification (Panel B). The "Other" institution type category in the penultimate row of Panel B includes Arbitrage; Foundation/Endowment; Family Office; Real Estate Manager; and Research Firm. Across columns, the number of distinct institutions holdings the stocks in our sample are followed by the total and average values of their holdings of sample stocks in £m, and the average number of sample stocks in a portfolio.

Panel A: Holdings by institution country

	Number of Institutions			Total Value of Portfolios			Average Portfolio Value			Average Port. Size		
Institution country	**2005**	**2008**	**2011**	**2005**	**2008**	**2011**	**2005**	**2008**	**2011**	**2005**	**2008**	**2011**
United Kingdom	334	411	449	458,421	378,659	478,377	1,372.5	921.3	1,065.4	31.7	31.9	30.4
United States	906	1,268	1,620	110,341	108,703	194,264	121.8	85.7	119.9	15.1	15.5	15.4
Other	375	448	537	105,394	107,195	172,285	281.0	239.3	320.8	14.6	19.0	18.4
All	1,615	2,127	2,606	674,155	594,557	844,925	417.4	279.5	324.2	18.4	19.4	18.6

Panel B: Holdings by institution classification

	Number of Institutions			Total Value of Portfolios			Average Portfolio Value			Average Port. Size		
Institution classification	**2005**	**2008**	**2011**	**2005**	**2008**	**2011**	**2005**	**2008**	**2011**	**2005**	**2008**	**2011**
Investment Adviser	1,059	1,375	1,654	468,102	403,178	577,730	442.0	293.2	349.3	18.0	19.4	19.4
Mutual Fund Manager	189	240	288	76,451	66,829	93,134	404.5	278.5	323.4	18.0	19.9	19.4

Pension Fund	101	110	109	36,375	33,585	53,301	360.2	305.3	489.0	22.0	29.7	34.8
Private Banking Portfolio	101	139	195	26,318	19,920	27,281	260.6	143.3	139.9	19.0	16.8	13.1
Broker	52	95	124	24,444	19,768	20,185	470.1	208.1	162.8	22.9	16.3	11.8
Market Maker	11	13	12	18,756	14,024	11,572	1,705.1	1,078.8	964.4	57.8	58.6	59.4
Sovereign Wealth Manager	8	16	15	11,836	24,269	48,707	1,479.5	1,516.8	3,247.2	40.5	27.4	40.2
Bank Management Division	2	2	2	3,130	3,693	929	1,565.0	1,846.5	464.7	37.0	43.0	48.5
Insurance Company	34	41	46	3,222	3,645	4,460	94.8	88.9	97.0	12.7	13.4	14.0
Hedge Fund Company	44	83	145	2,883	3,873	6,827	65.5	46.7	47.1	8.0	7.5	6.4
Other	14	13	16	2,636	1,775	799	188.3	136.5	49.9	10.9	10.9	8.2
All	1,615	2,127	2,606	674,155	594,557	844,925	417.4	279.5	324.2	18.4	19.4	18.6

Panel C: Holdings by institution type (short-term v. long-term)

	Number of Institutions			Total Value of Portfolios			Average Portfolio Value			Average Port. Size		
Institution type	**2005**	**2008**	**2011**	**2005**	**2008**	**2011**	**2005**	**2008**	**2011**	**2005**	**2008**	**2011**
Short-term institutions	368	504	670	338,750	251,659	223,386	920.5	499.3	333.4	28.8	33.7	27.9
Long-term institutions	1,014	1,283	1,675	333,782	341,031	620,499	329.2	265.8	370.4	18.2	18.0	17.4
Unclassified	233	340	261	1,623	1,867	1,040	7.0	5.5	4.0	3.3	3.4	2.4
All	1,615	2,127	2,606	674,155	594,557	844,925	417.4	279.5	324.2	18.4	19.4	18.6

While *DEMAND* quantifies the total change in the number of shares held by institutions, it is not necessarily a reflection of institutional consensus, which we instead seek to capture with herding measures. Our point of departure is the Lakonishok, Shleifer and Vishny (LSV, 1992) herding measure, *HM*. Define $p_{i,t}$ as the proportion of buyers among investors trading stock i in period t. Then, for a fixed population of investors, and for a given security in a given time period, *HM* is defined as the absolute value of the difference between $p_{i,t}$ and its expected value, less an adjustment term equal to the expectation of that absolute value quantity in the absence of herding:

$$HM_{i,t} = \left|p_{i,t} - E\left[p_{i,t}\right]\right| - E\left|p_{i,t} - E\left[p_{i,t}\right]\right|,$$

where $E\left[p_{i,t}\right]$ is estimated as the proportion of buys among the investors' trades in all stocks in the sample in period t. The adjustment term, $E\left|p_{i,t} - E\left[p_{i,t}\right]\right|$, is calculated by assuming that the number of buys (out of the total number of trades in that stock-period) follows the binomial distribution with probability $E\left[p_{i,t}\right]$.

As *HM* does not distinguish between herding on the buy and sell sides, we follow Wermers (1999) and define buy and sell herding measures, *BHM* and *SHM*. These are calculated similarly to *HM* but conditional on the ratio of buys to all trades in a stock in a given month being, respectively, higher and lower than the corresponding ratio for all stocks in the sample:

$$BHM_{i,t} = HM_{i,t}\left|p_{i,t} > E\left[p_{i,t}\right]\right.$$

$$SHM_{i,t} = HM_{i,t}\left|p_{i,t} < E\left[p_{i,t}\right]\right.$$

where the adjustment factors for *BHM* and *SHM* are also calculated conditional on $p_{i,t} > E\left[p_{i,t}\right]$ and $p_{i,t} < E\left[p_{i,t}\right]$, respectively.

Further, we follow Brown, Wei and Wermers (2013) and combine *SHM* and *BHM* into a signed herding measure, *ADJHERD*, as the excess of the stock's *BHM* value in a given period over the lowest value of *BHM* across all stocks in that period if the stock is being herded into, and as the negative of the excess of the stock's *SHM* value over the lowest value of *SHM* across all stocks in that period if the stock is being herded from:

$$ADJHERD_{i,t} = \begin{cases} BHM_{i,t} - \min_i BHM_{i,t}, \text{ if } p_{i,t} > E\left[p_{i,t}\right] \\ -\left(SHM_{i,t} - \min_i SHM_{i,t}\right), \text{ if } p_{i,t} < E\left[p_{i,t}\right] \end{cases}.$$

We calculate the above measures for 1) all institutional holders in our dataset; 2) UK-institutions; 3) non-UK institutions; 4) long-term institutions; 5) short-term institutions; 6) UK long-term institutions; 7) UK short-term institutions; 8) non-UK long-term institutions; 9) non-UK short-term institutions.

Table 3. Characteristics of monthly institutional trading measures

This table presents, by institution type, time-series means of monthly cross-sectional median, mean, standard deviation, minimum and maximum for our measures of institutional trading: *DEMAND* (Panel A), *HM* (Panel B), *SHM* (Panel C), *BHM* (Panel D), *ADJHERD* (Panel E). Medians and means are followed by p-values for difference from zero based on their time-series standard deviations.

Panel A: Institutional trading is measured with DEMAND

Set of institutions	Median		Mean		St. Dev.	Minimum	Maximum
All	0.00005	*0.90*	0.00230	*0.00*	0.02920	–0.08550	0.12070
UK	–0.00048	*0.08*	0.00050	*0.29*	0.02275	–0.07156	0.09463
Non-UK	0.00036	*0.01*	0.00180	*0.00*	0.01682	–0.05537	0.06826
Long-term	0.00018	*0.39*	0.00169	*0.00*	0.01829	–0.05999	0.07732
Short-term	–0.00063	*0.00*	–0.00009	*0.80*	0.01944	–0.06454	0.07749
UK long-term	–0.00019	*0.12*	0.00053	*0.10*	0.01293	–0.04666	0.05784
UK short-term	–0.00061	*0.00*	–0.00036	*0.23*	0.01621	–0.05580	0.06604
Non-UK long-term	0.00024	*0.00*	0.00115	*0.00*	0.01151	–0.04180	0.05093
Non-UK short-term	–0.00007	*0.31*	0.00027	*0.10*	0.01023	–0.03800	0.04111

Panel B: Institutional trading is measured with HM

Set of institutions	Median		Mean		St. Dev.	Minimum	Maximum
All	0.02978	*0.00*	0.04212	*0.00*	0.06181	–0.04368	0.25530
UK	0.02185	*0.00*	0.03456	*0.00*	0.06528	–0.06250	0.25111
Non-UK	0.03232	*0.00*	0.04811	*0.00*	0.07642	–0.06614	0.28653
Long-term	0.02988	*0.00*	0.04449	*0.00*	0.07219	–0.06324	0.28152
Short-term	0.01667	*0.00*	0.02931	*0.00*	0.06270	–0.06271	0.23399
UK long-term	0.02242	*0.00*	0.03703	*0.00*	0.08069	–0.08538	0.28196
UK short-term	0.01001	*0.00*	0.02360	*0.00*	0.07058	–0.08171	0.23902
Non-UK long-term	0.03612	*0.00*	0.05250	*0.00*	0.08831	–0.08153	0.30950
Non-UK short-term	0.01712	*0.00*	0.03200	*0.00*	0.07672	–0.08453	0.25940

Panel C: Institutional trading is measured with SHM

Set of institutions	Median		Mean		St. Dev.	Minimum	Maximum
All	–0.00954	*0.00*	0.02252	*0.00*	0.05947	–0.02934	0.23930
UK	–0.01400	*0.00*	0.01944	*0.00*	0.06275	–0.04228	0.23462
Non-UK	–0.01318	*0.00*	0.02431	*0.00*	0.07475	–0.04543	0.28323
Long-term	–0.01302	*0.00*	0.02366	*0.00*	0.07029	–0.04307	0.27158
Short-term	–0.01636	*0.00*	0.01555	*0.00*	0.05952	–0.04117	0.22581
UK long-term	–0.02182	*0.00*	0.02176	*0.00*	0.07968	–0.05405	0.28291
UK short-term	–0.02411	*0.00*	0.01312	*0.00*	0.06831	–0.05027	0.24145
Non-UK long-term	–0.01884	*0.00*	0.02560	*0.00*	0.08718	–0.05458	0.31259
Non-UK short-term	–0.02225	*0.00*	0.01608	*0.00*	0.07504	–0.05450	0.26684

Panel D: Institutional trading is measured with BHM

Set of institutions	Median		Mean		St. Dev.	Minimum	Maximum
All	–0.01077	*0.00*	0.01960	*0.00*	0.05650	–0.02848	0.23697
UK	–0.01929	*0.00*	0.01512	*0.00*	0.06256	–0.04137	0.24998
Non-UK	–0.01109	*0.00*	0.02380	*0.00*	0.07052	–0.04453	0.27319
Long-term	–0.01466	*0.00*	0.02083	*0.00*	0.06737	–0.04174	0.26829
Short-term	–0.01735	*0.00*	0.01376	*0.00*	0.05929	–0.03981	0.23765
UK long-term	–0.02567	*0.00*	0.01527	*0.00*	0.07685	–0.05474	0.28863
UK short-term	–0.02793	*0.00*	0.01048	*0.00*	0.06943	–0.05000	0.25566
Non-UK long-term	–0.01597	*0.00*	0.02690	*0.00*	0.08378	–0.05219	0.30364
Non-UK short-term	–0.02215	*0.00*	0.01593	*0.00*	0.07397	–0.05335	0.26691

Panel E: Institutional trading is measured with ADJHERD

Set of institutions	Median		Mean		St. Dev.	Minimum	Maximum
All	–0.00245	*0.23*	–0.00312	*0.00*	0.10792	–0.26865	0.26544
UK	–0.01230	*0.00*	–0.00516	*0.00*	0.12107	–0.27690	0.29135
Non-UK	0.00617	*0.09*	–0.00022	*0.88*	0.14043	–0.32866	0.31772
Long-term	–0.00450	*0.14*	–0.00339	*0.01*	0.13251	–0.31464	0.31003
Short-term	–0.00165	*0.52*	–0.00233	*0.00*	0.11387	–0.26698	0.27745
UK long-term	–0.01447	*0.00*	–0.00629	*0.00*	0.15038	–0.33696	0.34336
UK short-term	–0.00880	*0.00*	–0.00282	*0.00*	0.13053	–0.29173	0.30566
Non-UK long-term	0.00839	*0.03*	0.00072	*0.66*	0.16406	–0.36717	0.35583
Non-UK short-term	0.00071	*0.82*	–0.00059	*0.53*	0.14354	–0.32134	0.32026

Table 3 contains time series averages of monthly cross-sectional median, mean, standard deviation, minimum, and maximum values of our institutional trading measures for each of the nine subsets of investing institutions enumerated above. Median and mean values are followed by p-values for difference from zero. While *DEMAND* is quite variable in the cross-section – the standard deviation of *DEMAND* in aggregate across all institutions is 2.9 percent, ranging from a minimum of -8.6 percent to a maximum of 12.1 percent – this variability is largely evened out when averaged across stocks and time periods. Nonetheless, the average value of *DEMAND_ALL*, at 0.23 is quite high and statistically significant, which may at first seem to be at odds with the stable average proportion held by institutions between 2005 and 2011 shown in Table 1. On inspection, this is due in roughly equal parts to increases in average institutional holdings before end-2005 and after end-2011, and the fact that stocks leaving (entering) the sample during our sample period tend to have higher (lower) than average institutional holdings. As *DEMAND* is aggregated across institutions, its variation is smaller for different subsets of all institutions. The main driver of overall demand are non-UK long-term institutions, with mean value equal to 0.12 percent; for UK institutions, short-term institutions, UK long-term institutions and non-UK short-term institutions, average demand is statistically indistinguishable from zero at the 5 percent level.

Panel B presents statistics for the Lakonishok et al. (1992) herding measure, *HM*. Across all institutions, the average value of *HM* is 0.042, which is higher than the 0.027 Lakonishok et al. (1992) find for pension funds, and the 0.034 Wermers (1999) reports for mutual funds. Non-UK long-term institutions exhibit the most herding on average (0.052) and UK short-term institutions, the least (0.023). Since *HM* is the sum of a non-negative unadjusted herding measure less its expected value under the null of zero herding, it is positively skewed by construction as can be seen from its median, maximum, and minimum values. Panels C and D separate out sell (*SHM*) and buy (*BHM*) herding measures. Overall, firms herd more when selling (mean *SHM* is 0.023) than when buying (mean *BHM* is 0.020), and this is also the case for all subsets of institutions with the exception of non-UK long-term ones, which exhibit slightly more buy herding (0.027) than sell herding (0.026). When, therefore, *SHM* and *BHM* are combined into a single, signed measure (*ADJHERD)*, it is on average negative for all institutional categories except the non-UK

long-term category, and significant with the exception of non-UK and non-UK short-term categories.

More insight into institutional trading behavior in our sample can be gleaned from Table 4. Panel A shows pairwise correlations for our five measures of institutional trading across all institutions in the sample. Correlations between *DEMAND* and herding measures do not exceed 0.318 in magnitude, as the former focuses on total demand, and the latter on the number of institutions contributing to it. As expected, the correlation between *SHM* and *BHM* is negative (-0.442), since when institutions herd more on the buy side they do so less on the sell side, and vice versa. Also as expected, *SHM* and *BHM* are highly correlated with *ADJHERD*, which is an amalgam of these two measures.

The remainder of Table 4 sheds light on the extent to which different institutional groupings trade alike. For brevity, only correlations for *DEMAND* (Panel B) and *ADJHERD* (Panel C) are shown. Focusing on correlations for mutually exclusive subsets of institutions in the last four rows and the last four columns of Panel B, it is clear that *DEMAND* is quite distinct across institutional groupings based on geography and trading frequency, with correlations not exceeding 0.113 (for UK short-term and UK long-term institutions' *DEMAND*). This is relatively unsurprising as *DEMAND* can be strongly influenced by just a few institutions buying or selling substantial amounts.

ADJHERD, on the other hand, by relying on the count of buyers and sellers, reflects broader movements in institutional trading, which is probably why it is characterized by much stronger correlations across institutional groupings. Thus, the correlation between UK short-term and UK long-term institutions is 0.381, and correlations for other mutually exclusive sets of institutions never drop below 0.317. Therefore, in our analyses of how institutional stock trading relates to stock returns we can expect more stable results across institution types when characterizing their trading through how much they herd rather than through how much they trade in aggregate.

3. Methodology and results

In order to assess linkages between our measures of institutional trading and stock returns, we report results based on panel regressions with clustering

both by firm and by period (Petersen 2009). Our regressions take the following form:

$$RET_{i,t-k,t} = \beta_0 + \beta_1 TRADING_{i,t-k,t} + \beta_2 MKTCAP_{i,t-k} + \beta_3 BM_{i,t-k}$$
$$\beta_4 BETA_{i,t-k} + \beta_5 SIO_{i,t-k} + \beta_6 LIO_{i,t-k} + \beta_7 RET_{i,t-k-3,t-k} + \varepsilon_{i,t}\,.$$

where $k = 1$ for monthly regressions and $k = 3$ for quarterly regressions, $RET_{i,t-k,t}$ denotes the market-adjusted return on i th stock from time $t - k$ to time t, $TRADING_{i,t-k,t}$ represents one of our measures of institutional trading ($DEMAND$, HM, BHM, SHM or $ADJHERD$) calculated for stock i over the period $t - k$ to t, BM is the book-to-market ratio, $BETA$ is the market beta calculated over the preceding 36 months with the FTSE All Share as the market index, and SIO and LIO are proportions of shares held by short-term and long-term institutions, respectively.

Table 5 shows how institutional demand over a quarter (Panel A) or a month (Panel B) relates to contemporaneous stock returns. Of course, as we measure demand simply as the change in the proportion of shares held by a group of investors, demand for *all* investors (individuals as well as institutions) is necessarily zero. By disaggregating investors into groups, we can see which types of investors plausibly impact prices through their trading. The existing literature typically reports that institutional, rather than individual, investor move prices. Panel A, however, shows no evidence of this for our sample. In fact, when quarterly returns are regressed on aggregate institutional demand together with our panel of controls, the coefficient for *DEMAND_ALL* is a statistically significant –0.1106. This result appears to be driven mainly by demand due to long-term investors (*DEMAND_LI*) which is negative and significant at –0.3548, while neither domestic demand overall (*DEMAND_UK*), nor foreign demand overall (*DEMAND_NONUK*), nor demand by short-term institutions (*DEMAND_SI*) are significant.

The difficulty with interpreting co-movement between trading and return over a long period such as a calendar quarter is the confounding effect of the influence of past returns within the quarter on trading within the quarter, as well as trading predicting future returns within the quarter. In particular, a negative relation between trading and returns could be the result of negative feedback trading within the quarter (e.g. selling previous

Table 4. Correlations between monthly institutional trading measures

This table shows time-series means of monthly cross-sectional correlations of institutional trading measures for our sample of stocks. Panel A shows correlations between *DEMAND*, *HM*, *SHM*, *BHM* and *ADJHERD* calculated for all the institutional investors. Panels B and C show correlations for values of *DEMAND* and *ADJHERD*, respectively, calculated for different subsets of our set of institutional investors (*all*; *UK*; *non-UK*; *long-term*; *short-term*; *UK long-term*; *UK short-term*; *non-UK long-term*; *non-UK short-term*).

Panel A: Correlations between different trading measures for all institutions

Measure of trading	*DEMAND*	*HM*	*SHM*	*BHM*	*ADJHERD*
DEMAND	1.000	0.035	–0.244	0.292	0.318
HM	0.035	1.000	0.554	0.493	–0.050
SHM	–0.244	0.554	1.000	–0.442	–0.853
BHM	0.292	0.493	–0.442	1.000	0.837
ADJHERD	0.318	–0.050	–0.853	0.837	1.000

Panel B: Correlations for measures of DEMAND for different sets of institutions

Institutions	*All*	*UK*	*Non-UK*	*Long-term*	*Short-term*	*UK long-term*	*UK short-term*	*Non-UK long-term*	*Non-UK short-term*
All	1	0.791	0.628	0.731	0.748	0.551	0.604	0.508	0.434
UK	0.791	1	0.049	0.505	0.670	0.672	0.789	0.062	0.041
Non-UK	0.628	0.049	1	0.562	0.398	0.083	0.022	0.770	0.689
Long-term	0.731	0.505	0.562	1	0.129	0.738	0.090	0.698	0.104

Short-term	0.748	0.670	0.398	0.129	1	0.118	0.823	0.086	0.555
UK long-term	0.551	0.672	0.083	0.738	0.118	1	0.113	0.076	0.051
UK short-term	0.604	0.789	0.022	0.090	0.823	0.113	1	0.025	0.014
Non-UK long-term	0.508	0.062	0.770	0.698	0.086	0.076	0.025	1	0.121
Non-UK short-term	0.434	0.041	0.689	0.104	0.555	0.051	0.014	0.121	1

Panel C: Correlations for measures of ADJHERD for different sets of institutions

Institutions	*All*	*UK*	*Non-UK*	*Long-term*	*Short-term*	*UK long-term*	*UK short-term*	*Non-UK long-term*	*Non-UK short-term*
All	1	0.795	0.862	0.905	0.855	0.670	0.642	0.796	0.741
UK	0.795	1	0.416	0.718	0.683	0.852	0.790	0.387	0.360
Non-UK	0.862	0.416	1	0.784	0.742	0.345	0.347	0.905	0.845
Long-term	0.905	0.718	0.784	1	0.574	0.762	0.413	0.846	0.531
Short-term	0.855	0.683	0.742	0.574	1	0.399	0.773	0.546	0.827
UK long-term	0.670	0.852	0.345	0.762	0.399	1	0.381	0.329	0.286
UK short-term	0.642	0.790	0.347	0.413	0.773	0.381	1	0.318	0.317
Non-UK long-term	0.796	0.387	0.905	0.846	0.546	0.329	0.318	1	0.567
Non-UK short-term	0.741	0.360	0.845	0.531	0.827	0.286	0.317	0.567	1

Table 5. Institutional demand and contemporaneous stock returns

This table shows results of regressions of quarterly (Panel A) and monthly (Panel B) FTSE100 member stock market-adjusted returns on contemporaneous institutional investor demand measured as the change in the proportion of shares held by all institutional investors (*DEMAND_ALL*), UK institutional investors (*DEMAND_UK*), non-UK institutional investors (*DEMAND_NONUK*), short-term institutional investors (*DEMAND_SI*) and long-term institutional investors (*DEMAND_LI*), as well as control variables observed at the end of the preceding quarter (Panel A) or month (Panel B), market capitalization (*MKTCAP*), book-to-market ratio (*BM*), 36-month beta relative to the FTSE-AllShare index (*BETA*), proportion of shares held by long-term institutions (*LIO*), proportion of shares held by short-term institutions (*SIO*), and three-month prior market-adjusted return (*RET*). P-values are in italics and are based on standard errors adjusted for clustering both by period and by firm. Coefficients significant at the 0.05 level are in bold.

Panel A: Quarterly regressions

	(1)		(2)		(3)		(4)		(5)	
INTERCEPT	0.0153	*0.35*	0.0141	*0.39*	0.0142	*0.39*	0.0186	*0.26*	0.0233	*0.17*
DEMAND_ALL	**–0.1106**	*0.01*								
DEMAND_UK			–0.0869	*0.14*						
DEMAND_NONUK					–0.1509	*0.09*				
DEMAND_LI							**–0.3548**	*0.00*		
DEMAND_SI									0.0522	*0.63*
MKTCAP	–0.2050	*0.17*	–0.1978	*0.19*	–0.2002	*0.18*	–0.2050	*0.21*	–0.2296	*0.15*
BM	0.0255	*0.27*	0.0250	*0.28*	0.0256	*0.27*	0.0224	*0.36*	0.0239	*0.33*
BETA	–0.0033	*0.77*	–0.0032	*0.77*	–0.0031	*0.78*	–0.0017	*0.89*	–0.0023	*0.85*
LIO	–0.0155	*0.59*	–0.0135	*0.64*	–0.0131	*0.65*	–0.0178	*0.57*	–0.0301	*0.32*
SIO	–0.0019	*0.96*	–0.0020	*0.96*	–0.0014	*0.97*	–0.0105	*0.78*	–0.0032	*0.93*
$RET_{t-4,t-1}$	–0.0099	*0.86*	–0.0103	*0.86*	–0.0115	*0.84*	–0.0068	*0.91*	–0.0081	*0.89*
R-squared	0.0086		0.0076		0.0081		0.0066		0.0132	
N	2,529		2,529		2,529		2,324		2,324	

Panel B: Monthly regressions

	(1)		(2)		(3)		(4)		(5)	
INTERCEPT	0.0032	*0.52*	0.0029	*0.56*	0.0032	*0.52*	0.0052	*0.35*	0.0058	*0.29*
DEMAND_ALL	–0.0329	*0.27*								
DEMAND_UK			–0.0013	*0.97*						
DEMAND_NONUK					–0.0963	*0.06*				
DEMAND_LI							**–0.1061**	*0.01*		
DEMAND_SI									0.0117	*0.82*
MKTCAP	–0.0620	*0.15*	–0.0608	*0.16*	–0.0623	*0.15*	–0.0678	*0.15*	–0.0705	*0.13*
BM	0.0120	*0.18*	0.0120	*0.18*	0.0121	*0.18*	0.0116	*0.22*	0.0117	*0.22*
BETA	–0.0028	*0.42*	–0.0028	*0.42*	–0.0028	*0.42*	–0.0027	*0.47*	–0.0028	*0.46*
LIO	–0.0038	*0.64*	–0.0035	*0.67*	–0.0038	*0.64*	–0.0061	*0.51*	–0.0072	*0.43*
SIO	0.0022	*0.85*	0.0024	*0.83*	0.0022	*0.84*	–0.0008	*0.95*	–0.0005	*0.97*
$RET_{t-6,t-3}$	0.0204	*0.26*	0.0204	*0.26*	0.0203	*0.27*	0.0232	*0.22*	0.0228	*0.23*
R-squared	0.0052		0.0050		0.0052		0.0052		0.0059	
N	7,926		7,926		7,926		7,299		7,299	

month's winners).[10] Examining trading and contemporaneous returns at the shorter monthly frequency alleviates this problem. The results of this exercise are reported in Panel B of Table 5. They suggest that the negative association between *DEMAND_ALL* and returns in Panel B is illusory, as the corresponding coefficient is an insignificant -0.0329 when used as a monthly measure. *DEMAND_LI* , however, is again negative and significant, indicating that long-term investors absorb price pressure originating from trading by non-institutions. Overall, the results in Table 5 do not show any evidence of institutional trading, as proxied by changes in the proportion of shares held by either all or groups of institutions, impacting prices.

Table 6 examines the signed herding measure, *ADJHERD*, from the same perspective. Based on quarterly data (Panel A), one could argue that prices move in the direction of herding by non-UK investors (coefficient = 0.0937) and short-term investors (0.0911), at the expense of UK investors (–0.1155). Using monthly data (Panel B), however, undermines this result, as there is no evidence, at conventional significance levels, of an association between herding by a group of institutions and contemporaneous stock returns.[11]

In Table 7, we look at trading and stock returns through a wider lens. Panel A shows how *DEMAND* for each subset of institutional investors explains the current month's and the following three months' returns after controlling for the same stock characteristics as in previous regressions. That is to say, the Panel shows estimated coefficients and their associated p-values from panel regressions analogous to earlier ones, so that each coefficient/p-value pair represent one regression. We also include a column labeled *T-1* to show how *DEMAND* "explains" previous month's return,

10 Sias, Starks and Titman (2006) discuss how month-on-month effects can be estimated from quarterly holdings data when monthly returns are available, and find that the positive same-quarter correlation between institutional trading and investment returns in their US sample is essentially a same-month phenomenon. Campbell, Ramadorai and Schwartz (2009) go further and, starting from quarterly holdings, find there to be a positive relationship between institutional flows and returns at the daily level. However, it should be noted that Campbell, Ramadorai, and Schwartz (2009) use an algorithm to infer daily institutional trading activity from the TAQ (Trade and Quote) database. As Puckett and Yan (2011) point out, this approach measures institutional trades with noise and is unable to distinguish the trades of different institutions, either in the cross-section or over time. Furthermore, the assumption underlying the Campbell et al. approach is that institutions are more likely to place large orders, which is less likely to occur when market liquidity becomes scarce and large orders are better split into smaller ones to minimize price impact and transaction costs. In support of this view, Cready, Kumas, and Subasi (2014) find that institutions are heavily involved in small-size trades and significantly increase the order size in announcement periods relative to non-announcement periods. Therefore, the net trade order flow within each trade size bin may contain substantial amount of noise and capture either institutional or retail investors.

11 We note that none of the three stock characteristics we control for in Tables 5 and 6 (market capitalization, the book-to-market ratio, and beta) have significant power to explain returns. This is not surprising given that i) the finance literature has struggled to find a beta premium since Black (1972); ii) the size and value premia have proven to be highly variable over time, and hence unlikely to exhibit significance over an interval of just 8 years; iii) by focusing on the largest UK stocks we are limiting the variation in company size needed for the size effect to exhibit itself; and iv) the value effect in the UK is concentrated among smaller stocks (Mouselli, 2010).

as a parsimonious way of disclosing the presence of positive or negative feedback trading. As that column indicates, there is indeed evidence of negative feedback trading by long-term institutions (–0.1044, p-value=0.03), contributing to the association between quarterly long-term investor demand and corresponding stock return over the same period seen in Panel A of Table 5. This is especially due to long-term UK investors (–0.1612, p-value=0.02) rather than non-UK investors (–0.0548, p-value=0.52).

The second column of Panel A shows again that monthly returns move in the opposite direction to trading by long-term investors (–0.1061, p-value=0.01) from Panel B of Table 5, but also suggests that this is mainly due to non-UK long-term investors' trading (–0.2444, p-value=0.00). The remaining columns focus on future returns. The pattern that emerges is that of greater demand by UK short-term institutions (and by extension, both by UK institutions and by short-term institutions) being associated with negative returns in the following month (coefficient = –0.1545, p-value = 0.00), but positive returns in the month after (0.1251, p-value = 0.03). While longer-term reversal of price pressure is commonly observed in the literature (e.g. Dasgupta et al. 2011), the pattern here is harder to interpret as contemporaneous price pressure is not part of it.[12] What is clear, however, is that unlike in the US (Yan and Zhang, 2009), short-term investors in the UK do not appear to be better informed.

Panel B, C, and D, examine the association between *SHM*, *BHM*, and *ADJHERD* herding measures, respectively, and stock returns. The first column of Panel B shows that although institutional investors as a group tend to herd on the sell side when returns have been higher, i.e. engage in "selling winners", the opposite is true for non-UK short term investors. The remainder of the panel shows no evidence of sell herding predicting future returns over any of the following three months. The same holds for both buy herding (*BHM*) and the combined herding measure (*ADJHERD*). Of course, lack of significant coefficients does not imply the absence of an effect, as this could be due to low test power. However, the fact that we document several significant coefficients in the direction *opposite* to institutional investor price pressure or information effects in Panels A and C weakens the low power explanation somewhat. Nonetheless, to provide further evidence, we turn to portfolio-based tests to assess abnormal returns to a trading strategy based on institutional trading information.

12 This pattern contrasts with that documented by Chouliaras (2015) for US stocks, whereby institutional buying in one quarter is followed by positive returns in the following quarter, but negative returns in the quarter after that.

Table 6. Institutional herding and contemporaneous stock returns

This table shows results of regressions of quarterly (Panel A) and monthly (Panel B) FTSE100 member stock market-adjusted returns on contemporaneous institutional herding, *ADJHERD* (as described in the text), measured across all institutional investors (*ADJHERD_ALL*), UK institutional investors (*ADJHERD_UK*), non-UK institutional investors (*ADJHERD_NONUK*), short-term institutional investors (*ADJHERD_SI*) and long-term institutional investors (*ADJHERD_LI*), as well as control variables observed at the end of the preceding quarter (Panel A) or month (Panel B): market capitalization (*MKTCAP*), book-to-market ratio (*BM*), 36-month beta relative to the FTSE-AllShare index (*BETA*), proportion of shares held by long-term institutions (*LIO*), proportion of shares held by short-term institutions (*SIO*) and three-month prior market-adjusted return (*RET*). The herding measure is only estimated for stock-periods when the institutions in question make at least 10 trades. P-values are in italics and are based on standard errors adjusted for clustering both by period and by firm. Coefficients significant at the 0.05 level are in bold.

Panel A: Quarterly regressions

	(1)		(2)		(3)		(4)		(5)	
INTERCEPT	0.0129	*0.43*	0.0145	*0.37*	0.0115	*0.48*	0.0216	*0.20*	0.0173	*0.29*
ADJHERD_ALL	0.0102	*0.84*								
ADJHERD_UK			**–0.1155**	*0.00*						
ADJHERD_NONUK					**0.0937**	*0.03*				
ADJHERD_LI							–0.0790	*0.08*		
ADJHERD_SI									**0.0911**	*0.02*
MKTCAP	–0.1915	*0.21*	–0.1653	*0.26*	–0.1588	*0.30*	–0.2236	*0.16*	–0.2010	*0.21*
BM	0.0247	*0.29*	0.0249	*0.27*	0.0229	*0.33*	0.0233	*0.34*	0.0220	*0.38*
BETA	–0.0031	*0.78*	–0.0039	*0.73*	–0.0030	*0.78*	–0.0018	*0.88*	–0.0015	*0.90*
LIO	–0.0109	*0.71*	–0.0134	*0.64*	–0.0058	*0.84*	–0.0235	*0.46*	–0.0160	*0.61*
SIO	–0.0014	*0.97*	–0.0052	*0.88*	–0.0012	*0.97*	–0.0141	*0.70*	–0.0076	*0.84*
$RET_{t-4,t-1}$	–0.0117	*0.84*	–0.0216	*0.71*	–0.0185	*0.75*	–0.0084	*0.89*	–0.0129	*0.83*
R-squared	0.0070		0.0150		0.0110		0.0092		0.0097	
N	2,529		2,529		2,529		2,324		2,324	

Panel B: Monthly regressions

	(1)		(2)		(3)		(4)		(5)	
INTERCEPT	**0.0025**	*0.63*	**0.0027**	*0.60*	**0.0026**	*0.63*	**0.0071**	*0.22*	**0.0057**	*0.31*
ADJHERD_ALL	–0.0009	*0.92*								
ADJHERD_UK			–0.0049	*0.55*						
ADJHERD_NONUK					–0.0013	*0.82*				
ADJHERD_LI							–0.0137	*0.10*		
ADJHERD_SI									0.0069	*0.36*
MKTCAP	–0.0630	*0.16*	–0.0626	*0.16*	–0.0663	*0.14*	–0.0779	*0.11*	–0.0723	*0.15*
BM	0.0127	*0.18*	0.0128	*0.17*	0.0130	*0.17*	0.0125	*0.21*	0.0123	*0.22*
BETA	–0.0031	*0.38*	–0.0033	*0.36*	–0.0032	*0.38*	–0.0032	*0.42*	–0.0031	*0.42*
LIO	–0.0022	*0.80*	–0.0026	*0.76*	–0.0026	*0.76*	–0.0077	*0.43*	–0.0058	*0.54*
SIO	0.0028	*0.82*	0.0024	*0.84*	0.0030	*0.80*	–0.0033	*0.80*	–0.0015	*0.91*
$RET_{t-6,t-3}$	0.0136	*0.46*	0.0154	*0.42*	0.0151	*0.42*	0.0139	*0.47*	0.0161	*0.40*
R-squared	0.0052		0.0054		0.0055		0.0059		0.0052	
N	7,593		7,509		7,535		7,013		7,017	

Table 7. Monthly institutional trading and stock returns

This table summarizes results of regressions of monthly FTSE100 member stock market-adjusted returns on leading, contemporaneous, and lagged institutional trading measures, together with control variables whose coefficients are not shown in the table: market capitalization (*MKTCAP*), book-to-market ratio (*BM*), 36-month beta relative to the FTSE-AllShare index (*BETA*), proportion of shares held by long-term institutions (*LIO*), proportion of shares held by short-term institutions (*SIO*), and three-month prior market-adjusted return (*RET*). The institutional trading measures are *DEMAND* (Panel A), *SHM* (Panel B), *BHM* (Panel C), and *ADJHERD* (Panel D). The herding measures, *SHM*, *BHM*, and *ADJHERD*, are only estimated for stock-periods when the institutions in question make at least 10 trades. P-values are in italics and are based on standard errors adjusted for clustering both by period and by firm. Coefficients significant at the 0.05 level are in bold.

Panel A: Institutional trading is measured with DEMAND

	Return period									
Set of institutions	**T-1**		**T**		**T+1**		**T+2**		**T+3**	
All	–0.0493	*0.14*	–0.0329	*0.27*	–0.0480	*0.12*	0.0500	*0.07*	–0.0323	*0.27*
UK	–0.0768	*0.06*	–0.0013	*0.97*	**–0.0986**	*0.01*	**0.0870**	*0.02*	–0.0168	*0.66*
Non-UK	–0.0081	*0.89*	–0.0963	*0.06*	0.0358	*0.54*	–0.0086	*0.86*	–0.0665	*0.16*
Long-term	**–0.1044**	*0.03*	**–0.1061**	*0.01*	–0.0097	*0.85*	0.0227	*0.63*	–0.0364	*0.42*
Short-term	–0.0350	*0.48*	0.0117	*0.82*	**–0.1122**	*0.03*	**0.1008**	*0.02*	–0.0256	*0.61*
UK long-term	**–0.1612**	*0.02*	–0.0077	*0.91*	–0.0633	*0.39*	0.0444	*0.44*	–0.0318	*0.63*
UK short-term	–0.0607	*0.26*	0.0124	*0.82*	**–0.1545**	*0.00*	**0.1251**	*0.03*	–0.0010	*0.99*
Non-UK long-term	–0.0548	*0.52*	**–0.2444**	*0.00*	0.0533	*0.44*	0.0006	*0.99*	–0.0485	*0.51*
Non-UK short-term	0.0275	*0.80*	0.0105	*0.92*	–0.0115	*0.92*	0.0443	*0.50*	–0.0878	*0.22*

Panel B: Institutional trading is measured with SHM

	Return period									
Set of institutions	**T-1**		**T**		**T+1**		**T+2**		**T+3**	
All	**0.0380**	*0.02*	0.0105	*0.55*	0.0033	*0.81*	–0.0064	*0.65*	0.0036	*0.81*
UK	**0.1055**	*0.00*	0.0136	*0.47*	0.0030	*0.84*	–0.0186	*0.19*	–0.0044	*0.80*
Non-UK	–0.0239	*0.05*	–0.0020	*0.88*	–0.0040	*0.66*	0.0082	*0.47*	0.0035	*0.74*
Long-term	**0.0660**	*0.00*	0.0308	*0.08*	0.0061	*0.63*	0.0082	*0.51*	–0.0026	*0.84*
Short-term	0.0066	*0.64*	–0.0093	*0.57*	0.0025	*0.86*	–0.0100	*0.51*	0.0029	*0.85*
UK long-term	**0.1214**	*0.00*	0.0258	*0.21*	0.0066	*0.65*	–0.0079	*0.51*	–0.0019	*0.91*
UK short-term	**0.0321**	*0.02*	–0.0071	*0.58*	0.0159	*0.22*	–0.0086	*0.55*	0.0013	*0.93*
Non-UK long-term	–0.0083	*0.48*	0.0069	*0.56*	0.0005	*0.95*	0.0099	*0.33*	–0.0025	*0.76*
Non-UK short-term	**–0.0249**	*0.02*	–0.0071	*0.59*	–0.0064	*0.61*	0.0005	*0.97*	0.0108	*0.33*

Panel C: Institutional trading is measured with BHM

	Return period									
Set of institutions	**T-1**		**T**		**T+1**		**T+2**		**T+3**	
All	–0.0215	*0.21*	0.0093	*0.49*	–0.0082	*0.66*	0.0003	*0.99*	0.0072	*0.67*
UK	**–0.1070**	*0.00*	0.0027	*0.83*	–0.0136	*0.40*	0.0005	*0.97*	–0.0061	*0.71*
Non-UK	**0.0320**	*0.02*	–0.0055	*0.60*	–0.0021	*0.87*	–0.0026	*0.85*	0.0104	*0.37*
Long-term	**–0.0396**	*0.01*	–0.0135	*0.29*	–0.0196	*0.24*	–0.0039	*0.80*	0.0157	*0.31*
Short-term	0.0129	*0.40*	0.0190	*0.16*	–0.0106	*0.54*	0.0171	*0.32*	–0.0076	*0.66*
UK long-term	**–0.0997**	*0.00*	–0.0034	*0.78*	–0.0167	*0.23*	–0.0025	*0.83*	–0.0083	*0.62*
UK short-term	**–0.0386**	*0.01*	0.0054	*0.58*	–0.0138	*0.31*	0.0166	*0.21*	0.0043	*0.79*
Non-UK long-term	0.0189	*0.19*	**–0.0200**	*0.01*	–0.0171	*0.15*	–0.0089	*0.40*	0.0147	*0.14*
Non-UK short-term	**0.0408**	*0.00*	0.0160	*0.19*	0.0001	*0.99*	0.0006	*0.96*	–0.0075	*0.56*

Panel D: Institutional trading is measured with ADJHERD

	Return period									
Set of institutions	**T-1**		**T**		**T+1**		**T+2**		**T+3**	
All	**–0.0186**	*0.03*	–0.0009	*0.92*	–0.0053	*0.54*	0.0025	*0.77*	0.0015	*0.87*
UK	**–0.0643**	*0.00*	–0.0049	*0.55*	–0.0070	*0.41*	0.0052	*0.50*	0.0000	*1.00*
Non-UK	**0.0179**	*0.01*	–0.0013	*0.82*	0.0001	*0.99*	–0.0029	*0.64*	0.0019	*0.74*
Long-term	**–0.0316**	*0.00*	–0.0137	*0.10*	–0.0082	*0.30*	–0.0048	*0.51*	0.0050	*0.52*
Short-term	0.0022	*0.75*	0.0069	*0.36*	–0.0064	*0.42*	0.0084	*0.35*	–0.0028	*0.75*
UK long-term	**–0.0675**	*0.00*	–0.0098	*0.26*	–0.0064	*0.40*	0.0010	*0.88*	–0.0006	*0.94*
UK short-term	**–0.0215**	*0.00*	0.0027	*0.61*	–0.0102	*0.16*	0.0070	*0.37*	0.0014	*0.87*
Non-UK long-term	0.0085	*0.18*	–0.0079	*0.13*	–0.0050	*0.29*	–0.0056	*0.30*	0.0050	*0.29*
Non-UK short-term	**0.0209**	*0.00*	0.0082	*0.24*	0.0013	*0.83*	0.0001	*0.99*	–0.0044	*0.50*

To form institutional trading based portfolios, we proceed as follows. Each month we sort our sample stocks on *DEMAND*, *SHM*, *BHM* and *ADJHERD*, calculated for all institutions and for each subset of institutions, as in the preceding analysis. We then create equally weighted portfolios that are long in stocks in the top tercile and short stocks in the bottom tercile. These portfolios are re-formed each month. We calculate portfolio alphas by regressing daily or monthly portfolio returns on contemporaneous returns for factors that have been previously used to explain the cross-section of stock returns. Our baseline results, in Panel A, use a UK analogue of the Carhart (1997) four-factor model, i.e. we control for market, size, value and momentum factor realizations. In Panel B, we additionally use the stock-specific volatility factor and the low beta factor proposed by Frazzini and Pedersen (2014). To create the factor return series we run monthly cross-sectional regressions of current period stock return on lagged factor exposure for all S&P UK Broad Market Index constituents, and record the regression coefficient for the factor exposure as the factor return.[13] Our factor exposures are calculated as the negative of the logarithm of market capitalization (for the market factor), the book-to-market ratio using the more recent of annual and interim data (for the value factor), the 11-month return skipping the preceding month (for the momentum factor), and the negative of the residual volatility from the market model computed using daily data over the preceding 252 trading days (for the volatility factor). The betting-against-beta factor is constructed as in Frazzini and Pedersen (2014).

Panel A shows alphas and their p-values from 28 portfolio regressions (four herding measures for each of nine sets of institutional investors). *DEMAND* measured across all institutions produces a long-short portfolio that generates a –0.64 percent alpha per month. In other words, a strategy of buying low institutional *DEMAND* stocks and selling high ones would have generated an alpha of almost 8 percent a year before trading costs. Focusing more specifically on demand by UK short-term institutions, the magnitude of the before-cost alpha is one percent per month. Buy herding (*BHM*) also produces portfolios that have significant alphas, albeit somewhat smaller in magnitude: 0.53 percent for all institutions, and ranging up to 0.71 percent for UK long-term institutions. Sell herding, on the other hand, is not associated with significant future returns even in the calendar-time

13 Fama (1976), Section 8.D shows that this coefficient estimate represents the return on a zero-cost portfolio with factor exposures as weights.

Table 8. Alphas of calendar-time portfolios based on monthly institutional trading measures

This table summarizes the performance of monthly rebalanced calendar-time portfolios formed on monthly institutional trading measures (*DEMAND*, *SHM*, *BHM*, *ADJHERD*) for different sets of institutions. Specifically, each month sample stocks are sorted into terciles based on values of the above trading measures, and stocks in the highest tercile are assumed bought in equal proportions, while stocks in the bottom tercile are assumed sold short in equal proportions. Panel A shows alphas from Carhart four-factor regression of the resulting portfolio returns, followed by their p-values. Panel B shows alphas from a six-factor regression that includes a stock-specific volatility factor and an antibeta factor, in addition to the four Carhart factors. Coefficients significant at the 0.05 level are in bold.

Panel A: Four-factor regression alphas

	Institutional trading measure							
Set of institutions	*DEMAND*		*SHM*		*BHM*		*ADJHERD*	
All	**–0.0064**	*0.00*	–0.0006	*0.78*	**–0.0053**	*0.02*	**–0.0056**	*0.01*
UK	**–0.0076**	*0.00*	–0.0006	*0.81*	**–0.0048**	*0.04*	**–0.0050**	*0.03*
Non-UK	–0.0009	*0.67*	–0.0014	*0.52*	**–0.0038**	*0.05*	**–0.0040**	*0.04*
Long-term	–0.0017	*0.39*	0.0012	*0.62*	**–0.0058**	*0.01*	**–0.0061**	*0.01*
Short-term	**–0.0084**	*0.00*	0.0014	*0.54*	**–0.0044**	*0.05*	**–0.0056**	*0.01*
UK long-term	**–0.0052**	*0.01*	0.0013	*0.60*	–0.0040	*0.07*	**–0.0045**	*0.05*
UK short-term	**–0.0101**	*0.00*	0.0017	*0.55*	**–0.0039**	*0.05*	**–0.0050**	*0.02*
Non-UK long-term	–0.0037	*0.07*	–0.0026	*0.17*	**–0.0071**	*0.00*	**–0.0067**	*0.00*
Non-UK short-term	–0.0008	*0.73*	0.0002	*0.94*	–0.0024	*0.28*	**–0.0046**	*0.02*

Panel B: Six-factor regression alphas

	Institutional trading measure							
Set of institutions	*DEMAND*		*SHM*		*BHM*		*ADJHERD*	
All	**–0.0062**	*0.01*	–0.0002	*0.94*	**–0.0062**	*0.01*	**–0.0063**	*0.01*
UK	**–0.0070**	*0.00*	–0.0010	*0.67*	**–0.0050**	*0.03*	**–0.0051**	*0.03*
Non-UK	–0.0013	*0.54*	–0.0010	*0.64*	**–0.0048**	*0.01*	**–0.0048**	*0.01*
Long-term	–0.0017	*0.39*	0.0015	*0.53*	**–0.0064**	*0.00*	**–0.0066**	*0.00*
Short-term	**–0.0080**	*0.00*	0.0013	*0.56*	**–0.0048**	*0.03*	**–0.0058**	*0.01*
UK long-term	**–0.0055**	*0.01*	0.0014	*0.56*	**–0.0046**	*0.03*	**–0.0051**	*0.03*
UK short-term	**–0.0097**	*0.00*	0.0013	*0.65*	–0.0038	*0.06*	**–0.0046**	*0.03*
Non-UK long-term	–0.0037	*0.07*	–0.0024	*0.22*	**–0.0075**	*0.00*	**–0.0069**	*0.00*
Non-UK short-term	–0.0008	*0.71*	0.0002	*0.94*	–0.0027	*0.22*	**–0.0051**	*0.01*

portfolio setting. The predictive power of *ADJHERD*, therefore, rests mostly on that of *BHM*, resulting in 0.56 percent outperformance of low institutional demand portfolios relative to high institutional demand ones. Interestingly, however, *ADJHERD* calculated for any set of institutions allows us to form portfolios generating significant before-costs abnormal performance of a least 5 percent per year. Panel B checks the robustness of this result by additionally controlling for the specific volatility and anti-beta factors. This causes little change in the alphas and their significance levels.

For comparison, we also form portfolios as above but based on quarterly institutional trading measures. That is, equally-weighted long-short portfolios are formed at the start of each quarter based on the previous quarter's trading, and are rebalanced to equal weights (but not re-formed) at the end of the first and second months of the quarter. The results are in Panels A and B of Table 9. Forming portfolios based on quarterly *DEMAND* would have allowed one to generate monthly abnormal returns of up to 0.62 percent (if copying trading by short-term institutions). This is smaller than if relying on monthly data, but may be advantageous on an after-cost basis, given that this strategy calls for less frequent trading and that share buys in the UK are subject to 0.5 percent stamp duty. Quarterly herding measures, on the other hand, do not allow for portfolios with significant alphas, with the exception of buy herding by non-UK long-term investors (alpha=–0.0051, p-value=0.02). The lower predictive power of quarterly trading is consistent with the notion that, to the extent that institutional trading can generate insight into near-term returns, shorter-term trading contains more valuable information in this regard.

4. Conclusion

The literature on institutional trading and asset returns is voluminous, yet is overwhelmingly based on a specific setting: US stocks examined at quarterly frequency. We revisit this topic for the large and liquid UK stock market, where comprehensive institutional trading activity can be inferred at the monthly frequency. Our findings stand in contrast to US ones. Institutions generally do not generate contemporaneous price pressure in the direction of their trading. Their trading is not informative over short horizons. In fact, even short-term institutions appear to be poorly informed.

Table 9. Alphas of calendar-time portfolios based on quarterly institutional trading measures

This table summarizes the performance of monthly rebalanced calendar-time portfolios formed on quarterly institutional trading measures (*DEMAND*, *SHM*, *BHM*, *ADJHERD*) for different sets of institutions. Specifically, at the end of each quarter sample stocks are sorted into terciles based on values of the above trading measures for that quarter, and stocks in the highest tercile are assumed bought in equal proportions at that time, while stocks in the bottom tercile are assumed sold short in equal proportions. The portfolios are re-balanced to equal weights every month, but are re-formed only quarterly. Panel A shows alphas from Carhart four-factor regression of the resulting portfolio returns, followed by their p-values. Panel B shows alphas from a six-factor regression that includes a stock-specific volatility factor and an antibeta factor, in addition to the four Carhart factors. Coefficients significant at the 0.05 level are in bold.

Panel A: Four-factor regression alphas

	Institutional trading measure							
Set of institutions	*DEMAND*		*SHM*		*BHM*		*ADJHERD*	
All	**–0.0049**	*0.02*	0.0001	*0.94*	–0.0032	*0.14*	–0.0038	*0.09*
UK	–0.0033	*0.11*	–0.0017	*0.45*	–0.0034	*0.07*	–0.0026	*0.21*
Non-UK	**–0.0055**	*0.01*	0.0000	*0.98*	–0.0024	*0.23*	–0.0038	*0.06*
Long-term	–0.0026	*0.20*	–0.0003	*0.92*	–0.0036	*0.16*	–0.0036	*0.17*
Short-term	**–0.0064**	*0.00*	–0.0028	*0.16*	–0.0019	*0.43*	–0.0023	*0.28*
UK long-term	–0.0025	*0.23*	–0.0023	*0.31*	–0.0015	*0.43*	–0.0012	*0.58*
UK short-term	**–0.0055**	*0.02*	–0.0013	*0.54*	–0.0033	*0.09*	–0.0037	*0.08*
Non-UK long-term	–0.0005	*0.80*	0.0016	*0.48*	**–0.0053**	*0.01*	–0.0039	*0.09*
Non-UK short-term	–0.0036	*0.06*	–0.0020	*0.33*	–0.0030	*0.18*	–0.0034	*0.10*

Panel B: Six-factor regression alphas

	Institutional trading measure							
Set of institutions	*DEMAND*		*SHM*		*BHM*		*ADJHERD*	
All	**–0.0046**	0.03	0.0000	1.00	–0.0031	0.15	–0.0039	0.09
UK	–0.0030	0.14	–0.0021	0.37	–0.0033	0.08	–0.0025	0.23
Non-UK	**–0.0053**	0.01	–0.0001	0.95	–0.0025	0.20	–0.0040	0.06
Long-term	–0.0029	0.16	–0.0010	0.69	–0.0038	0.15	–0.0035	0.19
Short-term	**–0.0062**	0.00	–0.0031	0.11	–0.0017	0.48	–0.0021	0.32
UK long-term	–0.0028	0.17	–0.0026	0.26	–0.0021	0.27	–0.0014	0.51
UK short-term	**–0.0046**	0.04	–0.0017	0.43	–0.0031	0.12	–0.0033	0.12
Non-UK long-term	–0.0005	0.81	0.0011	0.62	**–0.0051**	0.02	–0.0036	0.12
Non-UK short-term	**–0.0040**	0.04	–0.0020	0.33	–0.0031	0.17	–0.0036	0.10

There are several caveats relating to our analysis: our sample is based on the largest UK stocks, where public information is abundant and liquidity high; it has a (mild) survivorship bias due to availability of high-frequency ownership data; and it covers the relatively short and unusual 2004-2012 time period, whereas US papers studies tend to span decades starting from the early 1980s.

Still, our results are thought-provoking. While US studies have not used monthly holdings data as we do, some of them (Sias et al., 2006; Campbell, Ramadorai, and Schwartz, 2009) inferred strong positive correlations between institutional trading and stock returns at monthly or higher frequencies; we find no such effect. What characteristics of the UK market could explain the difference from US findings? One possibility is the composition of the institutional investor category. Recall that aggregate investor demand across all types of investors is necessarily zero, hence in studying the impact of institutional trading on asset prices, much depends on the composition of institutional and individual investor categories. The dominant institutional investor type in our sample is investment advisors, who represent over two-thirds of the value of institutional holdings. If UK investment advisors tend to be uninformed price takers, this would go a substantial way toward explaining our findings. More generally, our results suggest that there is still much to be learned about the informativeness of institutional trading in different settings.

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