



## The trading behavior and price impact of foreign, institutional, individual investors and government: Evidence from Korean equity market

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### ABSTRACT

We examine the dynamic relation between stock returns and four types of investment flows using Korean daily data for the period 1998–2010, focusing on the investment/trading behavior of four types of investors – individual, institutional, government, and foreign – and the effect of cross-border investment flows on the Korean equity market. We find that, first, foreigners and institutional investors tend to drive the Korean equity market, and their trades seem to be information-driven, whereas individual investors do not drive the Korean equity market and their trades do not seem to be information-driven. Second, as a result, both foreigners and institutional investors performed well in the sample period, whereas individual investors performed poorly. Third, the four types of investors differ in their trading behavior. In response to U.S. market returns, foreigners and institutional investors tend to take a momentum strategy whereas individual investors and government tend to take a contrarian strategy.

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### 1. Introduction

Recently, there has been increasing interest in the relation between stock returns and mutual fund flows and the trading behavior of different types of investors. These studies tend to use aggregate market level data. Warther (1995) finds evidence that mutual fund flows are negatively related to past fund returns in monthly data and concludes that mutual fund investors (e.g., individual investors) appear to be somewhat contrarian investors. He also notes that mutual fund investors are considered by many to be the least informed investors in the market. However, Grinblatt et al. (1995) find that most of U.S. equity mutual fund managers are momentum investors.

Nofsinger and Sias (1999) find a strong positive relation between changes in institutional ownership and returns using daily data, and they interpret this as institutional investors being positive feedback traders (see also Sirri and Tufano, 1993; Hendricks et al., 1993). Chakravarty (2001) argues that institutions are informed traders, based on evidence that medium-size trades,

which are almost entirely initiated by institutional investors, have a disproportionately large cumulative price impact. However, Wylie (2005) finds that U.K. mutual fund managers' herding does not substantially affect future asset prices. Instead, he finds that they are contrarian in their buying and selling of the largest stocks.

Bohn and Tesar (1996) report a positive relationship between foreign equity flows and returns in emerging markets using low frequency monthly and quarterly data. Froot et al. (2001) confirm this relation using higher frequency daily and weekly data. This relationship is consistent with the positive feedback trading and herding by foreign investors documented by others.<sup>2</sup>

Given mixed evidence, we extend the literature by examining the dynamic relation between stock returns and investment flows made by four types of – individual, institutional, government, and foreign – investors using daily, individual stock returns and investment flows in the Korean stock market. We have access to a unique data set from Korea that contains the detailed transaction information about daily investment flows for each stock on the Korea Exchange (KRX) by the four types of investors. Such a data

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<sup>2</sup> For example, Choe et al. (1999), Borensztein and Gelos (2000), Kim and Wei (2002), Bonser-Neal et al. (2002), Karolyi (2002), Griffin et al. (2004), and Richards (2005).

set is rarely available in other countries where only aggregate data are available.

This data set allows us to better understand the potentially different trading behavior of the four types of investors, and to address the role of foreign investors in an emerging equity market. The foreign ownership restrictions on Korean securities were lifted in May 1998, following the Asian financial crisis. As a result, cumulative net purchases of Korean equities by foreign investors and their influence in the market have substantially increased since then. In addition, the Korean equity market is one of the largest in Asia.<sup>3</sup> The equity market of Korea makes a particularly interesting case to study because foreign investors have attained a substantial fraction of ownership of the firms listed on the exchange, accounting for about 42 percent in 2004, although the fraction has declined to about 33 percent in 2010.

Our analyses using individual stock return data, combined with investment flows of different types of investors, have an advantage in that this approach uncovers the dynamics of investment flows among the four types of investors and their impact on individual stock prices. Therefore, this study contributes to the growing literature on two issues: investment/trading behavior of four different types of – individual, institutional, government, and foreign – investors, and the effect of cross-border investment flows on emerging markets.

Specifically, compared to the aggregate market approach in the previous literature, we add to the literature by addressing the following questions using daily data: First, who among the four types of investors drive the equity market in Korea? Are the trades information-driven rational trades or irrational behavioral trades? Second, does any type of investor (e.g., foreign) perform better and have an information advantage over other types of (e.g., domestic) investors in their trades? Third, how do the four types of investors differ in their trading behavior? Is there any evidence of feedback trading, either momentum or contrarian trading, or behavioral trading? That is, do stock returns affect investment flows? Is the feedback trading due to information-driven rational trades or irrational (disposition effect) trades?

To address these issues, we use various empirical tools: cross correlations, dynamic causal relations based on autoregressive representations, and relative importance and dynamic impulse response analyses based on moving-average representation-based VAR analyses among individual stock returns and investment flows by the four types of investors. Although very useful, causal relation analysis has rarely been used in previous studies.<sup>4</sup>

The importance of foreign investors in Asian emerging markets has dramatically increased since the Asian financial crisis, and Korea is no exception. As shown in Panel A of *Table 1*, foreign investors own about 33 percent of the Korean equity market as of 2010, which is significantly up from 18 percent in 1998 and 12 percent in 1995. Some criticize foreign investors as bargain hunters because they enter Asian markets while increasing their market shares in the form of equity and bond investments, earn huge profits by acquiring financially distressed firms during the crisis and unloading them at higher prices in a short period of time, and then exit the markets. Others believe that foreign investors contributed to destabilizing Asian financial markets. Hence, it seems warranted to examine their investment behavior and their impact on the Korean stock market in comparison with those of domestic investors (e.g., *Choe et al., 1999, 2005*).

The paper is organized as follows. In Section 2, we describe our data and provide some descriptive statistics. In Section 3, we report various empirical results in response to the questions we raise in this introduction. We conclude in Section 4.

## 2. Data and descriptive statistics

We obtain daily data on investment flows (both inflows and outflows) for each stock made by the four types of investors from the investment flow database provided by the Korea Exchange (KRX). The database includes the number of purchases and sales made by four investor groups and the corresponding total Korean Won values for each stock. We obtain daily data on stock returns from the Korea Information Service. Korean market returns (RET) and U.S. market returns (USMR) are represented by the KOSPI Index returns and the S&P 500 index returns, respectively. The sample period covers from January 3, 1998 to May 31, 2010.<sup>5</sup> Given that investment inflows to the Korean stock market by foreign investors virtually began since the Asian financial crisis when the restriction on foreign investment was lifted, we examine the sample period starting from January 1998.

Foreigners were allowed to own up to 10 percent of domestically listed firms in 1992. Since then, the Korean government has gradually relaxed the limitations on the foreign ownership of listed firms, except for a few companies: 12 percent in March 1995, 15 percent in July 1995, 18 percent in May 1996, 20 percent in September 1996, 23 percent in May 1997, 26 percent in October 1997, and 50 percent in December 1997. And finally on May 22, 1998, the foreign investment limit on Korean securities was lifted with a few exceptions.<sup>6</sup>

To see whether there has been a change in investment behavior, we split the sample period into two sub-samples, 1998–2002 (pre period) and 2003–2010 (post period). We choose the end of 2002 as a cut-off point partly because the impact of the financial crisis on the equity market was almost subdued by that time.

In Panel A of *Table 1*, we present stock holdings by the four investor groups, the government, and others.<sup>7</sup> We find that stock holdings of foreigners have substantially increased in recent years. In 1995, institutions, individuals, foreigners, and government held 32 percent, 31 percent, 12 percent, and 12 percent, respectively, showing that domestic investors dominated the market. But in 2010, institutions, individuals, foreigners, and government held 14 percent, 21 percent, 33 percent, and 4 percent, respectively. Foreign ownership of Korean equity decreased until 1997 (i.e., 16.72 trillion won in 1995, 15.22 trillion won in 1996, and 9.64 trillion won in 1997), but has substantially increased during and after the financial crisis in 1998 (24.38 trillion won) and 1999 (79.53 trillion won). Although the amount of stock holdings by domestic investors has increased, their share of stock holdings has substantially declined over the periods.<sup>8</sup>

To illustrate the magnitude of the four investor groups' equity flows, we plot in *Fig. 1* cumulative net purchases by the four

<sup>5</sup> Data are available from January 3, 1995. Prior to the Asian Financial Crisis (i.e., December 1997), the capital inflows made by foreign investors, however, were minimal and in fact the amount of foreign ownership of Korean equity has declined until 1997. For details, see Panel A of *Table 1* and its discussion below. As such, we use the data from January 3, 1998 in this study. In a recent study, *Park and Chung (2007)* also point out that foreign investors played a negligible role in the Korean stock market before the 1997 financial crisis because there were simply too few of them.

<sup>6</sup> A more detailed chronology of major events about foreign ownership restrictions in Korea is available from authors upon request. To conserve space, it is not included in the paper. The exceptions include: KEPCO & POSCO (30 percent), mining (49.99 percent), air transportation (49.99 percent), and information and communication (33 percent).

<sup>7</sup> Others include firms that have ownership of other firms.

<sup>8</sup> The decline in the share of the government is partly due to the privatization of government owned firms during the Asian financial crisis.

<sup>3</sup> According to the Standard and Poor's (2004), Korean equity market is ranked 7th in terms of total value traded, 8th in terms of the number of listed domestic companies, and 15th in terms of the market capitalization in the world.

<sup>4</sup> For example, *Choe et al. (1999)* and *Nofsinger and Sias (1999)* provide only indirect evidence and conjecture about the dynamic causal relations of variables.

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