



Hot money and cross-section of stock returns during the global financial crisis



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ABSTRACT

We investigate a hitherto unexplored aspect of the hot money phenomenon: the effect of hot money at the individual stock level. In the South Korean stock market, foreign capital flow right before the global financial crisis can be characterized as hot money. A larger increase in foreign investors' ownership of a particular stock in the pre-crisis period resulted in a bigger decline in their ownership of the stock, a sharper drop in the stock's price, and higher volatility of the stock during the crisis. Our findings supplement the existing evidence for the destabilizing effect of certain international capital flows.

1. Introduction

Capital flows into a country during a boom can reverse subsequently, especially when adverse shocks such as international financial crises follow. Since capital outflows can be caused by external shocks that are not necessarily linked to macroeconomic fundamentals (Calvo & Mendoza, 1996; Nier, Sedik, & Mondino, 2014), one can argue that capital flows in pursuit of short-term profit, often referred to as hot money, make recipient countries, especially emerging ones where capital flows can be large compared with the size of their domestic financial markets, vulnerable to subsequent adverse shocks, such as global financial crises (Chari & Kehoe, 2003; Korinek, 2011).

Although the threats posed by hot money have been widely discussed in the literature of international finance from early on (e.g., Simon 1960), empirically demonstrating distortive effects of hot money has been a challenge for subsequent researchers. First, it is not straightforward to identify hot money. While most existing literatures consider short-term capital flows hot money, Claessens, Dooley and Warner (1995) document that long-term flows are often as volatile and unpredictable as short-term flows and conclude that the maturity of the assets that foreign investors buy does not provide any information on the “hotness” of the flows. Second, because almost all existing literatures on hot money have focused on aggregate, national-level time-series data (e.g., Sarno & Taylor, 1999), sample size is rather small, which poses difficulty on researchers.

In this paper, we contribute to hot money research by adopting the following two approaches which, as far as we know, have not been taken by existing literatures. First, to research distortive effects of hot money, we analyze cross-section of stock returns, rather than aggregate time-series data. We focus on returns of individual stocks in the South-Korean stock market during the recent global

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financial crisis (henceforth GFC). Destabilizing effect of hot money must be different for different stocks, but, as far as we know, this has not been documented in the literature. By focusing on cross-section of stock returns, sample size expands significantly, which helps us to obtain statistically robust results.

Second, to identify hot money, we develop some plausible assumptions on foreign investors' behavioral characteristics that make their capital flow "hot." In the literature, hot money is associated with "sudden" and "large" increase in capital flow (Claessens et al., 1995; Sarno & Taylor, 1999), and also with optimism and herding of investors (Chari & Kehoe, 2003). Herding is a group of investors trading in the same direction over a period of time (Nofsinger & Sias, 1999; Wermers, 1999). Herding may be driven by rational motives, but it may also be driven by optimism and/or opportunism, and, in the latter case, the herding is likely to cause their investment vulnerable to subsequent shocks. Based on this conjecture, we use three measures to identify "hotness" of level investors' flow into South-Korean stock market: an index of herding intensity of foreign investors together with an aggregate-level price-to-earnings ratio and foreigners' trading volume. Our index of herding intensity, similar to the one developed by Lakonishok, Shleifer, and Vishny (1992), measures one-sidedness of foreign investors' flow into the South-Korean stock market during a particular period; the index is high when foreign investors increase (or decrease) their positions across majority of South-Korean stocks, and it is low when they increase their positions in some stocks but they decrease their positions in other stocks. The aggregate-level price-to-earnings ratio and foreigners' trading volume are proxies for sentiment of market participants, including foreign investors. Using these measures, we determine that hot money flowed into South-Korean stock market during the first half of 2007, right before the GFC, when all our three measures were high.

We work on hypothesis that the hot money which flowed into the South-Korean stock market during the first half of 2007 was vulnerable to subsequent shocks and caused distortive effects. To test this hypothesis, we analyze the market at the individual stock level. Our key measure is the change in the proportion of the foreign ownership (henceforth FOC) during a particular six-month period (e.g., January to June of 2007), where each stock's FOC represents international capital flows into/out of the stock. We construct Korean stock portfolios based on FOC during the first half of 2007 and find that portfolios with higher FOC during that period experienced lower FOC in 2008, the year of GFC. This indicates that stocks that attracted more hot money in the pre-crisis period experienced larger capital outflows during the crisis.

To test distortive effects of the hot money, we ask whether stocks with higher FOC during the pre-crisis period experienced sharper declines in price during the GFC, and our findings support our hypothesis. We find that stocks with higher FOC during the first half of 2007 suffered sharper declines in price, measured by total return, value-at-risk, 20-day minimum return, and maximum drawdown during 2008. We also find that stocks with higher FOC during the pre-crisis period became more volatile and "riskier" during the GFC, in terms of volatility, downside volatility, beta and downside beta.

We perform several robustness tests. One possible scenario which may drive our result is that foreign investors selected fundamentally riskier stocks for whatever reasons during the first half of 2007, and those stocks "naturally" exhibited low returns during the GFC. For example, foreign investors¹ may have preferred stocks with high market beta, which is a sensible investment strategy for institutional investors who assume positive market return and who are incentivized to beat their benchmark portfolio (Baker, Bradley, & Wurgler, 2011). To test this possibility, we repeat our analysis, adding market beta as a control variable, but the results do not change. Similarly, we add other factors and firm characteristics that are considered proxies of fundamental risk of individual stocks: SMB beta and HML beta (Fama & French 1993), size, price-to-book ratio, price-to-earnings ratio, debt-to-equity ratio, and return-on-asset. Controlling for these variables does not change our results.

Thus our results support the hypothesis that the hot money which flowed into the South Korean stock market during the first half of 2007 was vulnerable to subsequent shocks and caused distortive effects. Although the idea that hot money can be distortive is not new, its effect at the individual stock level has not been reported in previous international finance literatures.

Previous studies have examined differential effects of two components of foreign capital flow—foreign direct investment (henceforth FDI) and foreign portfolio investment (henceforth FPI). These studies suggest that FPI is much "hotter" than FDI. FDI flows are less volatile than FPI (World Bank, 1999; Albuquerque, 2003), and FPI has a stronger impact on asset prices than FDI (Feng, Lin, & Wang, 2012; Kim and Yang, 2009). In particular, Feng et al. (2012) call FPI hot money, given its short-term nature and high volatility. Note that these studies have analyzed aggregate, national level time-series data in which FDI and FPI components of foreign capital flow are separately identified. As we focus on the foreign capital flow at the individual stock level, we are not able to explicitly distinguish the effects of FDI and FPI.²

While we do not explicitly distinguish between FDI and FPI components, our analysis is in line with the previous studies that do distinguish between the two. Consistent with those studies, we consider hot money flow to be mostly contained in the FPI component. The foreign capital flow that we analyze can be considered mostly FPI for the following reasons. Firstly, FDI is not very common among the Korean firms that are listed in the stock market. Kim and Cho (2008) found that, between 1999 and 2003, only 6 foreign investors had the ownership exceeding 50%, the threshold level for "exercising control" according to the IMF (2009) guideline for compiling FDI statistics. Using a much lower 10% criterion for "significant degree of influence," there were only 40 foreign investors meeting this criterion. Moreover, because FDI is a "strategic" investment, it does not change much within a short period of time. Kim and Cho (2008) found that most of "strategic" foreign investors of publicly listed Korean firms do not change their ownership for the

¹ Foreign investors in Korea are mostly institutional investors. According to the statistics compiled by the Financial Supervisory Service of Korea (2007), there were total of 20,000 registered foreign investors at the end of June of 2007, of which 15,000 were institutions. Institutional investors are further broken down into mutual funds (61%), pension funds (10%), brokers (3%), banks (3%), insurance companies (2%), and the rest. Most of these investors are financial investors who do not attempt to actively influence the management of the company. See Kim and Cho (2008).

² While governments compile FDI and FPI statistics at the aggregate level, such distinction is not available at the individual stock level.

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