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# **Investor Response to Public News, Sentiment and Institutional**

## **Trading in Emerging Markets: A Review**

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# **Investor Response to Public News, Sentiment and Institutional Trading in Emerging Markets: A Review**

## **Abstract**

This paper reviews the literature on investor reaction and sentiment with respect to public information arrival in emerging markets and discusses the implications of the findings for the validity of theoretical models emphasizing public information arrival as the main mover of asset prices. We cover three types of public information news: monetary policy announcements, the International Monetary Fund (IMF) related news and other public and political news. In addition, we review the literature on sentiment and institutional trading in emerging markets. We summarize general findings and suggest some directions for further research.

**Keywords: Investor reaction, investor behavior, IMF-news, central bank announcements, public news, news arrival, institutional trading**

**JEL codes: G12, G4, G15, E52, F31, G2.**

## **I. Introduction**

In recent years, there has been a significant growth in the number of survey articles in finance and financial economics. They cover such topics as the applications of modern financial econometrics methods (Chang et al., 2013), behavioral finance (Nawrocki and Viole, 2014; Ramiah et al., 2015), bond markets (Larsson, 2013), volatility indexes (Claessens and Yurtoglu, 2013), credit spreads (Guo, 2013) and financial risk management and economic policy uncertainty (Hammoudeh and McAleer, 2015), among others. However, these papers tend to be general and, more importantly for our purposes, do not focus on emerging markets or sometimes they cover only one country. For example, Wang et al. (2014) and Tan et al. (2014) review issues regarding energy and antitrust policy only for China. There are only a few reviews covering specific issues on emerging markets. For instance, Fan et al. (2011) review corporate finance and governance, Kearney (2012) focuses on trends and Atilgan et al. (2015) review empirical studies regarding equity returns. Other earlier papers studying diverse issues in financial economics on emerging markets include emerging markets finance (Beakert, 2003), financial crises in emerging markets (Khilji, 2003), asset pricing puzzles (Hurn and Siklos, 2006), futures contracts and derivative markets (Lien and Tse, 2006; Lien and Zhang, 2008) and China's financial markets (Chan et al., 2007), among others.

In this paper, we fill this gap in the literature by reviewing empirical studies on investor reaction, sentiment and institutional trading in emerging markets. Our focus on emerging markets is driven by several factors. The share of emerging economies in the world output has increased significantly over time. Based on purchasing power parity (PPP) figures, the share of emerging economies in the early 1990s was about 32 percent. During 2010s, it raised to more

than 45 percent (European Central Bank, 2015).<sup>1</sup> Emerging markets and economies have also undergone major structural changes and implemented significant economic reforms. As a result, emerging financial markets have grown significantly over time. For example, the stock market capitalization in China has now surpassed that of European Union and Japan, ranking it globally number #2 after the US. In addition, institutional trading in emerging markets has increased significantly. For example, about 80 percent of emerging markets bonds are now owned by institutional investors.<sup>2</sup> At the same time, foreign investors have become more active in emerging markets, which has increased investor wealth, but this effect has come at the expense of higher risk due to the exposure of emerging markets to more global factors.<sup>3</sup>

This review covers empirical papers examining investor reaction to three types of policy-oriented announcements and news: monetary policy announcements, news about International Monetary Fund (IMF) programs during financial crises and other public or political news. In addition, we review papers on investor sentiment and institutional trading. Studying public information arrival, typically measured by the publicly released economic and financial data such as those which we cover in this review, is a building block of many theoretical models of asset price determination.<sup>4</sup> Although the empirical evidence on linking public information with asset market behavior is still accumulating, the main focus in the existing literature so far has been mostly on industrial countries with limited evidence on emerging markets. Our paper

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<sup>1</sup> See: <https://www.ecb.europa.eu/ecb/tasks/international/emerging/html/index.en.html>

<sup>2</sup> Global Financial Stability Report, 2014, IMF.

<sup>3</sup> Global Financial Stability Report, 2014, IMF.

<sup>4</sup> For example, the mixture of distributions model (MODM) and the recent microstructure theories rely on public information arrival to explain movements in asset returns. MODM models are associated with Clark (1973) Epps and Epps (1976), Tauchen and Pitts (1983), Lamoureux and Lastrapes (1990), Foster and Viswanathan (1993, 1995, Harris (1987), Kalev et al. (2004), among others. Microstructure theories are reviewed in O'Hara (1995) and Lyons (2001), among others.

contributes to this line of literature by providing a review of related papers on emerging markets and summarizing the key findings.

Studies reviewed in this survey have practical implications for investors and policymakers. First, understanding investor reaction regarding policy announcements and other important public news on emerging markets has significant implications not only for the validity of theoretical models, but also for policymakers and investors in these economies. For example, investor reaction to a central bank announcement or other news, such as policy announcements by both the IMF and the European central bank during the recent 2008 global financial and later in the European debt crisis, help us understand not only the investor behavior and sentiment, but it is also useful to judge the success of the related policy initiatives. Second, the literature about investor sentiment is relevant for practitioners in emerging markets, who may benefit from such knowledge and from the existing empirical findings by constructing their trading strategies based on the information about investor behavior and the changes in trends of the sentiment measures. Practitioners in emerging markets may also benefit from the knowledge about the behavior of institutional investors, e.g. by simply following their trades and replicating them (there exists anecdotal evidence that smaller investors successfully trade by following the actions of large institutional traders). Third, the knowledge about the role of institutional investors is useful also for regulators in emerging markets, e.g. when they know what impact the trading by those institutions has on market volatility (i.e. market risk).

To our best knowledge there are no recent survey articles on investor behavior and institutional trading on emerging markets. Our selection of papers is based on a search for keywords, such as: “investor reaction”, “investor behavior”, ”investor sentiment”, “IMF-news, “central bank announcements”, “public news”, “news arrival” and “institutional trading.” It is

also worth mentioning that academic research has been booming since the data on emerging markets became more broadly available in the mid-1990s, yet there is lack of survey articles which attempt to summarize the results produced using such new statistical material. The empirical studies reviewed in this survey therefore focus on the more recent periods due to better access to data and the use of the emerging market definitions of the data providers. Given the recent enormous volume of research on emerging markets, it was obviously not possible to include all papers in this survey. Hence, the papers reviewed here are only representative of related studies and the inferences drawn from the articles included in this selective survey should not be necessarily interpreted as applying to all emerging markets and all possible cases. However, our initial survey may represent a yardstick for future reviews on investor reaction, sentiment and behavior of institutional traders in emerging markets.

In the next section II we first review articles on investor reaction to announcements and on investment sentiment. Section III covers papers on institutional trading. The last section IV concludes the review with the indication of some directions for further research.

## **II. Investor Reaction and Sentiment Studies**

In this section, we first review empirical studies of investor reaction in regards to three specific types of announcements and news: monetary policy, IMF-related news as well as other public news and political events. Next, we review the papers on investor sentiment.

### ***II. 1 Monetary Policy Announcements***

Available literature on investor reaction to monetary policy news examines the impact of a variety of announcements on financial markets. We divide these studies into two groups: those

investigating a panel of emerging economies and those focusing on certain regions or individual countries. We also summarize the papers based on the type of the financial markets covered, including stock, bond and foreign exchange markets.

Regarding the studies covering a broad sample of countries, Wongswan (2009) investigates the impact of US monetary policy announcement surprises on equity indexes in developed and emerging economies. He finds large and significant response of Asian, European and Latin American equity indexes to US monetary policy announcement surprises at short time horizons. Hayo et al. (2012) provide evidence about the effects of US monetary policy on 17 emerging equity market returns over the period 1998–2009. They find that central bank communications have a significant impact on market returns and informal communications have a larger influence on returns than do target rate surprises.

Several other papers focus on emerging European economies. Nikkinen et al. (2006) analyze the data from such countries as the Czech Republic, Poland, Hungary, Slovakia as well as Russia and investigate the dynamics of volatilities around the US macroeconomic news on their stock markets. They find that these markets as a group were not affected by such external information as the US announcements. Hanousek et al. (2009) utilize intra-daily frequency data from the Czech Republic, Hungary and Poland and analyze the impact of the US and EU macroeconomic news on their stock market returns. They find that all these markets experienced significant spillovers directly through the composite index returns from neighboring markets or indirectly through the transmission of macroeconomic announcements. Hayo et al. (2010) examine the effects of US federal funds target rate changes and other types of FOMC communication on the European and Pacific regions equity market returns. They report that both types of news have a significant impact, but target rate changes have an economically more



important effect. European markets are also influenced by a greater variety of FOMC communications than Pacific markets.

Above studies have focused mainly on stock markets and other papers cover a number of other market segments including stock, money and foreign exchange markets. Andritzky et al. (2007) investigate emerging market bonds reaction to macroeconomic announcements and demonstrate that all analyzed news affect bonds price volatility. However, the announcements appear to matter less for countries with more transparent policies and higher credit ratings. Rozkrut et al. (2007) investigate the verbal statements of the key policy makers regarding future monetary policy decisions reported by major news agencies and official communiqués of the central banks in the three Central and Eastern European (CEE) countries: the Czech Republic, Hungary and Poland. They found that the verbal comments of policy makers in the Czech Republic, Hungary and Poland influence the behavior of the currency market but that this effect differs among the investigated countries. Poghosyan et al. (2008) show that central bank's foreign exchange interventions significantly influence public expectations in Armenia regarding currency market fluctuations. Similarly, Loiseau–Aslanidi (2011) report that sterilized foreign exchange interventions by the National Bank of Georgia increased the volatility of the domestic currency exchange rate against the US dollar.

Regarding the individual country studies, Serwa (2006) investigates the impact of a change in the official interest rate and its surprise component on asset prices in Poland. He finds that the short-term interest rates did respond significantly to official interest rate changes, but other variables (the long-term interest rates, stock indices and foreign exchange rates) did not react to monetary announcements in the anticipated direction. Robitaille and Roush (2006) provide evidence about the impact of the US macro data and the FOMC announcements on the

stock market index in Brazil and on the yield spread on the Brazilian government dollar-denominated bonds market. Moura and Gaião (2014) examine the impact of Brazilian and US unexpected monetary policy and other macroeconomic announcements on both the term structure of nominal interest rates and inflation expectations in Brazil. Using daily data from March 2005 to December 2012 and a vector error correction model, they find that domestic and US macroeconomic surprises raise nominal interest rates, expected inflation and real interest rates. They also report that the global financial crisis of 2007–2009 significantly influences the responses to macroeconomic news.<sup>5</sup>

In the area of the foreign exchange market studies, Égert and Kočenda (2014) analyze the impact of central bank and macroeconomic news in the Czech Republic, Hungary and Poland using foreign exchange market data for the period 2004–2009 and a non-linear dynamic modeling framework. Their model allows the adjustment of the exchange rate to move back to equilibrium at different speeds, which is driven by the size of the exchange rate deviation from equilibrium. They show that investor reaction to macroeconomic news announcements in each country is different. In addition, they demonstrate that the effectiveness of central bank communication declined during the recent global financial crisis.

Brzeszczyński and Kutan (2015) conduct the analysis of the impact of the information about the monetary policy announcements revealed on the regular basis by the National Bank of Poland (NBP) in form of the publication of the new macroeconomic data, such as money supply

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<sup>5</sup> There are other studies examining the impact of the recent global financial crisis on emerging markets from many different angles. We do not review these papers in detail here. Among the related studies, Shehzada and Haan (2013) examine the impact of the crisis on stock prices. Agarwal et al. (2013) develop financial stability tests and compare performance of emerging economies with that of advanced economies during the pre- and post-2008 crisis. Dungey and Gajurel (2014) and Gorea and Radev (2014) investigate contagion effects. Chen et al. (2014) study the stock market integration between frontier and leading markets during the periods of pre- and post-global financial crisis. Črnigoj and Verbič (2014), Teixeira et al. (2014), Yamamoto (2014) and Wan and Jin (2014) investigate the impact of the crisis on Asian economies, corporate investment in Slovenia, banking sector regulation and business cycles, respectively. Liao (2015) investigate the link among betas, leverage and the subprime mortgage crisis for several advanced and emerging economies.

or reserve money etc., on the zloty/dollar exchange rate and on the zloty/dollar volume of trade. The novel data about foreign exchange trading volume was obtained directly from Reuters from the Reuters electronic brokerage platform for currency trading.<sup>6</sup> The sample period covers years 2000–2003 during which NBP gained independence, it was transforming institutionally and it was switching to a new monetary policy regime, i.e. inflation targeting. Evidence presented by Brzeszczyński and Kutun (2015), based on ARCH type models with dummy variables, indicates that NBP central bank communication helped reduce currency market uncertainty, measured by the conditional variance of foreign exchange returns and foreign exchange volume of trade, and stimulated market activity by increasing trading volume.

Frömmel et al. (2015) investigate how scheduled and unscheduled public news announcements affected the intraday jumps (i.e. significant price discontinuities) in the Hungarian foreign exchange interdealer market over the period 2003–2004. They show that both scheduled and unscheduled news are strongly related to jumps and scheduled US news had a large effect on the market. However, public news announcements can explain only about half of the jumps, which suggests that private news may also trigger such movements in foreign exchange markets.

## ***II. 2 International Monetary Fund News***

Literature on investor reaction to IMF-related news covers developments in bond, stock and foreign exchange markets. Many studies focus on the 1998 Asian crisis. Regarding the stock

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<sup>6</sup> Other studies, which deal with microstructural issues in emerging markets, are limited and, hence, we do not review these papers in details here. Among this small number of papers, Korczak and Bohl (2005) investigate the changes in the domestic market stock prices and trading volume around depositary receipts issuance on a sample of the Czech, Hungarian, Polish, Russian, Slovak and Slovenian stocks. Armitage et al. (2014) study trading on the Ukrainian stock exchange using trade-by-trade data. In particular, they investigate the efficiency of various liquidity measures. Araújo, Barbedo and Vincente (2014) analyze the adverse selection component embedded in the bid–ask spread of stocks traded in the Brazilian market. We review some other additional studies using high-frequency microstructural data in the next sections.

returns, most literature focuses on the bank stocks. Kho and Stulz (2000) examine the IMF-related news on the bank returns, both local and international, during the Asian crisis. They find that the IMF program announcements increased bank shareholder's wealth. Specifically, the increase of international bank returns was generally significantly positive but did not affect those in the crisis countries.

Dong et al. (2000) focus on the impact of IMF programs on banks in the US and conduct research on the abnormal returns of the US banks during the crises in Mexico, Brazil, Korea and Russia. They investigate the impact on banks in the United States during the currency crises in emerging markets and test the contagion effects. They conclude that the US banks with large exposure to crisis countries benefit from the IMF bailouts' news while others do not. Zhang (2001) investigate the effectiveness of IMF actions in South Korea on US bank creditors' equity values and show that major event announcements lead to significantly beneficial impact in case of the US bank creditors. In addition, banks with larger exposure to South Korea had more favorable equity-price responses. Different from these studies, Lau and McNish (2003) conclude that the crisis countries that received the rescue package experienced a positive increase in bank stock prices as a benefit from the IMF bailout.

Kutan and Sudjana (2003) examine the effect of IMF-related news on stock market returns and volatility in Indonesia during the Asian crisis. They show that IMF-related news had a significant impact on stock market returns and volatility and that stock returns react to news about requesting loans, negotiations, unfavorable IMF statements and the visits of the IMF. They also report that the market risk, measured by the conditional volatility of the stock market returns, declines due to loan requests from the IMF and the IMF visits.

Hayo and Kutan (2005) investigate the impact of IMF events on financial markets in six emerging markets during the Asian, Russian and Brazilian crises of 1997–1999. They cover stock, foreign exchange and bond markets. They find that IMF-related news (both good and bad) affects daily stock returns. For foreign exchange market returns, they observe significant effects of only bad IMF news. Regarding bond markets, neither good nor bad news seems to affect interest rate spreads. In addition, they report that IMF news does not have a significant impact on the volatility of the financial markets, suggesting that IMF actions do not calm down the markets during the crisis times.

Evrensel and Kutan (2007) divide IMF-related news into two sets, namely IMF program negotiations and the approvals. They find that the impact of the IMF news released on IMF bailout negotiation days was different from those on approval days. Kutan et al. (2012) expand this line of research on the stock market into various economic sectors, including financials, basic materials, industrials, and consumer goods sector and conduct a multi-event study to examine the interplay between the government and the IMF actions. They conclude that IMF decisions played an important role in affecting sectoral returns. However, they also show that negative investor reactions to IMF policies by the local authorities and the public might reverse the favorable impact on stock returns.

Kutan and Muradoglu (2014) further investigate the long-term shareholder wealth impact of IMF actions and programs on both financial and real sector returns in the stock markets of Thailand, Indonesia and Korea. They show that IMF involvement regarding liquidity disbursement or liquidity concerns in those markets were the most important events affecting abnormal returns and, hence, the investor wealth in both real and financial sectors.

However, the response of the financial sector to IMF actions is much stronger than that of the real sector.

Kutan et al. (2015) examine the effects of IMF bailouts not only on crisis countries but also on main creditor countries. They investigate the impact of IMF actions on a broad range of financial markets, including stock markets, bond market, foreign exchange markets and derivatives market (forward exchange rates) as well as banking and financial firms. Their analysis covers both the crisis countries: Indonesia, Malaysia, Philippines, South Korea, Thailand and the main creditors: United States, France, Germany and United Kingdom and they document who benefits most from the IMF involvement. They show that IMF involvement and local governments' co-operation actually helps the crisis countries but not the creditors.

Some other studies investigate the impact of IMF program announcements in bond markets during the financial crises that took place in Latin America. Ganapolsky and Schmuckler (2001) analyze the Mexican crisis of 1994–1995 and the reaction of Argentina's stock market index, Brady bond prices and peso-deposit interest rates to policy announcements and news reports received by markets during that period of time. They find that those announcements that were perceived as increasing the credibility of the currency board (i.e. the agreement with the IMF, the dollarization of reserve deposits in the central bank and changes in reserve requirements) had a positive impact on market returns. Zhang (1999) study the long-term influence of the 1995 Mexican bailout which implied moral hazard. He approaches this problem in the context of a regression model of spread determinations and concludes that IMF program did not involve the moral hazard. Evrensel

and Kutan (2008) show that the sovereign bond spreads in the countries accepting IMF programs decrease while the spreads in other countries increase.

Some studies also test the potential moral hazard effects of IMF programs (Eichengreen et al., 2006 and Evrensel and Kutan, 2006) whereby international banks are tempted to lend recklessly while local governments and local banks are tempted to borrow excessively. Dell’Ariccia et al. (2000) disentangle the moral hazard from alternative explanations of the factors regarded as reflecting moral hazard and exploit a larger range of data. They show that crisis countries benefit from IMF lending since it reduces investor risk due to liquidity injection. In addition, the results in Kutan and Muradoglu (2014) suggest that moral hazard effects were present in Thailand, Indonesia and Korea during the Asian crisis.

### ***II. 3 Other Public and Political News***

In two early studies, Kutan and Aksoy (2003 and 2004) examine the role of public information arrival based on macroeconomic news in the Istanbul Stock Exchange. Their sample covers the period from January 1996 to February 2001 and considers the composite, financial, industrial and service stock market indices. They show that real GDP and industrial production announcements have the most important impact on stock returns. Nominal stock returns increase in response to unfavorable inflation announcements, but only for the financial sector and the reaction was found to be only partial. In a more recent study for Turkey, Solakoglu and Demir (2014) investigate how news arrival affects return volatility in the Istanbul stock market. News arrival is defined by the number of daily news headlines. They find that the arrival of news mostly causes a decline in return volatility persistency supporting the mixture-of-distributions

hypothesis. Economic news, and specifically European news, lead to a larger decline in volatility persistence while only inflation news about the Turkish economy reduces volatility persistence.

Using news-based indexes of economic policy uncertainty (EPU) relying on newspaper coverage and disagreement among economic forecasters, Li et al. (2015) test the causal relationship between economic policy uncertainty and stock returns in China and India. In order to allow for structural changes, they use a 2-year rolling window. Their sample covers the period from February 1995 to February 2013 for China and from February 2003 to February 2013 for India. The findings show bi-directional causal link between EPU and stock returns in some sub-periods (but not in the whole analyzed sample), suggesting a weak link between EPU and stock returns in these two emerging countries.

Some studies investigate the impact of political news on capital markets. Bonilla et al. (2014) examine the impact of the presidential election in 2010 on capital market in Chile. The motivation for this study was the ownership of stocks in some Chilean companies by the presidential candidate Piñera throughout the presidential campaign. The analysis covers the last year of the election campaign. They show that when the probability that Piñera would be elected president increased, there was a positive and statistically significant effect on the capital market and the effect remained the same throughout the presidential campaign.

Ahmed and Hussain (2014) examine how political and military news affect the returns and volatility of the stock markets in India and Pakistan. Using the data from January 1997 to December 2008 and a bivariate VAR–EGARCH (exponential generalized autoregressive conditional heteroscedasticity) model, they report that military news coming from the rival country generates a significant reaction in both countries' stock markets. In addition, they find significant volatility spillover from India to Pakistan.



Bassiouny and Tooma (2014) examine the impact of a political uprising in January 2011, which closed the local market for 2 months, on price discovery in Egypt. In order to deal with the lack of domestic activity, Egyptian companies were cross-listed as Global DRs (GDRs) on the London Stock Exchange. Using intraday transaction data for Egyptian stocks and their foreign-listed GDRs from the period January 2010 to April 2012, they find that all of the securities that were dominantly priced in the local market prior to the uprising have become priced more in the London market. Overall, the results demonstrate that the foreign market has played a more important role in the price discovery process following the reopening of the local market.

In summary, the findings discussed above show that the majority of the studies that have tested the importance of public information indicate that its arrival, measured here by the monetary policy announcements, IMF-related news and other publicly released economic and political data, is important in explaining variation in asset returns. The relative significance of public information varies with the sample period, methodology used and other factors. Based on this evidence, we can conclude that public information is relevant in determining asset price movements in emerging markets, which supports relevant theories that emphasize public information as the main determinant of asset prices.

#### ***II. 4 Investor Sentiment***

According to traditional finance theory, asset prices should be equal to the present value of expected future cash flows. This relationship also suggests that in the equilibrium the expected returns can be explained only by systematic risk and any mispricing must be eliminated by the activities of arbitrageurs. Therefore, the classical finance theory does not predict any role of investor sentiment in shaping the patterns of stock returns and stock price volatility. However,

the research results spanning the past two decades have shown that the traditional finance approach is not able to explain stock returns and volatility satisfactorily. Thus, other factors that possibly include behavioral aspects of the market, might help to explain the returns of stocks. One of these factors is investor sentiment which may be defined as a belief about future cash flows and investment risks, which is not justified by any other facts or data (Baker and Wurgler (2007)). This stream of research on the developed markets has demonstrated the existence of statistically significant relationship between stock returns and the sentiment variables. Moreover, Baker and Wurgler (2006) argue that a wave of investor sentiment has large effects on securities, whose valuations are highly subjective and difficult to arbitrage, such as: securities of young firms, extreme growth firms, small firms and non-dividend paying firms.

Since the emerging markets are relatively young and often dominated by individual investors, as well as typically suffer from the shortage of high quality financial information and professional financial analysts' services, it is reasonable to assume that the performance of these markets may be affected by investor sentiment. As a result, the research covering impact of investor sentiment on emerging markets boomed during last two decades, although it is still not as rich yet as in case of developed markets. Investor behavior may be different in different markets, so it is important to be aware of the differences between the role of investor sentiment in emerging and developed countries. Such research may also have value for practitioners.

The existing literature applies different sentiment measures which can be divided into two general types: direct and indirect ones. Investor surveys are an example of the direct measure of market sentiment, whereas there are several other sentiment proxies proposed which are used as indirect sentiment indicators. Some examples of these proxies are: aggregate net flows of equity mutual funds, put-call ratio, consumer confidence index, aggregate trading volume, IPO

returns, number of IPOs, subscription rate in IPO, short sales to total sales ratio, close-end fund discounts, bull-bear spread or the sentiment index suggested by Baker and Wurgler (2006). The difference in variables measuring investor sentiment has resulted in big diversity in terms of the methodology used in empirical studies and the frequency of data. Empirical papers utilize data of very different frequencies (intra-daily, daily or monthly) and such methodologies as the OLS, GARCH or panel quantile regression models.

The sentiment of investors can be investigated from a broader perspective of the entire markets, through the industry-level effects to more micro-level studies analyzing the behavior of certain investor groups in individual countries.

A study which examines the general investor sentiment in Poland is provided in Brzeszczyński and Welfe (2007) who show evidence about the sentiment of the Polish stock market in terms of its sensitivity to international stock markets movements and transmission of spillovers from major markets to the the Warsaw Stock Exchange (WSE). Applying ARCH class models, they investigate the influence of the international stock market indices, such as DAX from Germany, CAC from France, FTSE from the United Kingdom, SMI from Switzerland and the indices DJIA and NASDAQ from the market in the USA, on the variability of returns of the WIG index from the WSE. The results for the sample five-year period from January 1998 to December 2002 indicate the existence of statistically significant interdependence between WIG index returns and the returns of indices from the European markets, however the strongest effect was detected in case of the DJIA index from the USA from the previous day (and to a weaker degree in case of the NASDAQ index also from the previous day). This finding suggests that the sentiment of the stock market investors in Poland was the strongest in case of the signals from the US market and the transmission processes of stock market returns variability from

international markets to the market in Poland in the analysed period were dominated by the price movements at the stock exchanges in the USA.

Csontó (2014) studies how the relationship between emerging markets sovereign bond spreads, economic fundamentals and global financial market conditions differs across three regimes of global market sentiment. Using a panel dataset of monthly observations from the period between January 2004 and December 2012 for 17 emerging markets and a Markov-switching model, they show that the cross-country correlation of spreads increases in high-volatility regimes, implying that countries cannot fully decouple from developments in other emerging markets during periods of distress. The fixed effects panel estimation indicates that while country-specific fundamentals are important determinants of spreads in each regime, the importance of global financial conditions increases in high-volatility periods.

Daszyńska-Żygadlo et al. (2014) test the existence of a contemporaneous relationship between sentiment/optimism indexes and returns at the aggregate market level in eight emerging markets: Brazil, China, India, Mexico, Poland, South Africa, Russia and Turkey. They use sentiment and optimism Thomson Reuters MarketPsych Indexes which are based on scanning media coverage for relevant texts reflecting particular moods and opinions. The results are not univocal. They confirm the hypothesis about a positive contemporaneous relationship between investor moods and excess returns only in Brazilian (only sentiment index) and Chinese (only optimism index) markets. Daszyńska-Żygadlo et al. (2014) also find that excess returns are more sensitive to changes in investors moods during periods of negative sentiment/optimism index values in four out of eight analyzed markets, namely: Brazil, China, India and Mexico and that this relationship is positive.

Oprea (2014) examines the relation between the sentiment of noise traders, proxied by the consumer confidence index, and stock prices in ten CEE stock markets: Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic and Slovenia over the period from April 2004 to March 2014. The findings suggest that, in general, the sentiment of noise traders seems to have no impact on stock prices at a market wide level.

However, the impact of investor sentiment on the CEE stock markets is found significant in another study. Corredor et al. (2015) examine the effect of investor sentiment on stock returns in the Czech Republic, Hungary and Poland. According to their results, sentiment is a key variable driving the prices of stocks traded on these markets and its impact is stronger there than in more developed European markets. It is also shown that this effect is interrelated with stocks characteristics, particularly those considered to make stocks more prone to the influences of investor mood. However, their results also show that the effect is not uniform across countries, because higher levels are found for Poland and the Czech Republic. Corredor et al. (2015) confirm the role of country-specific factors in the impact of investor sentiment on stock prices. They find also that sentiment is a twofold (global and local) phenomenon in which the global dimension has much greater importance than the local dimension.

At the industry level, Chen et al. (2013) examine how industry returns are affected by both global and local market sentiments through employing a threshold model for stock returns among several Asian countries during the period from 1996 to 2010. They show that the positive (negative) impact of global sentiment above (under) the threshold turns significant, indicating that global optimism leads industry returns to be overvalued, while pessimism leads them to be undervalued. They also report that the nexus of industry returns and investor sentiments is subject to change between different sentimental intervals.

Other studies are focused on more micro-level analysis of sentiment, in particular on sentiment measures. Using the sample of 293 IPOs in Hong Kong from the period from April 2003 to December 2009, Jiang and Li (2013) separately measure pre-market and aftermarket sentiments and examine their impact on IPO pricing in a two-stage framework. For the measures of the pre-market sentiment they use two proxies: subscription rate for retail tranche and abnormal Google Search Volume Index (SVI) values, which they treat as an unambiguous measure of investor attention. As the measures for the post-market sentiment they apply small trade order imbalance and the turnover on the first day of trading. Jiang and Li (2013) show that underwriters only partially adjust offer price to reflect pre-market sentiment. As a result, the money left on the table effect is positively related to the deterioration of investor sentiment in the aftermarket period. They also find that aftermarket sentiment causes a further price run-up in the secondary market. The long-run underperformance further confirms that over-optimistic sentiment eventually fades away and IPO overpricing is corrected over time. However, the presence of investor sentiment during pre-market and post-market stages makes it possible for underwriters to successfully implement a staged distribution strategy.

Some other papers focus on the analysis of sentiment for particular countries, most notably in Asia and, in particular, using the Taiwanese data. Ding et al. (2014a) examine the link between investor sentiment (measured by the survey data) and stock returns in Taiwan using monthly transaction data from January 2007 to October 2008. They show that investor mood, arbitrage constraints and stock characteristics of individual holdings are important factors affecting investor sentiment over time.

In another study on Taiwan, Yu et al. (2014) investigate how investor sentiment (measured by the consumer confidence index) affects stock returns in Taiwan during the period

from January 2001 to December 2011 by employing a VAR model and Granger causality tests. They show that stock returns Granger-cause investor sentiment and are positively (negatively) related to variance under low-sentiment (high-sentiment) regimes. In addition, they observe that the relationship among investor sentiment, returns and variance does not significantly differ among Taiwanese sectors, which indicates no significant industry effects.

Hu et al. (2015) examine the effects of investor sentiment on trading frequency and positive-feedback trading using high-frequency data for stocks listed on the Taiwan Stock Exchange. They employ both OLS and GARCH models to test how investor sentiment affects trading frequency for each one-minute interval during the period from October 2010 to March 2011 and find that investor sentiment increases trading frequency. The results based on the VAR model to measure feedback trading in one-minute intervals indicate that investor sentiment plays a significant role in explaining positive-feedback trading strategies, especially when market sentiment improves.

Szu and Young (2015) explore whether individual investor sentiment significantly influences the Taiwanese stock index option prices. The data relating to the 2007-2010 financial crisis show that risk-neutral distributions are associated with more negative skewness and wider confidence intervals. This indicates that during the financial crisis the Taiwanese option traders became more pessimistic about the underlying asset prices. Szu and Young (2015) suggest that individual investor sentiment was an important determinant of the Taiwanese stock index option prices in both the pre-crisis and crisis periods, which contrasts with the empirical evidence found in the US market. In addition, the errors in individual investors' beliefs significantly affected option traders' expectations concerning the jump direction and the volatility of the underlying asset prices.

Some other studies focus on China. Kling and Gaob (2008) analyze institutional investors' sentiment and explore its impact on the stock market in China. For the institutional investor sentiment measure they use a sentiment index constructed based on the daily data from the survey which has been conducted by Chinese Central Television Station since April 2001. The application of the empirical model used in this study reveals that stock prices and institutional investor sentiment do not have a long-run relation. However, in the short-run the mood of investors follows a positive-feedback process. Hence, institutional investors are optimistic when previous market returns were positive. Conversely, negative returns trigger a decline in sentiment. Investor sentiment does not predict future market movements but a drop in confidence increases market volatility and destabilizes the prices. EGARCH models reveal asymmetric responses in the volatility of investor sentiment, however Granger causality tests reject the hypothesis about the volatility-spillovers between returns and sentiment. Kling and Gaob (2008) conclude that although the institutional investors play a relatively minor role in China, their sentiment seems to have a considerable impact on volatility.

Kong and Wang (2014) study how order-based manipulation affects investor behavior in China. Using all A-shares listed in Shanghai and Shenzhen stock markets, they report a rise in stock prices, market activity and intraday volatility during the manipulation period. They also show that investors become much more sensitive to market order in the manipulation period than in the pre-manipulation period and that stock market manipulation affects investor behavior mostly in the short term.

Ni et al. (2015) employ the panel quantile regression model to study the nonlinear effect of investor sentiment on monthly stock returns in the Chinese A-share stock market. As a measure for investor sentiment they use opening accounts number and turnover rate in the



Shanghai A-share market segment. Their findings show that the influence of investor sentiment is significant in the periods from 1 to 24 months. Its effect is asymmetric and it is characterized by a reversal process, i.e. the effect of investor sentiment is more significantly positive and larger for stocks with higher returns in the short term, while notably negative and smaller for stocks with lower returns in the long term. This reversal pattern supports the existence of a strong overreaction effect in the Chinese stock market. A potential reason that may explain this finding is that the stocks could be traded at a premium when investors are optimistic. According to Ni and al. (2015) this result justifies the view that investor sentiment is likely to be a driving force for excess stock returns.

Kim and Park (2015) investigate the relationship between individual investor sentiment and stock returns in the Korean stock market in the period 2000–2009. They calculate the buy-sell imbalance (BSI) of individual investors and use it as a proxy for the individual investor sentiment variable. Subsequently, they construct quartile portfolios based on retail investor shareholdings in order to examine the effect of individual investor sentiment on contemporaneous stock returns by estimating the multifactor time-series models in which the portfolio BSI is added as an explanatory variable. They also examine whether the individual investor sentiment is related to momentum or contrarian trading and if it may be used to predict future returns. The empirical evidence indicates that individual investors' sentiment has no significant explanatory power for cross-sectional stock returns. However, individual investors' trades can move the prices of certain stocks through their contrarian behavior, which leads them to implicitly provide liquidity to other market participants. In addition, individual investors earn a small market-adjusted excess return in the short horizon as a compensation for liquidity

provision. Those findings suggest that short horizon returns predictability of individual investors does not depend on their private information.

Some other studies investigate investor sentiment in the Middle East countries. Al-Hajieh et al. (2011) examine whether the holy month of Ramadan, which is a time of celebration and renewal in Muslim countries, is reflected in positive calendar anomalies effects in nine Islamic Middle Eastern stock markets during the period of January 1992 – December 2007. Al-Hajieh et al. (2011) find a strong evidence of significant and positive calendar effects with respect to the whole period of Ramadan in most analyzed countries and they argue that this phenomenon can be attributed to the generally positive investor mood.

In a related study, Bialkowski et al. (2012) present the analysis of stock returns for a broad sample of 129 Ramadan months in 14 predominantly Muslim countries over the period from 1989 to 2007. The results show that during Ramadan stock returns are on average much higher but less volatile compared to the rest of the year. The results also indicate that there are no discernible declines in market liquidity during Ramadan. They find these results consistent with their prior expectation that Ramadan has a positive impact on the mood and hence on investor sentiment.<sup>7</sup>

There are also other studies investigating investor sentiment in Turkey. Sayim and Rahman (2015) examine the impact of Turkish individual investors' sentiment on the Istanbul Stock Exchange (ISE) and analyze whether it is related to stock return and volatility. They use the monthly Turkish Consumer Confidence Index, published by the Turkish Statistical Institute, as a proxy for individual investor sentiment and their sample period covers 2004-2010. The impulse response functions generated from the vector autoregression (VAR) model are employed

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<sup>7</sup> Other related line of literature studies the so called "Islamic effect", according to which the investors prefer stocks of companies using the Islamic principles selection criteria over the Western stocks. For related studies, see, among others, Hoepner et al. (2011), Dewandaru et al. (2014), Saiti et al. (2014) and Merdad et al. (2015).

to examine the effect of unanticipated movements in Turkish investor sentiment on both stock returns and volatility of the ISE. They found that unexpected changes in rational and irrational investor sentiment have a significant positive impact on ISE returns. This study also documents that unanticipated increase in the rational component of Turkish investor sentiment has a negative significant effect on ISE volatility.

Canbas and Kandir (2009) investigate the impact of investor sentiment on the Turkish stock market returns employing VAR models and Granger causality tests. The sample period extends from July 1997 to June 2005. The proxies for investor sentiment are closed-end fund discounts, mutual fund flows, shares of equity issues in aggregate issues, repo shares in mutual fund portfolios and Istanbul Stock Exchange turnover ratios. The results suggest that, except for the share of equity issues in aggregate issues, the stock portfolio returns affect investor sentiment proxies, whereas only the ISE turnover ratio appears to be a good predictor of future stock returns.

In summary, the findings discussed in this section show that in emerging markets, similarly to developed markets, the stock prices are not only affected by new information but also by irrational behavior of investors, which seems to be a response to changes in market sentiment that cannot be fully explained by news. However, the results from the related studies summarized above are not unambiguous. Some of them show that the individual investor sentiment has no significant explanatory power for explaining cross-sectional stock returns, while others provide evidence that in the emerging markets the security returns and volatility are, indeed, influenced by both global and local market sentiment variables. Moreover, the portfolio returns seem to be affected by investor sentiment proxies as well. The research on the sentiment on emerging markets concerns not only the relations between sentiment and future stock market

returns and volatility but also attempts to explain the relationship between sentiment and some other important market phenomena. The existing studies show that changes in investor sentiment influence trading frequency, they have impact on IPO decisions and they may also cause particular calendar anomaly effects (e.g. Ramadan effects). In addition, the findings from various studies suggest that, although the stock prices and institutional investor sentiment are not linked by a long-run relation, in the short-run the mood of investors follows a positive-feedback process. However, due to the differences between emerging and developed markets, the possible implications of findings from the studies discussed in this section for developed financial markets should be treated with caution. Last but not least, it is also worthwhile to add that the existing literature suffers from the lack of a uniform theory of investor sentiment, which could explain the differences in the reported results and in the inferences presented in the related papers in the existing literature.

### **III. Institutional traders' behavior**

Institutional investors are an important and growing group of participants in global financial markets. According to the recent World Bank News from June 18, 2015, in the year 2013 institutional investors based in the OECD countries managed nearly \$100 trillion worth of assets.<sup>8</sup> The role of institutional investors has grown substantially in emerging markets as well. Developed and developing countries policy-makers alike have promoted institutional investors as a pillar of their financial systems. Among many different objectives, they are expected to invest for the long term, follow market fundamentals, provide liquidity to countries and companies overlooked by other financial markets participants and reduce many of the shortcomings of the

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<sup>8</sup> See: <http://www.worldbank.org/en/news/feature/2015/06/18/institutional-investors-the-unfulfilled-100-trillion-promise>

financial system. Although the significance of this group of investors is still relatively small in some emerging markets, they are nevertheless important players there and, therefore, they are subject of numerous research studies which document their positive role but sometimes also negative effects of their actions.

The literature about institutional investors on emerging markets concerns different countries, however some of them are the subject of particular interest. For example, the research using the Polish data, as a result of the pension system reform in Poland in 1999, has culminated in a substantial number of studies. This particular event led to the emergence of private pension funds as a new large group of institutional investors and triggered a lot of investigations in this area for the Polish stock market. Below we review some of the most important papers in this field, as well as other papers for other markets, which are dealing with institutional investors' behavior.

Bohl and Brzeszczyński (2006), Bohl et al. (2006) and Bohl, Brzeszczyński and Wilfling (2009) analyze the impact of private pension funds as the new institutional investors group, which entered the stock market in Poland in 1999. The event which allowed to divide the entire sample into two distinct sub-samples in those studies was the above mentioned Polish pension system reform. From May 19th, 1999, the new open-ended pension funds, called *Otwarte Fundusze Emerytalne (OFE)*, could start investments on the Polish stock market and their size, as well as their trading activity, entirely changed the investors' structure on the capital market in Poland (before May 1999 small individual investors were a dominant group). The pension system reform in the year 1999 created, therefore, almost ideal laboratory conditions of a "natural experiment".

Bohl and Brzeszczyński (2006) investigate the autocorrelation structure of the returns of the WIG and WIG20 indices from the Warsaw Stock Exchange (WSE) as well as the dynamics of their variability in two specific periods in the context of this qualitative change in the investors' structure, which occurred on the Polish stock market. They use GARCH models with binary variables as main methodological tools. The findings of Bohl and Brzeszczyński (2006) indicate that the autocorrelation of WIG and WIG20 indices returns was weakened (which may also suggest an increase of the market efficiency according to the weak form of the EMH theory) and that the change of the investors' structure at the Warsaw Stock Exchange contributed also to the stabilisation of the variability of stock returns (measured through the effect of the binary variables introduced in the conditional variance function of the GARCH models).

In a related study, Bohl et al. (2006) also investigate returns autocorrelation at the Warsaw Stock Exchange around the entrance of the new OFE pension funds but based on the cross-sectional data analysis. Their findings show a negative relationship between the trading of pension funds and autocorrelation in returns of individual stocks, which supports the results presented by Bohl and Brzeszczyński (2006) using different methodology.

The study of Bohl, Brzeszczyński and Wilfling (2009) is focused on the investigation of the Polish stock market around the same period as in the case of Bohl and Brzeszczyński (2006) and Bohl et al. (2006) but using the Markov switching models. The identified changes of structural nature around the date marking the entrance of large institutional investors, i.e. OFE pension funds, on the Warsaw Stock Exchange confirmed earlier findings from the studies by Bohl and Brzeszczyński (2006) and Bohl et al. (2006). The empirical analysis takes into account various sub-samples with the aim to check the robustness of the obtained results, including the occurrence of the financial crises in the analysed period. The findings based on the Markov

switching models indicate that stock price volatility was reduced after the entrance of the large institutional investors on the Polish stock market, which suggests that they contributed to the stabilizing effects on stock prices at the WSE.

Bohl, Goodfellow and Gebka (2009) test for the presence of herding effects during market upswings and downswings on the stock market in Poland. They separate individual and institutional investors by examining two trading mechanisms with different investor structures. Their findings suggest that individuals engaged in herding during market downswings, while there was less evidence of imitating trading behaviour in bullish markets. Bohl et al. (2009) conclude that regardless of the state of the market, institutions' trading patterns does not appear to exhibit herd behaviour. They also suggest that herding by individuals becomes less pronounced over time.

Bohl et al. (2010) analyze individual investors' trading behaviour by testing the Monday and January anomalies on the Polish futures market, where individuals are the predominant trader type compared to institutional investors. An intraday analysis of trading volume, open interest, returns and return volatility on the futures market in Poland led to conclusion that the commonly believed contribution of individuals to market anomalies is overstated. Therefore, the evidence from the study by Bohl et al. (2010) indicates that the individual investors' trading pattern on the Polish futures market is more similar to the trading by institutions than what has been commonly thought previously about the differences between the investment behaviour of individual traders and institutional ones.

Piccioni Jr. et al. (2012) observe the preferential characteristics of mutual fund managers investing in Latin America. They test the hypothesis that foreign managers prefer companies with characteristics which amplify their visibility and reduce information asymmetry, which is a

possible explanation for the existence of the home bias effect. Their data covers Argentina, Brazil, Chile, Colombia, Mexico and Peru. Based on mutual fund holdings, they propose a model including the analyst coverage characteristic, dummies representing countries and two visibility variables (international listings or ADRs and exporting). The findings of Piccioni Jr. et al. (2012) support the home bias hypothesis and also suggest that international listings or ADRs play an important role in foreign mutual fund managers' decisions in Latin America. This study provides also evidence that Latin American fund managers act differently from the foreign ones. In their investment decisions they do not focus on companies with higher levels of visibility, so they spread their investments over a higher number of stocks (and, additionally, allocate funds in companies with lower market capitalization, lower volatility, higher liquidity and older age).

Some papers examine institutional investors activity in India. Chaturvedula et al. (2015) analyze the stock price effects of bulk trade sales and purchases in India over the period 2004–2012. Using the event study methodology, they find significant impact of bulk trades on the stock prices with very high cumulative returns around the trades. Buy trades are associated with significant positive cumulative abnormal returns, indicating that on average they increase firm's value. They also show that the effect of the institutional investors on cumulative average abnormal returns is more pronounced as compared to the effect of the high net worth individuals. This finding confirms the presence of front running effect because institutional investors are affecting the returns for all the event windows prior to day 0.

Maher and Parikh (2013) investigate the presence of a turn of the month (TOM) effect in India and its causes. The TOM effect is defined as the tendency of stock returns to surge during a period encompassing the end of each month and the beginning of the new month. Using parametric and non-parametric tests and the data covering the period from April 2003 to



February 2011, they find that both foreign and domestic institutional traders significantly increase their trading volumes (on the buying side) at the month's end, potentially pushing also the prices up, and supporting the existence of the TOM effect. However, their evidence seems to suggest that this phenomenon is more visible in growing rather than in sliding markets, because it is present in all samples except for the period marked by the global financial crisis of 2008–2009.

Some other studies focus on institutional investors in China. Bohl and Schuppli (2010) investigate the effect of foreign institutional investors on the stability of the Chinese stock markets. They examine the stock prices around the abolition of ownership restrictions on A-shares in China and find strong evidence that foreign institutions had a stabilizing effect on the Chinese stock markets and contributed to market efficiency. Their results cover different exchanges in China and are tested for robustness across various sample periods as well as alternative models specifications. Moreover, the findings by Bohl and Schuppli (2010) indicate that the domestic investors appear to engage in positive feedback trading, hence they are more likely to destabilize the stock market prices than other investors.

Cheung et al. (2014) examine the trading behavior of institutional investors in China based on management earnings forecasts (MEFs) and earnings announcements (EAs). Using data for the stock holdings of institutional investors, they test whether the investors can construct profitable trading strategies. They show that institutional investors do not design the trading strategies based on MEFs and also find that the characteristics of institutional investors influence their trading decisions. Ding et al. (2014b) examine investor confidence in analysts' earnings forecasts in the Shanghai and Shenzhen stock markets. Using A-share companies and a sample period from July 2006 to March 2010, they demonstrate that institutional investors do not rely on

analysts' earnings forecast revisions when they make investment decisions. Their findings also suggest that Chinese financial analysts' reputation is not critical in attracting institutional investors. Feng et al. (2014) study the selection ability of mutual funds investors in China using a unique dataset covering institutional and individual investors' transactions separately into and out of mutual funds. Using open-end equity mutual funds from the sample period between 2005 and 2011, they show that institutional investors perform better than individual investors in picking up profitable mutual funds due to better resources, motivation and superior skill sets which they have relative to individual investors.

Some studies focus on Eastern European economies. Economou et al. (2015) analyze institutional herding in frontier markets in Bulgaria and Montenegro. In particular, they investigate whether fund managers herd in those countries and whether their herding behavior is intentional or not. Economou et al. (2015) use the data on quarterly portfolio holdings of funds from Bulgaria and Montenegro from the period January 2005 - December 2012. The reported results show that fund managers indeed herd significantly in both those markets. Controlling for the interaction of their herding activity with different market states, Economou et al. (2015) find that herding is stronger in both countries during periods of positive market performance and high trading volume, while in the case of Montenegro it also appears significant during periods of low volatility. These findings are consistent with fund managers herding intentionally in anticipation of informational and/or professional payoffs. They also found that Bulgarian (Montenegrin) fund managers herd significantly after (before) the outbreak of the 2008 global financial crisis. Economou et al. (2015) attributed this to the volume effect since Montenegro (Bulgaria) experienced the heaviest trading activity before (after) the crisis outbreak.

There are some studies examining investor sentiment in Taiwan. Liao et al. (2013) investigate the trading behavior of foreign institutional investors in the Taiwanese stock market. They test whether the behavior of foreign institutional investors is influenced by their ownership, which represents a form of anchoring effect. Using a cognitive bias approach, capturing the potential anchoring effect, and the sample of quarterly data from the period 2003-2009, they test whether foreign institutional investors act irrationally when they trade stocks that have similar attributes. Their findings show that prior foreign ownership influences foreign institutional investors' momentum behavior.

Hsieh (2013) investigates the herding behavior of institutional and individual investors in the Taiwanese stock market using high frequency intraday data. His study separates the stock herding measures for each day into buy and sell categories. This procedure results in formation of 10 portfolios, where portfolio B1 (portfolio B5) is the intense buy (light buy) herding portfolio, and portfolio S1 (portfolio S5) is the intense sell (light sell) portfolio. Hsieh (2013) finds evidence of herding by both groups of investors with a stronger herding tendency among institutional than among individual investors. Institutional investors herd more in case of firms with small capitalization and lower turnover and they follow positive feedback strategies. By contrast, individual investors herd more in case of firms characterized by small size and higher turnover and they tend to buy (sell) stocks with negative (positive) past returns. The findings of Hsieh (2013) suggest that the herding of institutional investors speeds up the price adjustment process and it is more likely to be driven by correlated private information, while individual herding is most likely to be driven by behavior and emotions.

Lu et al. (2012) construct a panel threshold regression model to explore the price impact of foreign institutional herding of firms listed in the Taiwan Stock Exchange during the period

from January 2000 to June 2008. Their model aims to explore the effect of foreign institutional investors' herding in the Taiwan stock market after controlling for the firm size. The empirical results of this study show significant evidence of threshold effect, which divides the stocks into large-size and small-size firms. Foreign institutional investors in the Taiwanese stock market tend to hold large-size stocks listed in the Taiwan Stock Exchange. There is an apparent increase in the subsequent abnormal returns on large size stocks bought in bulk by foreign investors. The signals of changes in stock ownership initiated by foreign institutional investors reveal further information for improving the performance of asset allocation decisions in Taiwan.

Lin and Lin (2014) analyze the herding behavior of foreign and domestic institutional investors and margin traders from different herding perspectives by using daily buy and sell data from the Taiwanese stock market. They find evidence that herding phenomenon is closely associated with market conditions, traders' types and firm characteristics. The trading patterns of institutional investors and margin traders are affected by their own past trades but they changed during the episodes of price drops. Margin traders and institutional investors have the tendency to sell past losers upon large market price declines and buy past winners upon large market price rises.

Some other studies focus on Turkey. Uygur and Tas (2014) construct a model for evaluating the effects of investor sentiment on the conditional volatility by measuring the effects of noise traders demand shocks. They use EGARCH model to determine whether investor sentiment has more influence on the conditional volatility of various sector indexes. Sentiment proxy is constructed by using the ISE trading volume in order to capture the effects of investor sentiment on returns and conditional volatility. In light of the findings presented in this study, the investor sentiment affects mostly the conditional volatility of the key sectors of the Turkish

economy and the ISE stock exchange: industry and banking sectors. As it is evident that sector affiliation makes industry and banking stocks more favorable for noise traders on the Istanbul Stock Exchange, further studies using similar approach could help understand whether these results can be generalized to other stock markets and whether there are latent factors other than sector affiliation which alter the interaction between the conditional volatility and investor sentiment.

Using the data about private Turkish pension funds, Gökçen and Yalçın (2015) evaluate their performance in the period January 2004 - December 2013. Due to data availability, they use indexes on major asset classes as the factors in their regressions (instead of Fama–French factors). The results show that most active managers are not able to deliver the performance beyond what could be achieved by passive indexing. The average fund beats its benchmark by a much smaller margin than what it charges in fees and expenses. Fund indexes fail to deliver any significant positive alphas and the average alpha of individual funds is not distinguishable from zero. There is also herding behavior observed among managers' asset allocation decisions which can potentially explain their lack of overperformance. Gökçen and Yalçın (2015) argue that these results strongly support the need for low-cost index funds in emerging market countries that are reforming their pension schemes.

Białkowski et al. (2013) examine whether mutual fund managers investing in Turkish stocks are able to benefit from the Ramadan effect. Accounting for a potential asymmetry in the conditional volatility of stock index returns, they also test whether the Ramadan effect has strengthened or declined over time. They show that higher returns were present during Ramadan period at the Istanbul Stock Exchange. However, the Ramadan effect has gradually decreased over recent years, reflecting both investors' awareness of this anomaly and an increasing

integration of the Turkish stock market into the global financial system. In terms of volatility, the impact of Ramadan has reversed over time from a strengthening to a dampening influence on stock price fluctuations.

The role of institutional investors has also been investigated from the point of view of the profitability of investments on the stock market in portfolios of stocks. Brzezczynski and Gajdka (2008) simulate investments in high dividend yield stocks portfolios in the Polish stock market in the period 1997 – 2007 and find that their returns have been on average higher than the market returns in the entire period of their analysis. As one of the possible explanations, they attribute this effect to the increasing importance of institutional investors after the Polish pension system reform. Brzezczynski and Gajdka (2008) argue that it was likely that the entrance of new large private pension funds may have diminished the role of individuals and, at the same time, may have increased the role of institutional trades and the importance of fundamental information, such as that contained in the dividends.

In summary, the empirical results from this section show that the role of institutional investors on emerging markets can be both positive as well as negative. On the positive side, the institutional traders may contribute to the stabilization of stock prices and to increasing the market efficiency by reducing autocorrelation of returns. They may also perform better than individual investors in picking up profitable mutual funds due to better resources, motivation and skills sets which they have relative to individual investors. On the other hand, the institutional investors tend to suffer from the home bias, demonstrate herding behavior and most active managers are not able to deliver the performance beyond what could be achieved by passive indexing. However, due to the lack of comprehensive investors' behavior theory, it is not easy to draw general conclusions concerning the institutional investors' role because the available

empirical findings are sometimes contradictory (for example, there exist results confirming herding effects among institutional investors but also findings denying the existence of such behavior).

#### **IV. Conclusion and Suggestions for Further Research**

In the existing literature the number of survey papers on emerging markets is limited. This review study has provided an overview of empirical research focusing on investor reaction, sentiment and institutional trading in emerging markets countries. We have covered selected representative papers examining investor reaction to monetary policy announcements, IMF-related news and other public and political news. In addition, we have included papers on investor sentiment and institutional traders.

The findings about the importance of public information arrival, measured by the above mentioned types of announcements and news, indicate that public information is indeed important in determining asset price movements in emerging markets, which supports relevant theories that emphasize public information as the main determinant of asset prices.

The findings about investor sentiment are somewhat mixed. Although there is evidence confirming the lack of individual investor sentiment impact on the cross-sectional stock returns, some other findings can be interpreted as confirming that security returns and volatility in the emerging markets are affected by both global and local market sentiment variables. In addition, according to some findings, portfolio returns seem to be affected by investor sentiment proxies as well. Investor sentiment influences also trading frequency and IPO decisions and it may cause special calendar anomaly effects. Although stock prices and institutional investor sentiment are

not linked by a long-run relationship, in the short-run the sentiment of investors follows a positive feedback process.

The empirical results regarding the activity of institutional investors are not unambiguous either. Institutional traders may contribute to the stabilizing effects on stock prices and reduce stock returns autocorrelation. Under some circumstances mutual funds perform better than individual investors. However, active managers are usually not able to deliver the performance beyond what could be achieved by passive indexing strategies, they suffer from the home bias and demonstrate herding behavior. Therefore, in some regards, the conclusions from this stream of literature are mixed.

Based on our review of the studies evaluated in this paper, we suggest the following future research agenda.

- (1) Most of the existing literature uses daily data for examining investor reaction to announcements. In order to better understand investor behavior, we believe that future studies should utilize more of the microstructural data. Application of high-frequency data would also contribute to the knowledge about the microstructure of emerging financial markets.
- (2) Majority of the policy announcements, which we have reviewed, is related to monetary policy without much coverage of fiscal announcements. Understanding of how investors react to fiscal policy news is not only important for governments but also for enhancing theoretical models of investor behavior.
- (3) There are not many studies investigating the importance of private information in explaining asset price movements in emerging markets besides public information as the main mover of asset prices, which is supported by the studies reviewed here.



- (4) We conclude that the coverage of financial markets in the literature concerns mostly stock, bond and foreign exchanges markets. Further evidence from derivative markets would complement this picture. For example, examining the impact of IMF program announcements in forward and futures foreign exchanges markets at different maturities would help to better understand how investors expect the success of IMF programs in the short- and medium-term or in longer perspectives. Such knowledge may have important policy implications as well.
- (5) The studies about the impact of international financial institutions in financial markets mostly cover IMF-related news or news from national central banks. Further evidence from other key international organisations, such as the World Bank, the United Nations and other institutions, would be useful. For example, during the recent Greek crisis, both IMF and key European Union institutions have cooperated to resolve crisis issues in the affected regions. Hence, it would be interesting to examine the role of IMF advice and support in helping crisis countries in a monetary union setting.<sup>9</sup>
- (6) Regarding moral hazard effects of IMF program announcements, the existing studies do not distinguish between usual investor response to news and investor response in the presence of IMF-induced creditor moral hazard. Development of theoretical models of that phenomenon could allow a more direct assessment of the IMF-induced moral hazard in stock markets.

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<sup>9</sup> Among initial studies, Gogstad et al. (2015) investigate the effects of the policy announcements from the IMF and EU offices including the European Commission, the European Central Bank and the Euro Area ministers on financial and real sectors during the recent Greek Sovereign Debt Crisis. Kosmidou et al. (2015) examine the effectiveness of the IMF and EU bailout programs on the Greek stock market. Bratis et al. (2015) test for the creditor moral hazard effects of international financial support to Greece for Ireland and Portugal which received financial aid packages in years 2009–2013.

- (7) The role of investor sentiment needs more careful attention which could lead to more convincing empirical results. The future research should analyze the multilevel relationship between institutional and individual investor sentiment variables and stock returns.
- (8) The sentiment measures need further development and they should cover also different other underlying instruments, such as fixed income securities or derivatives, which seem to be particularly neglected in emerging markets research. This should help to evaluate whether the investors behave in a similar, systematic, way in different markets and in different periods.
- (9) Most of the empirical research concerning investor behavior patterns focuses on their aggregate behavior. However, a more detailed investigation of investor behavior is needed to better understand their incentives for trading. For example, some of the new future work on individual account data collected from brokers or surveys could focus on the motivation of individual investors to allocate funds in particular securities. There is lack of such research for both emerging and developed markets.
- (10) The research on institutional investors should also be focused on the problem whether their activity fulfills the expectations as far as investing for the long term, following market fundamentals, providing liquidity to countries and companies overlooked by other financial markets participants and reducing many of shortcomings of financial system, are concerned.
- (11) The research on institutional investors should also be focused on the problem whether their activity fulfills the expectations as far as investing for the long term, following market fundamentals, providing liquidity to countries and companies overlooked by

other financial markets participants and reducing many of shortcomings of financial system are concerned.

Last but not least, a unified investor behavior theory for emerging markets, which would bring together theoretical propositions and new empirical findings, is still missing. Such theory should incorporate evidence from both emerging and developed countries.

Finally, further surveys covering more specific topics in emerging markets, like our review, would enhance our understanding of the emerging financial markets mechanisms and would also help develop better theoretical models.

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