Literature review and Research Gaps:

The role of private information on global factors

for mutual funds holdings and performance

AFFI 2017 – PHD WORKSHOP

[redacted]

Introduction

Mutual funds have played important role in financial markets over the past two decades. In fact, mutual fund industry has grown dramatically from $4.0 trillion in global assets managed in 1993 to $28.9 trillion in September 2013 (Investment company institute, 2014). From the United States perspective, US mutual funds and exchange traded fund (ETF) had the largest ownership of $17.8 trillion in assets at year-end 2015 which represents 48% of the $37.2 trillion in open-end fund assets worldwide (Investment company institute, 2016). Above all, mutual funds have shown to have a major impact on the determination of stock prices (Grinblatt et al., 1995; Gompers and Metrick, 2001; Massa and Zhang, 2012). Academics and practitioners have been interested over the years to study how to measure information asymmetry and how to analyze its impact on portfolio management and stock prices. Due to market imperfections and frictions, private information is not freely obtainable by observing asset prices (Grossman and Stiglitz ,1980). Thus, the degree of private information held and efficiently processed by mutual fund managers impact from one part their portfolio choices and performance and from another part stocks prices.

A vast body of literature has shown that the information asymmetry affect the investment decisions of institutional investors. Many studies showed that investors do not diversify their portfolios across foreign markets according to their weight in world market capitalization. Instead, investors prefer to overweigh stocks from their home market where they enjoy local informational advantage despite the benefits of diversification. This anomaly called the home bias was first introduced by French and Porteba (1991) and then documented by many papers (Brenan and Cao, 1997; Gehrig, 1993; Bravo Ortega, 2004). Other studies showed that cross border investors that are less informed on international stocks compared to their local counterparts prefer familiar markets. Consequently, geographic proximity (Coval and Moskowtiz, 2001), common language and common culture (Grinblatt and Keloharju, 2001; Ferreira and Miguel, 2007) impact the investment choices across markets. In contrast, other studies suggested that foreign investors can be better informed (Grinblatt and Keloharju, 2000; Seacholes, 2000; Froot et al., 2001) and that their informational advantage is driving their foreign holdings. Covrig et al., (2010) explored the reverse home bias phenomenon that is when investors from one country overweigh assets from another country. They showed that investors

tend to invest more in foreign markets when the informational advantage on specific factors decrease and the informational advantage on global factors increase. Whereas, N Choi et al., (2016) demonstrated that private information held by foreign institutional investors drive their portfolio concentration not only in their domestic markets but also in selected foreign markets and industries.

In fact, many papers focused on the information asymmetry relative to the specific component of an asset payoff but in fact considering the private information on global macroeconomic factors may be more relevant for trading across markets. Albuquerque et al., (2009) argued that even if US foreign investors face informational disadvantage in foreign markets compared to local counterparts, they may enjoy informational advantage on global factors. They showed that this private information on global factors explains the cross-country correlation of positive returns and flows of US investors. As an example of private information on global components, the authors referred to the informational advantage gained by sophisticated investors in the well-established technology sector within the United States. Experience within this field, enable US investors to detect earlier global trends and thus facilitate the estimation of tech stock prices not only in the US but also worldwide. In emerging stock markets, Bae et al., (2012) showed that the stock's accessibility to foreign investors who process better information on global factors, increase the diffusion of global market information into stock prices and reduce price delay.

Covrig et al., (2010) illustrated the private information on global factors by taking the example of fund managers within major financial centers. These fund managers can capture informational advantage on global factors such as short-term interest rates, commodity prices, and global shipping costs from their interaction with financial analysts working for them or for large investment banking houses. This processed information about global factors of risks give fund managers an information advantage over and before others since this information is essential to estimate future payoffs of cross border assets. Therefore, these insights will help funds predict the potential performance and prices of the stocks that are highly sensitive to the global factors and thus may make them outperform local investors. However, these intuitions remain unexplored and the goal of this thesis is to test these assumptions. Our work will be based on the theoretical model of Fontaine et al. (2011) who have produced closed form solutions for holdings and asset prices within a rational expectation equilibrium model. A very important assumption of

their paper is that the demand of the stock depends not only on the private information on global factors held by investors but also the stock must load enough on the global component to compensate the stock specific information that other investors might hold.

This study aims to assess different controversial biases that have been attributed to mutual funds. Consequently, we would like to investigate different topics that we believe are essential to explain international investments of funds. The research to date tended to focus on investigating the relation between concentration and performance or between familiarity factors and performance of institutional investors. Results are controversial; however in most of the papers if a positive performance is captured, the informational advantage or the specialization effect is suggested to explain the results. Many recent studies highlighted that portfolio concentration enhance the performance of mutual funds relative to other diversified funds (Kacperczyk et al., 2005 ; Huij and Derwall, 2011) suggesting the specialization and the learning argument or the access to private information (Van Nieuwerburgh and Veldkamp, 2009; Fedenia et al., 2013; Hiraki et al., 2015). This positive performance is opposed to the prediction of the traditional diversification theory. However, none of these studies have identified a clear measure to detect this informational advantage besides the article of Covrig et al., (2010) and none have tested empirically this measure. Our study contributes to the literature on this matter. Thereby, we would like to test empirically that our measure of private global information is driving this concentration and performance, which have not yet been done to our knowledge of the existing literature. Specifically, we will contribute to the literature by investigating whether informed fund managers on global factors will diverge from other investors, adopt different strategies and consequently we would like to assess their performance.

In addition, this paper contributes to a large literature that investigates the information asymmetry between domestic and foreign investors. Ferreira et al., (2016) stated that foreign investors can perform as well as local investors or even exhibit higher returns when the information asymmetry is low. In fact, whether foreign institutional investors are better or less informed than domestic investors is still a debatable subject. We would like to prove in this work that even though foreign investors might be at an informational disadvantage regarding local information, they have better access and expertise in treating global information affecting by that their holdings and performance. Another controversial issue in the international finance literature

that we would like to investigate is the mixed performance results of foreign mutual funds. Breloer et al., (2014) and Comer and Rodriguez (2012) detected negative abnormal returns for international and global funds. Ferreira et al., (2013) concluded that mutual funds underperform the market after fees in their cross-country study of mutual fund performance. Whereas, international mutual funds earned positive performance in the study of Detzler and Wiggins (1997). Moreover, the literature lack studies on the performance of foreign institutional investors within an information asymmetry context on global factors. Our intuition is that substantial gains in portfolio choice can be obtained from the use of macroeconomic information. Hence, when fund managers have informational advantage on common global factors they can assess better the value of foreign firms that are sensitive to these factors, hence they exhibit positive performance.

In sum, there is lack in the literature concerning mutual funds holdings, performance and strategies when considering that these funds have informational advantage on global factors which motivate us to conduct different studies. First, we will investigate the portfolio holdings choices of mutual funds that possess private information on global components and the performance of these holdings in normal and in periods of shocks. Second, we will expose the potential strategies and characteristics (long term versus short term) of the institutional fund managers that hold private information on global factors. Finally, we will assess the impact of private information on global factors held by fund managers on the transmission of shocks between financial markets. However in this paper, we will expose the three studies but we will develop more the first study that treats particularly the implication of private global information on the performance of international and global funds.

Having said this, we believe from one part that this study will give guidance for fund managers of the benefits they can obtain by processing information on global factors and will highlight the impact of this information on financial markets in normal and in periods of shocks. Furthermore, finding the optimal asset allocation for a fund manager portfolio remains a major empirical question within the development and changes of international markets. Our aim is to investigate this question by showing that information advantage on global factors will have a major impact on the asset allocation and the performance of funds. Specifically, besides of proposing a measure for the private information on global factors, we would like to test empirically if this

measure of private information will lead mutual funds to be more specialized and concentrated in given industries and thus causes their outperformance. This study may also change the pessimistic view of the destabilizing role of mutual funds during financial shocks by showing that fund managers can have positive impact on the financial stability by diminishing contagion when they decide to hold private information on global factors.

Literature review and hypothesis development

1-Private information in international capital markets

Academics and practitioners have a considerable interest to study how to measure information asymmetry and to analyze its impact on asset prices. The traditional frictionless capital asset pricing model (CAPM) assumes that all investors are equally informed on the future returns of assets and that the expected returns depend only on its systematic risk. However, the assumptions of this theory are not supported empirically. Theories of financial markets with asymmetrically informed investors emerged and considered the information risk within the asset pricing models (Grossman & Stiglitz, 1981; Admati, 1985; Easley & O'Hara, 2004). The existence of a partially revealing equilibrium price has been demonstrated within the context of Rational Expectations Equilibrium (REE) model first initiated by Grossman and Stiglitz (1980). Consequently private information is not freely obtainable by observing asset prices. Admati (1985) developed the partially revealing REE model to a multi-assets framework and revealed how investors face various risk-return tradeoffs when informational asymmetries still exist in equilibrium. Whereas, Wang (1993) developed an intertemporal asset pricing model under asymmetric information. In their model, investors are asymmetrically informed on the future growth rate of dividends, extract information from both price and dividends and can invest in a risk free asset and a risky asset. Less informed investors facing the adverse selection problem, require higher risk premiums for trading against more informed investors and act often like trend chasers. Another important implication was presented by the multi-asset theoretical work of Easley et al., (2002); Easley and O'Hara, (2004) in which the authors showed that information risk cannot be diversified away. The authors detected a positive relation between stock returns and the probability of information based trading measure named PIN, derived from a market microstructure model. Hence, investors that are asymmetrically informed about the true value of

an asset, require an information risk premium in order to hold these assets on which they are not well informed.

We can thereby deduce that the degree of private information held and efficiently processed by mutual fund managers impact their portfolio choice and performance. However, the private information on asset's payoff can be disseminated into asset specific and global components as exposed by the theoretical model conducted by (Fontaine et al. 2011). The authors introduced a multi asset REE model in which multiple agents are asymmetrically informed on the asset-specific components and/or common components that affect the payoffs of various assets. They produced a closed form solution for investors' holdings and stock prices. In their model, the final payoff (dividend) of an asset is generated by an asset specific component and by a common factor component of payoffs and by a third component which is not known to investors called the residual uncertainty, represented as follow:

$$P^1 = \theta + \sum_{i=1}^{K} \beta_i * f + \varepsilon \qquad (1)$$

Where P^1 is the future payoff of the share, θ is the payoff of the asset specific component information, β is the factor loading that indicates the sensitivity of stocks for the common factor f and ε is the residual uncertainty that is unknown to all investors.

1.1 - Interpreting asset specific information

One of the important sources of the asset specific information is its own price. Theoretically, in a market where we have low levels of correlations between stocks, the price of an asset is the only private source of information to determine its return. Along with the price of the asset, the price of market portfolio can also be a source of the specific information factor. However, in practice, the hypothesis of no correlation between stocks is rejected and the specific information inferred from the price is highly noisy.

Grossman and Stiglitz (1980) stated that private information is costly to obtain and thus prices cannot reflect the full information, otherwise there will be no compensation for the money invested to acquire this private information. As private information become less costly, the informativeness of the pricing mechanism increase. Indeed, many papers within the literature

relate asset price informativeness with firm specific return variation (Morck et al. 2000 ; Durnev et al . 2000; Dunev et al.2004) and state that with lower cost information, higher stock variation is due to higher informed trading. The asset specific risk has been long argued whether it is a proxy for stock price informativeness or a measure of information asymmetry (noise). It has been used in some papers as a measure of information asymmetry between investors (Goyal and Santa-Clara 2003) and considered as a proxy of noise by Roll (1988). In contrast, it was considered by others as a measure of price informativeness (Durnev et al. 2004), highlighting by that a challenge for the traditional CAPM which predicts that only systematic risk should matter for asset pricing.

Firms with higher firm specific return variability (FRSV) are shown to enjoy efficient capital investment policies along with good corporate governance (Durnev et al., 2004). In fact, the firm specific risk component is negatively correlated with the extent of informational asymmetries affecting common stocks. Higher firm-specific return movements implies larger amounts of firm-specific information revealed by prices to uninformed investors, lowering the degree of private information and highlighting the stock price informativeness. The FRSV measure of Durnev et al. (2004) is obtained by the logistic transformation of the fit $\ln(\frac{1-R_i^2}{R_i^2})$. This fit comes from regressing stock j total return variation on the returns of the market and the returns of the industry i for which stock i belong as follow:

$$r_{i,j,t} = \alpha + \beta_{j,m} r_{m,t} + \beta_{j,i} r_{i,t} + \varepsilon_{i,j,t} \qquad (2)$$

In the same spirit, Burlacu et al. (2005) presented evidence that FRSV captures price informativeness rather than information asymmetry. The authors found a negative link between FRSV and stock returns on the American market and explained it by the fact that asymmetrically informed investors require less information-risk premium for holding securities that reveals more information and thus lowering the expected returns of the securities. They showed also that FRSV predicts better stock returns and dominates traditional Fama and French market, SMB and HML risk factors.

On another hand, Burlacu et al., (2012) developed a variable that predicts cross sectional average returns dispersion. The authors conducted a theoretical analysis based on Admati (1985) and an empirical study in which they transformed unobservable REE model parameters into a predictor variable of future average returns. They considered from one part that an investor

forecast future stock i dividends based on his own private information and on observable price signal within the market. From another part, investors can infer private signals from other stock's dividends and prices that are highly correlated with stock i especially when there are noise signals about the stock i. The authors regressed the return of the stock on the prices of all the stocks within the US market in order to capture the time series fit R_i^2. More precisely, they regressed the return of a given stock i on its normalized price and on the prices of different portfolios of stocks that share with the stock i the same four, three, two and one digit SIC code. However, they excluded the stock i in each of these portfolios and the stocks belonging to the industry portfolio *SIC*(*j-1*) . For instance, the stocks that form the one digit SIC portfolio exclude the stock i and the stocks used in the first three portfolios. Thus,

$$r_{i,t} = \alpha_{i,0} + \beta_{i,1} P_{i,t-1} + \sum_{j=1}^{4} \beta_i^{SICj} P_{i,t-1}^{SICj} + \in_{i,t} \qquad (3)$$

Then, they conducted a logistic transformation of this fit to obtain their predictor variable $E(r)_{i,t}$ as follow:

$$\text{Proxy } E(r)_{i,t} = \ln\left(\frac{R_{i,t}^2}{1-R_{i,t}^2}\right) \qquad (4)$$

They found a positive relationship between this proxy of private information and expected returns even after including many predictor measures of cross section returns that have been used within the literature. For instance, the authors showed that this positive relation remains significant even after accounting for firm-specific return variation of Durnev, Morck, and Yeung (2004), PIN measure of Easley, et al. (2002), the delay measure of Hou and Moskowitz (2005), the turnover of the stock and its relative Amihud illiquidity.

However, Covrig et al (2010) stated that if we consider the common components of payoffs, an investor cannot be considered as being less exposed to risk even if he is well informed on the asset specific component. As the common components become more valuable in payoffs, the asset specific information become less important. Therefore, the asset prices depend on how many investors hold information on asset specific and common component of payoffs and how sensitive the asset's payoffs are to these components.

Thus, we can clearly deduce the importance of common macroeconomics factors and its relevance in international equity markets.

1.1- Interpreting global private information

As we have mentioned earlier, stock returns are driven by both local and global factors on which agents are asymmetrically informed. The literature acknowledges the impact of global macroeconomic factors in international equity markets.

For example, Campbell and Hamo (1992) studied the predictability of monthly excess returns on equity portfolios in the American and Japanese markets. They found that the dividend-price ratio and interest rate variables can predict the excess returns in each country and that a common movement in expected excess returns across the two countries is determined largely by the changing price of risk of a single common factor. Ferson and Harvey (1999) showed that employing macroeconomic indicators as conditioning variables forecast better the returns on international stock indexes. In addition, broad economic lagged variables are important for the cross-sectional explanatory power of U.S. stock returns and are even better than the Fama and French (1993) factors. By using macroeconomic variables like interest rate, expected inflation rate and unexpected inflation rate, stock market performance can be evaluated and examined (Fama, 1990).

In another perspective, Tille et al (2014) exposed the role of private information for international capital flows using a two-country DSGE model. They showed that dispersed information increase the volatility of capital flows which generate a disconnect between capital flows and observed macro fundamentals, and makes capital flows a relevant source of information about future macro fundamentals. Conrad et al (2014) investigated whether the long-term oil market volatility is related to the U.S. macro economy and whether oil and stock volatility respond to the same macroeconomic information. They found that oil market volatility can be forecasted by various measures of U.S. macroeconomic activity such as industrial production and that current and expected increases (decreases) in economic activity clearly anticipate downswings (upswings) in long-term oil volatility.

Lumsdaine and Prasad (2003) identified a common component in industrial production growth rates in different countries and this common factor drove industrial production in all of the countries. They proved the existence of world business cycle that is common fluctuations across countries as well as the existence of common European component. Mensi et al. (2014) showed also that the changing global factors (the S&P 500 index, the commodity markets, the global

stock market uncertainty VIX and the US economic policy uncertainty impact the BRICS stock markets (Brazil, Russia, India, China and South Africa) by using quantile regression approach. For instance, global stock market return proxied by the S&P 500 index commove with BRIC stock market in bullish markets while they are independent in bearish markets. Second, changes in oil and gold prices affect BRICS stock market returns before and after the global financial crisis. Thus, global investors should adjust their investment strategies based on the changes of global factors.

In addition, Avramov and Chordia (2006) showed that choosing individual stocks based on conditioning macroeconomic variables generate substantial alphas. Agrippino and Rey (2015) found that one global factor reflecting the time-varying degree of market wide risk aversion and aggregate volatility accounts for the variance of huge cross section returns of risky assets across the world. Moreover, the authors used a medium scale Bayesian VAR and demonstrated that US monetary policy is a driver of this global factor and reflect a main transmission channel across countries through credit flows, leverage, risk premia and term spread. They also clearly state the need of international macroeconomic models where financial intermediaries play a major role in asset pricing. Whereas, Ülkü (2015) shed light on the correlation between the trades of foreign investors in European emerging markets with global emerging stock index returns that serve as a proxy for the expectation of information about global macroeconomic conditions.

Taken together, we can clearly see the impact of global factors on stock markets and on portfolio holdings of investors. Hence, our assumption in this thesis is that if investors are well informed on these global factors and if their strategies are based on this private information, they can generate better financial return. Covrig et al (2010) considered an example for the informational advantage on common global factors. They referred to the superior information on macroeconomic factors that can be gained by fund managers that are located in major financial centers such as in New York City. Indeed, managers within this framework often interact with each other's or with financial analysts and thus they can easily synthetize information on global trends and on global economic factors such as commodity prices or shipping costs. Albuquerque, Bauer, and Schneider (2006) developed a theoretical model in which stock returns are driven by local and global factors. Global investors are better informed than local investors

on global factors and their global private information is valuable for their trading across different countries at the same time. The authors gave another illustration of the global private information by considering the dominated well developed technology sector in the United States. Insights about the future of this sector in US are likely to be important for the valuation of tech stocks not only in the US but also for different markets. In addition, the experience and the skills gained in this field may make US investors outperform domestic investors in Europe as referred by the authors.

Bae et al.(2012) showed that the degree of investibility of foreign investors in emerging stock markets increase the informational efficiency of stock prices. Foreign investors that have better access to global market information lead to a faster incorporation of this information among investible stocks in emerging markets. More precisely, stock's level of invesitbility is negatively associated with the price delay to global market information. In addition, the authors found that the return of highly investible stocks lead the returns of noninvestible stocks so that information will be slowly transmitted to noninvestible stocks but this not applicable vice versa.

Indeed, the information on common factors is crucial for the choice and the performance of international investments and for assessing the payoffs of multiple assets which drive us to conduct multiple studies as we will discuss in the upcoming sections.

1.3- Measure of private information on global factors

Detecting informational advantage is not an easy process since private information is unobservable. As we have seen in the previous section, much work has been done to elaborate a measure of firm's specific information advantage. However, few papers have worked on the degree of private information on global factors. The theory offers little evidence in identifying assets with higher degree of private information. Our measure of private global information is based on two major papers. First, Covrig et al. (2010) and Fontaine et al. (2011) have presented a theoretical evidence of the importance of global factors by proposing a model that produces closed form solutions for holdings and asset prices. A very important assumption of their model is that high demand of a stock depends not only on the information about the global component but also the stock must load enough on the global component to compensate the stock specific information that other investors might hold.

Our measure will also capture and treat how much a stock is affected by the industry and/or country factors. L'Her (2002) stated that the globalization and the global integration have highlighted the importance of global risk factors in determining equity returns along with controlling for country and industry effects. There is extensive literature about the impact of country and industry factors on the returns of global stocks within international markets. The debate persists on which factor is more important for asset allocation and risk management. Many papers demonstrated the dominance of country factors relative to industrial factors (Heston and Rouwenhorst (1994); Griffin and Karolyi (1998) and the benefits of cross countries diversification Solnik (1974). However, the world have witnessed increasing market integration, liberalization initiatives and lower cost communication systems and thus subsequent studies pointed out the growing importance of industrial factors in the variation on international securities returns (Cavaglia et al., 2004; L'Her et al., 2002, Ferreira M,A and Ferreira M,Â, 2006). Indeed, the international structural changes have reduced the advantages of country diversification in favor of industry diversification. In their review of the determinants of assets returns, Cavaglia et al., (2004) have shown that the return of industry affiliation is becoming more crucial than the return of country of domicile but this latter should be never abandoned in the analysis. So that the new cross border investing strategies should be build based on a comparison of stocks within global industries but also across countries. Ferreira M,A and Ferreira M,Â (2006) studied the relevance of country, industry and common effects in return variation of the EMU equity market for the period 1975-2001. For the overall period, the country factors dominate the industry and common market effects and the diversification based on country rather than industry have indeed better risk reduction. However, for the post euro period 1999-2001, industry factors had the same magnitude than country effects and industry diversification strategies were as efficient as country diversification ones. In another study, Ferreira and Gama (2010) showed that the correlation between global industry and world market returns varies over time and particularly increases during recessions and decreases during market expansion.

Hence, our measure of private global information is inspired from these papers and is based on the measure presented within the paper of Covrig et al., (2010).

Covrig et al., (2010) used the following measure:

$Common_{j;k}$= 100 * Industry Wgt_k* β_{JK}^2 (5)

Where $common_{j;k}$ is the proxy for the informational advantage on the common component of stock j's payoff within the industry k. Whereas, Industry Wgt_k is the weight each industry k represents of total market capitalization of all United States stocks and β_{JK} comes from the time series regression of the return of each stock j on the return of the industry k for which the stock j belongs, using up to 5 years monthly returns:

$r_{j;t} = \alpha + \beta_{J;K} r_{k;t} + \varepsilon_{j;t}$ (6)

The authors developed this measure to evaluate the common component of asset's payoff on which global funds might be informed, driving by that their foreign holding choices. Their intuition was that the larger the industry, the greater the quality and the amount of information available for fund managers about the sector.

This measure is of particular interest for us for several reasons. First, using this proxy enable us to investigate the mutual funds holdings sensitivity for global factors. Second, this measure captures the industrial dimension of global factors. It is proven within some papers of the literature that the outperformance of funds are driven mainly by industry concentration rather than country concentration and that the private global information tend to be industry specific instead of country specific as mentioned by Hiraki et al., (2015). Weiss (1998) stated that as capital market integration grows, global industry rotation become the optimum strategy in the global asset allocation rather than the country allocation strategies. He also stated that the factors of production that impact multiple industries will become the crucial determinant of international equity returns. The author gave an example of a US based oil company's stock traded on the NYSE. The return of this stock is less affected by the country of domicile component but rather by the global factors related to the oil industry such as the production, pricing and distribution. But the reverse would be true in case of the retail industry. In the same perspective, Grinold et al., (1989) showed that asset returns are influenced by their exposure to global industry factors across countries.

We would like to propose a measure that captures both the informativeness of the stock on the country and industrial levels. Thus, this measure avoid the long debate of which is more important the country or the industry factor in determining foreign allocation. First, we add to the previous measure of Covrig et al., (2010) $\beta_{J;C}$ that represents the sensitivity of the return of a stock j to the return of the market for which it is incorporated. Second, we interact $\beta_{J;C}$ with a ratio that captures the market cap of a given country in US investors portfolio relative to the total market cap of all foreign holdings of US funds, the higher the ratio then the higher US investors invest in that foreign market c. Our intuition is that the more US investors invest in a given country the more they gain informational advantage about that country.

$$Common_{J;K;C} = 100 * \text{Industry } Wgt_k * \beta_{JK}^2 + \frac{\text{market cap of all stocks of country c held by US funds}}{\text{market cap of all foreign stocks held by US funds}} * \beta_{JC}^2 \quad (7)$$

$$r_{j;t} = \alpha + \beta_{J;K} r_{k;t} + \varepsilon_{j;t} \quad (8)$$

$$r_{j;t} = \alpha + \beta_{J;C} r_{c;t} + \varepsilon_{j;t} \quad (9)$$

Where $r_{j;t}$ and β_{JK} are defined as above but $\beta_{J;C}$ comes from the time series regression of the return of each stock j on the return of the country c where the stock is domiciled.

Besides, we would like to control also for country's opacity in another measure as follow:

$$Common_{J,K,C} = 100 * \text{Industry } Wgt_K * \beta_{JK}^2 + \frac{1}{Opacity\ index_c} * \beta_{JC}^2 \quad (10)$$

Where all the variables are defined as above and the opacity index of country c comes from the 2009 report of Milken institute. The opacity measure captures the overall country's risk by controlling for corruption, legal system inadequacies, economic enforcement policies, accounting standards and corporate governance, and regulation.

Indeed, Ferreira et al., (2016) showed that local investors enjoy better informational advantage in their home markets when this market is subject to high levels of corruption. In addition, they showed that local institutional investors have higher performance in stocks that are subject to high information asymmetry for instance in stocks that are illiquid, have low analyst coverage and in countries with weak investor protection. The negative relation between information

asymmetry and information disclosure that affects the trades of investors is also treated by Chan and Covrig (2012). In fact, the authors argued that markets that enjoy high quality of information disclosure attract more foreign investments and thus increase the visibility of firms operating within these markets. Investors prefer to invest in firms that operate in transparent markets where they can detect and process more easily private information. Most importantly, transparent markets avoid huge fire sales during financial shocks or surprising events. The proxies used by Chan and Covrig (2012) are opacity measure from Bhattacharya et al., (2003) and a disclosure score DMSIC of a country from the global competitiveness report that is issued from a survey done in 1999 and 2002. The results showed that the churn rate of foreign equities is lower in markets with higher information disclosure. Hence, mutual funds managers rebalance more frequently their holdings in opaque countries and in those that have less than average disclosure score.

The paper conducted by Galos and Wei (2008) is also a good illustration of the impact of macroeconomic opacity on international investment. The authors examined the holdings of emerging market equity funds in different countries that have different levels of transparency and thus different levels of information quality and availability. To do so, the authors considered two categories of opacity: the corporate opacity and the government opacity. The latter is formed from both macropolicy opacity that is a measure of the transparency of marcoeconomic policies such as fiscal and monetary policies and the macrodata opacity that measures the frequency and timeliness of macroeconomic data dissementation for all countries. The authors further considered a composite index derived from a survey conducted by Pricewatercoopers on opacity. They found that fund managers tend to invest less in countries with low degree of transparency, react less strongly to news that are thought to be less useful and herd more in these countries during crisis. However, this tendency to herd is less observable in transparent countries.

Therefore in this thesis, we would like to broaden the private information view on international scale by considering the private information on global factors. In contrast of all previous papers, that uses the geographical proximity, common language and culture etc. as proxies of informational advantage, our innovation is that the information proxy is captured directly from the fund portfolio. Revealing the information on global factors from the securities

held by this fund was first introduced by Covrig et al., (2010) but its implication was not yet empirically deeply tested. Our intuition is that this private global information is more relevant for trading across markets and has major impacts on the informed mutual funds holdings and performance.

2- Implications of global private information

We begin by investigating the impact of holding the global private information on the mutual funds' portfolios in terms of dispersion of ownership, turnover and finally in terms of its performance during normal and periods of shocks.

2.1- Holdings choices of mutual funds informed on global factors

We will expose in this section different anomalies treating the allocation choices of sophisticated investors that have been documented within the literature. Extant empirical research have been focusing on the home equity bias which is the high concentration in domestic equity investment by local investors and on their potential outperformance due to their informational advantage on the country's specific risk. However, these results have been challenged in recent papers. In this respect, we will start by exposing the home bias puzzle versus the reverse home bias phenomenon. We will also discuss the recent controversial findings of the outperformance of concentrated portfolios relative to diversified ones. Our assumption is that fund managers with superior information on global factors will diverge from others and will act differently on the stocks they know more during normal and periods of shocks. Hence, we will start by determining the role of the private global information on the holdings of institutional investors by determining their portfolio choices and allocation within domestic and international markets, their turnover, as well as their performance.

2.1.1- Home bias Versus Reverse home bias

The international capital asset pricing model state that investors should hold assets from markets around the world in proportion with the country weight in the world market capitalization and assume no barriers for investing abroad. However, these theoretical

assumptions are not respected in international investment. The information asymmetry between local and foreign investors has created puzzling phenomenon in international finance known as home bias versus reverse home bias (Brenan and Cao 1997; Gehrig 1993). The home bias phenomenon is described as a lack of diversification in investor's portfolios around the world and is revealed by the high bias toward home country equity (French and Porteba 1991; Brenan and Cao 1997). This local preference of fund managers to invest in their domestic equities despite the benefits of diversifying into foreign markets might be due to the transaction costs they incur when investing abroad, to currency risk, to legal constraints etc.

Existing literature have highlighted the familiarity and the informational advantage arguments to explain the home bias phenomenon. Several studies suggest that investors are discouraged to hold cross border holdings when they are less informed on foreign securities than do local investors. In addition, the literature showed that local informational advantage drives investment preference for domestic stocks (Brennan and Cao, 1997; Van Nieuwerburgh and Veldkamp, 2009). It has conclusively been shown that domestic stocks held have higher returns than distant stocks due to this private information held by investors (Gaspar and Massa, 2007). However, many papers did not find this outperformance of local stocks compared to others (Grinblatt and Keloharju, 2000, 2001; Seasholes and Zhu, 2010; Pool et al., 2012) and relate the local stock preference of funds to the familiarity argument. For instance, Poon et al., (2012) based their study on the impact of fund manager location and found that these managers tend to overweight stocks from their home state due to familiarity bias and not because of their private information. This bias is more exacerbated with unskilled managers and their home state stocks show lower performance than others.

In addition, it has been shown that investors are psychologically influenced by common language (Grinblatt and Keloharju, 2001), culture (Anderson et al., 2011; Aggarwal et al., 2012) and geographical proximity (Coval and Moskowitz, 2001; Poon et al., 2012) when choosing their portfolio allocation. Anderson et al. (2011) showed that a nation's cultural characteristics of an institutional investor affect its portfolio allocation both in home and foreign markets. They demonstrated that funds have higher preference for culturally close target markets overs distant ones. In addition, institutional investors that come from countries with high uncertainty avoidance tend to overweight home market stocks and are less diversified in foreign markets.

Investors that come from countries with high levels of masculinity and long term orientation, have lower level of home bias. Thus, cultural masculinity is mainly highly related to foreign diversification of funds.

Chan et al., (2005) investigated both the foreign and domestic bias by using a sample of global mutual funds from 26 developed and developing countries investing across 48 countries for the year 1999 and 2000. In their results, home bias is present in all countries and stock market developments along with familiarity variables are the important factors that explain the domestic bias of mutual funds. Whereas, cross border allocation of funds is influenced by investor familiarity with foreign markets proxied by common language, lower geographic distance and more bilateral trade flows. Amadi (2004) found also that familiarity have an impact on foreign diversification. Specifically, common language, trade flows and immigration affect foreign investment.

In order to study international portfolio choice (mainly cross-border holdings and the home bias puzzle), Covrig et al., (2010) propose a rational expectation equilibrium model that takes into account information asymmetry between agents for which some of them has informational advantage on asset specific components of payoffs or common factors or both, or neither. The authors found that low levels of asset specific information, high-level of information asymmetry about the common factors lead to wide dispersion in home bias measures that leads to greater levels of cross-border holdings. In this respect, the authors introduced the reverse home bias by the fact that informed fund managers from one country tend to overweigh assets from another country when these fund managers have superior information on common global factors.

While foreign institutional investors could be at an informational disadvantage to domestic investors in obtaining local information, they may actually have more resources and expertise in processing information on global factors. Thus, cross border holdings of mutual funds managers increase as informational advantage on common component increase and as asset specific informational advantage decrease (Covrig et al., 2010). Moreover, Albuquerque et al., (2009) presented a theoretical model showing that the trades of sophisticated US investors are correlated across countries due to the global private information acquired within the US market. In their model stock return are driven by both local and global factors. Global investors are more informed on global factors than local ones who are more informed on local factors but react less

on changes in public signals. They showed also that the access to global private information by US investors diminishes the home bias over time and generates global return chasing. The authors extracted a measure of comovement in unexpected US net purchases of foreign stocks as a measure of private global information.

2.1.2- Portfolio industry concentration and private global information

While the traditional asset pricing theory suggests that diversification across industries and markets help fund managers to form optimal portfolios, recent papers have challenged this theory. In fact, some academics argue that within the context of informational advantage, portfolios concentration in few industries or assets might be optimal.

Hence, investor's informational advantage is essential to understand and to determine the portfolio allocation and flows. It has been shown that, as information acquisition becomes more difficult, foreign institutional investors will mostly benefit from specialization as stated by Fedenia et al. (2013). The latter have studied the impact of information immobility on different foreign institutional investor holdings and performance in one market that is the US market. Results from this paper were various and vital. First, foreign investors that have an informational advantage, particularly those that share the same culture and language with the United States, have higher holding ownership ratio in the US securities. It is important to mention that the informational advantage in their paper is proxied from one part by gravity variables such as geographical and cultural distance, language, common trade, tax treaties and similarity in industrial development. From another part, it is also represented by investor's specific country variables such as market integration and development, access to information, transparency variables, accounting quality and investor protection rights. Second, industry concentrated foreign investors outperform diversified institutional investors pointing out that concentration enable an easier access to information. Interestingly, industry concentrated foreign investors that have an informational advantage in the US market (in terms of distance, culture, language) enjoy the highest performance in the United States and even outperform American institutional investors.

Van Nieuwerburgh and Veldkamp (2010) showed that when investors have the choice between acquiring noisy information about the payoff of multiple assets or more precise information about fewer assets, they tend to under-diversify their portfolios and thus they tend to have more specialized and concentrated portfolios, contradicting the diversification hypothesis of the standard portfolio theory. They explain that by the fact that investors prefer to acquire more precise signals about fewer assets on which they are more familiar referring to the learning hypothesis.

In their study of the concentration and performance of institutional investors in international markets, Choi et al., (2016) tested empirically the theoretical assumptions of Van Nieuwerburgh and Veldkamp (2010). The authors found that institutional investors' industrial concentration results in a better performance, suggesting the existence of informational advantage. To test it, the authors proxied the informational advantage by the capacity to learn i.e the skills of managers. They found that higher skills are associated with higher concentration in countries and in industries that are complicated to understand and to follow for an average investor. Therefore, skilled investors spend more learning effort in complex industries but are rewarded with better risk adjusted returns. Based on this study, skilled investors have shown to possess industry concentrated portfolios in their own home since they have a large capacity to learn in them. In addition, these skilled investors have more concentrated holdings at the country and industry levels when they invest in foreign countries.

On the other hand, it is also documented within the literature that concentration may emerge from behavioral bias. For instance, fund managers with lower skills may take advantage of the agency problem between investors and management and thus take more risks by holding concentrated portfolios in certain markets or industries. Concentration may also be the consequence of another problem called the overconfidence of fund managers (Goetzman and Kumar, 2008). Another possible explanation is the familiarity reason that generates portfolio concentration (Pool et al., 2012). As stated by Hiraki et al. (2015), these different explanations might be the reason behind the mixed results on the relation between concentration and performance within the literature. The authors specify that only private information and specialization are the main drivers of the positive relation between concentration and performance of funds.

Kacperczyk et al (2005) provide evidence that skilled fund managers within the US market hold concentrated portfolios if they believe they have superior information in certain industries, which generate their outperformance compared to others. On another hand, Hiraki et al., (2015) investigated the industry and country concentration of international mutual funds for the period 1993 to 2008. The authors found a positive relationship between concentration and performance, mostly driven by industry rather than country concentration highlighting the existence of private industrial information.

Cavaglia et al., (2004) drew our attention on the increasing importance of considering sector rotation strategies across different countries and on the increasing role of industry factor within the recent integration of global economies. Therefore, we would like to develop this suggestion by investigating the portfolio holding choices of mutual funds that are differently informed on global factors with respect to industries and countries. In addition, recent studies have shown that those portfolios can be under-diversified but optimal, if they are based on information advantage. For Fedenia et al., (2013) industry concentration of foreign institutional investors within the United States market is advantageous for these investors and enhances their relative performance. Our approach differs from the existing papers since our approach begins by capturing the informational advantage on global factors at the fund level that we believe will drive subsequently the concentration and the specialization of mutual funds in foreign markets or within foreign industries. Particularly, our measure extracts how much a fund can be informed on the security's industry and country of domicile. Most importantly, our assumption is that the concentration strategies are the results of a rational portfolio optimization based on the information advantage theory.

As we have mentioned earlier, the private information on global factors has major implications on mutual funds portfolio holdings and few of the present papers within the literature studied the composition and the characteristics of the portfolios held by funds informed on global factors. It would be interesting to investigate why and how funds invest largely in some foreign stocks but not in others. Thus, our first hypothesis relative to the implication of private global information on mutual funds holding is:

H1: Informed mutual fund managers that have global private information choose portfolios that are specialized in given industries.

2.1.3- Turnover of informed mutual funds on global factors

It is quite intuitive for us to investigate whether the holding period of securities by fund managers will depend on the information they have about these securities. In their theoretical model, Van Nieuwerburgh and Veldkamp (2010) referred to the information advantage assumption by stating that the securities become more valuable to learn about when investors hold these securities for longer periods which drives specialization. Hiraki et al., (2015) found a negative relationship between US international mutual fund turnover and concentration. This relation was more significant when they controlled for industry concentration rather than country concentration. The authors investigated the turnover of funds by creating an industry rotation score. To do so, they sorted funds into quintiles based on their industrial concentration and they identified for each fund the average portfolio weight for the two most overweighted and underweighted industries. They found that 54% of a concentrated fund's capital goes to the preferred overweighted industries. Then, they created a rotation score that takes the value of 0 if the fund continues to hold the same overweighted and underweighted industries as in the preceding year, 0.5 if the fund change one of them, and 1 if the fund change both of them. The low rotation score of the top two industries of concentrated funds relative to their diversified counterparts ascertain the information advantage hypothesis relative to industries. Thus, they concluded that mutual fund managers rotate less frequently their top holding industries, holding them for a longer time period due to the industry specific information these managers might have acquired.

As it is known, fund's turnover ratio is hard to be interpreted since it can be due to multiple facts but we will be interested particularly by the investor's informational role. Wermers (2000) revealed that funds that enjoy an informational advantage or that have higher skills, will trade more actively if they detect regularly overvalued or undervalued stocks. High turnover funds are those that are actively managed and hence have better performance than low turnover funds. Other papers argue that short term investment horizon may be a response to noise, or due to investors following each other's or due to investor's overconfidence Christoffersen et al., (2011). In contrast, some argue that lower turnover can be related to higher informational advantage and better performance in case managers have long term private information on which they base and time their strategies (Hiraki et al., 2015; Van Nieuwerburgh and Veldkamp, 2010). Or it might

be that short term investors can better process information on the short run and long term investors on the long run.

In fact, facing market turmoil, uninformed investors might not have a full picture of the economic conditions so they could engage in irrational transactions whereas long term investment held by sophisticated fund managers could conduct contrary operations and thus absorb the deviations from the true fundamental value. However, if fund managers are faced with limited capital or if they have short term investment horizon, they could not act against a deviation from the true economic value and thus cannot remove a potential bubble or crash. Thus, investor's horizon may have major implications during changing market conditions.

Switzer and Wang (2013) found that during the financial crisis 2007-2008 higher ownership by long-term horizon institutional investors has actually mitigated credit risk and thus played an important role in enhancing financial stability during the crisis period. Anand et al. (2013) showed that liquidity supplying buy and hold institutions absorb imbalances in the market and are vital to recovery patterns after the financial crisis 2007-2009. Locke and Mann (2001) found that professional traders held losing trades longer than winning trades, indicating that relative aversion to loss realization is related to contemporaneous and future trader relative success. In contrast, high turnover can be a response to unexpected redemptions or withdrawals experienced by funds (Coval and Stanford, 2007). Indeed, funds would rebalance their holdings more often especially during financial crisis. Hence, high portfolio turnover of funds could also be interpreted as a proxy of high liquidity needs faced by mutual funds (Gaspar et al., 2005)

Thus, our intuition is that these mutual funds that spend time and money in order to acquire private information on global factors will possibly deviate from holding diversified portfolios and thus they will be more specialized in given industries. We expect that these informed funds on global factors will have relatively longer holding period than their counterparts. Facing liquidity needs during financial crisis, we expect that fund managers would be less willing to sell securities on which they have an informational advantage. In addition, we expect that informed fund managers during financial crisis engage in a buy and hold strategy or even increase their holdings in stocks on which they are well informed to take advantage from the temporary mispricing.

H2: Mutual funds manager that hold superior information on global factors tend to have long term investment horizon on their holdings.

H2a: The informational advantage on global factors may induce fund managers not to sell their holdings and to act as long term buy and hold investors especially in period of market turmoil.

3- Performance of informed mutual funds on global factors

If local informational advantage is important, local investors should make higher trading profits than foreign investors. However, results on the portfolio performance of funds are mixed, with a number of papers highlighting the outperformance of foreign investors relative to their local counterparts. A large literature argues that local investors outperform their foreign counterparts due to their local informational advantage (Hau, 2001, Chloe et al., 2005). Other studies found that there's no difference between the performance of local and foreign investors (Kang and Stulz, 1997; Seasholes and Zhu, 2010; Ferreira et al., 2016). In contrast to these results, many papers found that foreign investors can outperform in foreign markets if they are better informed than local ones (Grinblatt and Keloharju, 2000, Froot et al., 2001).

Ferreira et al., (2016) used an international sample of stocks from 32 countries for the period 2000-2010 and showed that there is no difference on average between the performance of foreign and local institutional investors. Local and foreign institutional ownership have positive forecasting power of future returns but this positive relation is due to price pressure rather than private information. The authors investigated whether different stocks and countries attributes affect the relation of future stock returns and the level and changes of domestic and foreign institutional ownership. They found that local investors perform better in stocks that are subject to high information asymmetry such as small, illiquid, low analyst coverage and high insider ownership stocks. In addition, this outperformance of local investors is explicitly more captured in opaque markets with weak accounting transparency. However, foreign investors can perform as well as local investors or even exhibit higher returns when the information asymmetry is low.

On the other hand and overall, practitioners and academics have always had a considerable interest for assessing whether mutual funds can provide positive alphas to its clients or not.

Several lines of evidence suggest that mutual funds have negative risk adjusted alphas (Chen et al., 2000). For example, Cahart (1997) concludes that the net returns of actively managed funds decrease and are negatively associated with expenses in the context of active management of mutual funds. This view is supported by the paper of Ferreira et al., (2013) in which the authors estimated the determinants of cross country open end mutual fund performance i.e fund and country characteristics for the period 1997-2007. They concluded that mutual funds underperform the market after fees. Other empirical studies have more optimistic view concerning the performance of funds. For instance, Edelen (1999) did not find negative abnormal returns for funds after taking into account the costs of liquidity services of fund managers. Wermers (2000) found that mutual funds hold a portfolio of stocks that outperform the market portfolio by 130 basis point per year. This positive return roughly compensates their expenses and transaction costs. Burlacu et al., (2013) attempted to measure the performance of mutual funds from the perspective of clients investing in these funds by constructing a benchmark that is different from that of the market. The benchmark is formed from overweighing stocks with low informational asymmetries and under-weighing stocks with high informational asymmetries. They found that mutual funds provide non negative alphas to its uninformed investors.

In addition, Ferreira et al., (2013) found interesting results concerning the diseconomies of scale presented by Chen et al., (2004) in which the authors highlight that US mutual fund performance decrease with fund size. In contrast to the findings of Chen et al., (2004), Ferreira et al., (2013) argued that this finding is not a universal fact and is only significant for the US funds. However, the performance of international funds does not deteriorate with fund size, and this result is even true for those located in the United States. Most importantly, large mutual funds located outside the US showed better performance than smaller funds. The diminishing return to scale of US domestic funds is explained by the liquidity constraints of these funds and by their restriction to limited set of domestic and small securities due to their style. In addition, fund family size has a positive impact of the performance of funds. The superior performance was also detected for funds managed solely instead of team managed that could be explained by higher hierarchy costs within large groups and thus more inefficiency in processing soft information. These two latter findings were also documented by Chen et al., (2004). Besides funds characteristics, the authors also considered the impact of country characteristics on the returns of funds. Mutual funds have higher performance results in countries with higher financial

development, with higher trading activity and with lower trading costs. Moreover, funds that are geographically located in countries of common low and in countries in which they enjoy a better investor' protection, outperform others. The authors also took into account each country's mutual fund industry age, size and concentration as a whole.

Bae et al., (2012) suggested an explication for these mixed results that we would like to deepen and prove in this thesis. They state that foreign investors have informational advantage when processing global market information even though they are at an informational disadvantage regarding local market information. However, one can judge that foreign investors are more or less informed depending on the importance of global or local information reflected in stock prices. The authors didn't test this assumption empirically but they demonstrated that foreign investor's accessibility to emerging markets increase informational efficiency in stock prices and that the returns of investible stocks lead those that are noninvestible. As we have seen, previous papers capture the existence of private information from the superior performance of funds.

For example, Choi et al., (2016) found that concentrated investment strategies create positive risk adjusted returns for all institutional investors all over the world. The main goal of their paper was to prove that if investors deviate from the world portfolio based on their informational advantage then this should result in a positive relation between this deviation and performance. Indeed, they demonstrate that the different measures of concentration are positively related to higher levels of return. Hence, the authors presented evidence that the decision to concentrate in foreign markets can be a rational decision making process driven by an information advantage. However, their paper is similar to all the empirical studies that we are aware of, that uses the positive performance to detect informational advantage. As a matter of fact, they defined skilled investors as the investors that have more capacity to learn and specialize by sorting funds into deciles based on their abnormal performance. Funds within the highest decile represent the most skilled investor. In our point of view, the good performance is the consequence of the existence of private information. None of the present papers within the literature tested empirically a clear measure of informational advantage that drives the concentration as well as the good performance of funds. Thus, our contribution would be to test a measure of private global information that we believe is a main driver of mutual funds portfolio allocation and performance.

On the other hand, Grinblatt & Titman (1994) stated that mutual funds' performance is more sensitive to the benchmark choice than to the performance measures using an identical benchmark. We can clearly deduce the importance of choosing the appropriate benchmark to conduct our study. We will expose thereafter the benchmarks used for assessing the performance of international funds within the literature.

3.1- Methodology and choice of benchmark

The choice of appropriate risk factors is a controversial key factor for measuring the performance of mutual funds. Previous research on performance analysis of funds has extensively relied on the four factor model from the seminal paper of Cahart (1997). However, researchers have been using either stock based factor models (Fama and French, 2012; Ferreira et al., (2013:2013; 2016) or index based factor models (Huij and Derwall, 2011; Breloer et al., 2014) in their construction of these risk factors. In addition some papers have been using both stock based and index based factors such as the paper of Cremers et al., (2012); Hiraki (2014).

Cremers et al., (2012) used indices to compute the size and the value factors, whereas the momentum factor was a stock based factor. Hiraki et al., (2015) investigated the performance of US international mutual funds with different industry and country concentration measures. For that, they regressed monthly gross fund returns on US stock based four factor and international index based three factors model. The international market factor comes from MSCI ACWI ex USA index returns, the difference between MSCI ACWI Value and Growth index return gives them the international book to market factor and the difference between MSCI ACWI Large and Small Cap index return generates for them the international size factor.

To date, momentum factor in several studies on the performance of international and global factors is omitted (Huij and Derwall, 2011; Comer and Rodriguez, 2012; Hiraki, 2015). However, the momentum factor has been included in some recent papers on the performance on institutional investors worldwide. For instance, in their analysis of cross country mutual fund performance Ferreira et al., (2012;2013) extracted the alphas measure of fund from a stock based four factor Cahart model. However, they did not use indices to capture global factors but instead they computed monthly country-specific benchmark factors by employing the methodology of Fama and French (1992) and by using all the securities from Datastream/Worldscope database.

Whereas, Banegas et al (2013) included the momentum factor in their analysis using index based version of the four factor model in their performance evaluation of European equity mutual funds.

A more detailed study on the performance of global and international funds for the period 1996 to 2009 was made by Breloer et al., (2014). In their paper, they extended the international index-based three factor model of Fama and French (1993) by including the country and sector momentum to their model using 45 MSCI investable market indices and 10 MSCI sector indices. Thus, the developed five factor model are computed the following way: The market factor is captured by the monthly return of MSCI (ACWI) investable market index (IMI) -which ensure a large coverage since it includes stocks from developed and emerging markets and from different sizes i.e large, medium and small cap stocks- less one month T-bill return. Whereas the size factor is computed as the monthly average return of the indices MSCI ACWI Small Value and the MSCI ACWI Small Growth less the average return of MSCI ACWI Large Value and the MSCI ACWI Large growth. Similarly, the value factor is the average return of the MSCI ACWI Small Value and the MSCI ACWI Large Value less the average return of the MSCI ACWI Small Growth and MSCI ACWI Large Growth index. The country momentum index is the result of a 12/1 strategy that consists of sorting monthly country indices based on their past twelve month return for a holding period of 1 month in local currency. For the sector momentum, for international funds they used a 6/1 strategy and for global funds a 12/ strategy. As a result, the five factor model of performance capture lower alphas than the free factor model for both global and international funds. These latter funds are significantly exposed for more than 50% to either country of sector momentum factor. The authors conducted also a comparison of performance analysis using stock based and index based models and found that index based model reveal a better adjusted R squared and thus a better explanatory power. The authors also conducted a bootstrap simulation as Fama and French (2010) in order to investigate whether the positive alpha found among funds that have higher exposure to momentum are related to skill or luck. Indeed, weaker findings with respect to skill where detected.

Choi et al., (2016) investigated whether institutional investor concentration in a specific country boost the investor performance in that country's assets. For that, they regressed the value weighted return of the assets held by each investor as explained above less the global risk free

rate obtained from Kenneth French's data library on the four Cahart factor model. However, the authors conducted the performance analysis using the global factor returns from Kenneth French's data library and also another performance analysis at the target country level that is they computed the HML, SMB and UMD of each target market. Results were statistically similar when the authors used global risk factors or country specific factors. But, the country specific factors remained better in explaining the performance of investors.

Besides the benchmark choice, Ferson and Harvey (1993) demonstrated that returns on international stock indexes are predictable using macroeconomic indicators as conditioning variables. Avramov and Chordia (2006) showed that the use of macroeconomic conditioning variables such as 'the dividend yield, the default spread, the term spread, and the Treasury bill' yield substantial alphas.

Our intuition is that substantial gains in portfolio choice can be obtained from the use of macroeconomic information. Thus, when fund managers have informational advantage on common global factors they can better assess the value of foreign firms especially the ones that are highly sensitive to these factors hence they will exhibit good performance. Another point to be noted is that fund managers that outperform their counterparts are usually origin from countries that present large developed industries. Consequently, they have better access on information about global risk factors such as the price of petrol, inflation, exchange rates etc. that are essential to forecast accurately the payoffs of the assets. Thereby, our developed hypothesis is:

H3: The use of private information on global factors by mutual funds managers enables them to outperform others.

4- Methodology to test H3:

First of all, our measure of private global information is as discussed in equation 5, 7 and 10. Whereas our sample consists of US global and international funds that are differently informed on global factors.

We begin by estimating the sensitivity to global factors for each stock held by mutual funds by using our common info proxy. Then, we will aggregate this measure on the fund level by

calculating the average sensitivity to global factors for each fund portfolio. Next, we will sort these portfolios into quartiles based on their level of informational advantage on global factors, and we extract the average alphas for each quartile. We use for that the four factor Cahart model along with international index based three factors model. The international market factor comes from MSCI ACWI index returns, the difference between MSCI ACWI Value and Growth index return gives us the international book to market factor and the difference between MSCI ACWI Large and Small Cap index return generates the international size factor.

Hence, we will interpret these alphas to see whether mutual funds managers having informational advantage on common factors achieve superior performance than funds with lower informational advantage. Furthermore, we will investigate whether and how the performance of these portfolios is affected just before and during periods of shocks. Period of shocks are captured by the VIX index that was used in many papers within the literature (Gianetti and Leaven 2012; Cella et al., 2013 ; Skiba, 2013; Ferreira et al., 2015). As in Cella et al., (2013), we require that the S&P 500 monthly returns falls in the bottom 5th percentile and the VIX change is above 95th percentile to capture market turmoil.

Model 1: (Carhart, 1997): $r_{it} - r_{ft} = ALPHA_i + \beta_{i1}^{M} (r_{mt} - r_{ft}) + \beta_{i2}^{SMB} SMB_t + \beta_{i3}^{HML} HML_t + \beta_{i4}^{WML} WML_t + \varepsilon_{it}$ **(11)**

Model 2: $r_{it} - r_{ft} = ALPHA_i + \beta_{i1} INTL - MKT_t + \beta_{i2} INTL - SMB_t + \beta_{i3} INTL - HML_t + \varepsilon_{it}$ **(12)**

Model 3: $r_{it} - r_{ft} = ALPHA_i + \beta_{i1}^{M} (r_{mt} - r_{ft}) + \beta_{i2}^{SMB} SMB_t + \beta_{i3}^{HML} HML_t + \beta_{i4}^{MOM} MOM_t + \beta_{i5} INTL - MKT_t + \beta_{i6} INTL - SMB_t + \beta_{i7} INTL - HML_t + \varepsilon_{it}$ **(13)**

	Normal period			Pre-shock period			Period of shocks		
	Bottom 25%	50%	Upper 25%	Bottom 25%	50%	Upper 25%	Bottom 25%	50%	Upper 25%
Model 1									
Model 2									
Model 3									

Second, our main goal is to assess whether funds that are better informed on global factors achieve superior performance by investing in stocks that are highly sensitive to macroeconomic factors, than stocks that are less sensitive to these factors. We will be guided by the methodology of Massa and Zhang (2012) and Cohen et al., (2008) by assessing the performance of the stocks within the fund's portfolio rather than the performance of the entire fund. Particularly, we will investigate whether the risk adjusted return gained from the fund's holding in stocks that are highly sensitive to global factors is higher than that obtained from stocks that are less sensitive to these factors. Thus, we will first examine the quarter-end portfolio holdings of each mutual fund investor, we then create two value-weighted portfolios: a high-informational advantage on common factors portfolio consisting of stocks that are highly sensitive to global factors and a low informational advantage on common factors portfolio, consisting of stocks that are less sensitive to these factors.

For each portfolio, we define its buy-and-hold returns over the following quarter and we calculate the difference in returns between the high-informational advantage on common factors portfolio returns and the low informational advantage on common factors portfolio returns. We rebalance these portfolios at the beginning of each quarter. Finally, we run a pooled regression of the difference in returns on traditional risk factors.

Difference in portfolio returns= α **+**β_1**market factor +** β_2**HML, +** β_3 **SMB +** β_4**momentum factor +** $\beta_5 INTL - MKT_t$**+**$\beta_6\ INTL - SMB_t + \beta_7\ INTL - HML_t + \varepsilon_{it}$ **(14)**

The aim of this regression is to see if the positive difference in the portfolio returns is explained by the traditional factors and if it's not the case we can deduce that the generated positive alpha is due to private global information.

Third, we would like to assess the determinants of the abnormal performance of the fund by regressing the excess return of the fund i over month t $AR_{i,t}$ over our common measure and over other fund characteristics that have been shown to impact the performance of funds .

$$AR_{i,t} = \beta_0 + \beta_1\, common_{i,t-1} + \beta_2(\ln TNA)_{i,t-1} + \beta_3\, Turnover_{i,t-1} + \beta_4 expenses_{i,t-1} + \beta_5 lnage_{i,t-1} + \beta_5 NMG_{i,t-1} + \varepsilon_{it} \quad (15)$$

In addition, we would like to capture an important fact that is what is driving the abnormal return of global and international funds ; is it the familiarity effect (common language, culture, geographical proximity etc.) or the informational advantage that these funds migh have on global factors.

$$AR_{i,t} = \beta_0 + \beta_1\, common_{i,t-1} + \beta_2 geog\ distance + \beta_3\, culturediff + \beta_4\, religiondiff + + \beta_5\, common\ tax\ treaty \quad (16)$$

On another hand, many studies have documented that mutual funds that hold concentrated portfolios outperform those who hold more diversified counterparts. Kacperczyk et al., (2005) found that actively managed US mutual funds who concentrate in specific industries perform better than their diversified counterparts. These positive results reflect the superior investment ability of fund managers in exploiting their informational advantage. These findings are obtained after controlling for risk and style differences and by using factor-based and holding-based performance measures such as the industry stock selectivity and the industry timing measures following the methodology of DGTW (1997).

Fedenia et al., (2013) investigated the relationship between the informational advantage, industry concentration and institutional investor performance by using information advantage proxies such as the geographical and cultural distances, differences in religion and language, industrial development, common trade, capital tax treaty indicator. They showed that industry concentration enhances the performance of foreign investors but this impact declines with the geographical and cultural distances and differences in religion. They demonstrated that foreign institutional investors who concentrate their holdings in given industries and who benefit from an informational advantage in the US market outperform diversified foreign investors as well as US institutional investors.

Huij and Derwall (2011) showed that US global equity mutual funds with higher level of tracking error and thus who are more concentrated enjoy better performance than more diversified funds. However, the authors shed light on the role of the breadth of the underlying fund strategies which drive the positive relationship between concentration and performance. In

fact, they demonstrated that funds that take large bets and concentrate in multiple market segments are the most outperforming funds but those who concentrate in one or two market segments may even underperform diversified funds that are concentrated in multiple market segments. The breadth are measured within their paper by the number of independent market segments to which the fund can invest which are the number of predictive factors to which the fund is exposed (style, country and sectors) or by the average square deviation between fund's beta and beta of the market portfolio in the styles, sectors and countries factor models. Whereas the portfolio concentration is measured by the tracking error which is the funds R-squared obtained from regressing fund returns against several benchmark factors.However, Huij and Derwall (2011) did not use holdings data to conduct their study. Whereas, Hiraki et al., (2015) investigated the holdings of US international equity funds and showed that concentrated funds outperform diversified ones when controlling for both industry and country dimensions and that this abnormal performance is mainly due to the industry concentration referring to the private global information argument.

None of the present studies have proposed a concrete measure of the private global information and studied its relation with portfolio concentration and performance of funds

Therefore, we would like to investigate the performance differential between concentrated and diversified funds informed differently on global factors by using our measure of global private information. We sort the funds into terciles based on industry concentration and on information advantage proxy. We expect to observe the highest abnormal performance in portfolios that are both industry concentrated and information advantaged.

Common info // DSC				
	NET RETURNS OR ALPHA ADJUSTED by factors			
	DSC –low1	DSC -2	DSC high 3	High-low
COMMON LOW				
COMMON 2				
COMMON HIGH 3				
TERCILE 3 – TERCILE 1				

It is well documented within the literature that the location of mutual funds matters since it can influence its strategies, its portfolio allocation and its performance. In fact, mutual funds located in financial centers may enjoy information advantage over others due to local interaction between traders and financial intermediaries that might improve their performance. In fact, Christoffersen et al. (2004) found that experienced fund manager located within financial centers hold less diversified portfolios and outperform funds located in other places in terms of both gross and risk-adjusted returns. The authors interpreted these results by the fact that information is more readily accessible to fund managers within financial centers which attract high skilled managers that have better ability to perform and learn. However, these benefits and information advantage diminish with manager's overconfidence or among young fund managers who engage in excessive trading. The authors used for this study a classification of six large cities defined to be financial centers: Boston, Chicago, Los Angeles, New York, Philadelphia, and San Francisco. A fund is classified to be in one of these financial centers if the distance of its headquarters from the city proper is no more than 50 miles. In a subsequent article, Christoffersen et al. (2009) highlighted that the outperformance of US domestic fund managers within financial center is mainly due to the long experience of these managers. The authors provide evidence of the learning hypothesis within financial centers.

We believe that there is an informational spillover within financial centers so that fund managers located in them have better access to information on global factors than managers located outside. Financial centers are indeed places where information can be transmitted by the interaction of fund managers with leading investment banks, financial analysts or executive managers that come for a business visit to financial centers in order to brief asset managers. Therefore we would like to develop the studies conducted by Christoffersen (2004,2009) in order to test if funds located within financial center are better informed on global factors and thus exhibit higher returns.

Common info //Financial center	

	NET RETURNS OR ALPHA ADJUSTED by factors			
	Common info – low1	Common info -2	Common info high 3	High- low
Financial center Yes				
No				
Yes- No				

References

Admati, A.R., 1985. A noisy rational expectations equilibrium for multi- asset securities markets. *Econometrica* 53, 629–657.

Miranda-Agrippino, S., & Rey, H. (2015). *World asset markets and the global financial cycle* (No. w21722). National Bureau of Economic Research.

Albuquerque, R., Bauer B., Schneider M., 2009. Global Private Information in International Equity Markets. *Journal of Financial Economics*, 94(1): 18-46.

Amadi, A., 2004. Equity home bias: a disappearing phenomenon? Available at SSRN http://ssrn.com/abstract=540662

Anand.A., Ivrine, P., Puckett.A., Venkataraman, K., 2013. Institutional tradng and stock resiliency : Evidence from the 2007-2009 financial crisis .*Journal of Financial Economics.* 108 .773–797

Anderson, C. W., Fedenia, M., Hirschey, M., & Skiba, H. (2011). Cultural influences on home bias and international diversification by institutional investors. *Journal of Banking & Finance*, *35*(4), 916-934.

Avramov, D., Chordia, T., 2006. Predicting stock returns. *Journal of Financial Economics* 82, 387-415.

Bae, K., Ozoguz, A., Tan, H., Wirjanto, T., 2012. Do foreigners facilitate information transmission in emerging markets? *Journal of Financial Economics*, 105, 209–227.

Banegas, A., Gillen, B., Timmermann, A., Wermers, R., 2013. The cross section of conditional mutual fund performance in European stock markets.*Journal of Financial economics*, *108*(3), 699-726.

Bhattacharya, U., Daouk, H., & Welker, M. (2003). The world price of earnings opacity. *The Accounting Review*, *78*(3), 641-678

Breloer, B., Scholz, H., & Wilkens, M. (2014). Performance of international and global equity mutual funds: Do country momentum and sector momentum matter?. *Journal of Banking & Finance*, *43*, 58-77.

Brennan, M. J., Cao, H., 1997. International Portfolio Investment Flows, *Journal of Finance* 52, 1851-1880.

Burlacu, R., Fontaine, P., Jimenez-Garcès, S., 2005. Firm specific return variation: A measure of price informativeness or information asymmetry? *Annals of Financial Economics* Vol. 1, No. 1 0550004

Burlacu, R., Fontaine, P., Jimenez-Garces, S., 2006. Industry specialization and performance: a study of mutual funds. *Finance* 2/2006 (Vol. 27) , p. 33-70

Carhart, M. M. (1997). On persistence in mutual fund performance. *The Journal of finance*, *52*(1), 57-82.

Campbell, J.Y., Hamao, Y., 1992. Predictable stock returns in the United States and Japan: a study of long-term capital market integration. *The Journal of Finance* 47, 43–69.

Cavaglia, S. M., Diermeier, J., Moroz, V., & De Zordo, S. (2004). Investing in global equities. *The Journal of Portfolio Management*, *30*(3), 88-94.

Cella,C.,Ellul, A.,Mariassunta, G., 2013. Investors' Horizons and the Amplification of Market Shocks. *Review of Financial Studies*, hht023.

Cremers, M., Petajisto, A., & Zitzewitz, E. (2012). *Should benchmark indices have alpha? Revisiting performance evaluation* (No. w18050). National Bureau of Economic Research.

Chan, K., Covrig, V., & Ng, L. (2005). What determines the domestic bias and foreign bias? Evidence from mutual fund equity allocations worldwide. *The Journal of Finance*, *60*(3), 1495-1534.

Choi, N., Fedenia, M., Skiba, H., & Sokolyk, T. (2017). Portfolio concentration and performance of institutional investors worldwide. *Journal of Financial Economics*, *123*(1), 189-208.

Christoffersen, S. E., & Sarkissian, S. (2009). City size and fund performance. *Journal of Financial Economics*, *92*(2), 252-275.

Christoffersen, S. E., & Sarkissian, S. (2011). The demographics of fund turnover. *Journal of Financial Intermediation*, *20*(3), 414-440.

Cohen, L., Frazzini, A., & Malloy, C. (2008). The small world of investing: Board connections and mutual fund returns. *Journal of Political Economy*, *116*(5), 951-979.

Comer, G., & Rodriguez, J. (2012). International mutual funds: MSCI benchmarks and portfolio evaluation.

Conrad , C., Loch, K., Rittler, D., 2014. On the macroeconomic determinants of long-term volatilities and correlations in U.S. stock and crude oil markets , *Journal of Empirical Finance 29* ,26–40

Coval, J. D., & Moskowitz, T. J. (2001). The geography of investment: Informed trading and asset prices. *Journal of political Economy*, *109*(4), 811-841.

Coval, J., & Stafford, E. (2007). Asset fire sales (and purchases) in equity markets. *Journal of Financial Economics*, *86*(2), 479-512.

Covrig , M, V., Fontaine ,P., Jimenez-Garces, S., Seasholes,M,S.,2008. Information and Cross-Border Equity Holdings. Working Paper.

Chan, K., & Covrig, V. (2012). What determines mutual fund trading in foreign stocks?. *Journal of International Money and Finance*, *31*(4), 793-817.

Chen, H. L., Jegadeesh, N., & Wermers, R. (2000). The value of active mutual fund management: An examination of the stockholdings and trades of fund managers. *Journal of Financial and quantitative Analysis*, *35*(03), 343-368.

Chen, J., Hong, H., Huang, M., & Kubik, J. D. (2004). Does fund size erode mutual fund performance? The role of liquidity and organization. *The American Economic Review*, *94*(5), 1276-1302.

DETZLER, MIRANDA et WIGGINS, JAMES. The performance of actively managed international mutual funds. *Review of Quantitative Finance and Accounting*, 1997, vol. 8, no 3, p. 291-313.

Durnev, A., Morck, R., and Yeung , B., 2004. Value-enhancing capital budgeting and firm specific stock return variation. *Journal of Finance,* 59(1), 65–105.

Easley, D., Hvidkjaer, S., & O'hara, M. (2002). Is information risk a determinant of asset returns?. *The journal of finance*, *57*(5), 2185-2221.

Easley, D., & O'hara, M. (2004). Information and the cost of capital. *The journal of finance*, *59*(4), 1553-1583.

Edelen, R. M. (1999). Investor flows and the assessed performance of open-end mutual funds. *Journal of Financial Economics*, *53*(3), 439-466.

Fama, E. F.,1990. Stock prices, expected prices and real activity. *Journal of Finance*, 45(4), 1080-1089.

Fama, E. F., & French, K. R. (1992). The cross-section of expected stock returns. *the Journal of Finance*, *47*(2), 427-465.

Fama, E. F., & French, K. R. (2010). Luck versus skill in the cross-section of mutual fund returns. *The journal of finance*, *65*(5), 1915-1947.

Fama, E. F., & French, K. R. (2012). Size, value, and momentum in international stock returns. *Journal of financial economics*, *105*(3), 457-472.

Fedenia, M., Shafer, S., & Skiba, H. (2013). Information immobility, industry concentration, and institutional investors' performance. *Journal of Banking & Finance*, *37*(6), 2140-2159.

Ferreira, M. A., & Ferreira, M. A. (2006). The importance of industry and country effects in the EMU equity markets. *European Financial Management*, *12*(3), 341-373.

Ferreira, M. A., & Miguel, A. F. (2007). Home equity bias and industry concentration. Working paper

Ferreira, M. A., Matos, P., & Pereira, J. (2009). Do foreigners know better? A comparison of the performance of local and foreign mutual fund managers. *A Comparison of the Performance of Local and Foreign Mutual Fund Managers*

Ferreira, M., Massa, M., Matos, P., 2011. The Geography of Mutual Funds: The Advantage of Distant Investors, Working paper, INSEAD.

Ferreira, M. A., Keswani, A., Miguel, A. F., & Ramos, S. B. (2012). The determinants of mutual fund performance: A cross-country study. *Review of Finance*, rfs013.

Ferson, W.E., Harvey, C.R., 1993. The risk and predictability of international equity returns. *Review of Financial Studies* 6, 527-566.

Ferson, W.E., Harvey, C.R., 1999. Conditioning variables and the cross-section of stock returns. *Journal of Finance 54*, 1325-1360.

Fontaine, P., Jimenez-Garces, S., & Seasholes, M. (2011). *Common factors, information, and portfolio choice*. Working paper

French, K. R., Poterba, J.M., 1991. Investor Diversification and International Equity Markets. *The American Economic Review* 81, 222-226.

Froot, K., O'Connell, P., Seasholes, M., 2001. The Portfolio Flows of International Investors, *Journal of Financial Economics* 59, 151-193.

Gaspar, J. M., & Massa, M. (2007). Local ownership as private information: Evidence on the monitoring-liquidity trade-off. *Journal of Financial Economics*, *83*(3), 751-792.

Gaspar, J. M., Massa, M., & Matos, P. (2005). Shareholder investment horizons and the market for corporate control. *Journal of financial economics*, *76*(1), 135-165.

Gehrig, T., 1993. An Information Based Explanation of the Domestic Bias in International Equity Investment. Scandinavian. *Journal of Economics* 95, 97-109.

Griffin, J. M., & Karolyi, G. A. (1998). Another look at the role of the industrial structure of markets for international diversification strategies. *Journal of financial economics*, *50*(3), 351-373.

Grinblatt, M., Keloharju M., 2000. The Investment Behavior and Performance of Various Investor Types: A study of Finland's Unique Data Set. *Journal of Financial Economics* 55, 43-67.

Grinblatt, M., & Keloharju, M. (2001). How distance, language, and culture influence stockholdings and trades. *The Journal of Finance*, *56*(3), 1053-1073.

Grinblatt, M., & Titman, S. (1994). A study of monthly mutual fund returns and performance evaluation techniques. *Journal of financial and quantitative analysis*, *29*(03), 419-444.

Grinblatt, M., Titman, S., & Wermers, R. (1995). Momentum investment strategies, portfolio performance, and herding: A study of mutual fund behavior. *The American economic review*, 1088-1105.

Goetzmann, W. N., & Kumar, A. (2008). Equity portfolio diversification. *Review of Finance*, *12*(3), 433-463.

Goyal, A., Santa-Clara, P., 2003. Idiosyncratic risk matters! *Journal of Finance,* 54(3), 1199–1219

Grossman, S.J., 1976. On the Efficiency of Competitive Stock Markets Where Traders Have Diverse Information. *Journal of Finance 31*, 573-585.

Harvey, C.R., 1991. The world price of covariance risk. *Journal of Finance* 46, 111–158.

Hau, H. (2001). Location matters: An examination of trading profits. *The Journal of Finance*, *56*(5), 1959-1983.

He, W., Shen, J., 2014. Do foreign investors improve informational efficiency of stock prices? Evidence from Japan. *Pacific-Basin Finance Journal* 27 32–48

Hatzius, J., Hooper, F.,Schoenholtz, K., Watson, W., 2010, Financial conditions indexes: A fresh look after the financial crises, No. w16150. National Bureau of Economic Research.

Hiraki, T., Liu, M., & Wang, X. (2015). Country and industry concentration and the performance of international mutual funds. *Journal of Banking & Finance*, *59*, 297-310.

Hou, K., & Moskowitz, T. J. (2005). Market frictions, price delay, and the cross-section of expected returns. *Review of Financial Studies*, *18*(3), 981-1020.

Heston, S. L., & Rouwenhorst, K. G. (1994). Does industrial structure explain the benefits of international diversification?. *Journal of Financial Economics*, *36*(1), 3-27.

Huij, J., & Derwall, J. (2011). Global equity fund performance, portfolio concentration, and the fundamental law of active management. *Journal of Banking & Finance*, *35*(1), 155-165.

IMF, 2014. How do changes in the investor base and financial deepening affect emerging market economies? (Washington: International Monetary Fund)

Kacperczyk, M., Sialm, C., & Zheng, L. (2005). On the industry concentration of actively managed equity mutual funds. *The Journal of Finance*, *60*(4), 1983-2011.

Kang, J.K., Stulz, R.M., 1997. Why is there a Home Bias? An Analysis of Foreign Portfolio Equity Ownership in Japan. *Journal of Financial Economics* 46, 3-28.

L'Her, J. F., Sy, O., & Tnani, M. Y. (2002). Country, industry, and risk factor loadings in portfolio management. *The Journal of Portfolio Management*, *28*(4), 70-79.

Lin, C., Massa, M., Zhang, H., 2014. Mutual funds and information diffusion: The role of country-level governance. *Review of Financial Studies* : hhu046.

Locke, P., Mann, S,. 2001. Do professional traders exhibit loss realisation aversion?Social social science reseach working paper 2001. Available at (http://www.ssrn.com/abstract=251942).

Lumsdaine, R.L., Prasad, E.S., 2003. Identifying the common component in international economic fluctuations: a new approach. *Economic Journal* 113, 101–127.

Massa, M., Rehman, Z., 2008. Information flows within financial conglomerates: evidence from the banksmutual funds relationship, *Journal of Financial Economics*, 208-306.

Massa, M., Zhang, L.,2012. Fire-sales and Information Advantage: When Bank-Affiliation Helps, *Available at SSRN 2097456*.

Mensi, W., Hammoudeh, S., Reboredo, J. C., & Nguyen, D. K. (2014). Do global factors impact BRICS stock markets? A quantile regression approach. *Emerging Markets Review*, *19*, 1-17.

Milken institute. Opacity index 2009 report available at http://www.milkeninstitute.org/publications/view/384

Morck, R., Yeung, B., & Yu, W. (2000). The information content of stock markets: why do emerging markets have synchronous stock price movements?. *Journal of financial economics*, *58*(1), 215-260.

Pool, V., Stoffman, N., Yonker,S., 2012. No Place Like Home: Familiarity in Mutual Fund Manager Portfolio Choice, The Review of Financial Studies 25, 2563-2599.

Seasholes, M. S., & Zhu, N. (2010). Individual investors and local bias. *The Journal of Finance*, *65*(5), 1987-2010.

Skiba, H. (2013). Time Varying Risk Aversion, Familiarity Bias, and Portfolio Concentration During Market Uncertainty.

Solnik, B. H. (1974). The international pricing of risk: An empirical investigation of the world capital market structure. *The Journal of Finance*, *29*(2), 365-378.

Switzer ,N., Wang, J., 2013 . Institutional Investment Horizon, the Information Environment and Firm Credit Risk . Working paper

Tille, C., Wincoop, V., 2014. International capital flows under dispersed private information, *Journal of international economics* 93 , 31–49.

Ülkü, N. (2015). The interaction between foreigners' trading and stock market returns in emerging Europe. *Journal of Empirical Finance*, *33*, 243-262.

Van Nieuwerburgh, S., & Veldkamp, L. (2010). Information acquisition and under-diversification. *The Review of Economic Studies*, *77*(2), 779-805.

Wang, J. (1993). A model of intertemporal asset prices under asymmetric information. *The Review of Economic Studies*, *60*(2), 249-282.

Wermers, R. (2000). Mutual fund performance: An empirical decomposition into stock-picking talent, style, transactions costs, and expenses. *The Journal of Finance*, *55*(4), 1655-1703.