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Asian Hedge Funds in a Risk-on, Risk-off World

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BNP Paribas Hedge Fund Centre Hedge Fund Insights

Contents

Mission of the BNP Paribas Hedge Fund Centre

The mission of the BNP Paribas Hedge Fund Centre is to facilitate, encourage, and sponsor high-level academic research on hedge funds. The Centre also provides outstanding education to students, executives, and investors, and publishes objective and independent information on hedge funds, while promoting understanding and awareness of alternative investment strategies. Through excellence in research on alternative investments, the Centre is recognized for its capacity to foster stimulating exchange of opinions, and to develop a knowledgeable and objective information base regarding hedge funds.

Specifically, the primary objectives of the BNP Paribas Hedge Fund Centre at the Singapore Management University are to

1. conduct and disseminate high quality academic hedge fund research
2. educate finance practitioners and the investor public on hedge funds, and
3. raise the profile of the hedge fund industry in Asia and Singapore

To achieve these goals, the Centre will collaborate closely with academics at the London Business School. Moreover at all times, the Centre is absolutely committed to the highest ethical conduct and will actively avoid any conflicts of interest with outside parties.

Asian Hedge Funds in a Risk-on, Risk-off World

Melvyn Teo[1]

Executive summary

We analyze the performance of Asia-focused and Asia-based funds in risk-on and risk-off periods between 2002 and 2011. We find that Asian hedge funds, like their US and European counterparts, deliver equity-like payoffs with bond-like risk. They generate returns that are roughly in line with the equity markets in risk-on and neutral states of the world. While their returns do not dominate those of US Treasuries in risk-off situations, they generally outperform the equity market by a significant margin. Indeed, their risk-adjusted returns in risk-off states are on par if not higher than their risk-adjusted returns in risk-on states. Of course, this is cold comfort for investors who would have preferred a larger allocation to US Treasuries in such situations. Nonetheless, hedge fund investors who are principally concerned with performance in a risk-off environment will benefit from an increased allocation to CTAs and macro hedge funds in Asia. Investor in such funds over our sample period would have harvested on average positive returns even in risk-off conditions. The trade off is that they would not have benefitted more from the stellar risk-on returns of equity long/short and event driven funds.

Given the recent market volatility, institutional investors have become increasingly focused on performance in risk-off conditions. The underperformance of hedge funds in general this year has sparked concerns that hedge funds do not live up to their purported ability to deliver equity-like returns and bond-like risk. In this issue of the Hedge Fund Insights, we analyze the performance of Asian hedge funds conditional on whether markets are in a risk-on or risk-off state. We follow the framework pioneered by Fung (2012) and use the level of VIX to sort our sample into three discrete states, namely risk-on, neutral, and risk-off. These states correspond to periods of low, medium, and high levels of VIX, respectively.

Our analysis centers on data obtained from the Eurekahedge and Asiahedge databases and on the 2002-2011 period. We merge these databases by hand using fund name. In much of our analysis, we shall focus on both Asia focused and Asia based funds.[2] The sample includes 10,011 funds of which 5,010 stop reporting by the end of the sample period in December 2011 leaving us with 5,001 live funds. There are 2,463 Asia focused and Asia based funds within our sample, of which 1,161 are live in December 2011.

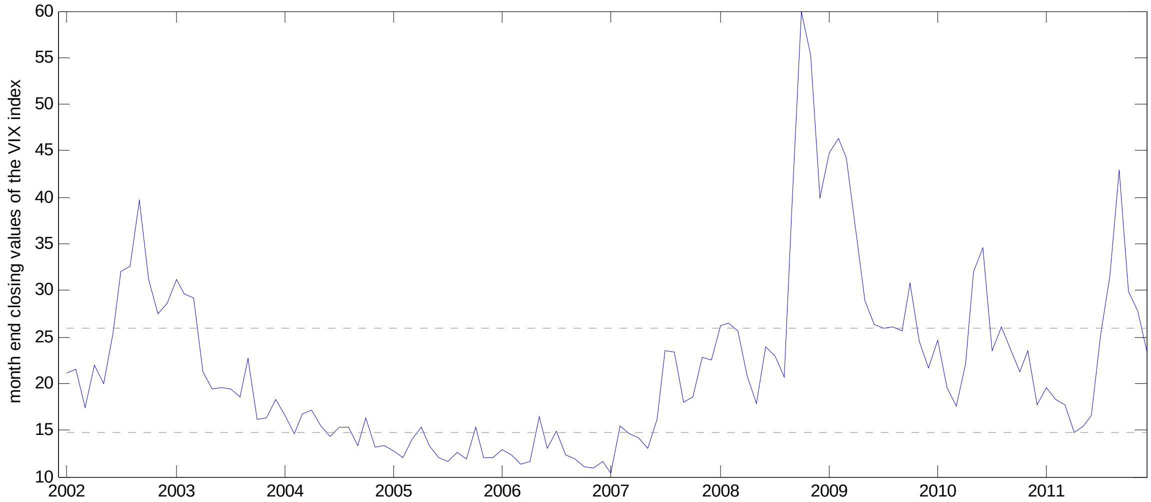
As discussed, to understand how hedge funds perform in different states of the world, we sort the sample months into three states based on the month-end closing level of the VIX index, which is a forward measure of

[1] Melvyn Teo is Professor of Finance and Director, BNP Paribas Hedge Fund Centre at the Singapore Management University. E-mail: melvynteo@smu.edu.sg. Phone: +65-6828-0735. This work was inspired by discussions with Bill Fung. We thank Narayan Naik for helpful suggestions and comments. Kelvin Min provided excellent research assistance.

[2] We define funds investing in Asia excluding Japan, Asia including Japan, Australia/NZ, Emerging markets, Greater China, India, Japan, South Korea, and Taiwan as Asia focused funds, and funds managed from Australia, China, Hong Kong, India, Indonesia, Japan, Malaysia, Mauritius, Singapore, South Korea, Taiwan, and Thailand as Asia based funds.

volatility. Specifically, risk-on months are months with VIX equal to or below its 25th percentile, risk-off months are months with VIX equal to or above its 75th percentile, and neutral months are months with VIX between its 25th and 75th percentiles.[3] We plot the month-end closing levels of the VIX index in Figure 1. The 25th and 75th percentile bounds are denoted by the dotted lines. The risk-off states of the world correspond well with anecdotal periods of market turmoil, including the global financial crisis in 2008 and the sovereign debt crisis in 2010 and 2011.

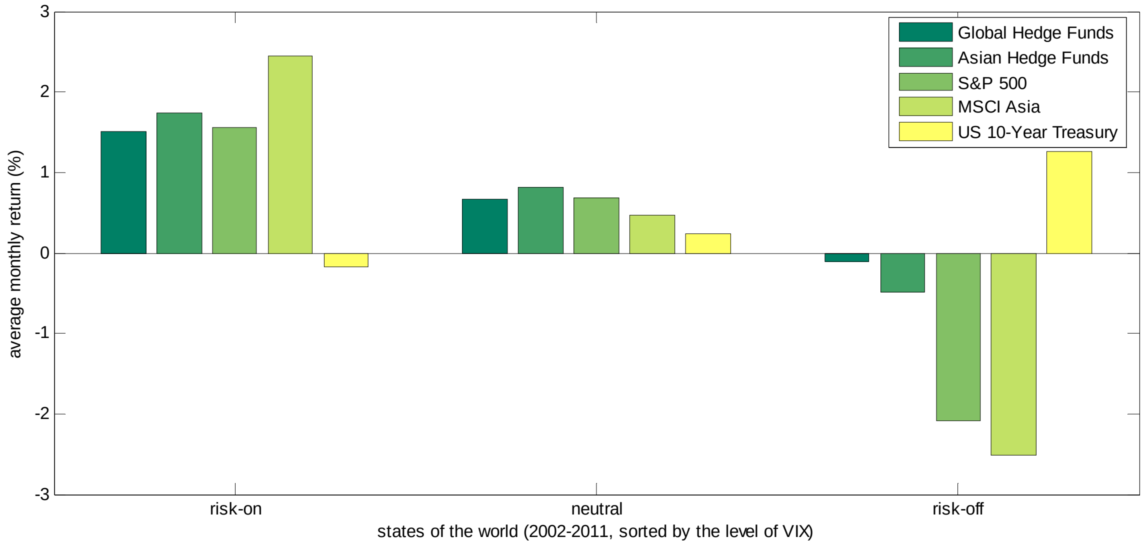
Figure 1: VIX index (2002-2011)



In Figure 2, we plot the average monthly return of the equal-weighted composite hedge fund index as well as the analogous index for Asian hedge funds. We compare their performance in the three states of the world with that of S&P 500 index and the US 10-year Treasury. The results are broadly consistent with Fung (2012). We find that hedge funds and the equity markets perform better during risk-on and neutral periods than during risk-off periods. US Treasuries on the other hand underperform when markets are risk-on and outperform when markets are risk-off, in line with the view that a flight to quality benefits Treasuries. We note also that the monthly returns of hedge funds are roughly on par with those of equities in the risk-on and neutral months but significantly higher (although still negative) during risk-off months. This provides some support for the view that hedge funds provide equity-like payoffs with bond-like risks. Figure 2 also reveals that Asian hedge fund index outperforms the composite hedge fund index in risk-on and neutral periods but underperforms in risk-off periods. As we shall show, the greater variation in Asian hedge fund returns can be traced to an exposure to Asian equities which tend to outperform and underperform US equities in risk-on and risk-off scenarios, respectively.

[3] Inferences do not change when we use the 20th and 80th VIX percentiles or the 30th and 70th VIX percentiles as cutoffs to define risk-on and risk-off periods.

Figure 2: Hedge fund performance in different states of the world (2002-2011)



To understand what drives hedge fund performance in each state of the world, we evaluate the performance of the composite and Asian hedge fund indices relative to an augmented Fung and Hsieh (2004) factor model. The Fung and Hsieh (2004) factors include the S&P 500 factor (SNPMRF), the size factor (SCMLC), the term spread (BD10RET), the default spread (BAAMTSY), and trend following factors for bonds (PTFSBD), foreign exchange (PTFSFX), and commodities (PTFSCOM). We include an additional factor derived from the excess return of the MSCI AC Asia equity index (MSCIASIA) to capture the equity exposure of the Asia-focused funds in the data. We find from Panel A of Table 1 that roughly half of the hedge fund returns in the risk-on and neutral periods can be explained by exposure to the augmented Fung and Hsieh (2004) factors. Specifically, hedge funds have significant risk loadings on the size factor, the term spread, the default spread, trend following factors for foreign exchange and commodities, and the Asian equity factor during risk-on months. In neutral months, there are significant risk loadings on the US equity factor, the term spread, and the Asian equity factor. In contrast, only the Asian equity factor explains fund performance during risk-off periods. Interestingly despite delivering the negative returns in risk-off months, hedge funds generate a positive alpha of 8.52 percent per year during the same period. The is driven primarily by the significant positive loading on the MSCI Asia factor and the large and negative realized return of that factor in risk-off situations.

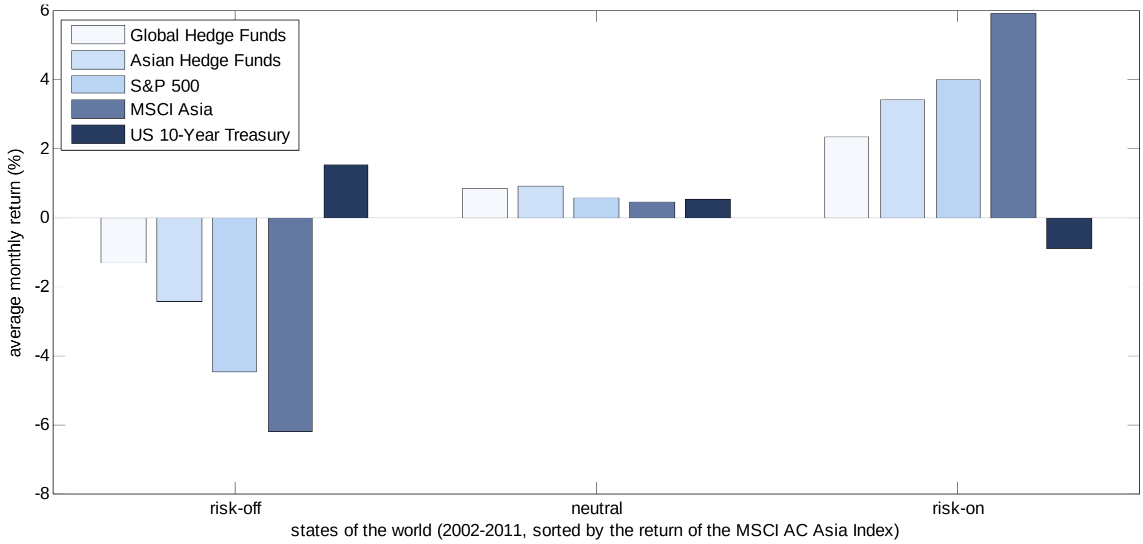
In general, hedge funds cut back on risk as we move from a risk-on to a risk-off world. The reduction in exposures to SCMLC and BAAMTSY suggests that hedge funds load less on risky small stocks and corporate bonds and more on safer larger stocks and US Treasuries in a risk-off environment. While they also crimp exposure to the US stock market, hedge funds tend to boost their exposure to Asian stock markets suggesting that funds may (rightly or wrongly) view Asian equities as a haven from the volatility at least during our sample period. This is not an unreasonable view given the US- and European-centric nature of the risk-off episodes between 2002 and 2011. A similar situation plays out with the Asian funds as reported in Panel B of Table 1. In a risk-off environment, Asian hedge funds also eschew risky small stocks and corporate bonds in favor of Asian equities.

Table 1: Hedge fund performance in different states of the world (2002-2011)

State of the world	Excess Ret. (pct/ year)	*t*-stat of excess return	Alpha (pct/ year)	*t*-stat of alpha	SNPMRF	SCMLC	BD10RET	BAAMTSY	PTFSBD	PTFSFX	PTFSCOM	MSCIAISA	Adj. R^2
Panel A: All Hedge Funds													
Risk-on (VIX ≤ 25th percentile)	14.65	7.29	7.31	4.62	0.11	**0.14**	**-0.14**	**0.25**	0.01	**0.01**	**0.01**	**0.17**	0.66
Neutral (25th < VIX < 75th percent	6.55	2.74	2.63	2.03	**0.16**	0.06	**0.09**	0.17	-0.01	0.01	0.00	**0.19**	0.70
Risk-off (VIX ≥ 75th percentile)	-1.95	-0.36	8.52	3.47	0.02	-0.08	-0.06	0.06	0.00	0.02	-0.01	**0.32**	0.86
Panel B: Asia-focused and Asia-based Hedge Funds													
Risk-on (VIX ≤ 25th percentile)	17.48	6.58	7.56	3.24	0.05	0.07	**-0.20**	**0.37**	0.02	0.01	0.01	**0.32**	0.59
Neutral (25th < VIX < 75th percent	8.30	2.41	4.20	2.63	0.07	0.00	0.08	0.05	-0.02	0.02	0.01	**0.45**	0.77
Risk-off (VIX ≥ 75th percentile)	-6.59	-0.82	9.73	6.44	0.03	**-0.14**	-0.06	0.07	0.01	**0.02**	0.00	**0.53**	0.94

Note: Coefficient estimates that are statistically significant at the 5 percent level are in bold

Figure 3: Sorting by the performance of the MSCI Asia Equity Index



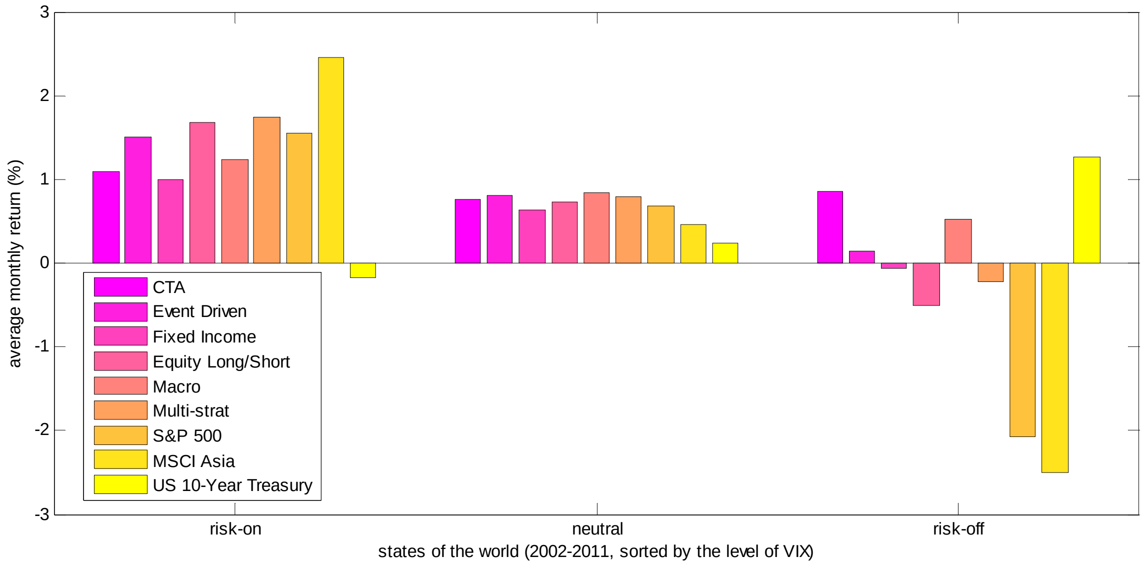
Since our focus is on Asian hedge funds, one potential concern is that the CBOE VIX may not proxy well for sentiment in Asian markets. While volatility futures tracking the Hang Seng Index (V-HSI) and the Nikkei 225 (V-Nikkei) were introduced in 2011, the liquidity has been very low[4]. An alternative is to proxy for market sentiment with the return on the MSCI AC Asia Index. In that effort, we sort the sample months into three groups based on whether the MSCI Asia returns falls above the 75th percentile or below the 25th percentile. Risk–on periods correspond to months where the MSCI Asia index return exceeds its 75th percentile while risk-off periods correspond to months where it falls below its 25th percentile. We find in Figure 3 that inferences do not change qualitatively when we use the returns on the MSCI Asia equity index as a proxy for market

[4] See http://www.risk.net/asia-risk/news/2174122/asian-volatility-index-futures-illiquid-hedge-risk

sentiment. Asian hedge funds generate decent returns in risk-on states, outperform the equity market modestly in neutral states, and outperform the equity market significantly in risk-off states.

In Figure 4, we stratify Asian hedge funds by investment strategy and examine how the various strategies perform in a risk-on and risk-off environment. Investors who are particularly concerned with performance in a risk-off environment will appreciate the positive risk-off returns of CTAs and macro funds.[5] At the same time they will want to avoid equity long/short which tends to underperform other hedge fund strategies in a risk-off period. In a risk-on environment however, equity long/short funds outperform both CTAs and macro funds. Event driven and, to a lesser extent, fixed income funds provide a decent compromise. They deliver decent returns in risk-on and neutral states and also insulate the investor by delivering returns that are close to zero during risk-off periods.

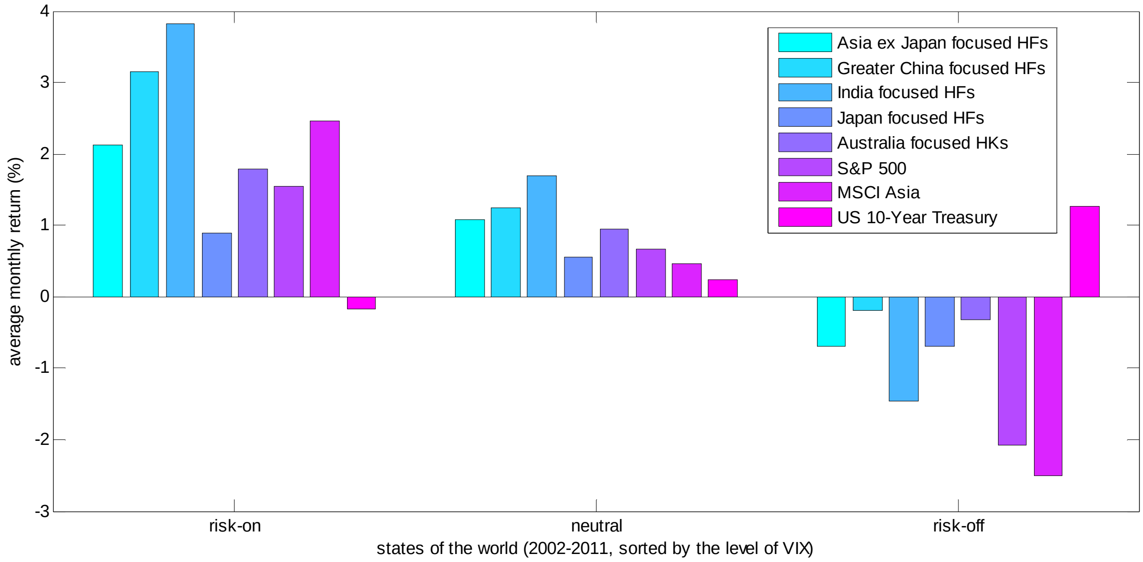
Figure 4: Asian hedge fund performance by investment strategy (2002-2011)



Next, we examine the performance of Asian hedge funds stratified by investment region. According to the analysis in the previous issue of the Hedge Fund Insight, investment geography better explains hedge fund performance in Asia than does investment strategy. In line with that observation we find greater variation in fund performance across investment regions (see Figure 5) than across investment strategies (see Figure 4). In particular, India focused funds exhibit significant swings in performance as we move from the risk-on to risk-off period. They deliver the highest and lowest returns in a risk-on and risk-off environment, respectively. The relative performance of Greater China hedge funds on the other hand does not vary as much. Greater China hedge funds deliver returns that consistently place them within the top two investment regions in terms of performance. Specifically, among the five regions that we analyze, they deliver the second best performance in risk-on and neutral states and the best performance in risk-off states.

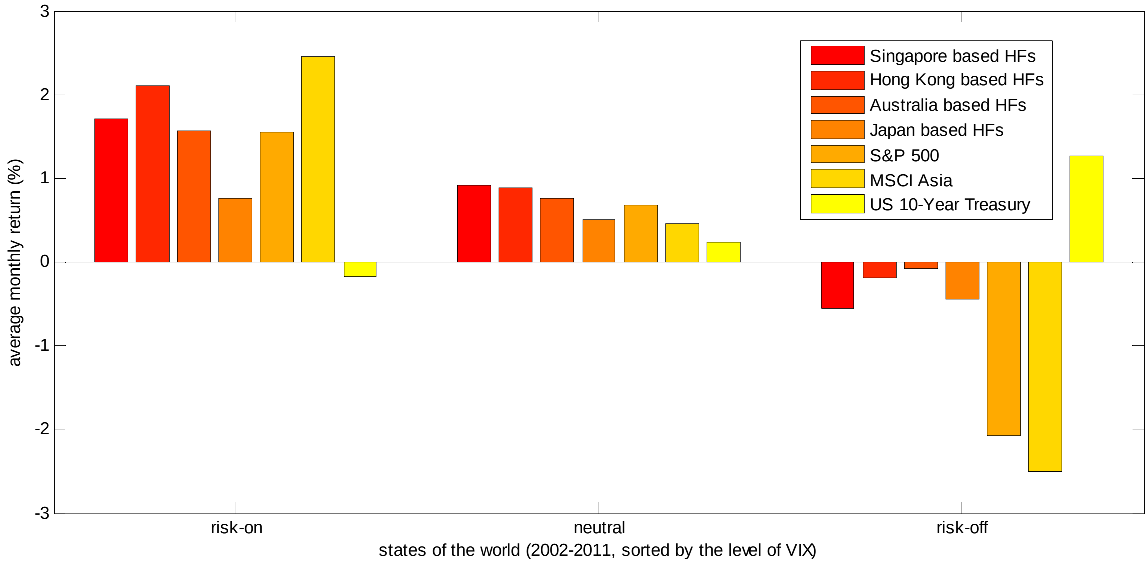
[5] There are some concerns that the consistently positive returns from CTAs in each state may be driven by the smaller CTAs in our sample. We redo the analysis using the returns of BTOP50 which is an index of the top CTAs by AUM tracked by BarclayHedge. While BTOP50 returns are noticeable lower than our CTA returns for risk-on and neutral states, they are still consistently positive in all three states. See http://www.barclayhedge.com/research/indices/btop/index.html for more information on the funds in BTOP50.

Figure 5: Asian hedge fund performance by investment region (2002-2011)



When we group Asian hedge funds by manager location and evaluate performance conditional on the level of the VIX in Figure 6, we find that Hong Kong based funds outperform other funds in risk-on situations. During neutral and risk-off months, Singapore- and Australia-based funds outperform, respectively. We believe that the superior performance of Australia-based funds in risk-off situations is driven by the preponderance of CTAs based in Australia. Japan-based funds however seems to lag behind the other funds in terms of performance. They deliver the worst returns in risk-on and neutral states of the world and the second worst returns (after Singapore-based funds) in risk-off states.

Figure 6: Asian hedge fund performance by base country



Conclusion

In light of the recent market turmoil, hedge fund investors have become increasingly concerned about fund performance during risk-off states of the world. In this issue of the Hedge Fund Insights, we seek to understand Asian hedge fund performance relative to the equity and bond market conditional on the level of the VIX. Our results provide comfort to investors who have sought out hedge funds for their ability to weather volatile conditions. We find that Asian hedge funds provide equity-like payoffs in risk-on and neutral market conditions. During risk-off periods, while Asian hedge funds do not deliver positive returns like bonds, they are able to significantly outperform equities and generate positive alpha. This lends support to the view that hedge funds deliver equity-like payoffs with bond-like risk. Investors in Asian hedge funds who are particularly worried about performance in risk-off states of the world will do well to load up on CTAs and macro funds.

References

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Update on the Centre's Activities

Education

We will be running a hedge fund executive education program between 23 October and 25 October, 2012. The program will be taught by professors from the London Business School and the Singapore Management University. It will feature cutting edge academic research, real world case study discussions, and guest speakers who are seasoned veterans in the industry. This year we have as industry speakers Tan Chin Hwee from Apollo, Bart Broadman from Alphadyne, and Steve Diggle from Vulpes. On the last day of the program, i.e., October 25, we will be organizing a hedge fund symposium where hedge fund managers, fund investors and academics will discuss and debate the theme: "Opportunities and Challenges in a Volatile Market." The speakers and panelists for the symposium include Hyder Ahmad from Broad Peak, Adelene Tan who recently retired from GIC, Bill Fung from the London Business School, Ng Yong Ngee from Tahan, and Lee Ming San from One North. To register for the hedge fund executive education program or the symposium, please email Karyn Tai at hfc@smu.edu.sg

For more information on our upcoming events, please visit our events website:

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For more information regarding the BNP Paribas Hedge Fund Centre at SMU and our upcoming activities, please contact Ms Karyn Tai, centre coordinator (Tel: +65-6828-0933, E-mail: hfc@smu.edu.sg) or visit our webpage at http://www.smu.edu.sg/centres/hfc/index.asp. We look forward to receiving your suggestions and comments.