

Mutual Fund Flows in Emerging Asian Equity Market



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 - **Professor Yan Hong**
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Agenda

- What we know about foreign flows
- Practitioners' concerns and academic findings
- Research objectives
- Overview of international mutual funds
- Research methods
- Key findings
- Conclusions

What we know about foreign flows ...



“International Investor are the 2nd largest investor in Thai Stock Market”

Trading statistics	Jan 95 - Dec 09	Jan 95 - Jun 07	Jul 07 - Dec 09
Avg market volume (THB bn)	7.99 (39.67)	5.44 (26.88)	3.35 (16.86)
Avg foreign net flow (THB mn)	63.63 (300.67)	131.06 (598.75)	-270.86 (-1,389.26)
% Foreign Investors	31%	34%	29%
% Local institutions	8%	13%	8%
% Local retail	61%	52%	63%

What we know about foreign flows ...



“Foreign Mutual Funds prefer larger stocks, larger prices and tick size”

Group	I	VIII
Lower price bound in THB (> =)	<2	200
Upper price bound in THB (<)		400
Tick size (THB)	0.01	2
Avg daily price (THB)	2	297
Avg mkt cap (THB millions)	808	33,958
Retail transaction freq (%)	83.94%	23.63%
Broker transactions (THB millions)	0.64	6.25
Foreign transactions (THB millions)	1.44	31.25
Fund transactions (THB millions)	2.56	21.37
Retail transactions (THB millions)	24.28	18.22

- They prefer larger stocks, larger prices, and tick size (Pavabutr and Sirodom (2010))
Stock splits in a retail dominant order-driven market, Pacific Basin Finance Journal



“If retail trade dominates, then why do foreign flow appear to be more powerful?”

Possible causes regarding this concern:

- Foreign orders tend to be larger in terms of order size and with concentration in large cap stocks
- Foreign trading activities tend to be more coordinated
- Dominance of some family funds
- Foreign funds have deeper pockets
- Foreign investors are more informed?



Do foreign investors engage in positive feedback trading? If yes, will it lead to excess volatility?

Findings:

✓ Yes, they do.

Ex. Choe, Kho, and Stulz (1999), Bakaert, Harvey, and Lumsdaine (2002), Kim and Wei (2002), Griffin, Nardari, and Stulz (2002), Richards (2002)

✗ No evidence that positive feedback trading creates excess volatility

Ex. Choe, Kho, and Stulz (1999), Borensztein and Gelos (2000), Pavabutr and Yan (2007)



Do foreign investors engaged in informed trading? If so, do they benefit at expense of host countries?

Findings:

- **Some evidence that foreign investors have better information**

Froot, O'Connell, and Seasholes (2002), Bailey, Mao, and Sirodom (2007)

- **Foreign participation help reduce firm cost of capital**

Bekaert and Harvey (2000), Chari and Henry (2002), Henry (2000)



Are exchange rates affected by equity flow?

Findings:

- **Some evidence suggesting that equity flows are important in explaining exchange rates, at least in the short-term**

Evans and Lyons (2002), Froot and Ramadorai (2002), Richards (2005), Chai-anant and Ho (2008)



Questions to be answered in this paper

- **What is evolution of capital flows into mutual fund focusing on emerging market ?**
- **What is the allocation pattern of funds classified by geographic focus?**
- **What is investors' injection/redemption behavior?**
- **What is the determinants of change in allocation pattern?**



Why all these topics are so interesting?

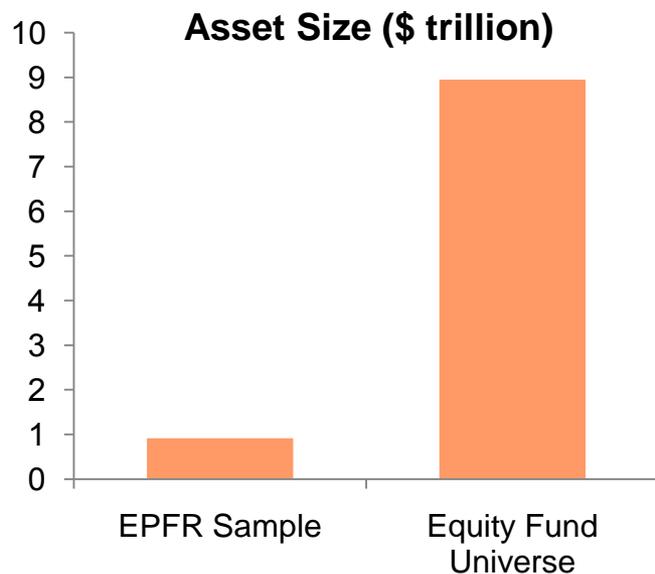
- **Most existing research focus on equity flow market impact on price and volatility.**
- **Fewer papers examine behavior of investor injection/ redemption into those funds**
- **Our paper consolidates both fund manager and investors behavior**



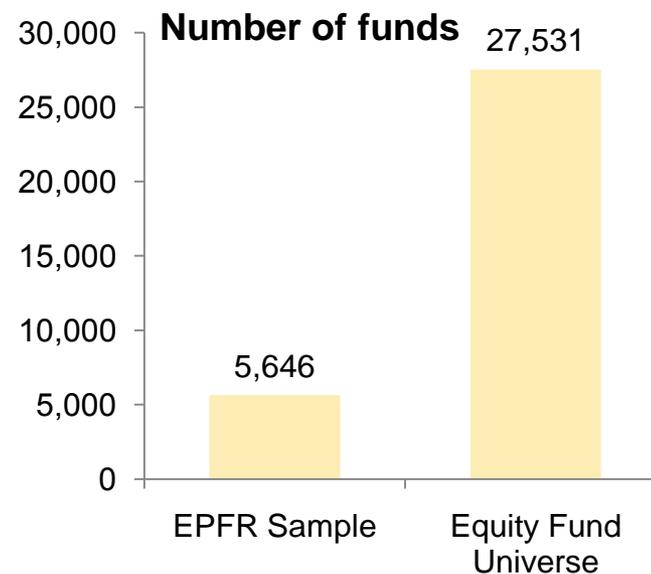
“Sample from EPFR Global represent ~ 10% of Equity funds Universe”



- EPFR Global is a fund flow and asset allocation data provider
- EPFR sourced data through **direct relationship** with fund manager and administrators
- Core EPFR datasets of Fund flows and Fund allocations are used to derive “Country/Sector/Industry Flows”
- Users of EPFR Global include various participants in financial market around the world



Source: Investment Company Institute (ICI)



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Glossary

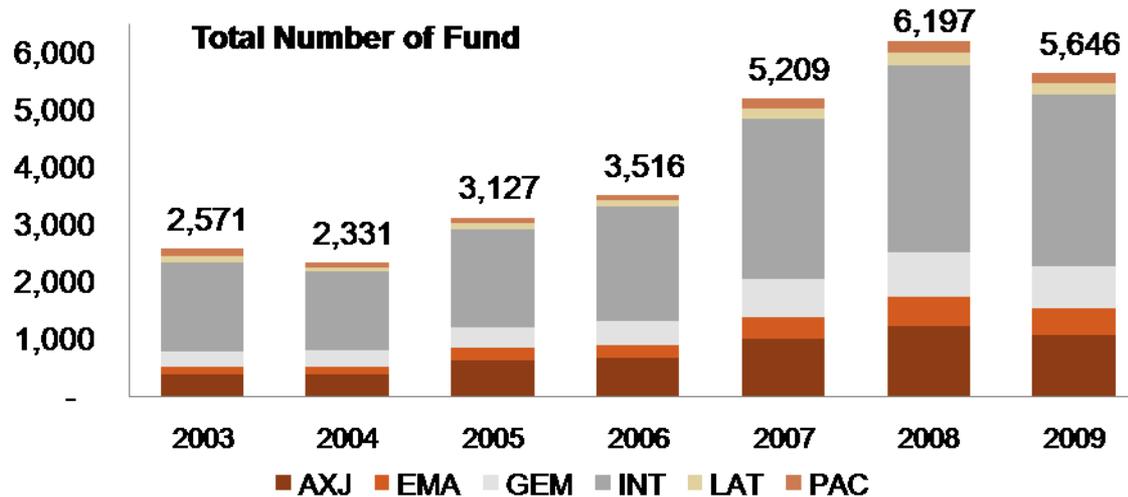
Geo Fund Focus:

- AXJ = Asia Ex-Japan
- GEM = Global Emerging Market
- PAC = Pacific
- EMA = Europe, Middle East and Africa
- LAT = Latin America
- INT = International
- GLOBAL = Global fund
- GLOBALXUS = Global fund excluding United States

Data Overview: Total Number of Fund and Total EoW Asset

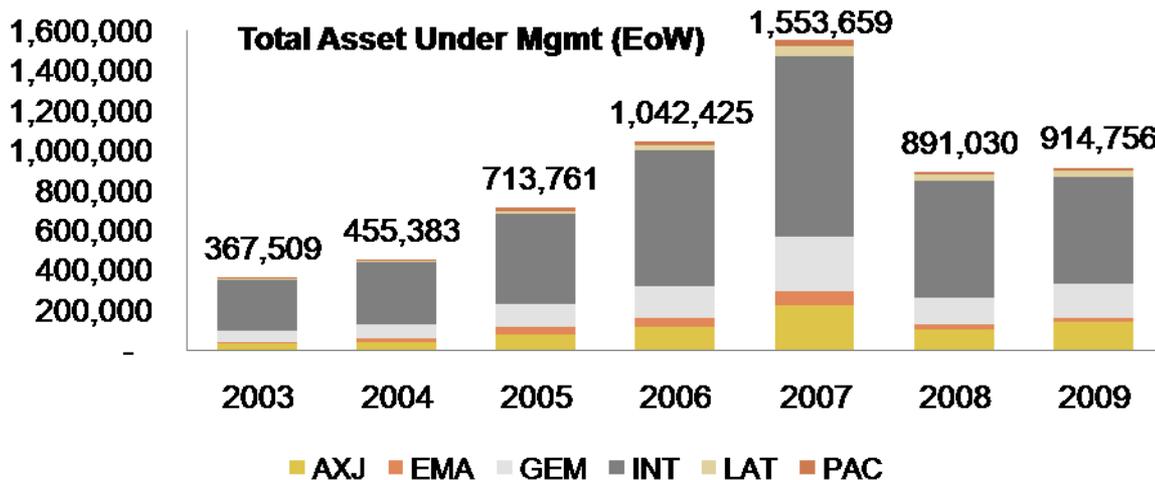


“International fund represent the largest portion of world equity fund”



- Number of mutual funds increase steadily since 2003; however it drop slightly in 2009
- International fund contribute to more than 60% of total number of funds

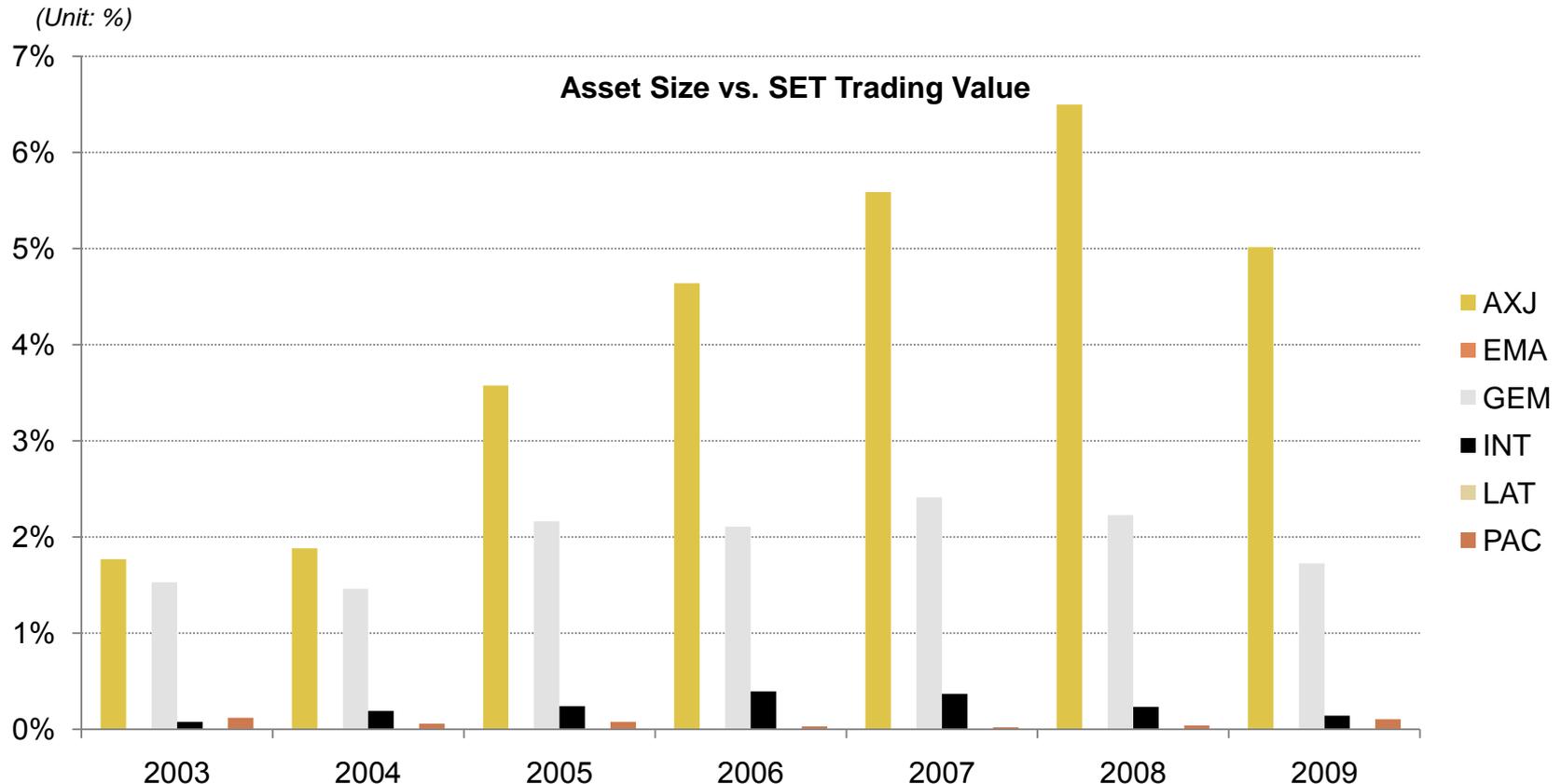
(Unit: USD MN)



- Despite of increasing number of funds in 2008, total asset under management decrease substantially before experience slight pick up in 2009



“Asset allocated from all funds have very little effect on SET”

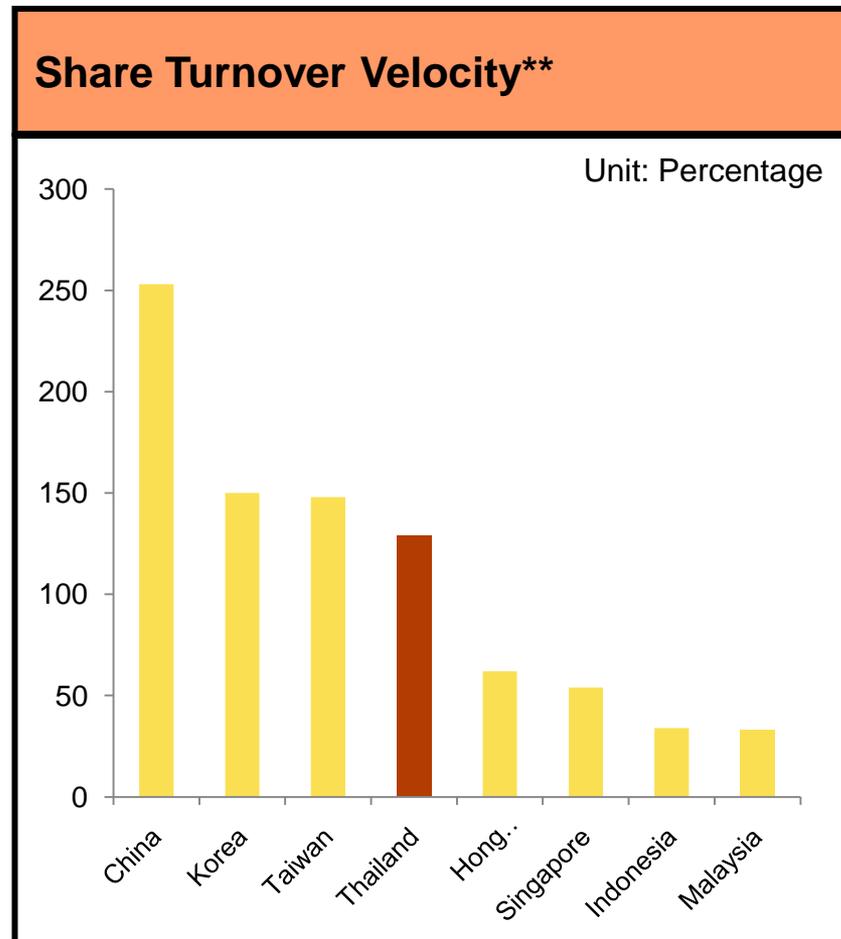
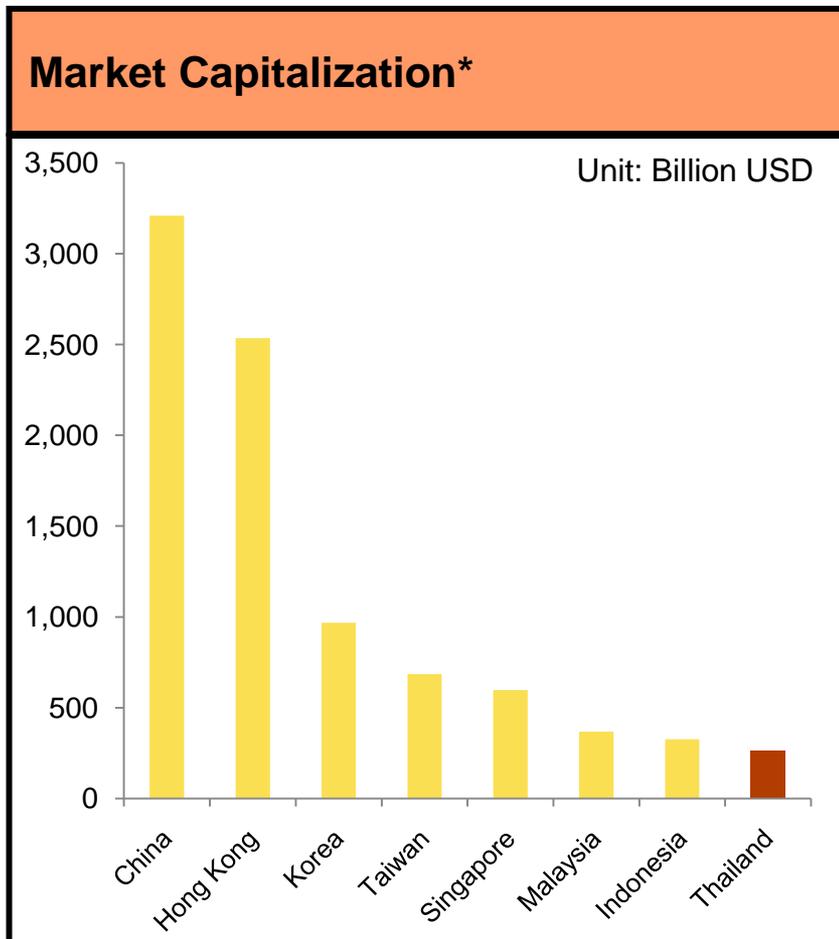


- **When comparing fund’s asset allocation to Thailand to SET, it is very apparent that all type of fund have very little effect on SET.**
- **AXJ and GEM is the only two category that can possible move the market.**

Data Overview: Thailand Capital Market



“As of September 2010, Thailand stock market are small in term of market capitalization, but trading turnover is 4th highest in region”



Source: WFE

Note:

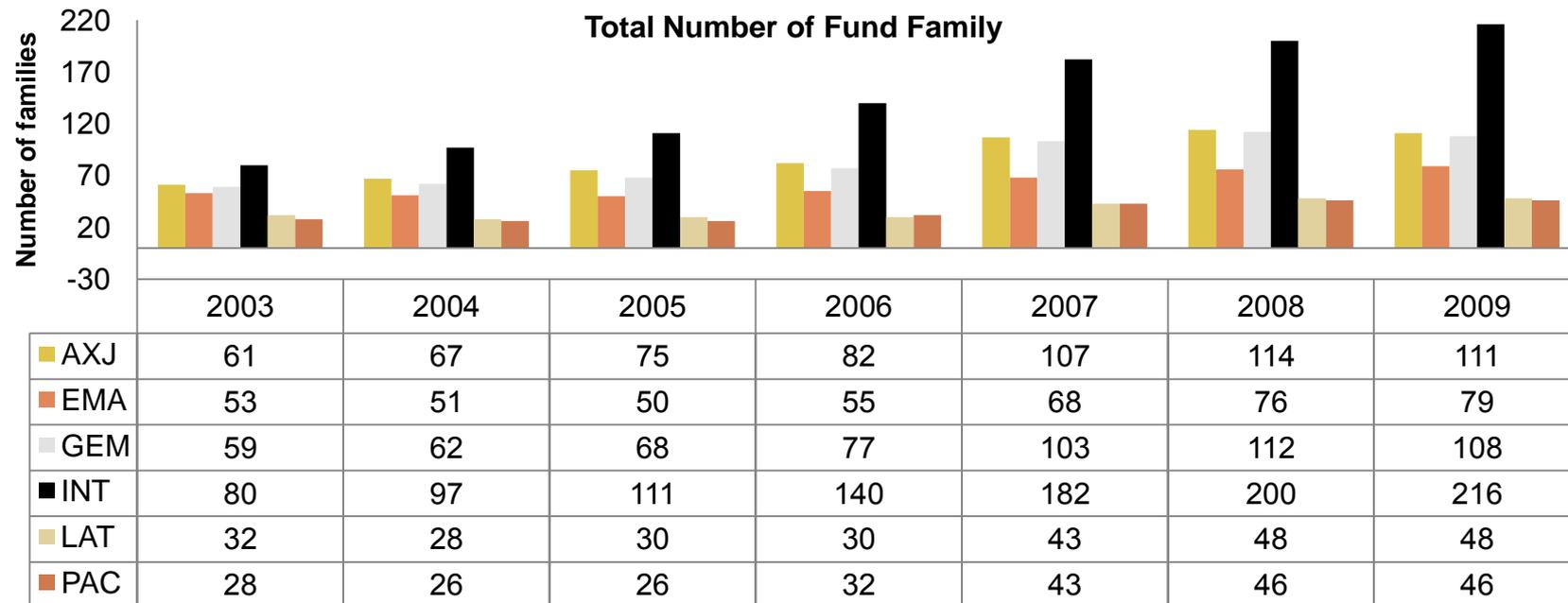
* Market Capitalization as of September 30, 2010.

** Share Turnover Velocity is calculated by $\{\text{Share Turnover (of Sep 10)} / \text{Market Capitalization (at end of Sep 10)}\} * 12$

Data Overview: Total number of fund families



“Most popular type of funds among management firms are still International, Global Emerging Market and Asia Ex-Japan”

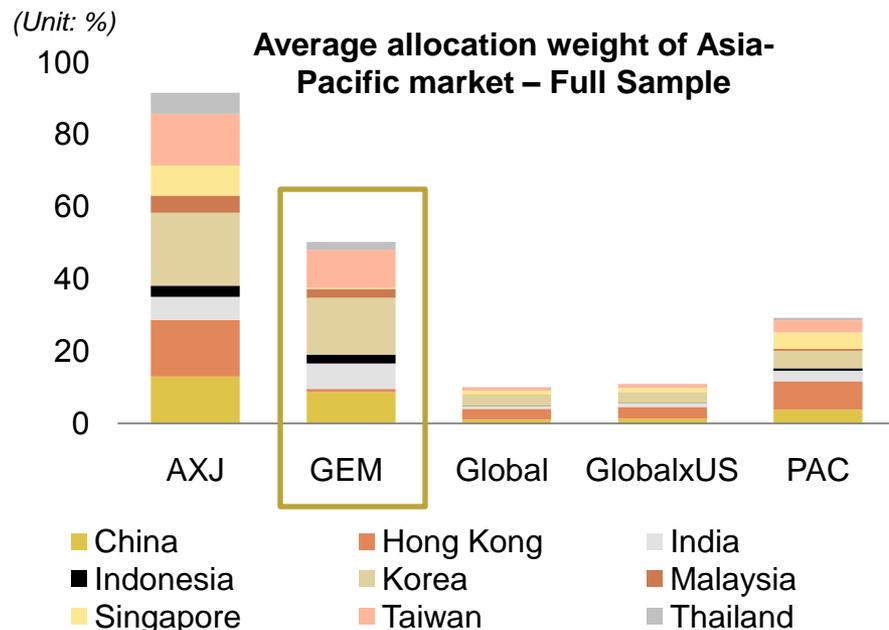


- International Fund category show strongest growth in term of fund families number in examined period – approximately 2.7 times growth from 80 families to 216 families
- While Asia ex- Japan and Global emerging market category are also popular among management firms, the number of families pursue these type of funds increase roughly 2 times in number

Fund Behavior: Percentage of Allocation weights by country



“Weight Allocation tend to be closely related to size of capital market in each country”



- Korea, Hong Kong, China and Taiwan are most popular countries as capital deployment destination for Mutual Funds
- These 9 destinations attracted more than 50% of Global Emerging Market’s asset allocation
- Average Allocation number indicate much smaller size of Thailand Stock market to other comparable countries in Asia

	China	Hong Kong	India	Indonesia	Korea	Malaysia	Singapore	Taiwan	Thailand
AXJ	13.05	15.62	6.42	3.03	20.19	4.77	8.29	14.34	5.80
GEM	8.68	0.94	6.98	2.47	15.73	2.47	0.25	10.54	2.23
Global	1.09	3.01	0.78	0.09	3.00	0.05	1.04	0.95	0.08
Globalxus	1.37	3.24	0.99	0.12	2.90	0.04	1.17	1.04	0.06
PAC	3.76	7.90	2.98	0.63	4.82	0.60	4.49	3.37	0.71

Fund Behavior: Asset Allocation



“Countries with higher weight allocation from mutual fund tend to have high volatility accordingly”

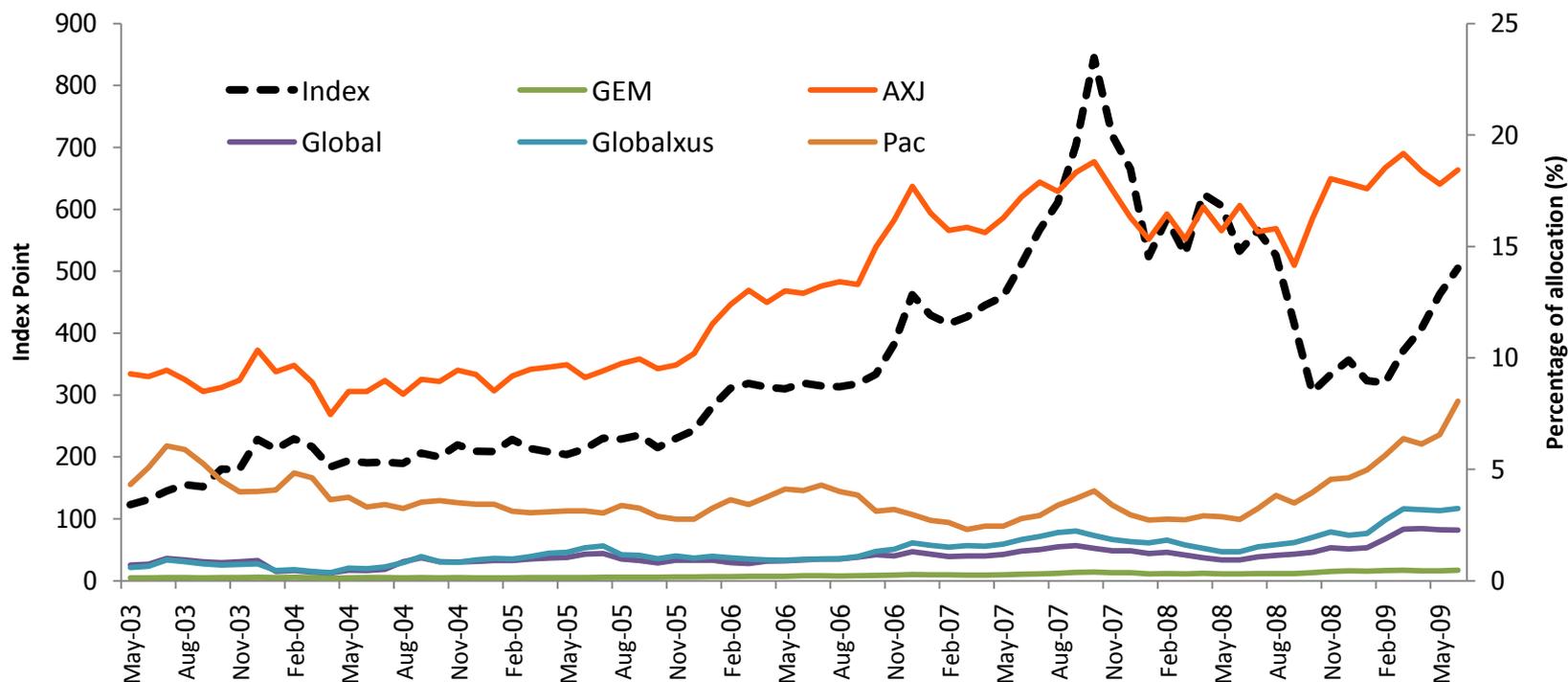
Standard Deviation

	China	Hong Kong	India	Indonesia	Korea	Malaysia	Singapore	Taiwan	Thailand
AXJ	3.74	2.23	2.04	0.54	4.57	1.11	0.76	2.11	0.54
GEM	3.81	0.29	1.06	0.33	3.89	0.70	0.08	1.59	0.35
Global	0.41	0.51	0.16	0.04	0.96	0.04	0.24	0.22	0.02
Globalxu	0.67	0.33	0.22	0.06	1.16	0.04	0.20	0.17	0.03
PAC	1.10	1.33	0.96	0.30	1.79	0.26	0.79	0.63	0.57

- Volatility in asset allocation have seems to have positive correlation with weight received.
- Countries with higher weight allocation like China and Korea, have higher volatility.
- Thailand have very low volatility in all type of funds due to the overall lower allocation received.



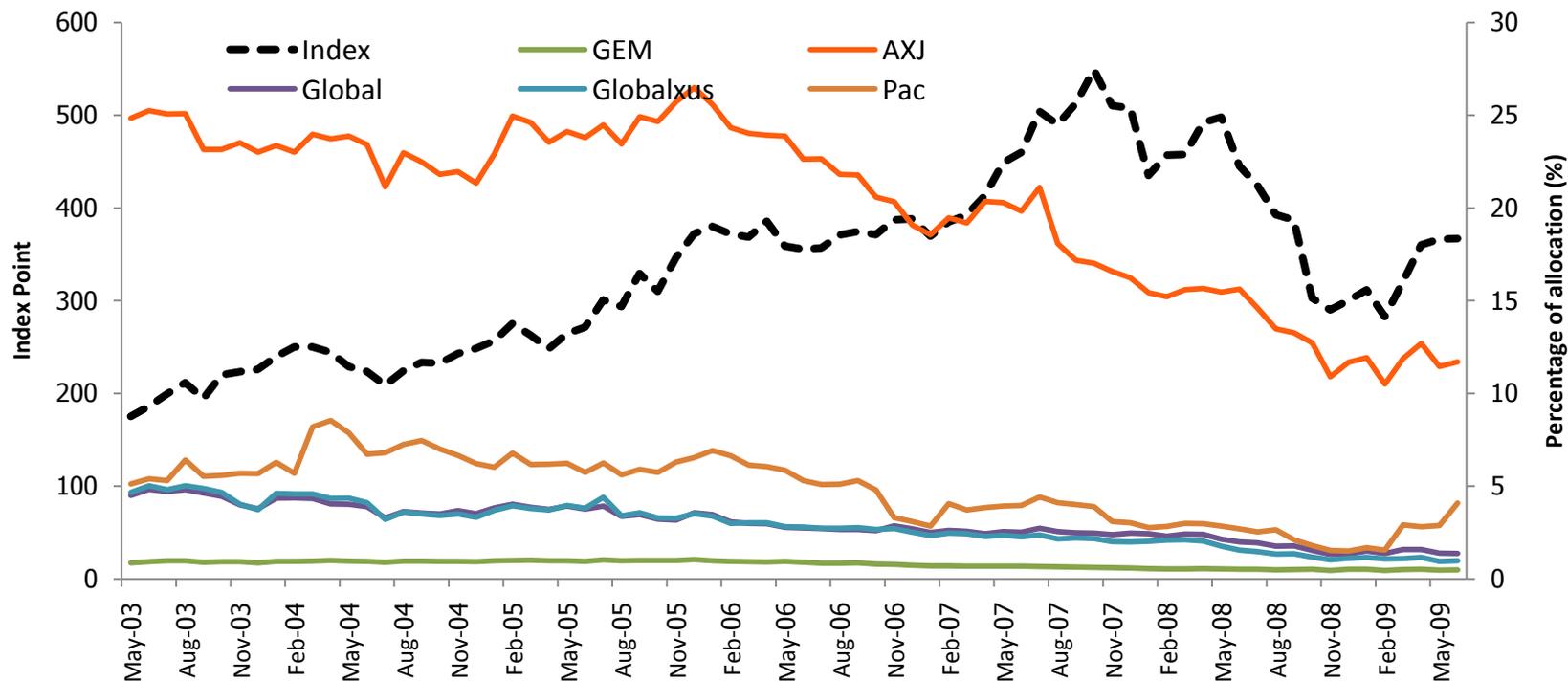
Asset Allocation vs Index in each Country - China



- Asset allocation from other fund type except Asia ex-Japan have very low correlation to the movement in China's Index.
- Asset allocation from Asia ex-Japan funds increase with the index since 2003 onwards, however it did not reflex the drop in 2008 – 2009.
- Asset allocation from Pacific funds increase slightly through time.



Asset Allocation vs Index in each Country - Korea

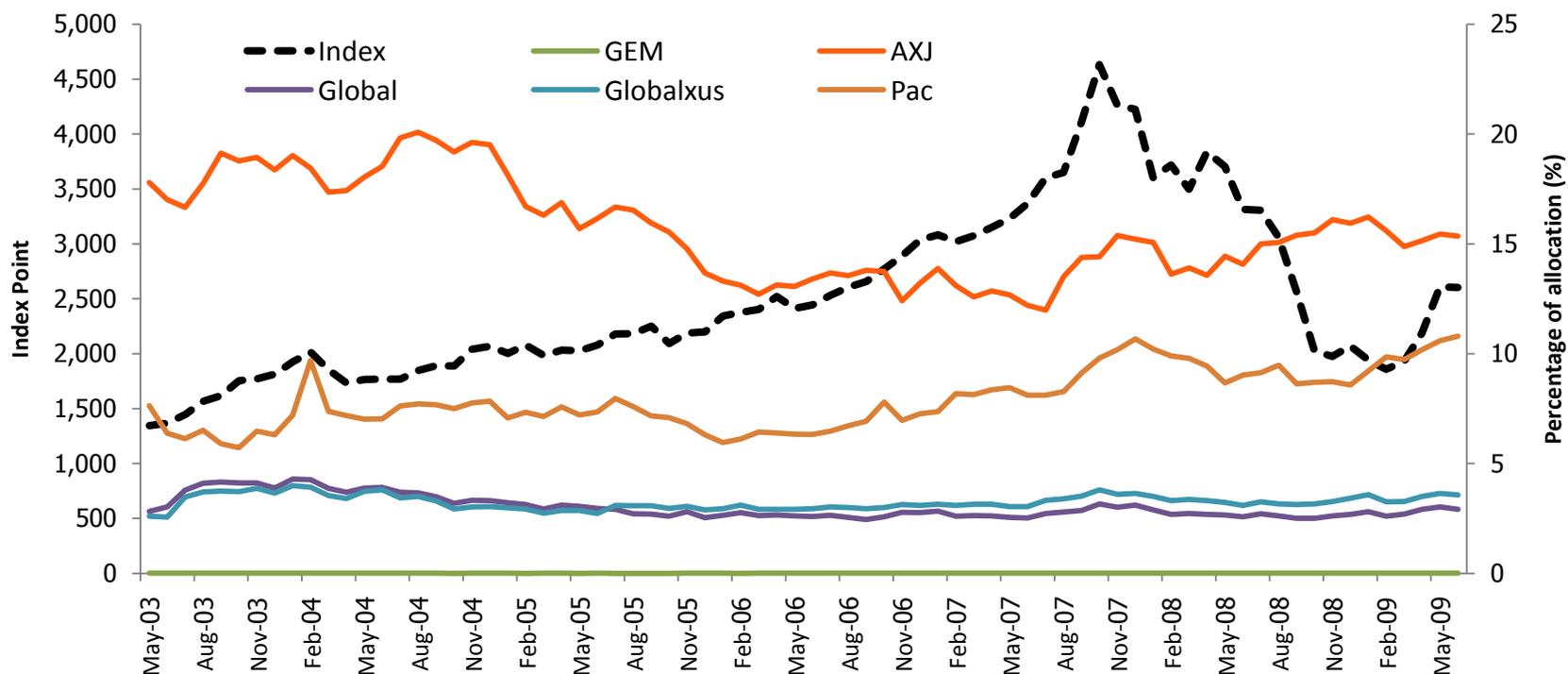


- Asset allocation in other fund type except Asia ex-Japan have very low correlation to the movement in Korea's Index.
- Asset allocation from Asia ex-Japan funds have an overall decreasing trend despite the growth from 2003 to 2007, or decline from 2008.

Evolution of Capital Flows in Asian Region



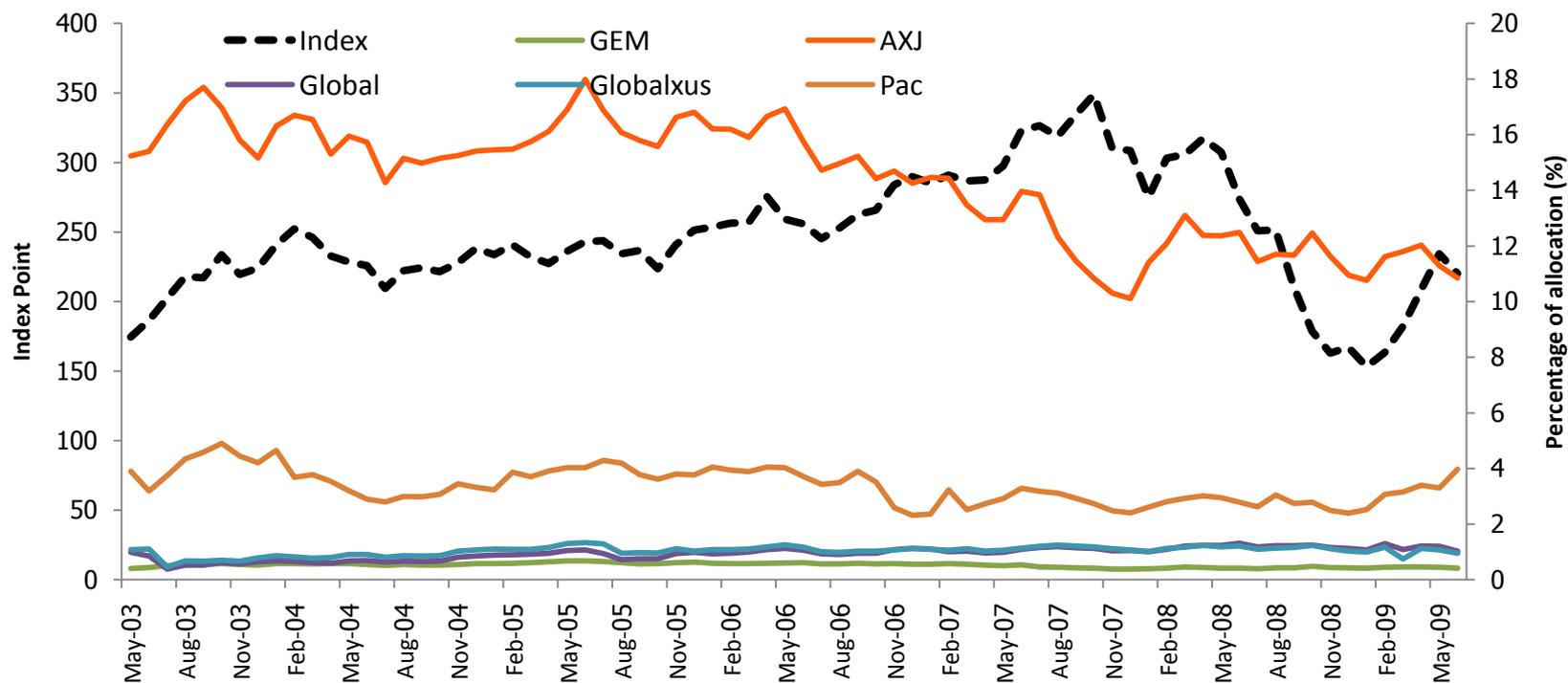
Asset Allocation vs Index in each Country – Hong Kong



- Asset allocation from global funds have very low allocation to the movement in Hong Kong's Index.
- Asset allocation from Asia ex-Japan funds have been fairly stable or slightly decreasing trend despite the movement in the index.
- Asset allocation from Pacific have slightly increase through time.



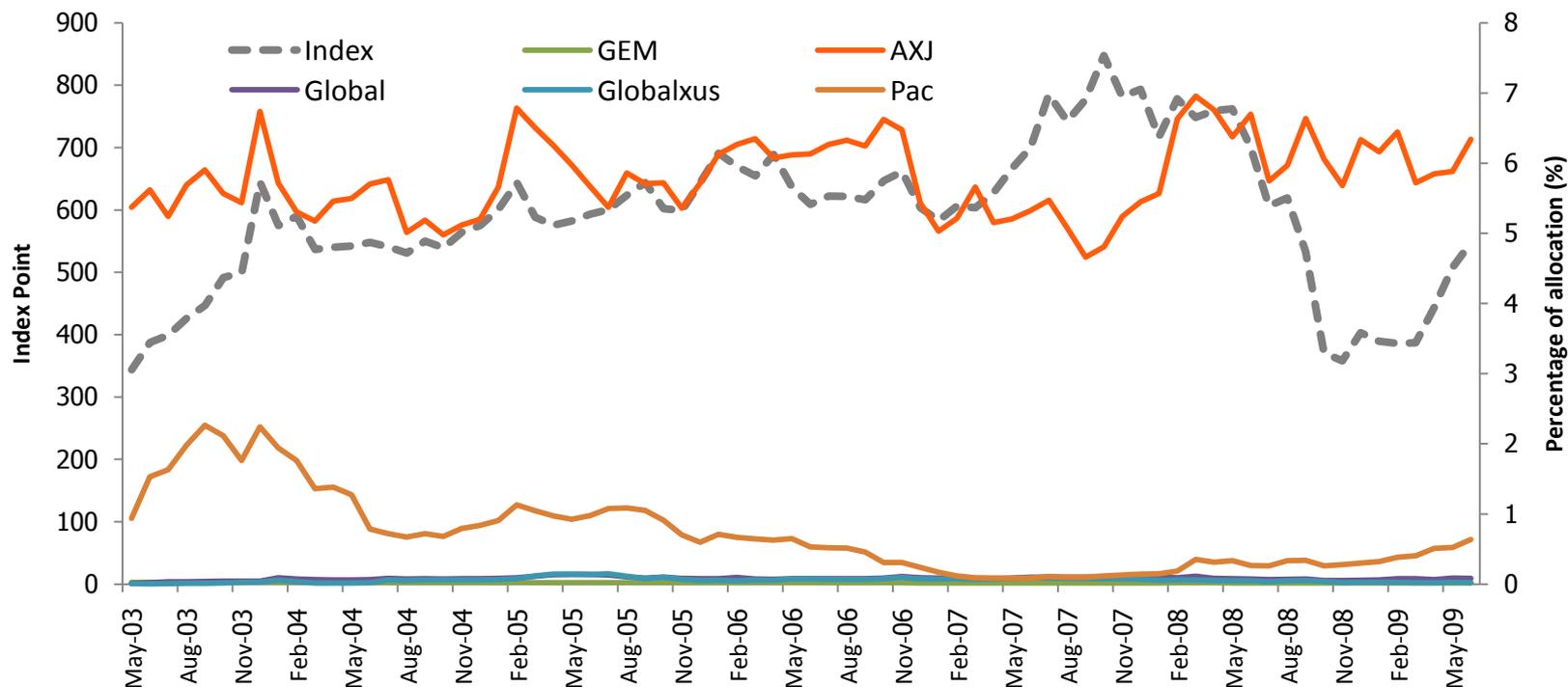
Asset Allocation vs Index in each Country - Taiwan



- Asset allocation in other fund type except Asia ex-Japan have very low allocation to the movement in Taiwan's Index.
- Asset allocation from Asia ex-Japan funds have downward trend through time.



Asset Allocation vs Index in each Country – Thailand

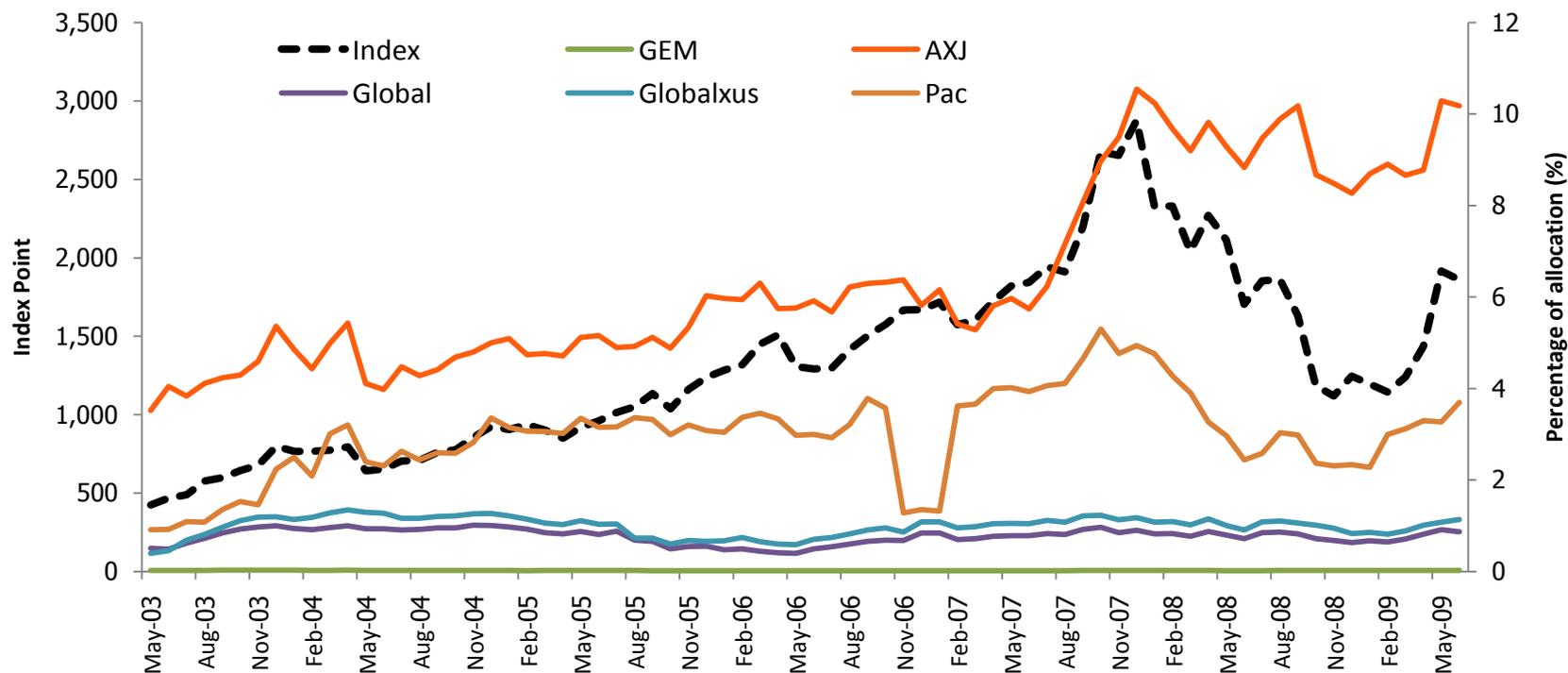


- Global and Global Emerging fund seem to have no interest in Thai's market.
- Despite notable amount of allocation from Pacific in 2003, the allocation have decline to near zero through time.
- Asia ex Japan is the only fund with noticeable investment.
- The weight allocation were fairly stable within a small range of 5% to 7%, with overall movement correlate to market's movement.

Evolution of Capital Flows in Asian Region



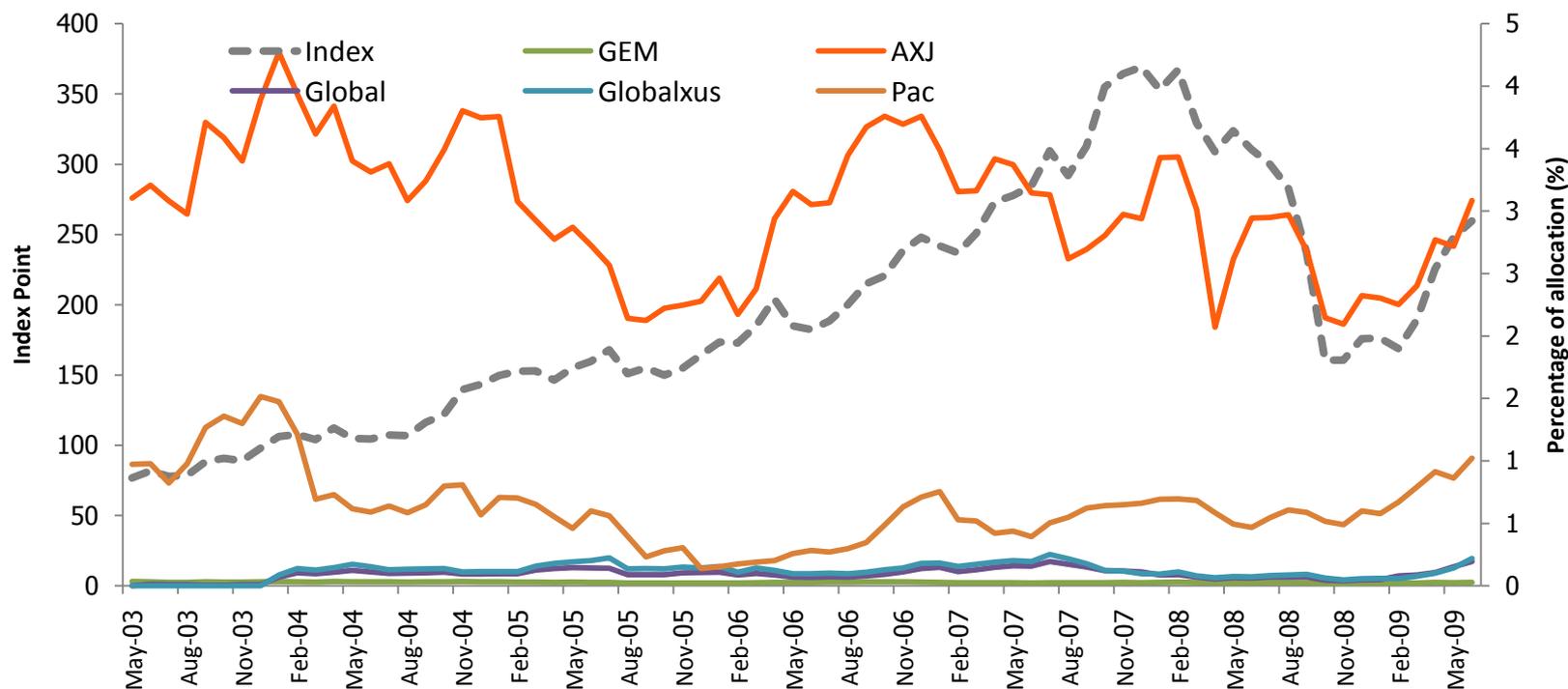
Asset Allocation vs Index in each Country - India



- Asset allocation in other fund type except Asia ex-Japan have very low correlation to the movement in India's Index.
- Asset allocation from Asia ex-Japan funds increase with the index since 2003 onwards, however it did not reflex the drop in 2008 – 2009.



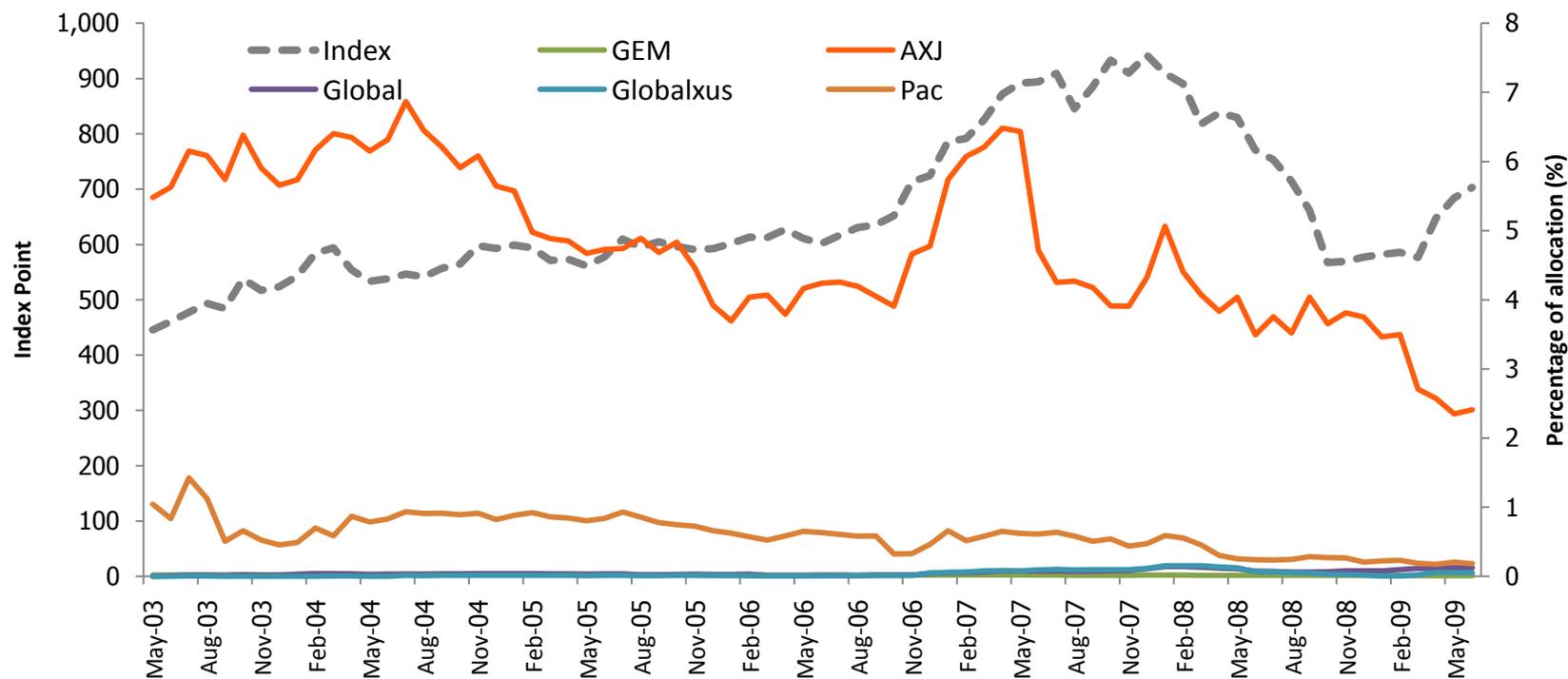
Asset Allocation vs Index in each Country – Indonesia



Evolution of Capital Flows in Asian Region



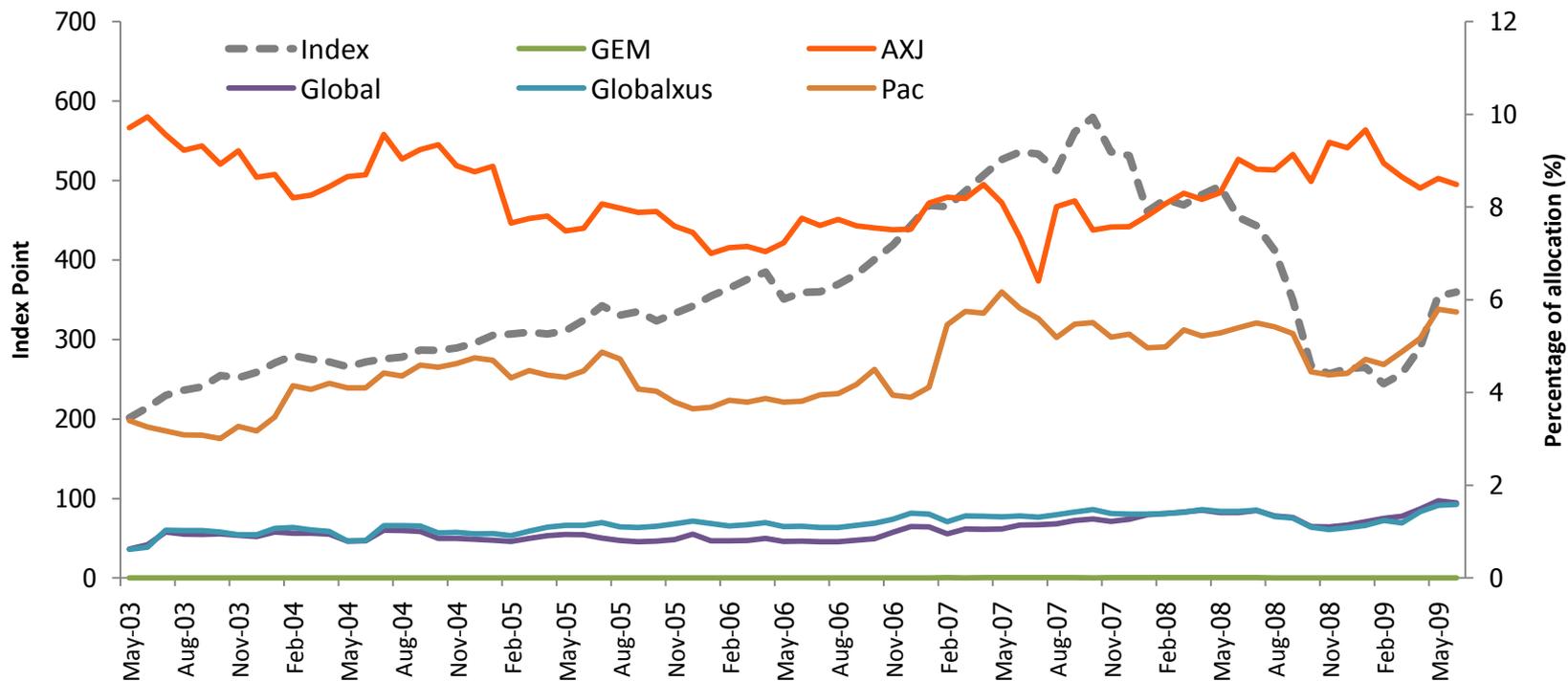
Asset Allocation vs Index in each Country – Malaysia



Evolution of Capital Flows in Asian Region



Asset Allocation vs Index in each Country – Singapore





Correlation and Co-movement of country weights

Co-movement of investor net flows into funds

	<u>% Comovement</u>
China	82%
Hong Kong	79%
India	82%
Indonesia	78%
Korea	85%
Malaysia	79%
Singapore	71%
Taiwan	82%
Thailand	79%

$$\text{Closed Form Formula} = \frac{\max[n_{increase}, n_{decrease}]}{(n_{increase} + n_{decrease})}$$

- More than 70% of weight adjustment between all fund are being done at the same time.
- This illustrate that fund manager's discretion are similar across the market.



Correlation and Co-movement

Co-movement of investor net flows into funds

	<u>% Comovement</u>
AXJ	64%
EMA	65%
GEM	64%
INT	57%
LAT	69%
PAC	61%

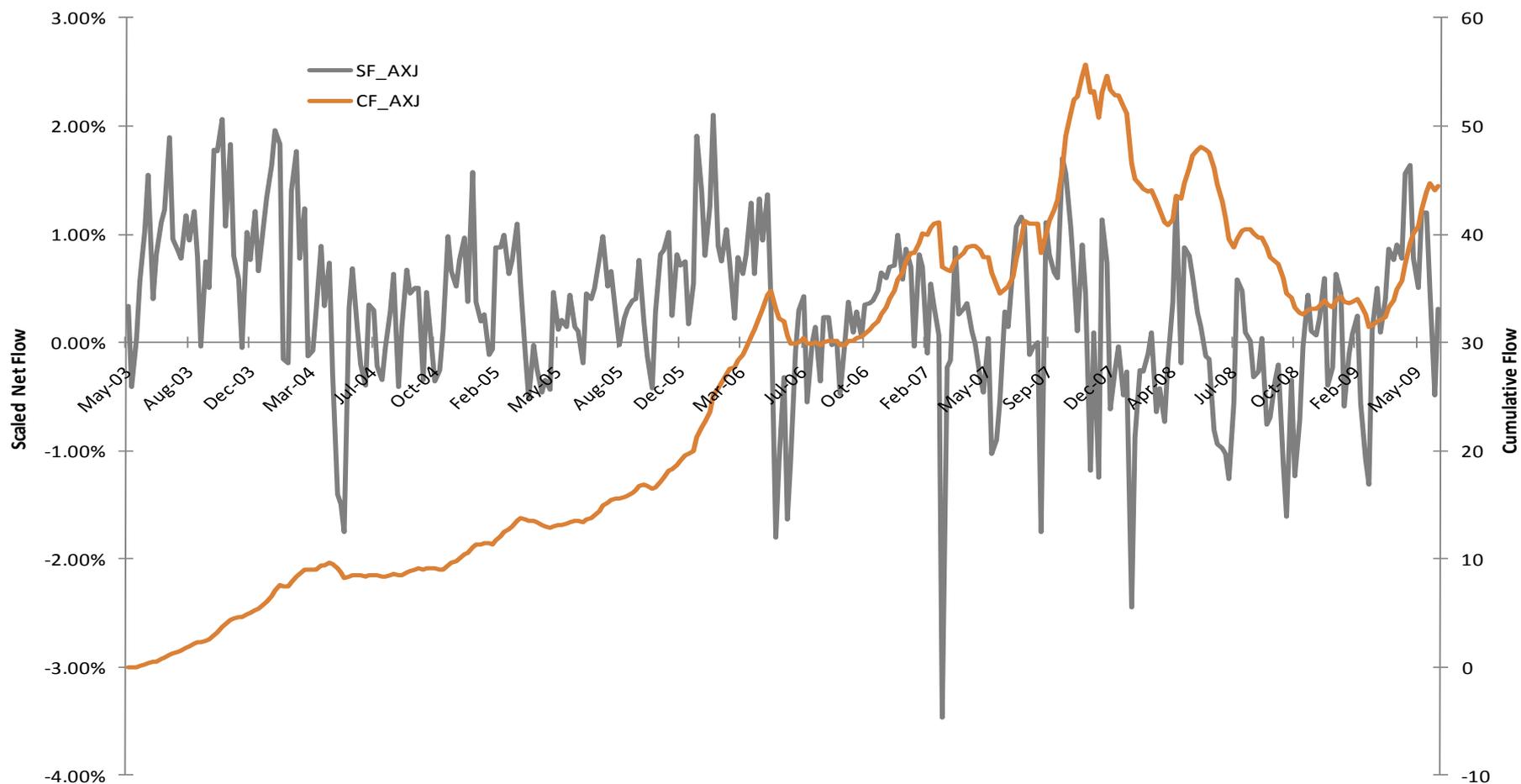
$$\text{Closed Form Formula} = \frac{\max[n_{injection}, n_{redemption}]}{(n_{injection} + n_{redemption})}$$

- Investor injection/redemption also have an effect on weight allocation.
- However, co-movement between investor's discretion are not as significant as fund manager's discretion.

Pattern of Investor Injection/Redemption

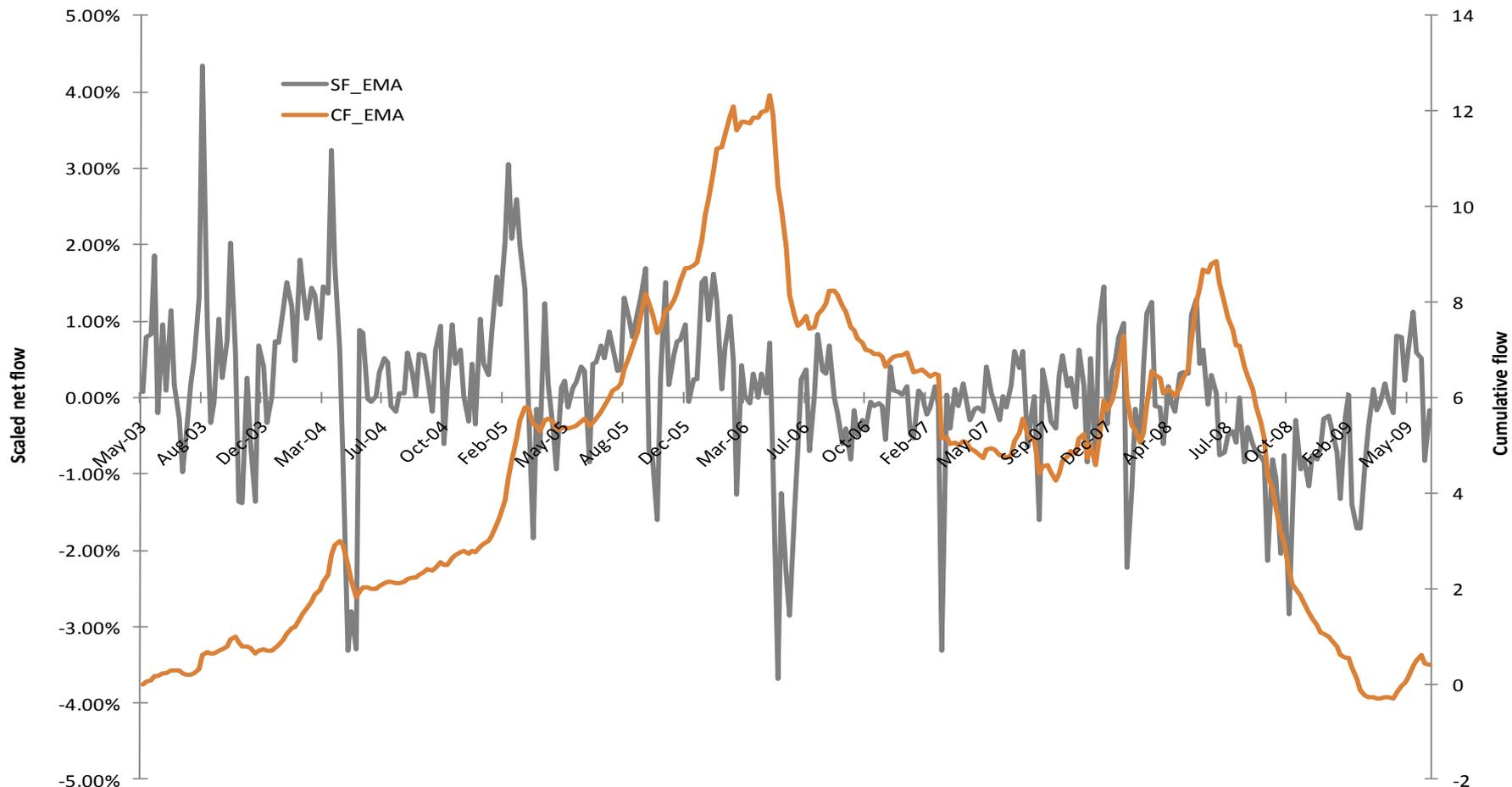


“Fund Net Flow and Cumulative Flow - AXJ”



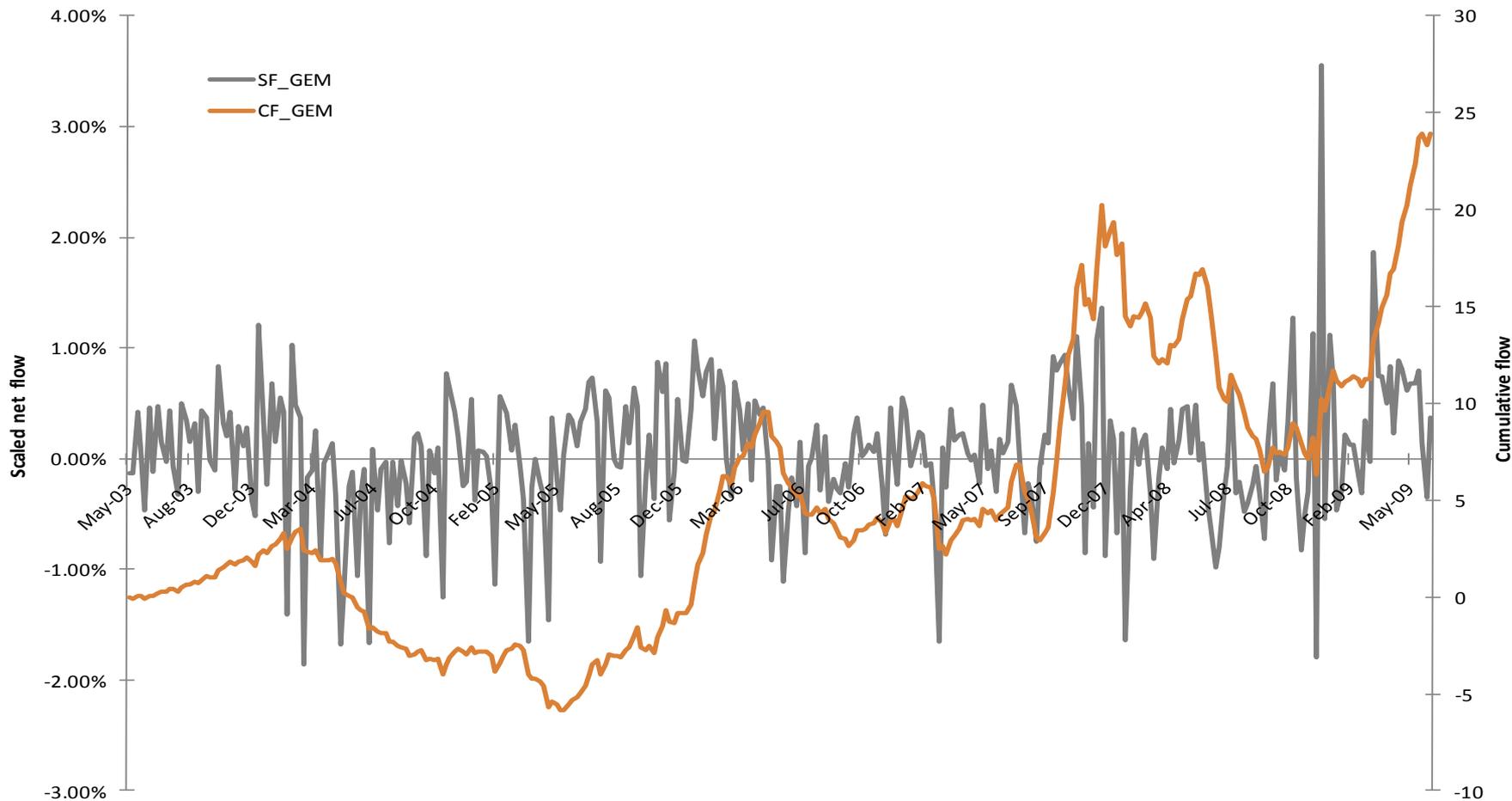


“Fund Net Flow and Cumulative Flow – EMA”





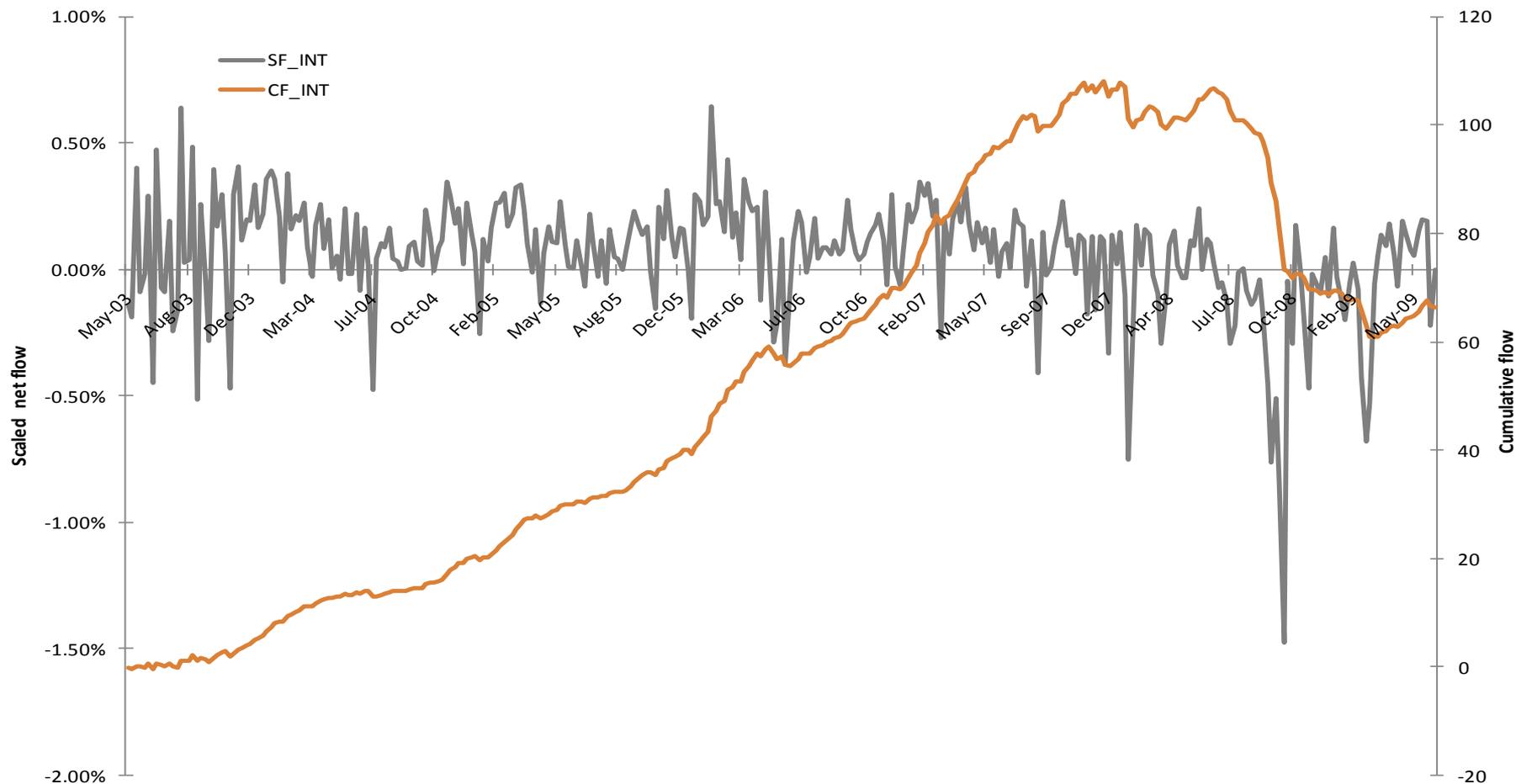
“Fund Net Flow and Cumulative Flow - GEM”



Pattern of Investor Injection/Redemption



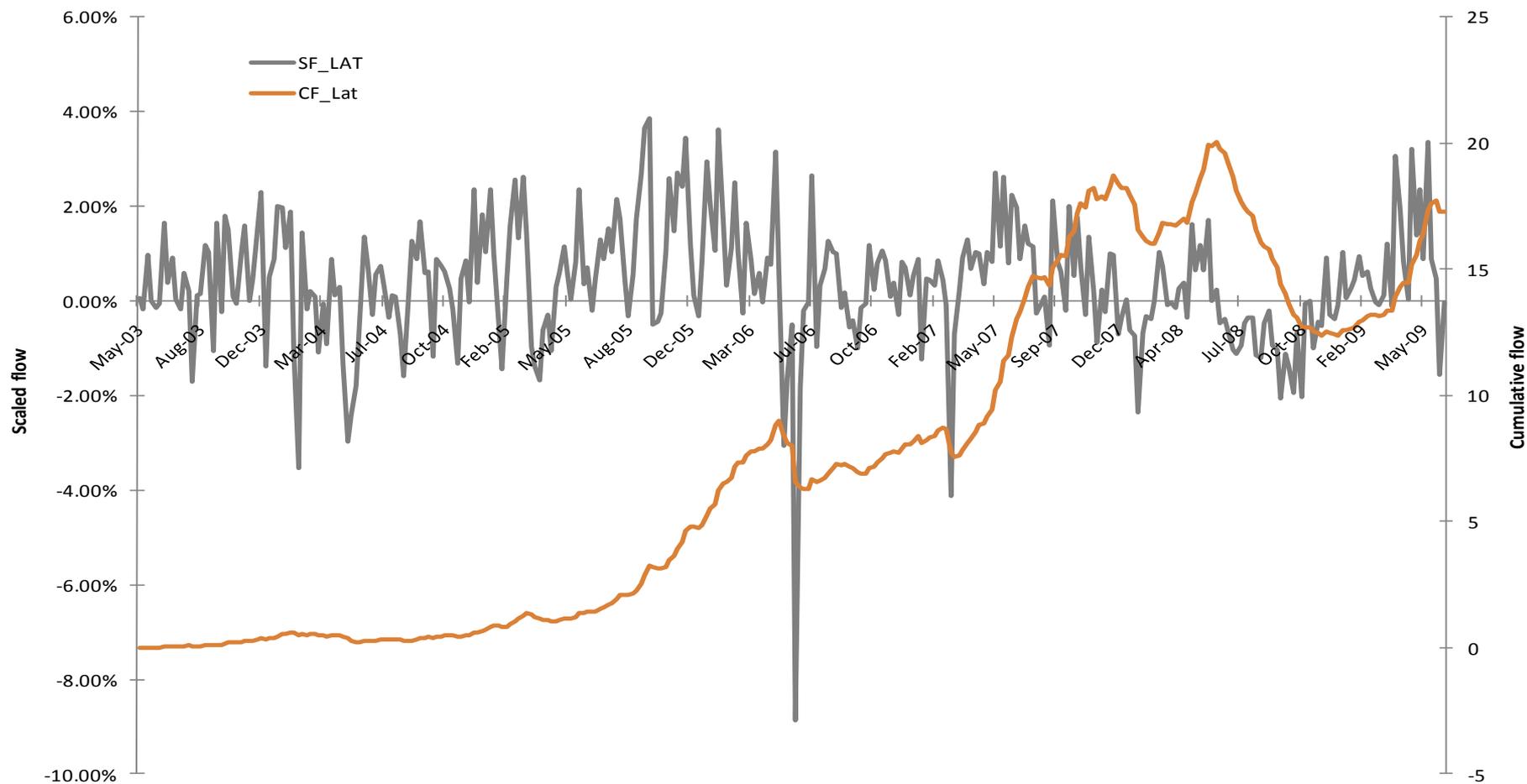
“Fund Net Flow and Cumulative Flow - INT”



Pattern of Investor Injection/Redemption



“Fund Net Flow and Cumulative Flow - LAT”



Pattern of Investor Injection/Redemption



“Fund Net Flow and Cumulative Flow - PAC”



Equity Mutual Funds with investment focus outside Asia tend to experience “Net-Redemption” or Capital Outflows from their capital pool





Determinants of changes in country allocations:

Fund manager discretion VS. investor discretion Assumptions for the FE Model

$y_i = X_i\beta + d_i\alpha_i + \varepsilon_i$, for each geo focused fund group

$$\begin{pmatrix} \mathbf{y}_1 \\ \mathbf{y}_2 \\ \vdots \\ \mathbf{y}_N \end{pmatrix} = \begin{bmatrix} \mathbf{X}_1 & \mathbf{d}_1 & \mathbf{0} & \mathbf{0} & \mathbf{0} \\ \mathbf{X}_2 & \mathbf{0} & \mathbf{d}_2 & \mathbf{0} & \mathbf{0} \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ \mathbf{X}_N & \mathbf{0} & \mathbf{0} & \mathbf{0} & \mathbf{d}_N \end{bmatrix} \begin{pmatrix} \boldsymbol{\beta} \\ \boldsymbol{\alpha} \end{pmatrix} + \boldsymbol{\varepsilon}$$

$$= [\mathbf{X}, \mathbf{D}] \begin{pmatrix} \boldsymbol{\beta} \\ \boldsymbol{\alpha} \end{pmatrix} + \boldsymbol{\varepsilon}$$

$$= \mathbf{Z}\boldsymbol{\delta} + \boldsymbol{\varepsilon}$$

- $E[c_i | X_i] = g(X_i)$;
- Effects are correlated with included variables
- Common: $\text{Cov}[x_{it}, c_i] \neq 0$

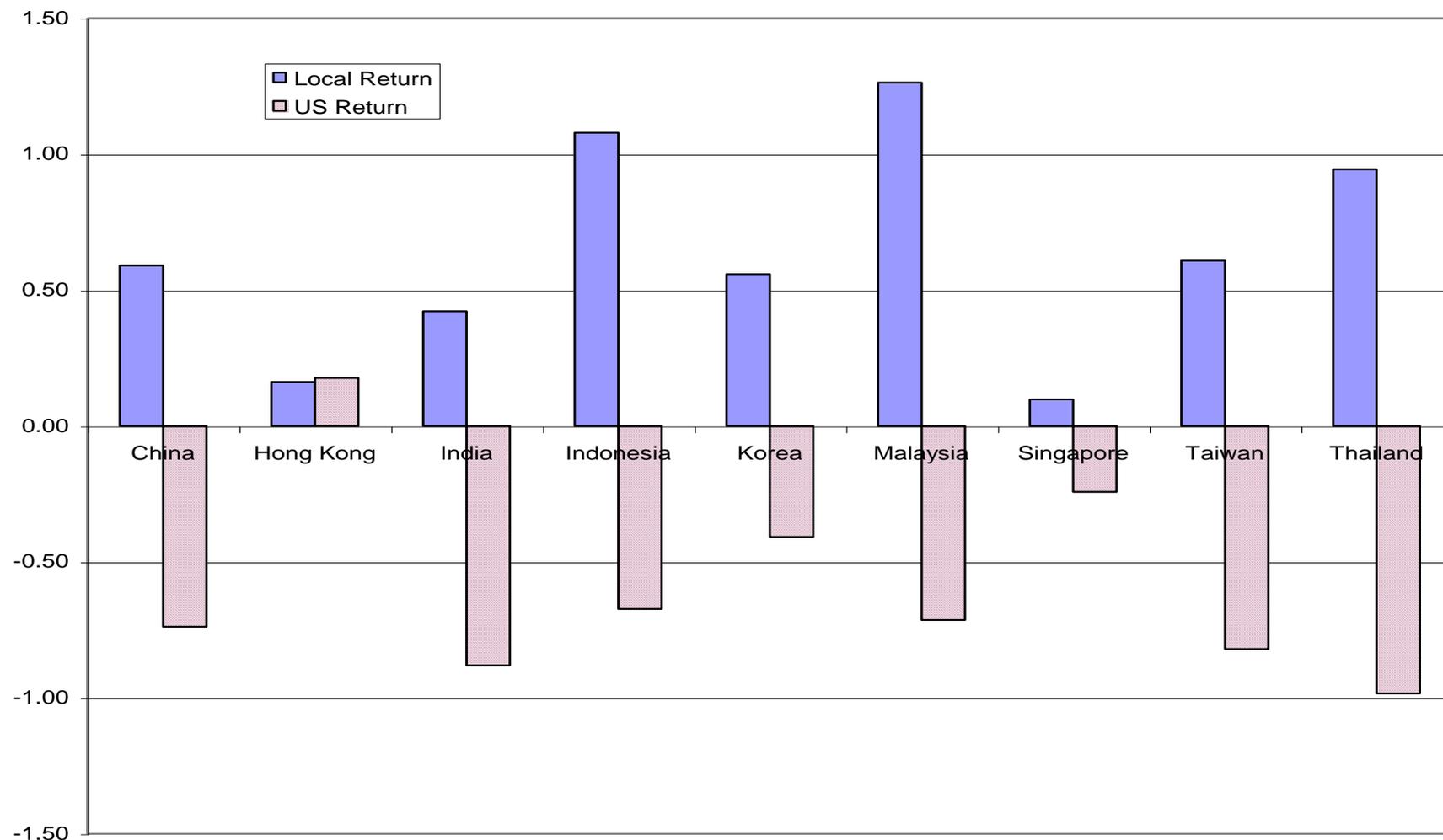
- Selected Explanatory Variables:**
- Local return (concurrent)
 - US return (concurrent)
 - Local return (lag one month)
 - US return (lag one month)
 - Volatility of injection/redemption (lag one month)
 - Volatility of injection/redemption given that last month is net redemption (lag one month)

Determinants of changes in country allocations:



“Local Return & U.S. Return materially affect weight allocation in each market”

Do concurrent local and US returns matter?

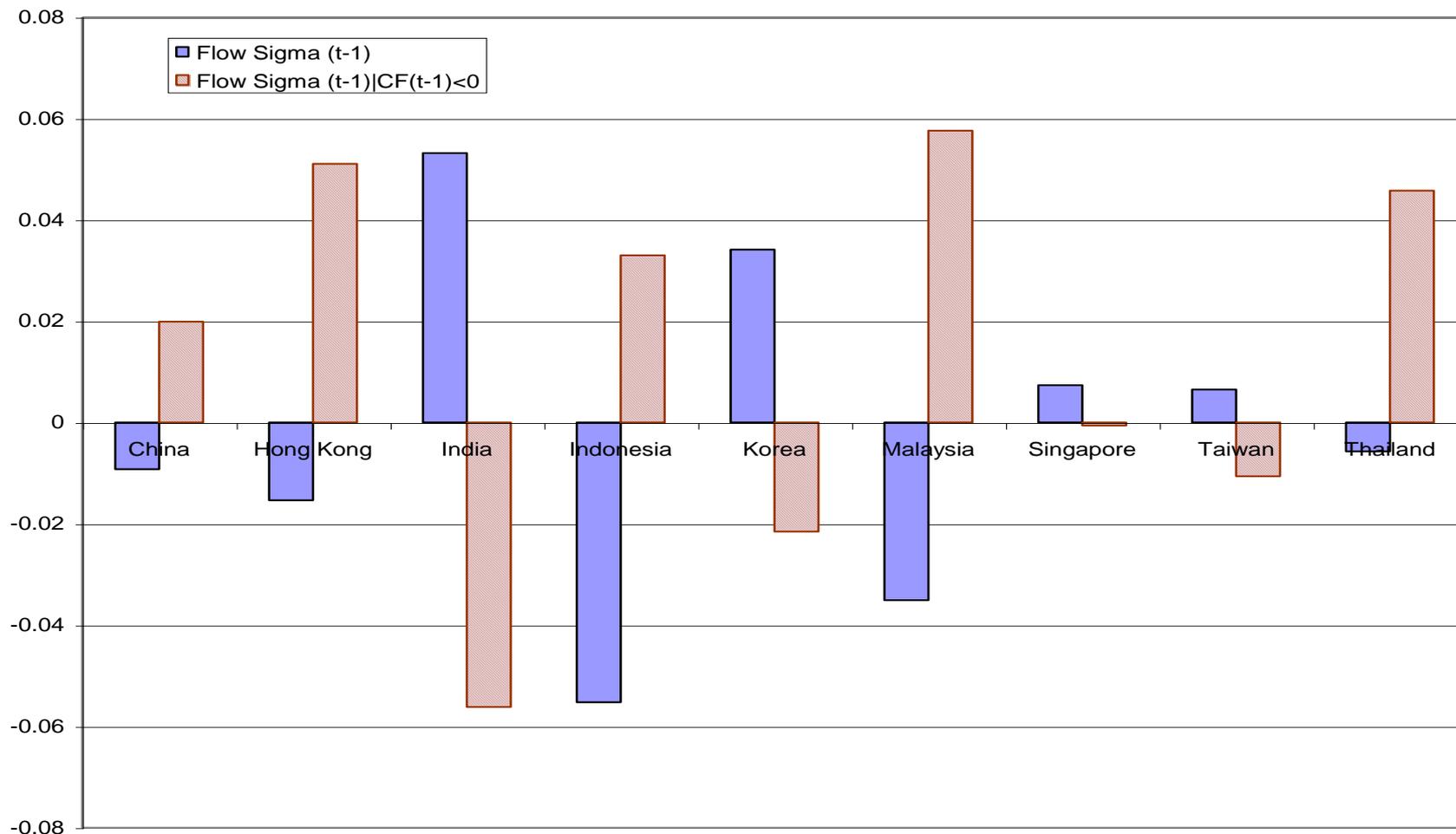


Determinants of changes in country allocations:



“Investor Injection/Redemption have certain impact on investment weight allocation”

The effect of investor's discretion





Key Findings:

- Evolution of fund flows in Asia region is more notable when comparing to other geographical areas.
- Co-movement of weight allocation between various fund type are high (~ 79%) indicating similar pattern of weight adjustment among fund manager
- Investor's injection/redemption have high co-movement (~ 63%) across fund type and also effect weight allocation of fund.
- Thailand have very low volatility in all type of funds due to the overall lower allocation received