The Benefits of Further Financial Integration in Asia

Phurichai Rungcharoenkitkul

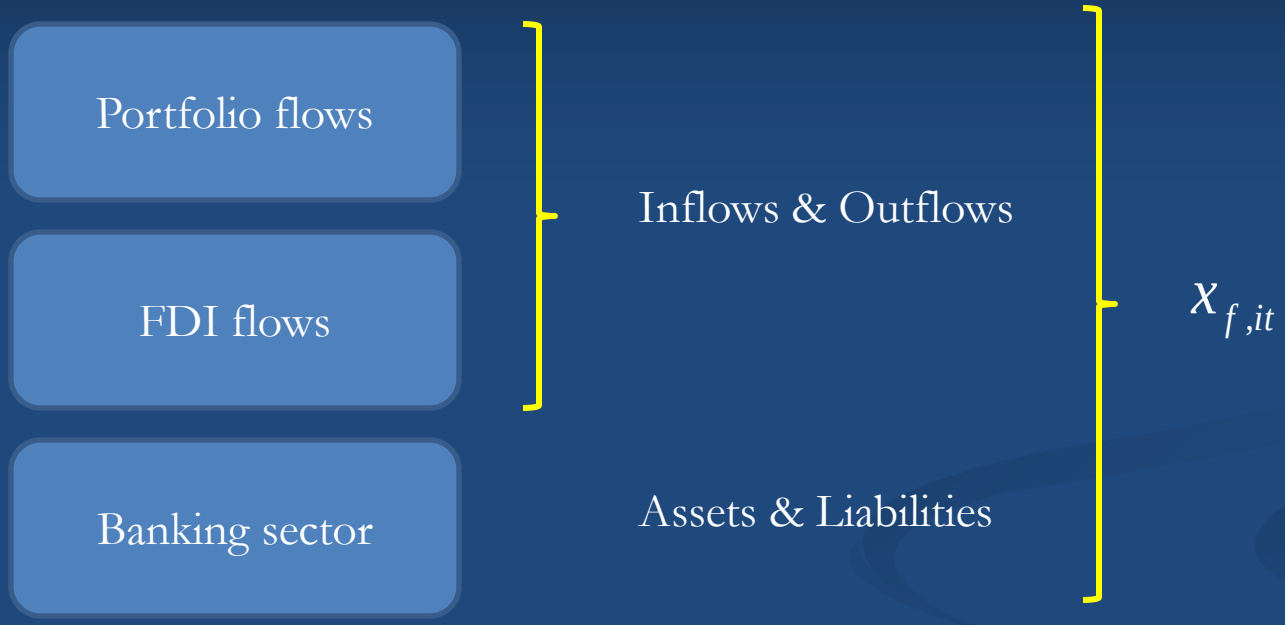
April, 2012

* This presentation is based on Pongsaparn and Unteroberdoerster (2011) and Rungcharoenkitkul (2011)

Questions

- What is the current degree of Asian financial integration?
- Can financial integration help Asia rebalance?
- What are the benefits and costs to each country, in terms of risk sharing and contagion?
- How to maximize the benefits of financial integration without raising the costs?

Quantity-based measures of financial integration



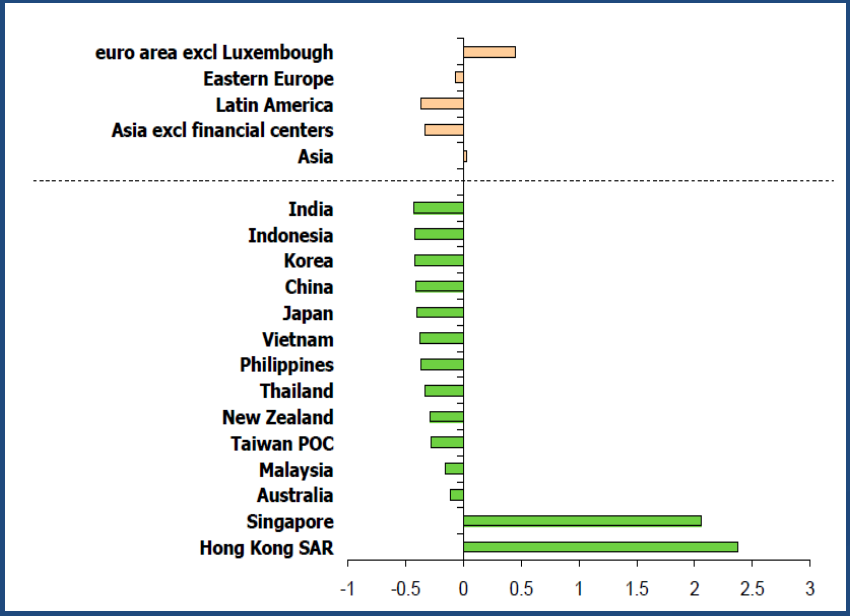
Z-score measure

$$z_{f,it} = \frac{(x_{f,it} - \bar{x}_{f,t})}{\sigma_{f,t}}$$

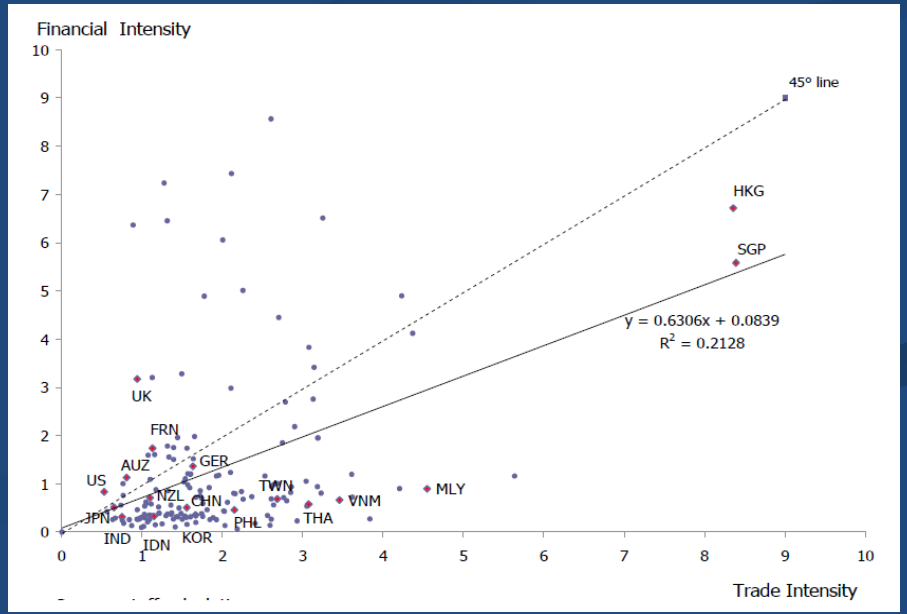
The Degree of Financial Integration in Asia

- Outside financial centers, financial integration in Asia is limited:
  - relative to world average
  - relative to trade integration
  - after controlling for standard push and pull factors
  - both intra- and inter-regionally

Z-score of Financial Integration



Financial versus Trade Integration



A Catalyst for Rebalancing?

Financial integration can foster rebalancing by:

- Inducing greater competition in banking sector, easing HH's financing constraints
- Lowering liquidity premium in bond market and increasing investment (e.g. ABMI)
- Fostering financial innovation, lessening the need for precautionary savings

Financial Integration and CA Balances

Augmented macro balance regression

Estimation of Augmented Macroeconomic Balance Approach

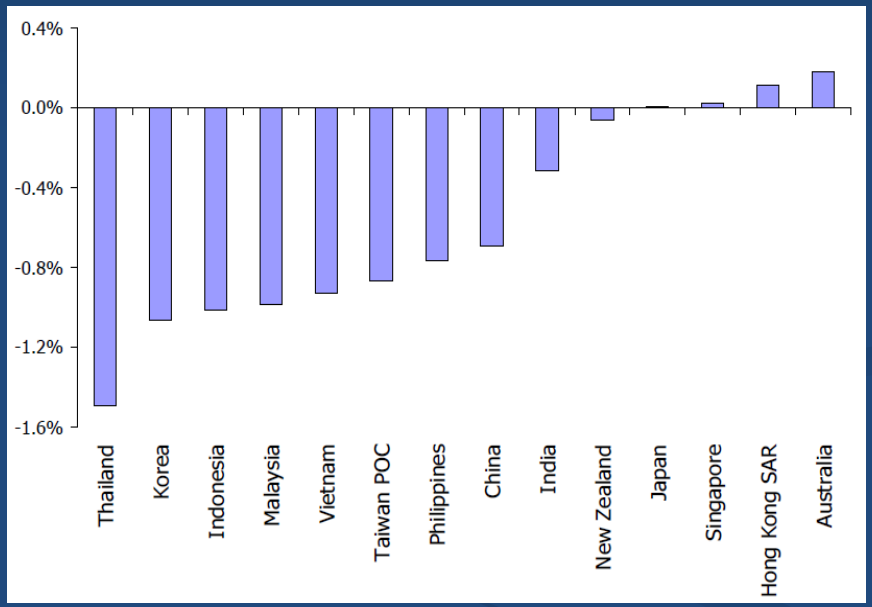
Dependent variable: current account to GDP

Variable	Original Macrobalance Model[1]	Z score Model	Trade-Financial Intensity Model
Constant	-0.001	0.002	-0.006
	(-0.159)	(0.252)	(-0.880)
Relative old age dependency	-0.108	-0.106	-0.008
	(-1.197)	(-1.376)	(-0.108)
Relative population growth	-0.613		
	(-1.324)		
Relative income growth	-0.719	-0.546	-0.733
	(-2.030)	(-1.599)	(-2.498)
Oil trade balance	0.383	0.406	0.398
	(5.303)	(6.262)	(6.158)
Relative fiscal balance	0.265	0.166	0.266
	(1.590)	(1.545)	(2.162)
Initial net foreign assets	0.051	0.060	0.053
	(4.791)	(4.854)	(4.472)
Z score		-0.014	
		(-1.698)	
Trade to financial intensity ratio			0.004
			(2.005)
Number of observations	795	488	698
Adjusted R^2	0.451	0.467	0.473

Note: t-statistic in brackets

[1] Vitek (2010).

CA implications of closing integration gaps



Is There a Tradeoff to Financial Integration?

Red Cliff Battle

Cao Cao chained his ships from stem to stern to stabilize the fleet against waves and reduce seasickness in his navy.

Seeing the ships are all connected, Zhou Yu set the ships ablaze, destroying the entire fleet.

Will financial integration bring about 'risk-sharing' benefits that make up for the 'contagion' costs?

Risk-sharing

- There is perfect risk sharing between 2 countries if all idiosyncratic risks are diversified
- Intuitively, consumption growth is equalized because shocks are shared (under some preferences)
- In asset pricing model, perfect risk sharing implies equality of the stochastic discount factors (SDFs)

$$\left.\begin{aligned} 1 &= E(M^i R) \\ 1 &= E(M^j R) \end{aligned}\right\} \quad M^i = M^j$$

- Brandt-Cochrane-SantaClara (2006) proposed a risk sharing metric:

$$BCS_{i,j} = 1 - \frac{\text{var}(\log M^i_{t+1} - \log M^j_{t+1})}{\text{var}(\log M^i_{t+1}) + \text{var}(\log M^j_{t+1})}$$

Extracting SDFs

- Adopt price-based approach to extracting SDFs
- Stock market data do not suffice, need multidimensional bond prices
- Standard affine term structure model:

State $X_t = \mu + K X_{t-1} + \Sigma \varepsilon_t$

SDF $M_{t+1} = exp\left[-r_t - \frac{1}{2}\lambda_t'\lambda_t - \lambda_t'\varepsilon_{t+1}\right]$

Price of risk $\lambda_t = \Lambda_0 + \Lambda_1 X_t$

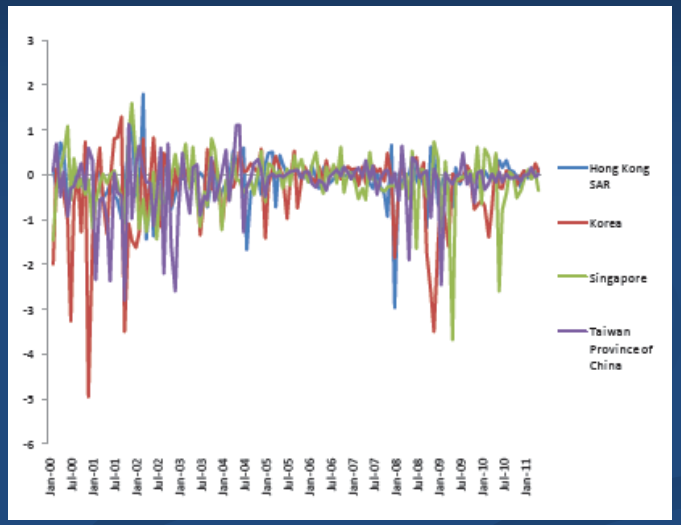
Short rate $r_t = \delta_0 + \delta_1' X_t$

$$y_{n,t} = -\frac{A_n}{n} - \frac{B_n'}{n} X_t$$

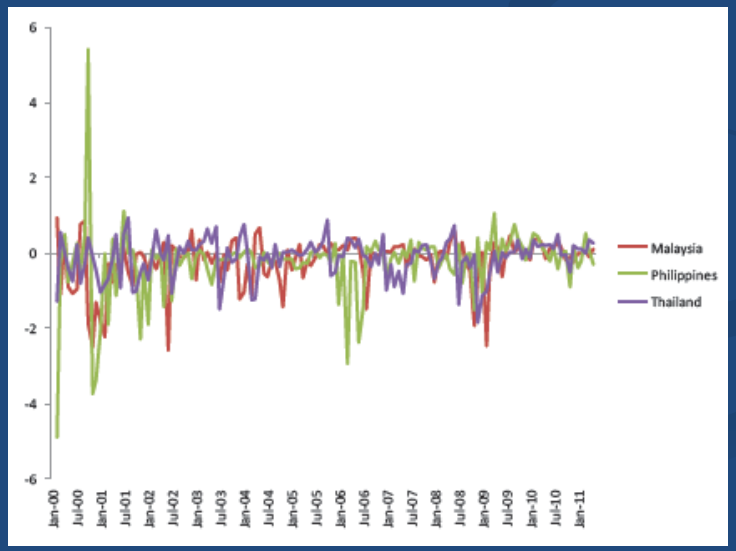
SDFs

US and EU

East Asia (ex China) and Singapore



Malaysia
Philippines
Thailand



BCS Matrix

	Japan	Hong Kong SAR	Korea	Singapore	Taiwan Province of China	Indonesia	Malaysia	Philippines	Thailand	China	India	US
Hong Kong SAR	0.182											
Korea	0.193	0.078										
Singapore	0.076	0.208	0.054									
Taiwan Province of China	-0.076	0.059	0.072	0.095								
Indonesia	0.102	-0.023	0.198	0.067	-0.022							
Malaysia	0.186	0.206	0.146	0.116	0.221	0.176						
Philippines	-0.123	-0.043	0.157	0.060	0.007	0.180	-0.022					
Thailand	0.173	0.090	0.269	0.156	0.098	-0.021	0.086	0.166				
China	-0.099	-0.111	0.167	0.131	0.304	0.009	0.222	-0.108	0.007			
India	-0.029	0.055	0.251	-0.004	-0.062	0.012	0.034	0.204	0.254	0.049		
US	0.025	0.587	0.059	0.226	0.127	-0.041	0.137	0.201	0.131	-0.054	0.166	
EU	0.011	0.297	0.086	0.034	0.101	0.025	0.177	0.063	0.049	0.037	0.212	0.338

A

B

C

D

E

	NIEs	ASEAN 4	US & EU
NIEs	0.095		
ASEAN 4	0.107	0.094	
US & EU	0.190	0.093	0.338

Contagion

- Contagion is not correlation of asset prices
- Define contagion as 'tail-event' spillover in stock markets

Tail correlation
via quantile regression

$$ret_t^i = \alpha + \beta\, ret_{t-1}^i + \gamma\, ret_t^j + \epsilon_t$$

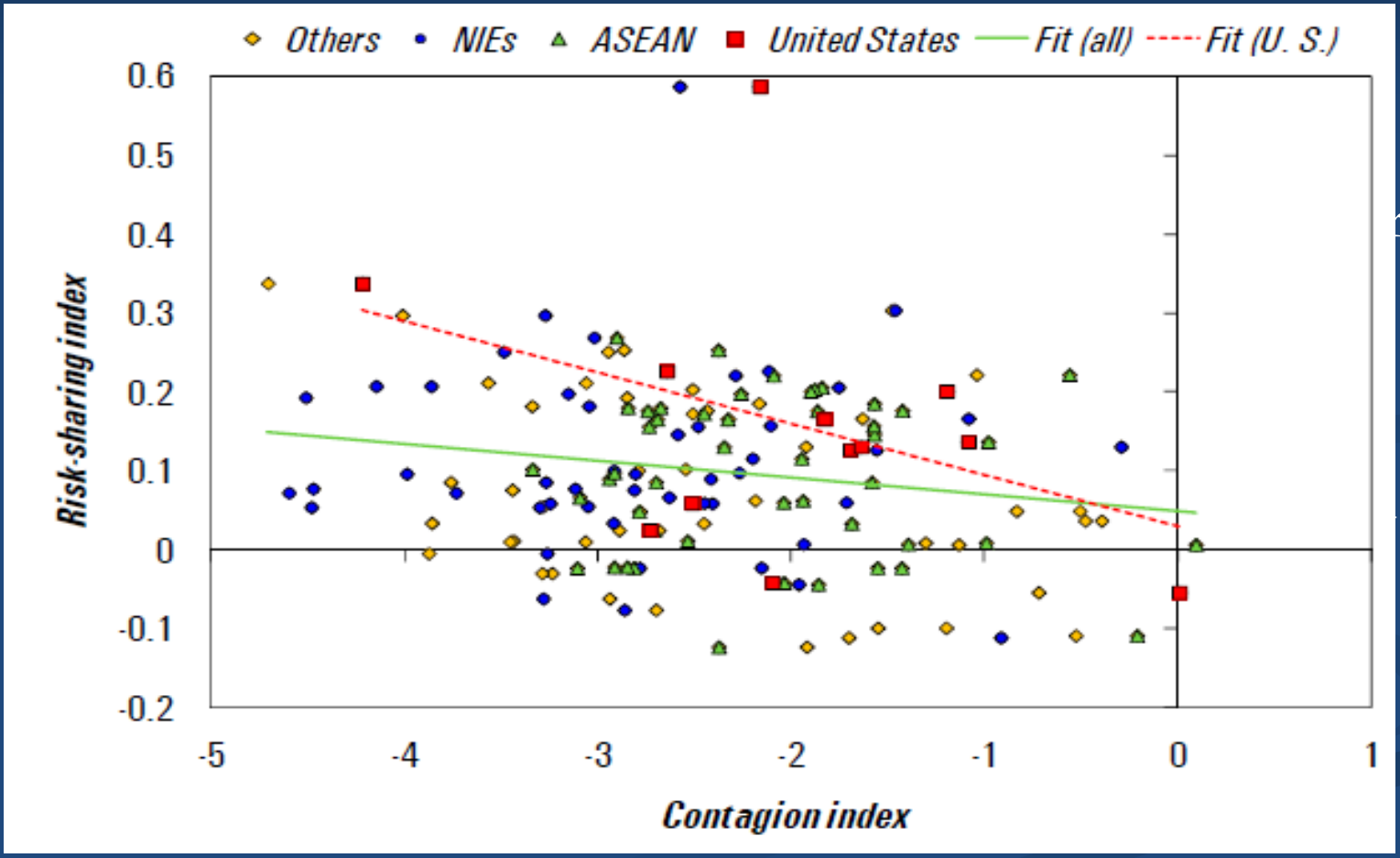
Contagion
from j to i

$$Contag_t^{i,j} = \hat{\gamma}\left(VaR_t^j - Median^j\right)$$

Contag matrix

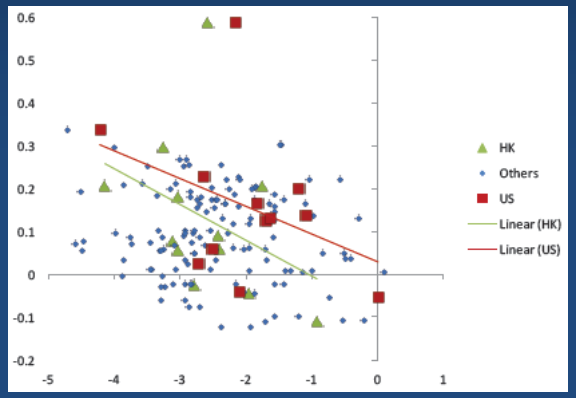
j \ i	Japan	Hong Kong SAR	Korea	Singapore	Taiwan Province of China	Indonesia	Malaysia	Philippines	Thailand	China	India	US	EU	NIEs	ASEAN	US&EU	Average
Japan		-3.046	-4.511	-2.812	-2.863	-3.339	-1.570	-2.375	-2.452	-1.552	-3.289	-2.730	-3.454	-3.308	-2.434	-3.092	-2.833
Hong Kong SAR	-3.341		-4.473	-3.862	-3.247	-3.107	-1.842	-1.859	-2.942	-1.702	-3.283	-2.162	-4.011	-3.861	-2.438	-3.087	-2.986
Korea	-2.850	-3.118		-3.301	-3.734	-2.261	-1.571	-1.574	-2.903	-1.632	-2.947	-2.513	-3.761	-3.384	-2.077	-3.137	-2.680
Singapore	-3.443	-4.147	-4.482		-3.989	-3.094	-1.947	-2.039	-2.736	-1.924	-3.875	-2.644	-3.858	-4.206	-2.454	-3.251	-3.181
Taiwan Province of China	-2.699	-2.408	-4.599	-2.807		-2.813	-2.092	-1.395	-2.915	-1.478	-2.940	-1.692	-2.791	-3.271	-2.304	-2.241	-2.552
Indonesia	-2.547	-2.785	-3.154	-2.632	-2.154		-1.865	-2.677	-2.849	-1.306	-3.437	-2.097	-2.685	-2.681	-2.464	-2.391	-2.516
Malaysia	-2.166	-1.755	-2.588	-2.200	-2.289	-2.743		-1.554	-2.700	-1.041	-2.452	-1.082	-2.436	-2.208	-2.332	-1.759	-2.084
Philippines	-1.919	-1.962	-2.107	-1.716	-1.936	-2.845	-1.428		-2.328	-0.528	-2.510	-1.195	-2.187	-1.930	-2.201	-1.691	-1.888
Thailand	-2.510	-2.417	-3.019	-2.482	-2.269	-2.916	-1.583	-2.693		-1.133	-2.866	-1.639	-2.782	-2.547	-2.397	-2.211	-2.359
China	-1.198	-0.915	-1.083	-0.292	-1.463	-0.992	-0.561	-0.210	0.094		-0.506	0.010	-0.479	-0.938	-0.417	-0.234	-0.633
India	-3.238	-3.052	-3.487	-3.263	-3.282	-2.537	-1.687	-1.879	-2.377	-0.834		-1.828	-3.569	-3.271	-2.120	-2.698	-2.586
US	-2.891	-2.576	-2.450	-2.116	-1.559	-2.037	-0.980	-1.899	-2.348	-0.720	-2.325		-4.707	-2.176	-1.816	-4.707	-2.217
EU	-3.064	-3.274	-3.270	-2.920	-2.917	-2.708	-1.425	-1.940	-2.787	-0.394	-3.062	-4.219		-3.095	-2.215	-4.219	-2.665
NIEs	-3.083	-3.225	-4.518	-3.324	-3.657	-2.819	-1.863	-1.717	-2.874	-1.684	-3.261	-2.253	-3.605	-3.681	-2.318	-2.929	-2.914
ASEAN	-2.286	-2.229	-2.717	-2.258	-2.162	-2.834	-1.625	-2.308	-2.626	-1.002	-2.816	-1.503	-2.523	-2.342	-2.348	-2.013	-2.222
US&EU	-2.977	-2.925	-2.860	-2.518	-2.238	-2.372	-1.203	-1.919	-2.568	-0.557	-2.693	-4.219	-4.707	-2.635	-2.016	-4.463	-2.597
Average	-2.656	-2.621	-3.269	-2.534	-2.642	-2.616	-1.546	-1.841	-2.437	-1.187	-2.791	-1.983	-3.060	-2.837	-2.128	-2.671	-2.435

Is There a Tradeoff?

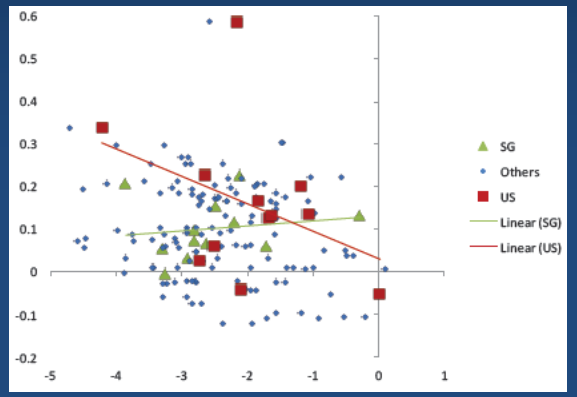


Some Individual Countries Results

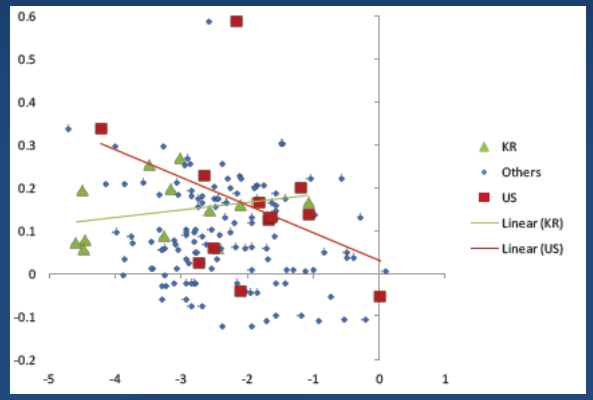
Hong Kong SAR



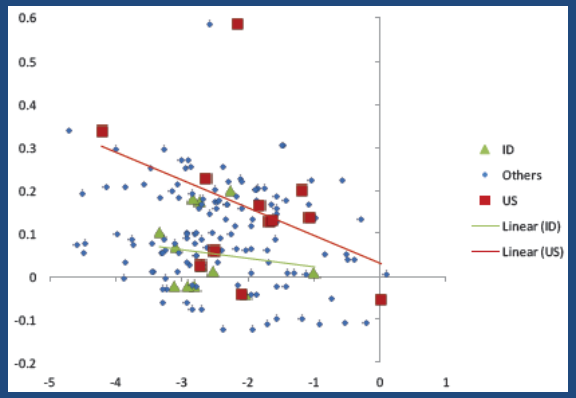
Singapore



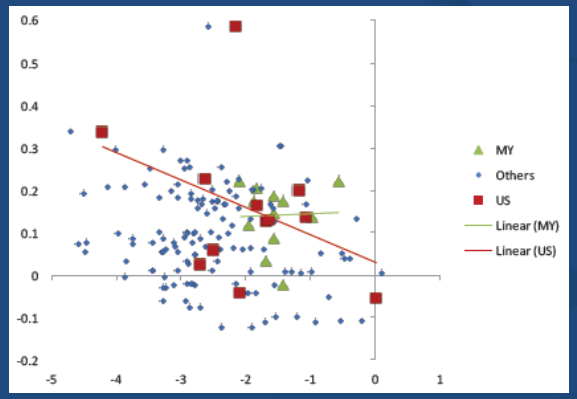
Korea



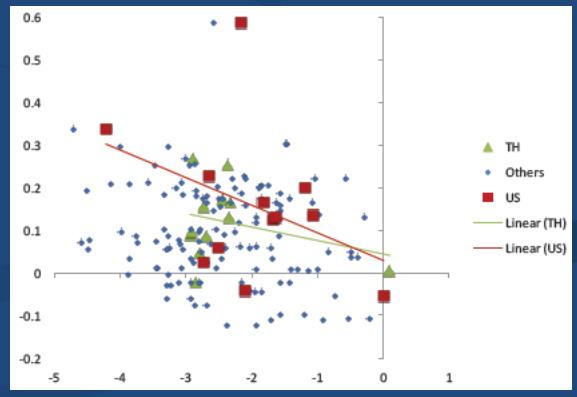
Indonesia



Malaysia



Thailand



How to improve the terms of tradeoffs?

$$BCS = F(Contag, Context)$$

More integration Better integration

- *Context* may include
  1. Greater integration leads to better integration (nonlinear effect)
  2. Financial market developments
  3. Size of economic shocks
  4. Macroeconomic policy

Quantifying the role of contextual factors

Table 7: Determinants of Intra-Regional Risk Sharing

	OLS	Fixed effects	Random effects
int_{jt}	-0.023	-0.156	-0.041
	(0.008)***	(0.052)***	(0.018)***
$\sigma_{jt}(st\_gdp)$	0.029	0.042	-0.062
	(0.055)	(0.139)	(0.101)
$\sigma_{jt}(ip)$	0.224	0.217	0.216
	(0.066)***	(0.066)***	(0.066)***
$\sigma_{jt}(\pi)$	0.142	0.145	0.138
	(0.074)**	(0.073)***	(0.074)**
Constant	-1.275	0.316	-1.114
	(0.152)***	(0.660)	(0.286)***
R^2	0.26	0.27	0.07
N	408	408	408

Source: Authors' calculations.

[a] Standard errors are in parentheses. ***,** and * indicate statistical significance at 1%, 5% and 10% respectively. Random effects estimation uses Wallace-Hussain method to compute component variances.

Concluding Remarks

- Making the most of financial integration requires a collective effort
- Getting it right would not only improve economic resilience, but also strengthen domestic sources of growth
- The way forward:
  - More rather than less financial integration
  - Harmonization of legal and institutional infrastructures
  - Alignment of macroeconomic policy objectives

THANK YOU.