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Heterogeneous Patterns of Financial Development:

Implications for Asian Financial Integration

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Outline

- Introduction

- Financial integration and financial development

- Measuring financial development: Levels and patterns

- Data

- Results

- Conclusion

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Introduction

- Economic dynamism of Asia Pacific region
  - "East Asian miracle"
  - Regional production networks

- Financial crises
  - 1997-98 vs. 2007-09
  - Challenges and responses

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Financial integration and financial development

- **Much less consensus on the net benefits of financial openness vs. trade openness**

- **East Asian financial integration**
  - ❑ Increasing
  - ❑ Still not strong, especially relative to links to other regions

- **Financial development is seen as a precondition (or a positive) for financial integration**

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Financial integration and financial development

- Financial development itself may have mixed implications for growth
  - Maybe "too much finance"
  - Mostly measured as financial **depth**
- Interactions
  - Institutional quality
  - Trade openness
  - Financial openness

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Financial development

- World Bank (2012)
  - Depth
  - Access
  - Efficiency
  - Stability
- IMF (2015)
  - Depth, access, efficiency
- Aizenman, Jinjarak and Park (2015)
  - Depth (quantity) and efficiency (quality)
  - Sectoral data

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Measuring financial development: Levels and patterns

- **N indicators of financial development**
  - ❑ Common scale for each indicator
  - ❑ Financial development is a vector, for economy *i*,
    - $x_i = (x_{i1}, x_{i2}, \ldots, x_{iN})$
- **Level of financial development is an index**

$$\overline{x}_i(w) = \sum_1^N w_n x_{in}$$

- Principal components is an alternative approach
  - ❑ ***Level Distance*** between country *i* and country *j* is
    $$\overline{x}_i(w) - \overline{x}_j(w)$$

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Measuring financial development: Levels and patterns

- ■ ***Average Level Distance*** is

$$\overline{LD_i} = \frac{1}{I-1}\sqrt{\sum_{j\neq i}[\bar{x}_i(w) - \bar{x}_j(w)]^2}$$

- ■ ***Pattern Distance*** between two economies is

$$PD_{ij} = 1 - corr(x_i, x_j)$$

Introduced by Kaur and Singh (2014)

- ■ ***Average Pattern Distance*** is

$$\overline{PD_i} = \frac{1}{I-1}\sum_{j=1}^{I-1} PD_{ij}$$

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Measuring financial development: Levels and patterns

- Idea is to see how close an economy is to other economies in a particular region (individually or on average), in terms of
    - Levels of financial development
    - Patterns of financial development
- World Bank (2012) distance measure combines level and pattern differences

$$D_{ij} = \sqrt{\sum_{1}^{N}(x_{in} - x_{jn})^2}$$

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Data

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Index Components

World Economic Forum: Global Competitiveness Index

Category	Indicator
Efficiency	Affordability of financial services
	Availability of financial services
	Financing through local equity market
	Ease of access to loans
	Venture capital availability
Trustworthiness and confidence	Soundness of banks
	Regulation of securities exchanges
	Legal rights of investors

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Additional Index Components

- **Main Results**
  - Institutional Environment
  - Business Environment
  - Based on WEF Financial Development Report 2012
- **Appendix**
  - Business Sophistication
  - Technology Sophistication
 - Openness
  - Institutional Environment 2

Economies

Economies in the Analysis

Australia	New Zealand
Cambodia	Philippines
China	Singapore
Hong Kong	South Korea
Indonesia	Taiwan
Japan	Thailand
Malaysia	Vietnam

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Fin Dev Index Levels

	FDIndex8		FDIndex7		FDIndex10		FDIndex9	
	2010	**2014**	**2010**	**2014**	**2010**	**2014**	**2010**	**2014**
AUS	5.24	5.18	5.07	4.92	5.27	5.20	5.14	5.00
CHN	4.22	4.26	4.17	4.29	4.17	4.21	4.12	4.23
HKG	5.60	5.77	5.41	5.60	5.56	5.74	5.40	5.60
IDN	4.23	4.44	4.43	4.50	4.14	4.35	4.29	4.39
JPN	4.44	4.86	4.33	4.82	4.53	4.94	4.46	4.91
KHM	3.63	3.63	3.31	3.32	3.54	3.55	3.29	3.30
KOR	3.75	3.65	3.54	3.34	3.90	3.83	3.75	3.61
MYS	5.22	5.48	4.97	5.26	5.09	5.39	4.88	5.21
NZL	4.91	5.53	4.70	5.32	5.05	5.58	4.90	5.42
PHL	3.94	4.33	4.11	4.46	3.82	4.24	3.93	4.33
SGP	5.51	5.67	5.30	5.48	5.55	5.68	5.39	5.54
THA	4.35	4.54	4.49	4.62	4.27	4.43	4.37	4.48
TWN	4.73	4.88	4.92	5.01	4.76	4.91	4.92	5.02
VNM	4.03	3.65	3.77	3.35	3.96	3.63	3.75	3.39

Patterns of Financial Development, Developed Economies, 2014
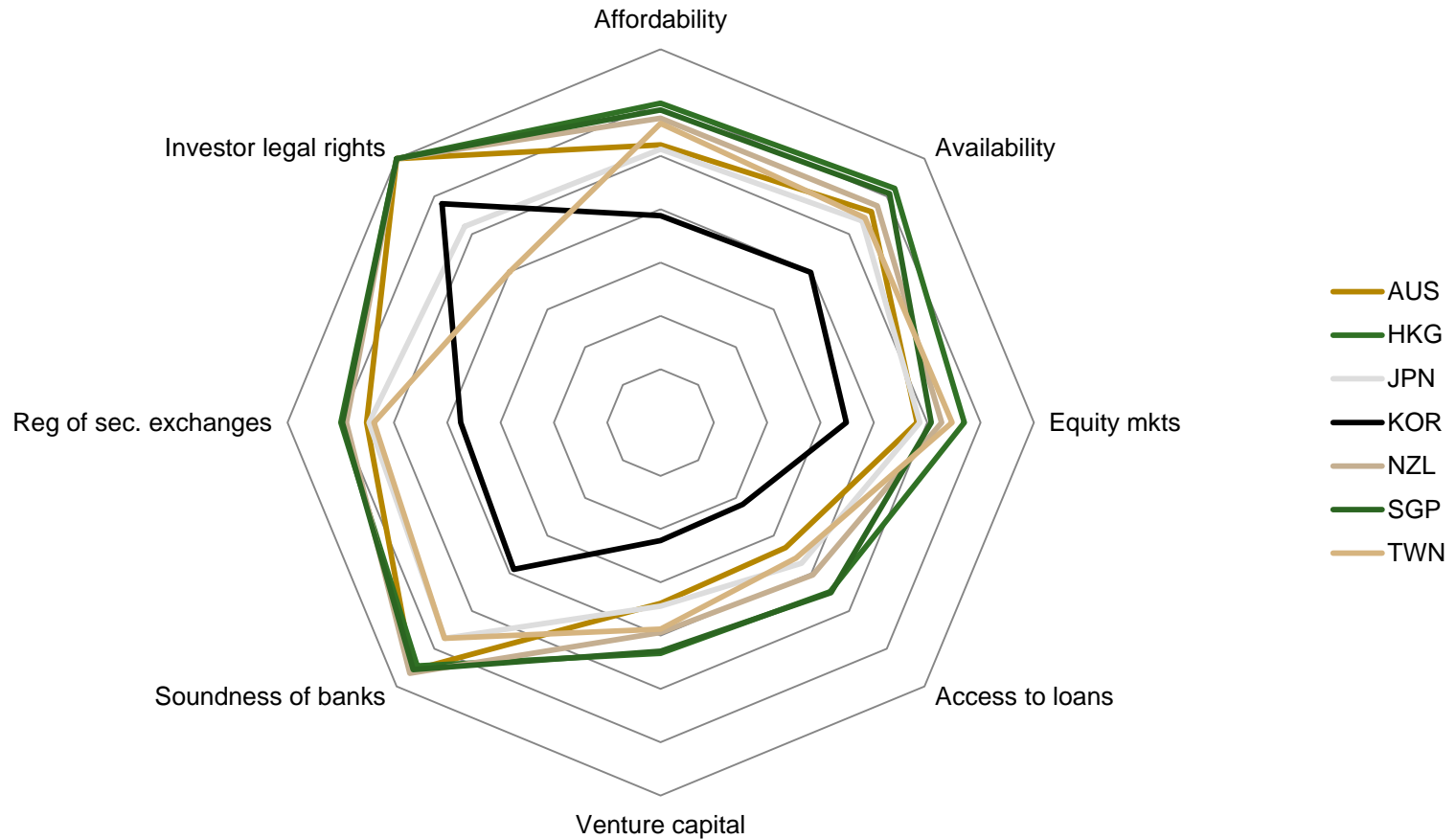
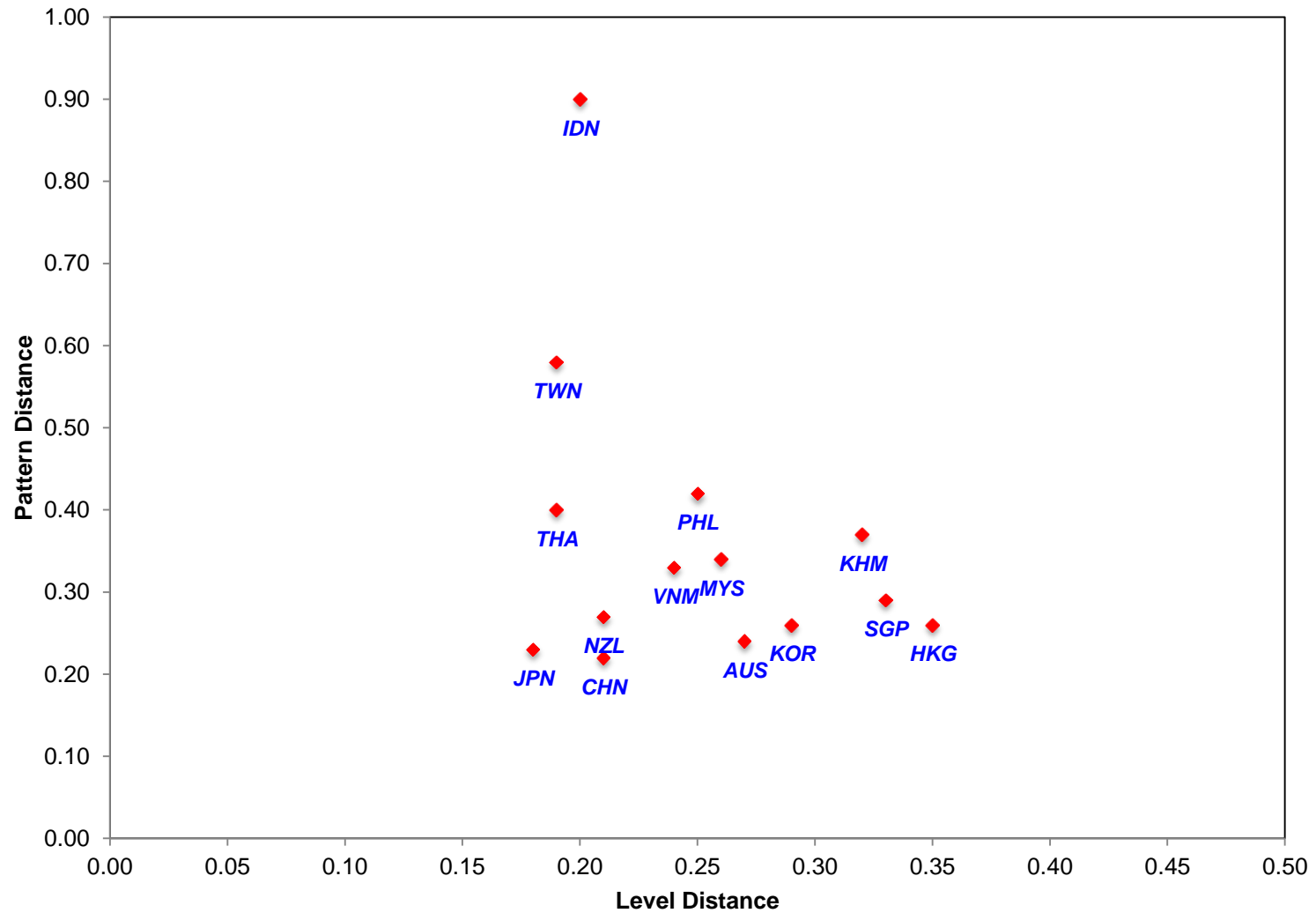# Patterns of Financial Development, Emerging Economies, 2014

Results

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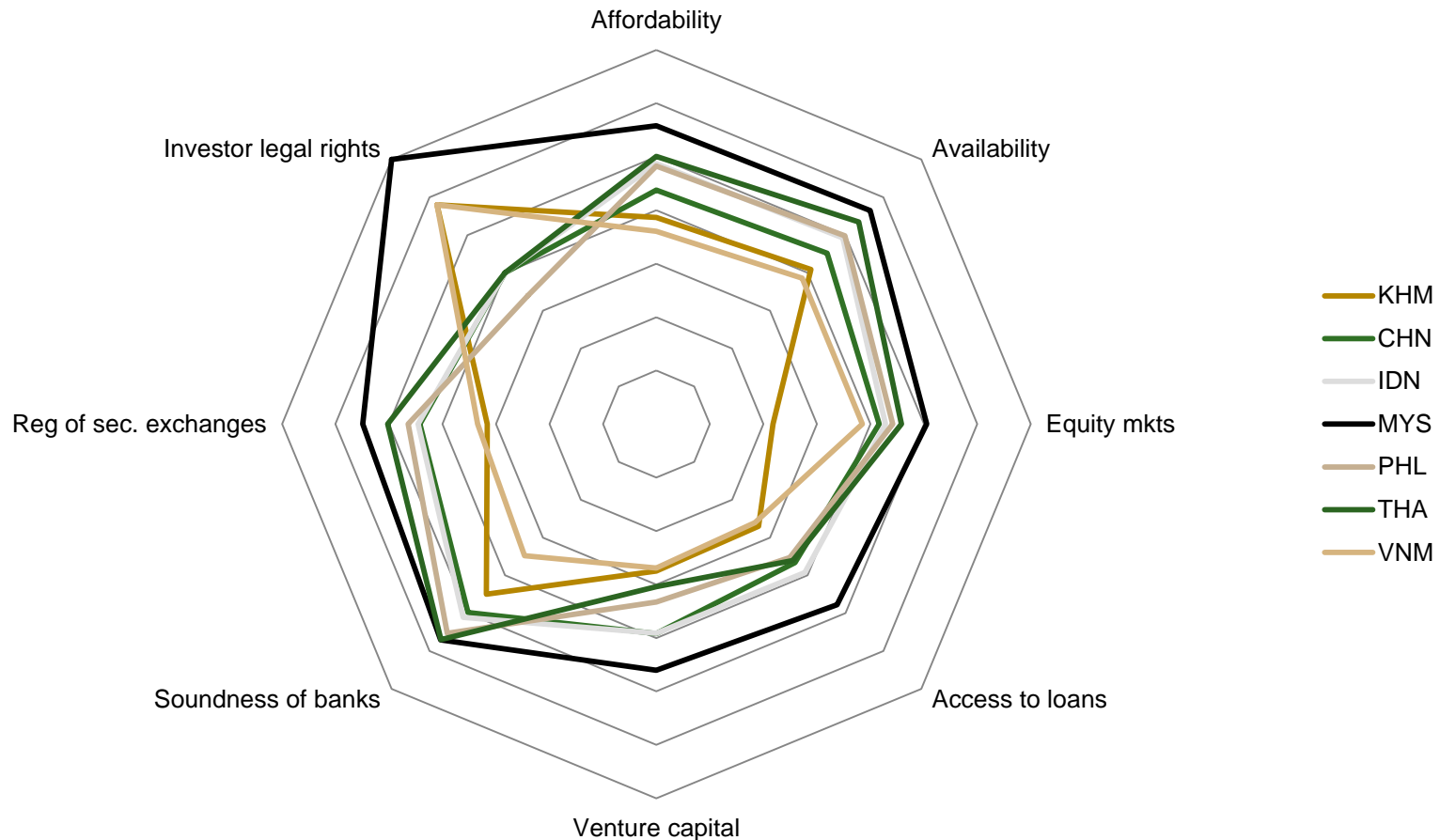
Level and Pattern Differences FDIndex8, 2010

|	**Level Difference**				**Pattern Difference**			
Country	**Average**	**Range**	**Min**	**Max**	**Average**	**Range**	**Min**	**Max**
AUS	0.27	1.98	-0.37	1.61	0.24	0.96	0.02	0.98
CHN	0.21	1.98	-1.38	0.59	0.22	0.68	0.08	0.76
HKG	0.35	1.89	0.09	1.98	0.26	1.09	0.04	1.13
IDN	0.20	1.98	-1.38	0.60	0.90	1.18	0.18	1.36
JPN	0.18	1.98	-1.16	0.82	0.23	0.76	0.06	0.82
KHM	0.32	1.85	-1.98	-0.13	0.37	1.31	0.05	1.36
KOR	0.29	1.98	-1.85	0.13	0.26	1.04	0.03	1.07
MYS	0.26	1.98	-0.38	1.59	0.34	1.30	0.03	1.33
NZL	0.21	1.98	-0.69	1.29	0.27	1.04	0.02	1.06
PHL	0.25	1.98	-1.66	0.32	0.42	0.68	0.01	0.69
SGP	0.33	1.98	-0.09	1.89	0.29	1.20	0.03	1.23
THA	0.19	1.98	-1.25	0.72	0.40	0.68	0.01	0.69
TWN	0.19	1.98	-0.87	1.11	0.58	0.81	0.10	0.91
VNM	0.24	1.98	-1.58	0.40	0.33	1.24	0.03	1.27

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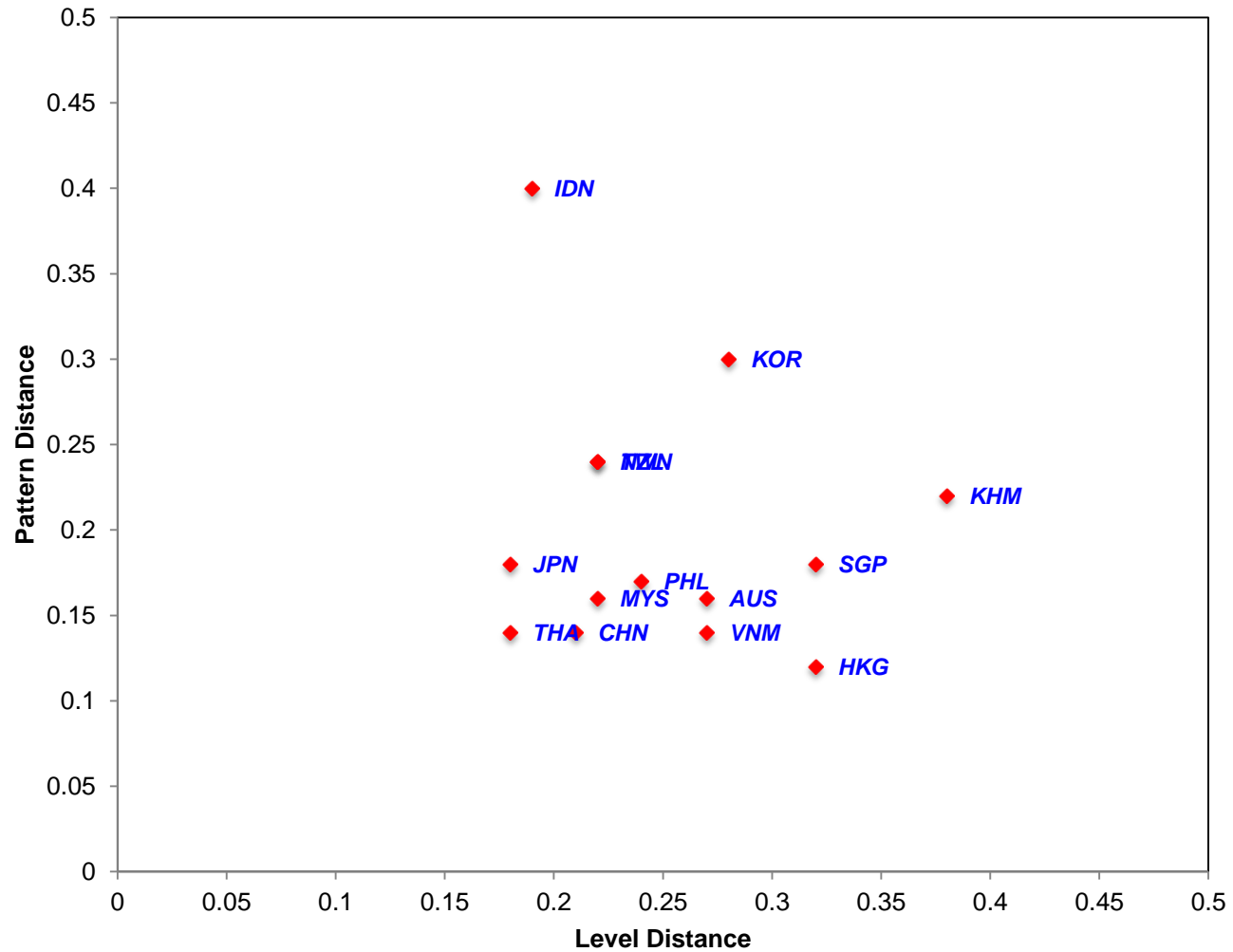
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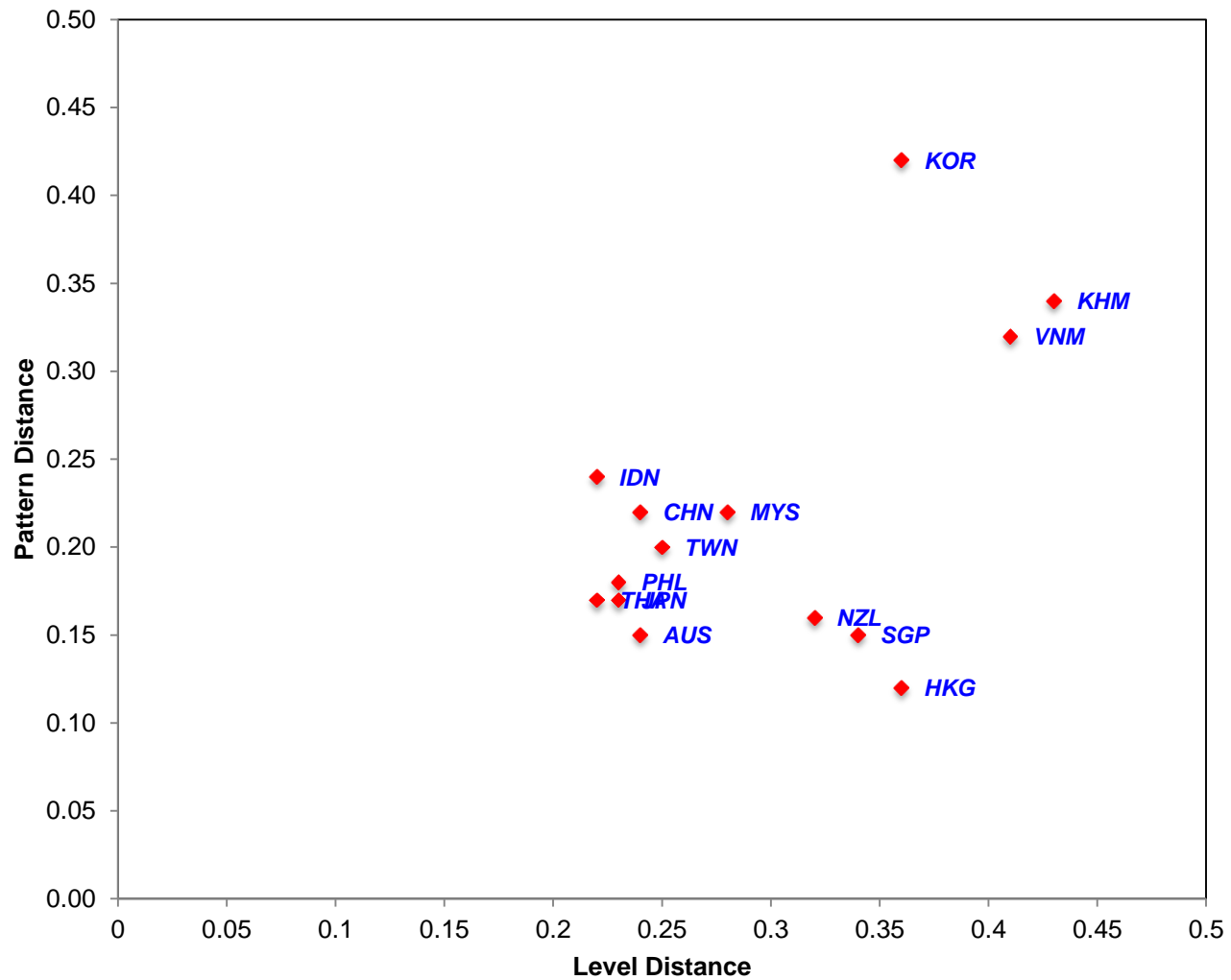
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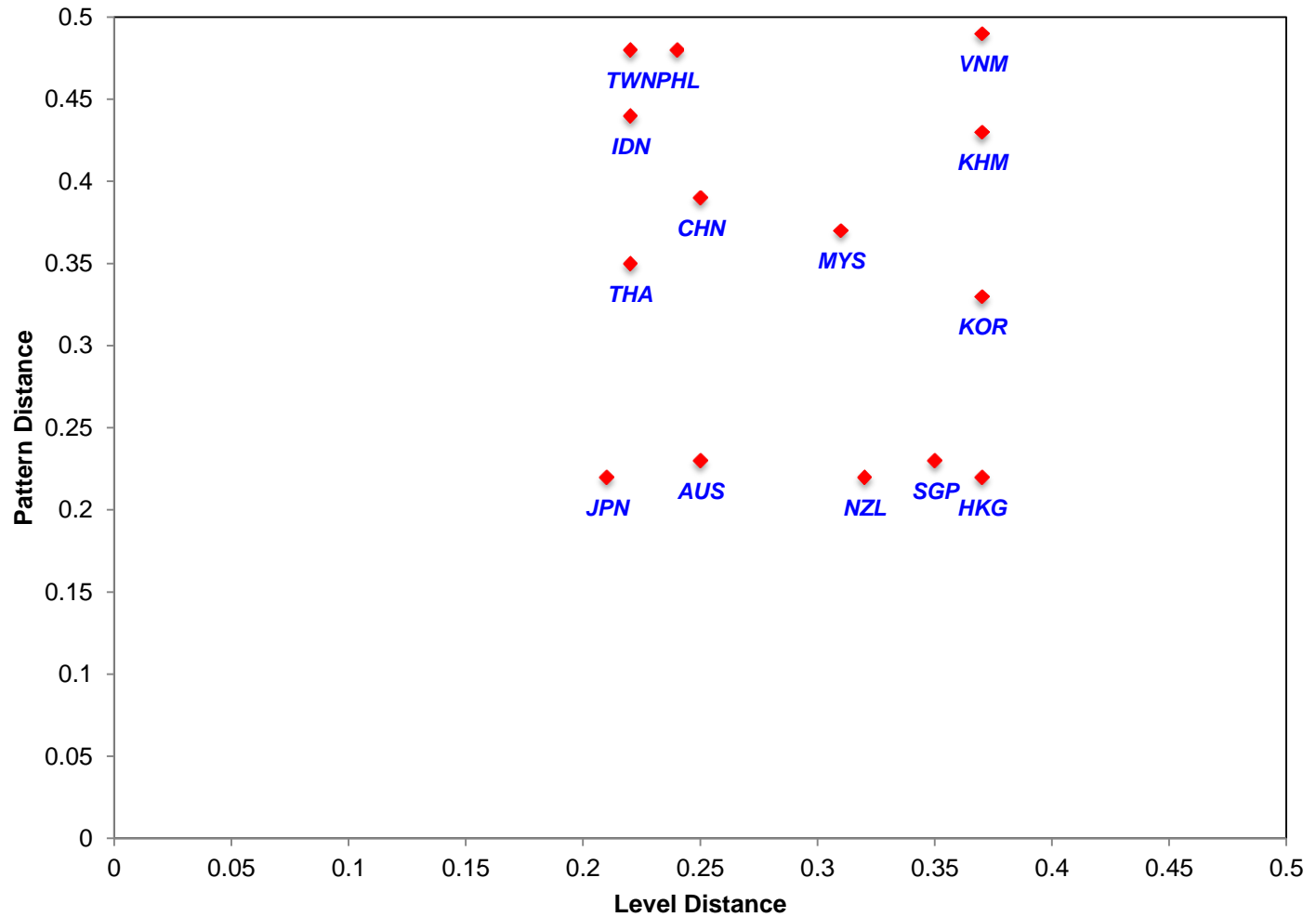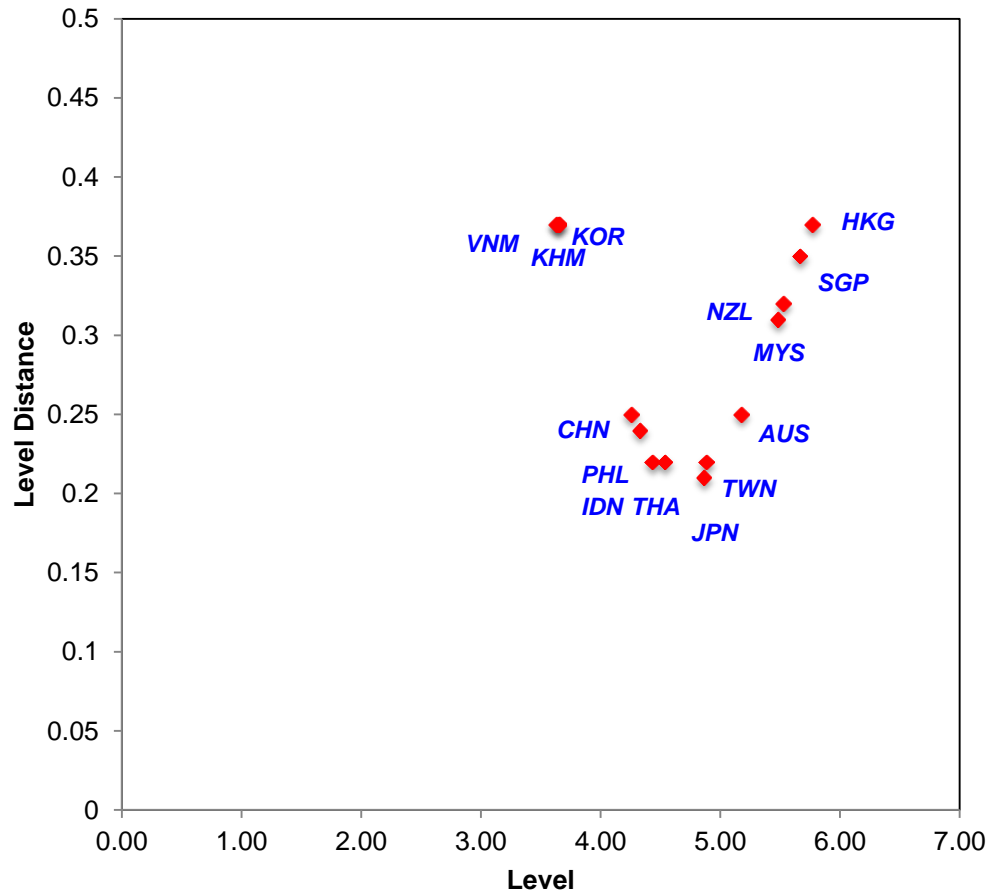
FDIndex7 2010
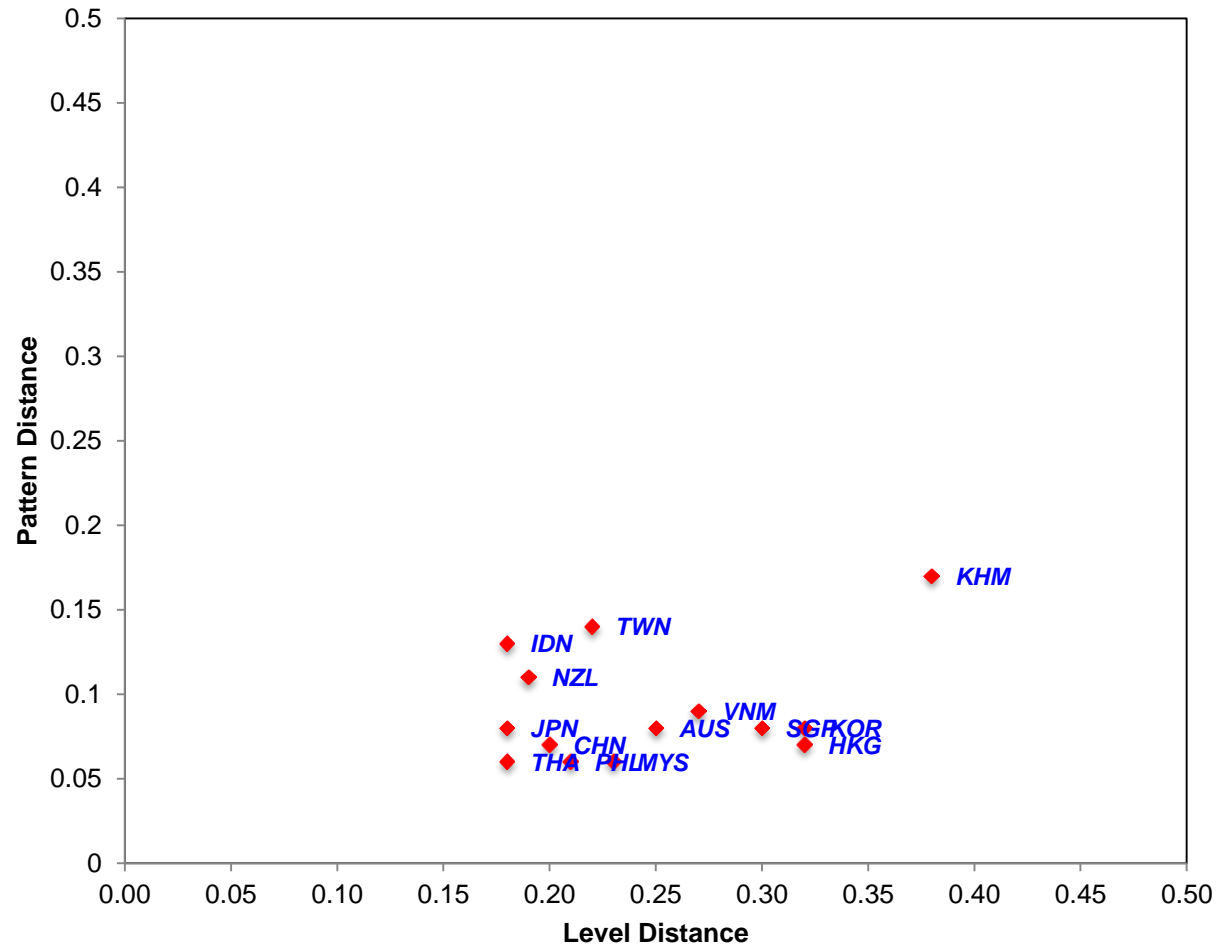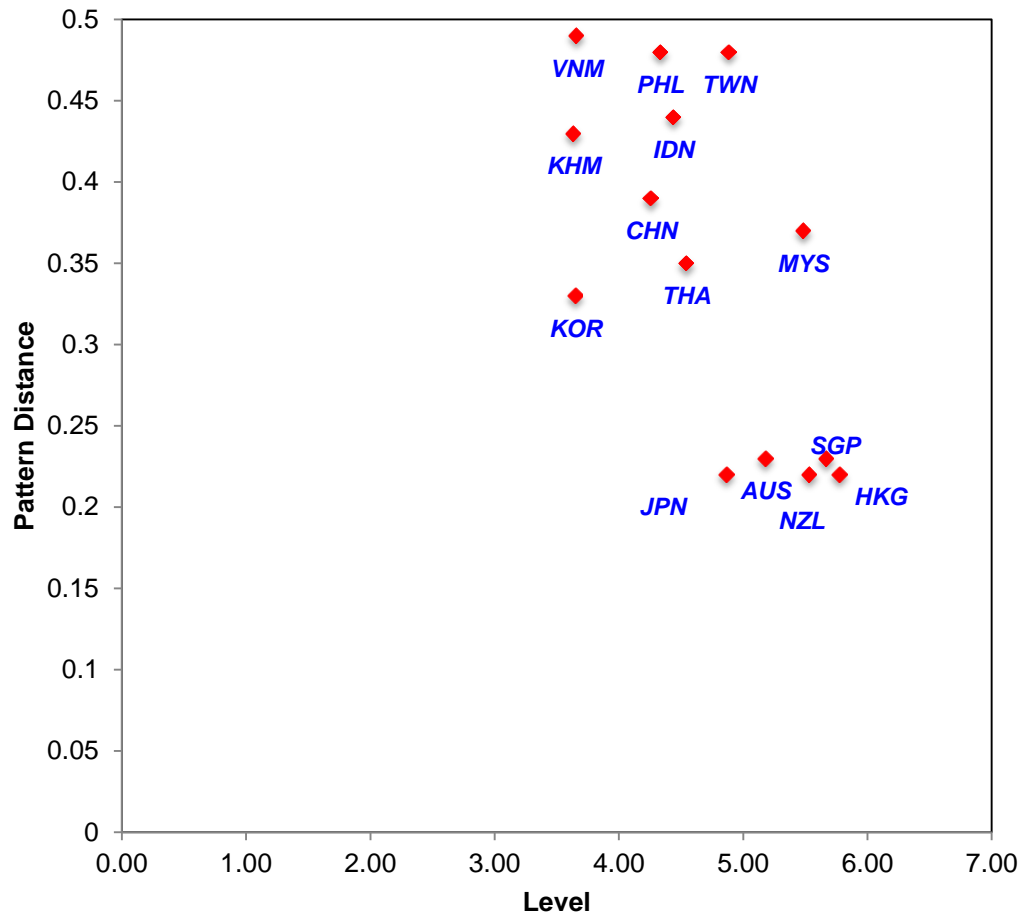
FDIndex7 2014
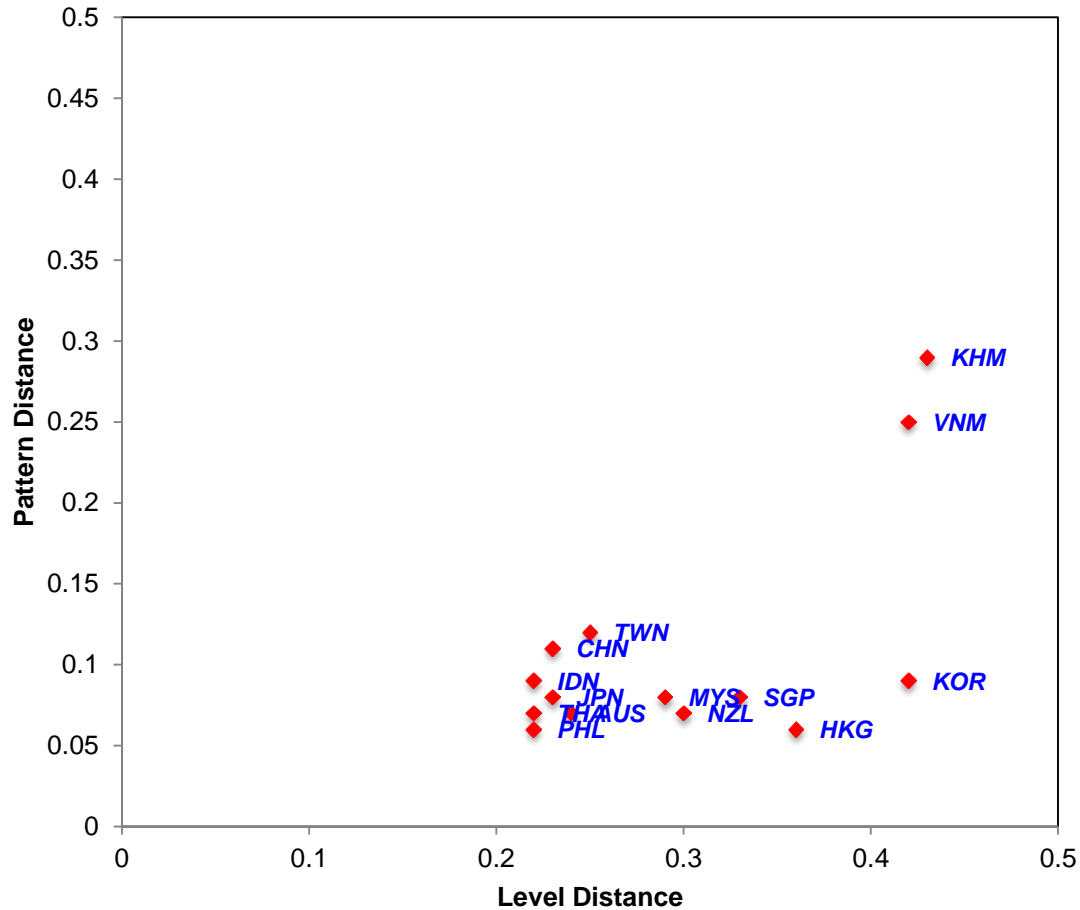
FDIndex10 2010
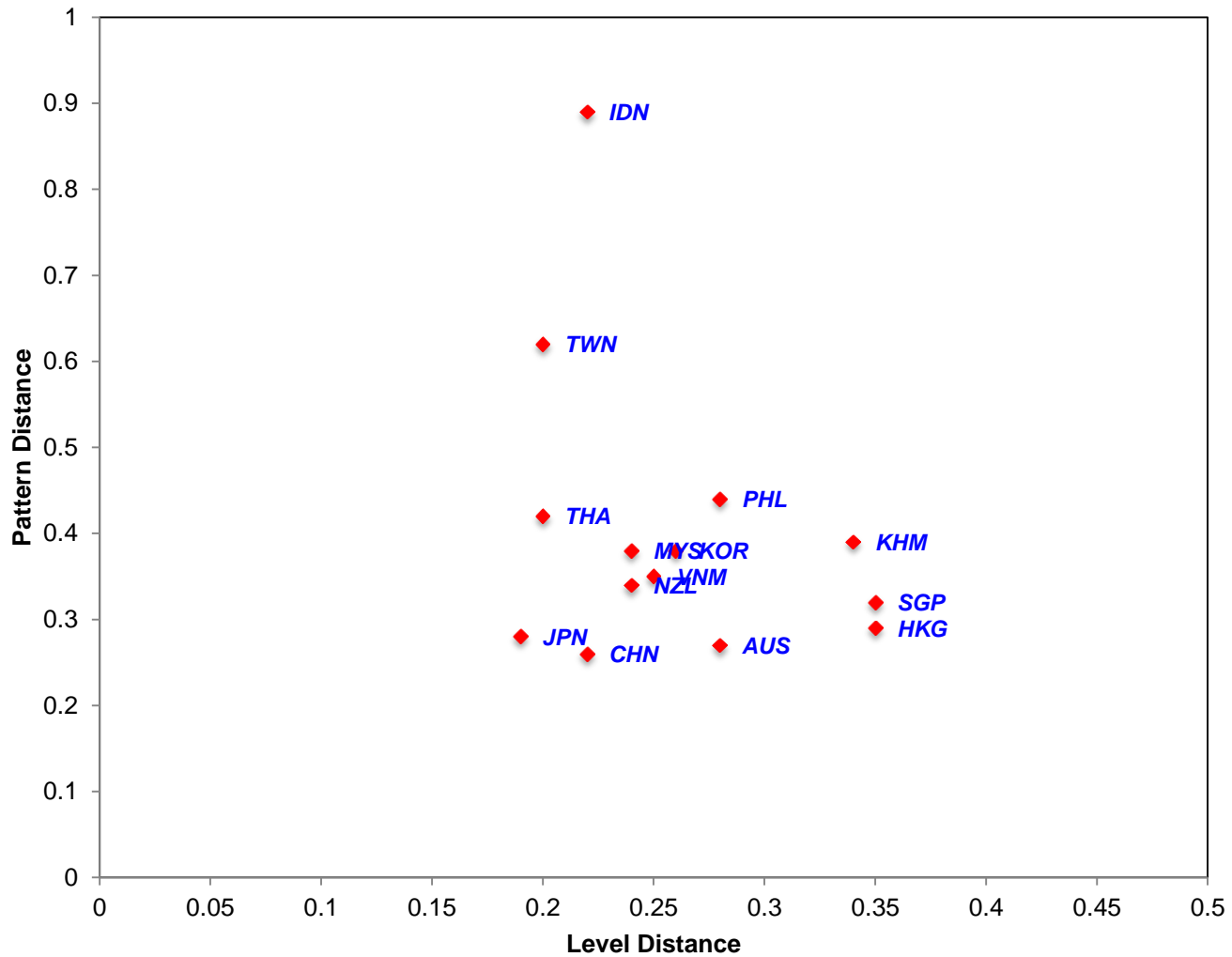
FDIndex10 2014

FDIndex9 2010

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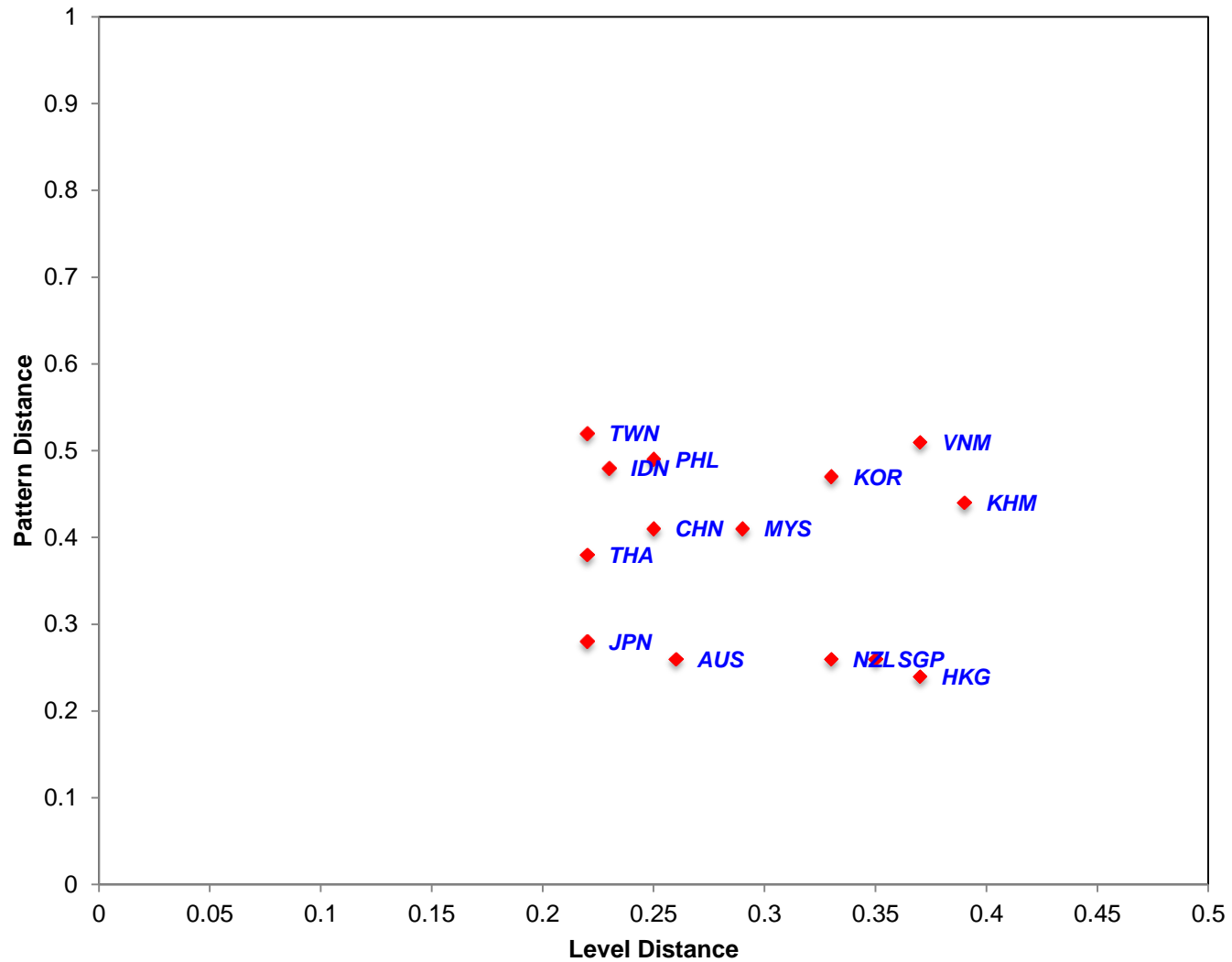
FDIndex9 2014

Level Distances vs. Levels, FDIndex8, 2014

Pattern Distances vs. Levels, FDIndex8, 2014

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Clustering based on Levels of Financial Development

AUS	AUS	AUS	AUS	AUS	AUS	AUS	AUS	AUS	AUS			
KHM	KHM	KHM										
CHN	CHN	CHN	CHN	CHN	*CP*	*CP*	*CP*	*CPITh*	*CPITh*	*CPITh*		
HKG	HKG	HKG	HKG	HKG	HKG	HKG	*HS*	*HS*				
IDN	IDN	IDN	IDN	IDN	IDN	*ITh*	*ITh*					
JPN	JPN	*JTw*	*JTw*	*JTw*	*JTw*	*JTw*	*JTw*	*JTw*	*JTw*	*JTwA*	*JTwACPITh*	*JTwACPIThMNHS*
KOR	*KoV*	*KoV*	*KoVKh*	*KoVKh*	*KoVKh*	*KoVKh*	*KoVKh*	*KoVKh*	*KoVKh*	*KoVKh*	*KoVKh*	*KoVKh*
MYS	MYS	MYS	MYS	*MN*	*MN*	*MN*	*MN*	*MN*	*MNHS*	*MNHS*	*MNHS*	
NZL	NZL	NZL	NZL									
PHL	PHL	PHL	PHL	PHL								
SGP	SGP	SGP	SGP	SGP	SGP	SGP						
TWN	TWN											
THA	THA	THA	THA	THA	THA							
VNM												

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Clustering based on Patterns of Financial Development

AUS	*AN*	*ANS*	*ANSH*	*ANSH*	*ANSH*	*ANSH*	*ANSH*	*ANSH*	*ANSH*	*ANSHJ*	*ANSHJKoMV*	*ANSHJKoMVKh*
KHM	KHM	KHM	KHM	KHM	KHM	KHM	KHM	KHM	KHM	KHM	KHM	
CHN	CHN	CHN	CHN	CHN	CHN	CHN	CHN					
HKG	HKG	HKG										
IDN	IDN	IDN	IDN	*IP*	*IP*	*IPTh*	*IPTh*	*IPThC*	*IPThCTw*	*IPThCTw*	*IPThCTw*	*IPThCTw*
JPN	JPN	JPN	JPN	JPN	JPN	JPN	JPN	JPN	JPN			
KOR	KOR	KOR	KOR	KOR	*KoM*	*KoM*	*KoMV*	*KoMV*	*KoMV*	*KoMV*		
MYS	MYS	MYS	MYS	MYS								
NZL												
PHL	PHL	PHL	PHL									
SGP	SGP											
TWN	TWN	TWN	TWN	TWN	TWN	TWN	TWN	TWN				
THA	THA	THA	THA	THA	THA							
VNM	VNM	VNM	VNM	VNM	VNM	VNM						

Conclusions (1)

- Financial development is considered a beneficial precursor to financial integration

- We provide a way of separating levels and patterns of financial development

- The components of financial development index matter more for levels than for patterns in our data

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Conclusions (2)

- We provide a way of measuring closeness in levels and in patterns among countries in a region and apply it in a cluster analysis

- Differences in patterns are less stable over time than differences in levels in our data

- These kinds of calculations can be a useful preliminary tool for assessing prospects for beneficial financial integration among a given set of economies.