Chapter 6 Results using OCA Criteria

Utilizing the conceptual framework and the methodology explained respectively in Chapters 4 and 5, this chapter delivers the findings upon accomplishing the objectives using OCA criteria, toward addressing the research questions highlighted in Table 6.1. The second question involves the Maastricht criteria and the findings will be discussed in the next chapter, Chapter 7. The final chapter, Chapter 8 will explain how the research questions would have been satisfied by the results.

The organization of this chapter is depicted in Figure 6.1. The chapter begins with preliminary analysis of the data in Section 6.1. The discussion continues with the hierarchical cluster analysis (HCM) findings in Section 6.2, the fuzzy cluster analysis (FCM) findings in Section 6.3, and the model-based cluster analysis (MBC) findings in Section 6.4. Each of these clustering results sections contains classifications; classifications using weighted criteria; assessment of preparedness using original unweighted criteria and using weighted criteria; and a recapitulation. In each of them, comparisons are made across reference countries and periods.

The results from the clustering methods are then compared and contrasted in

Section 6.5. The original cluster solutions are also evaluated against Principal Component Analysis (PCA) results in Section 6.5.1. Other subsections assess the rest of the earlier findings, also over the methods. Section 6.6 on subsidiary analysis delivers the results on criterion dominance and variable selection. The chapter is concluded in Section 6.7.

Table 6.1 Research questions and objectives

	Specific Research Question	Specific Research Objective
1	How would the grouping configuration differ under different monetary anchor?	To evaluate and compare the results when different monetary anchors, namely dollar, currency basket, yen, euro, and yuan anchors are alternatively assigned.
2	How different are the partitions when different sets of criteria are used?	To explore and compare the results by OCA with those by Maastricht criteria.
3	How would the results differ across different clustering methods?	To assess and compare the results by hierarchical, fuzzy, and model-based cluster analysis methods. Results are also compared with those of principal component analysis.
4	How would the arrangements vary if benefits and costs of monetary integration are treated equally?	To inspect and compare the solutions when the sum of 'benefit' OCA criteria and the sum of 'cost' OCA criteria are weighted equally.
5	How prepared are generated country clusters for exchange rate fixation and for monetary union?	To infer the degree of readiness for fixed exchange rate and for monetary union by evaluating the groupings of East Asian countries with dollarized and euroized countries respectively.
6	How dominant are some criteria in representing the rest of the criteria?	To detect and examine subsets of OCA criteria which are most representative of the rest in generating the results.
7	How important are certain criteria in producing the best partitions?	To detect and assess subsets of OCA criteria which produce the most data-fitting partitions as indicated by particular statistical measures.
8	How would the results vary over different economic periods?	To compare the results across pre-crisis, crisis, and post-crisis periods.
9	How do the findings compare with the actual HongKong-Macau and Singapore-Brunei fixed exchange rate arrangements?	To evaluate the results against the existing fixed exchange rate arrangements of HongKong-Macau and Singapore-Brunei.

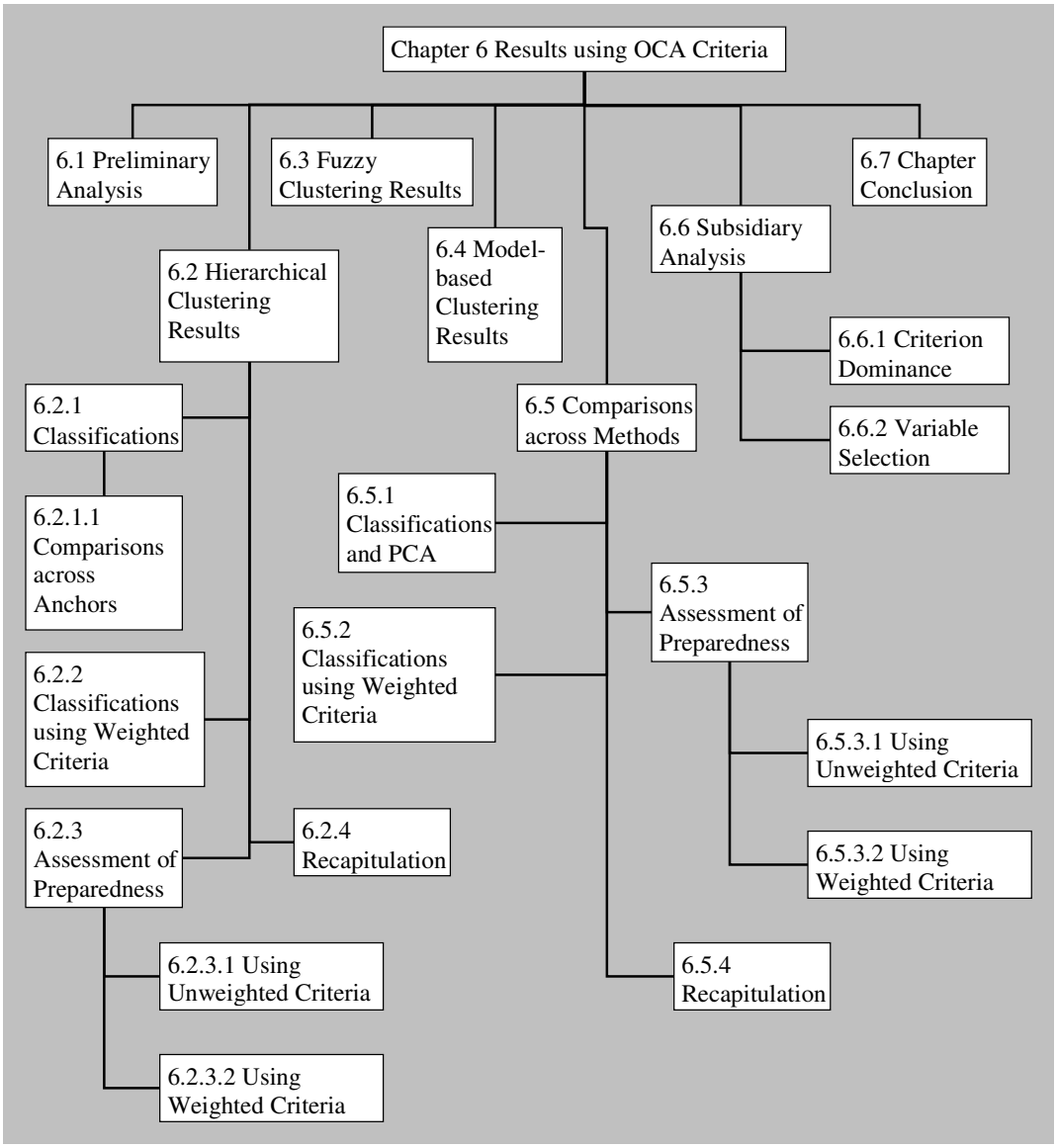


Figure 6.1 Structure of Chapter Six

6.1 Preliminary Analysis

This section concisely comments on the features of the countries with respect to the OCA dimensions. The features are explored across reference countries and across pre-crisis, crisis, and post-crisis periods. Some remarks are also given to economies associated with fixed exchange rates, namely Hong Kong, Macau, Singapore, and Brunei. At the end of this section, conclusions and implications from this cursory analysis are provided.

For the first 5 criteria that are measured relative to a reference, the respective references are the US, the weighted-group of G3 (with the country weights of US 0.47, Japan 0.23, and Germany/EMU 0.30), Japan, Germany/EMU, and China. Hence, the values for currency basket are actually weighted averages of the US, Japan, and Germany/EMU values. Given the heaviest weight of US in the basket, it is straightforward that the values for G3 would resemble those for US.

Trade Openness (TRA)

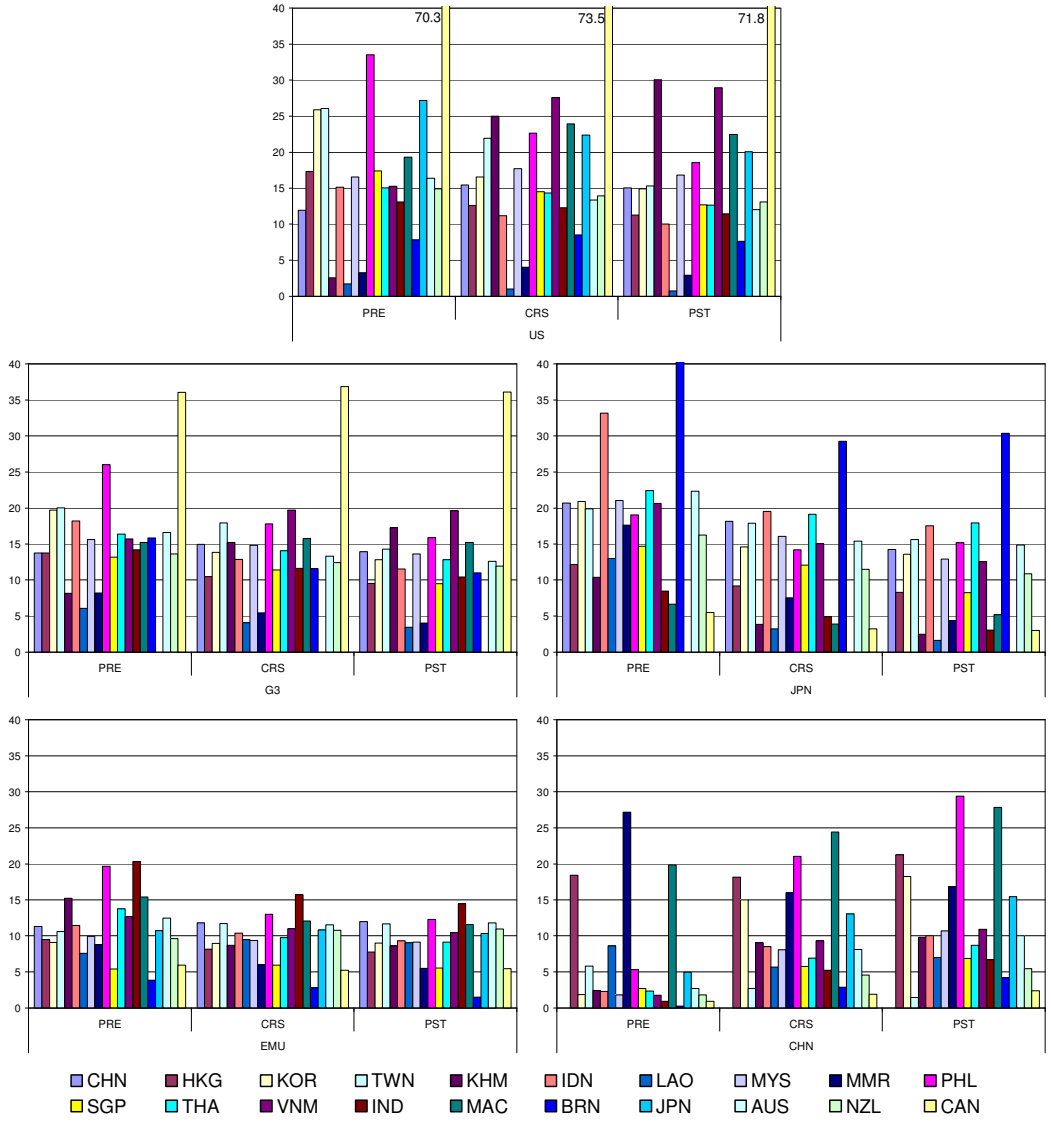
The first OCA dimension to be examined is bilateral trade intensity, the ratio of total exports and imports (of goods) of a country with a reference country to the country's total exports and imports. The ratio measures the trade openness criterion. The higher the ratio, the greater the level of trade linkage with the reference country. For Germany/EMU reference, the values represent trade linkages with 11 founders of eurozone including Germany.

The ratios by reference countries and periods are exhibited in Figure 6.2. By and large, for each reference country the data pattern over the countries is fairly stable across the periods in spite of the change in the levels of trade linkage. Amongst the countries, the highest trade openness is exhibited by Canada with US and the second highest one is shown by Brunei with Japan.

Since the crisis period, there had been a general reduction in trade linkages with Japan and EMU whilst on the contrary a stark increase in trade linkages with China. The prolonged recession in Japan and the liberalizations taken by China, both began around the 1990s could have contributed to this trend.

The charts also exhibit the dominance and the stability of trade with US through the periods. Meantime, trade openness with EMU had been the most symmetrical over countries for the periods. Trade openness with G3 had also been fairly similar over

countries across the periods. In this regard, the Germany/EMU and the G3 reference might be slightly advantaged to be monetary anchor as far as symmetry in trade openness is concerned.



Note: The order of the bars in the charts follows that of the legend, that is, the first bar represents China, the second bar Hong Kong, and so forth.

Figure 6.2 Bilateral trade intensity (%)

For the effective dollar areas of Hong Kong and Macau, there had been a rise in relative importance of China over other reference countries, more so for Hong Kong, consistent with the return of these small territories to their motherland after the Asian catastrophe. For the monetary union constituents of Singapore and Brunei, they have also shown a decline in relative importance of US, Japan, and Germany/EMU as trading

partners, to a larger extent for Brunei.

Business Cycle Synchronization (BUS)

In Figure 6.3, correlation coefficients representing the degrees of business cycle symmetry with each of the reference countries are exhibited.

Before the Asian crisis, the levels of business cycle synchronicity/asynchronicity with any of the reference countries had been relatively small but despite this the general degree of symmetry with China had been somewhat larger. In the crisis period, the levels of business cycle symmetry with Japan and with China had been much dominant, with high and homogenous correlations with Japan. At the same time there had been high degrees of business cycle asymmetry with US. After the crisis period, the region's business cycles had been comparatively synchronous with the US, the Japanese, and the Chinese cycle. In terms of homogeneity over countries, the China reference is slightly advantaged.

In the meantime, though both Hong Kong and Macau have been maintaining effective dollar pegs, their levels of business cycle symmetry with the reference countries by period had been quite asymmetric. For instance, for the post-crisis period Hong Kong displays high levels of symmetry with US, Japan, and China but Macau shows somewhat high degree of symmetry with Germany instead.

The same is also true for Singapore and Brunei which share common currencies in practice. For the post-crisis period, for example, the Singapore business cycle is highly synchronous with the US, the Japanese, and the Chinese cycle but the Bruneian cycle is synchronous with neither of the reference cycles.

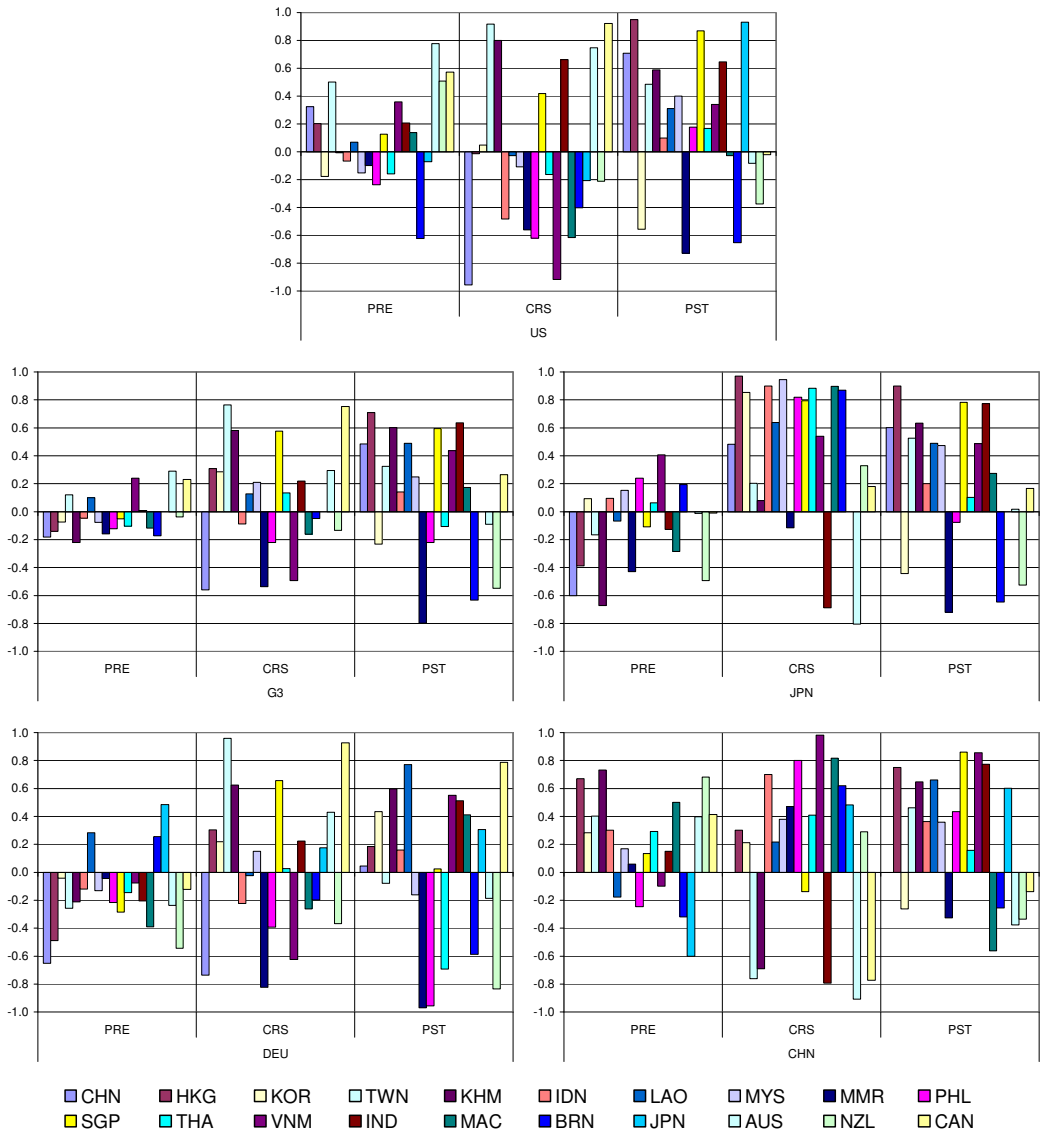


Figure 6.3 Real business cycle correlation

Inflation Convergence (INF)

The third dimension is convergence of inflation quantified by inflation differentials exhibited in Figure 6.4.

Immediately, one can see a general rise in inflation convergence represented by lower differentials toward the reference levels since the Asian crisis. The greatest difference is shown by that toward the Chinese level, which is not surprising given the ever parallel Chinese inflation to the US, Japanese, and German levels. A closer inspection would reveal that the inflation levels are even more convergent to the US and

German levels for the post-crisis period. Nevertheless, dispersion in the rate of inflation had remained high in Indonesia which was badly hit by the Asian turmoil and in Laos and Myanmar the two least liberalized economies.

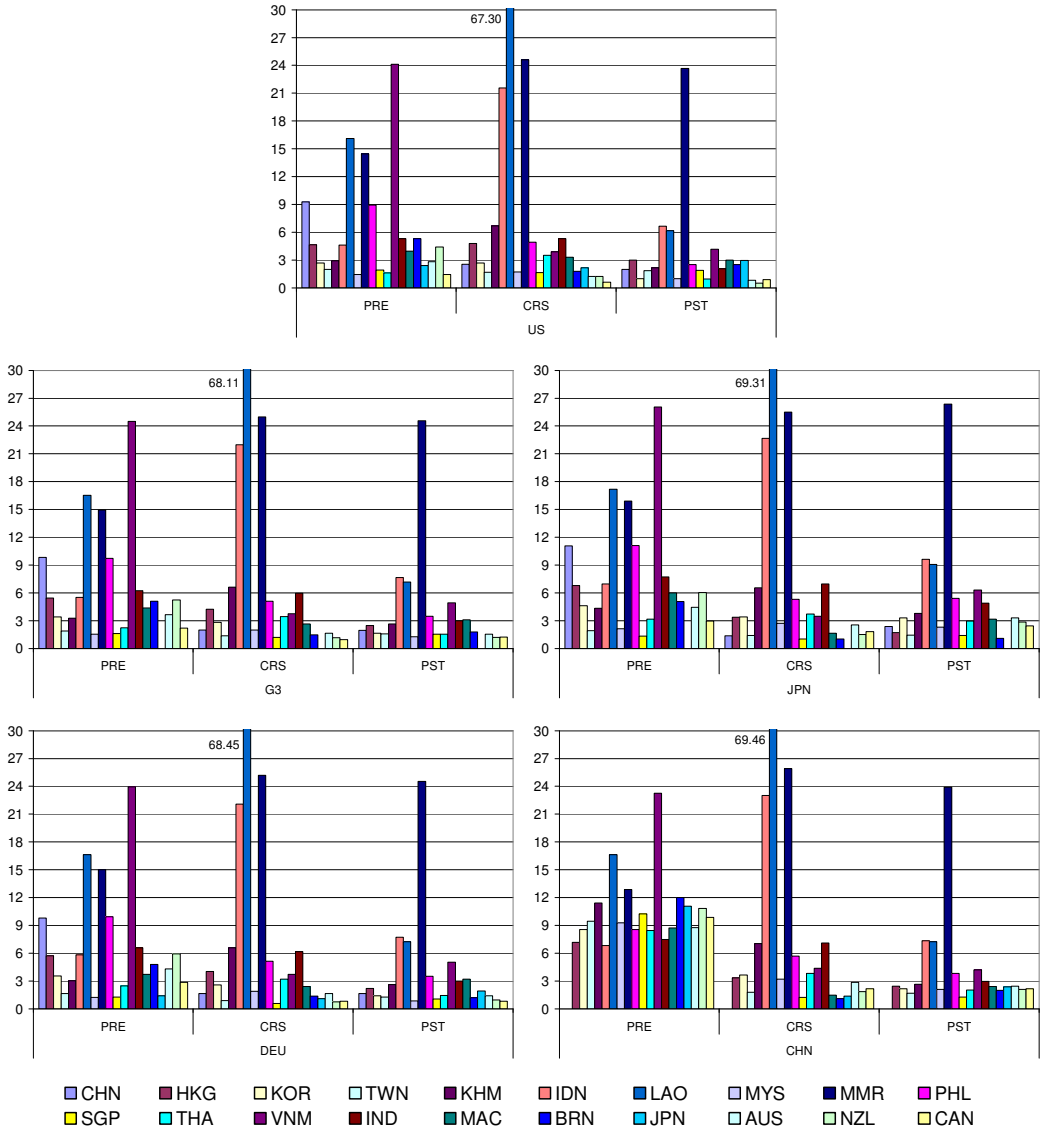


Figure 6.4 Inflation differential

For Hong Kong and Macau, their degrees of inflation convergence with US and with China had been increasing and even converged in the post-crisis period, in line with their dollar pegs. This is clear because the inflation in China had also been converging toward that in US, coherent with the yuan-dollar rate fixation for most of the post-crisis period. For Singapore and Brunei, their levels of inflation convergence with

the G3 reference had been rising before converging in the post-crisis period, consistent with their prevailing common currency basket peg led by Singapore.

Real Exchange Rate Volatility (RER)

Figure 6.5 charts the standard deviations quantifying the degrees of real exchange rate volatility with each of the reference countries.

At first glance, one can notice the much higher real exchange rate stability with US throughout the periods. It is also apparent that in the crisis period, the real exchange rates had been distinctly variable, most probably due to increased variability in the nominal exchange rates during that period. Nevertheless, the rates had since become ever stabler, particularly against the US dollar and the Chinese yuan. This is probably due to the stable nominal rates since the Chinese renminbi had been fixed to the US dollar in 1995–2005 which encompasses the crisis period and most of the post-crisis period (McKinnon & Schnabl, 2008).

Amidst the stabler rates in the post-crisis period however, the Indonesian rupiah rates had been highly variable. Meantime, the dollar rates of Australia and New Zealand had consistently been highly volatile over the periods.

For Hong Kong and Macau, their levels of real exchange rate volatility had been fairly parallel to each other over the periods. Aside from maintaining the greatest levels of real exchange rate stability with US, their real exchange rates against the yuan had also become as stable as those against the dollar. Though their volatility with Japan had been relatively high throughout the periods, it had nevertheless been decreasing.

For Singapore and Brunei, their levels of real exchange rate variability with each of the reference countries are virtually the same for each of the period.

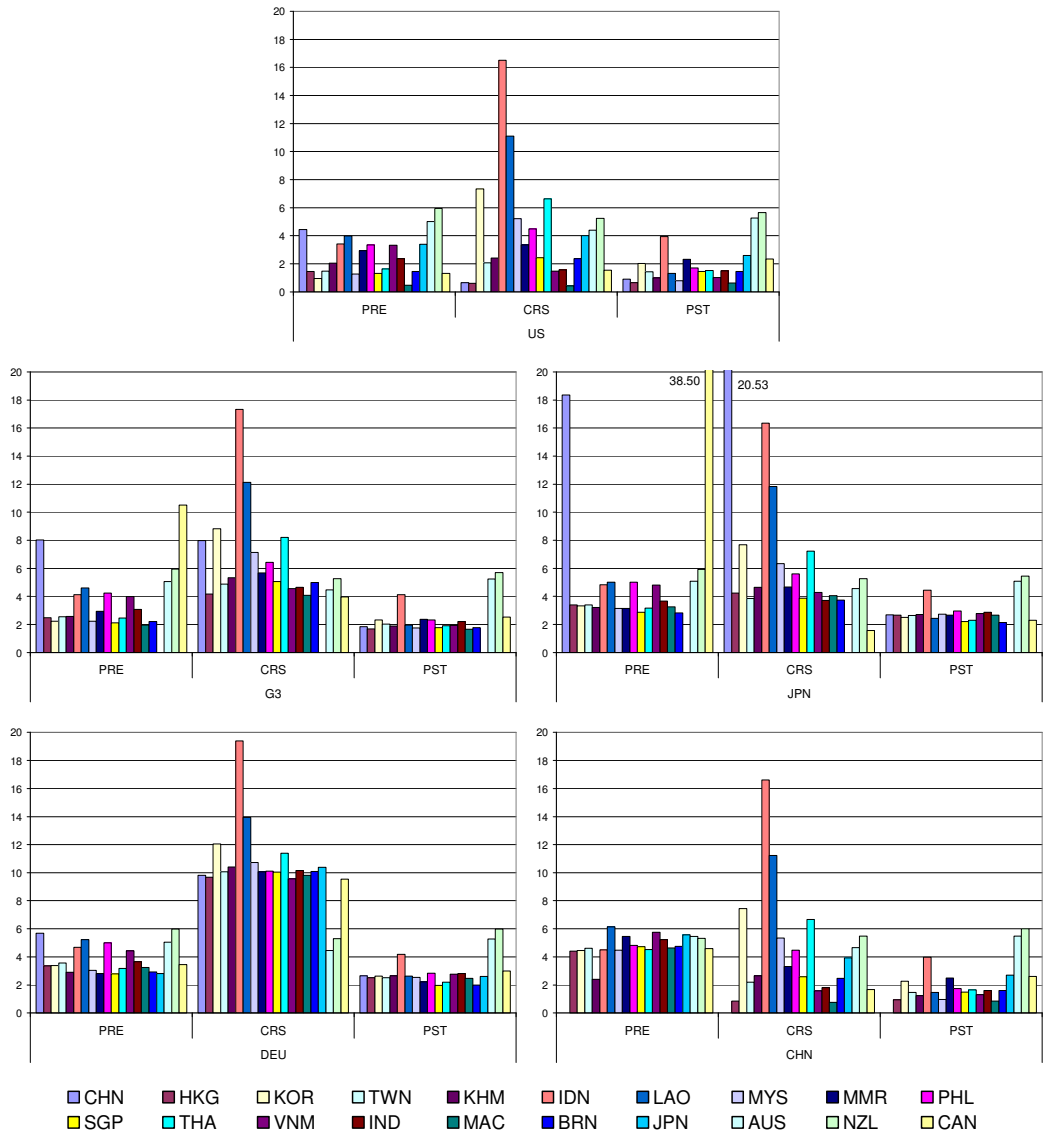


Figure 6.5 Standard deviation (x10^2) of the log difference in bilateral real exchange rate

Real Interest Rate Cycle Synchronization (INT)

The fifth criterion is synchronization in real interest rate cycle, operationalized through correlations of real interest rate cycles with each of the reference cycles, as depicted in Figure 6.6. To an extent, the measure can be interpreted as a proxy for the degree of monetary policy symmetry.

While the countries were divided in the pre-crisis and crisis periods, virtually all countries had their interest rate cycles significantly synchronized with the Japanese and the Chinese cycle in the post-crisis period. Notice also that the cycles of China and

Japan had been highly parallel to each other but divergent from the US cycle since the crisis period.

Despite having a fixed dollar rate since the 1980s, Hong Kong and Macau only show high degrees of interest rate cycle synchronicity with US for the pre-crisis period but high levels of synchronicity with every other reference countries for rest of the periods.

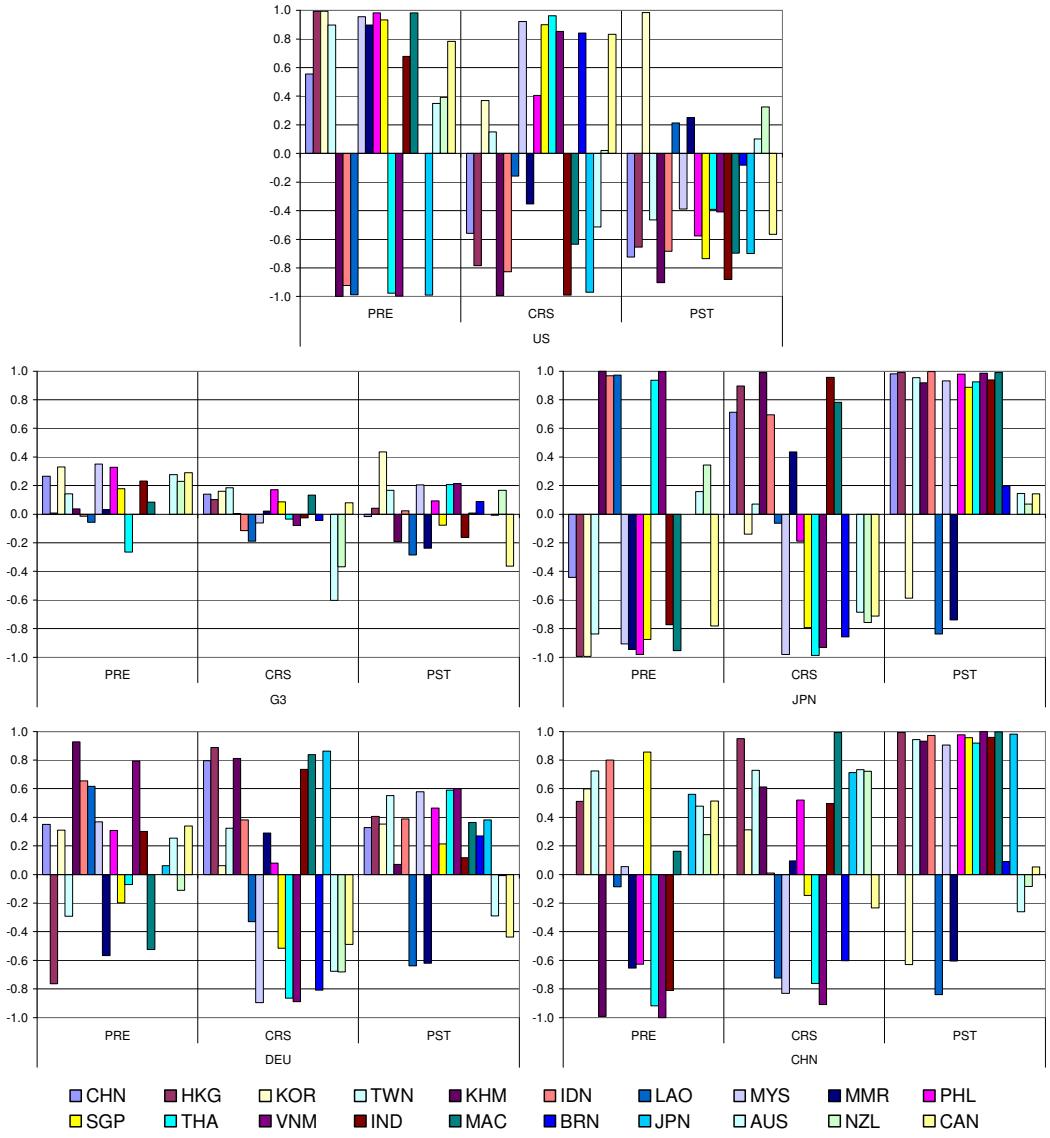


Figure 6.6 Real interest rate cycle correlation

For Singapore, it had enjoyed high degree of symmetry with US over the pre-crisis and crisis periods but with Japan and China subsequently. For Brunei whose interest

data are not available for the pre-crisis period, it had experienced high level of synchronicity with US in the crisis period and low levels of synchronicity with Japan and with Germany in the post-crisis period.

Export Diversification (EXP)

The sixth dimension, export diversification measured by diversification indexes are graphed in Figure 6.7. Higher indexes correspond to greater degrees of variety in exports.

Obviously, the most diversified exports are from Indonesia and Australia and the least diversified ones are from Cambodia, Macau, Brunei, and Japan. Looking at the changes in the levels, about half of the countries had increased their range of exports over the periods while others had not.

For Hong Kong and Macau, Hong Kong reports higher and consistently rising levels of diversification whereas Macau displays lower and constantly falling levels of diversification. For Singapore, its exports had been least varied in the crisis period but for Brunei, its exports had been most varied in the same period and the Singapore levels of diversification had always been higher than the Bruneian levels.

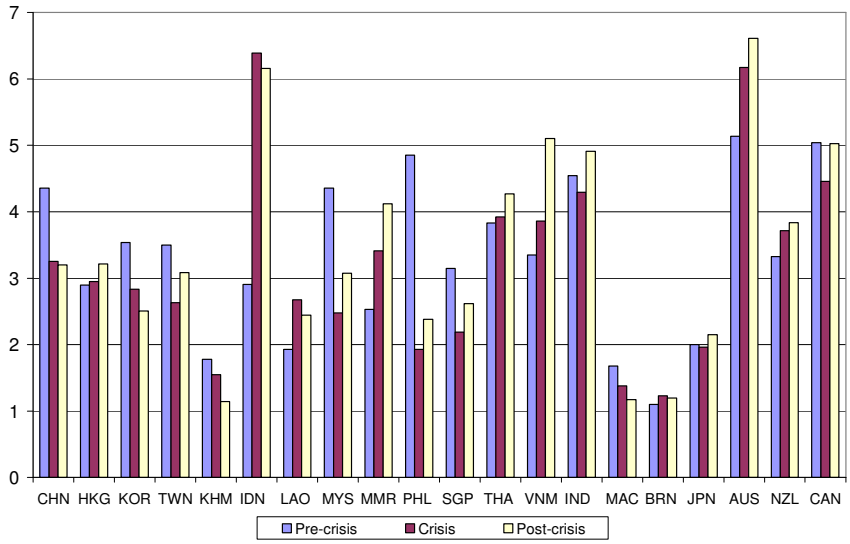


Figure 6.7 Diversification index

External Indebtedness (DEB)

The ratios [53] measuring external indebtedness, the seventh criterion are depicted graphically in Figure 6.8. The higher the ratio, the higher the degree of foreign borrowing over the main source of foreign income. On the whole, a regional downward trend in foreign indebtedness can be observed. Nonetheless, amongst the poorer economies Laos is the most indebted country for all the periods which is seconded by Myanmar. Exceptionally, Brunei has not officially reported any foreign debt as far as publicly available sources are concerned.

If one looks at the indebtedness levels of Hong Kong and Macau, except in the crisis period Macau had been more indebted than Hong Kong. As for Singapore and Brunei, obviously Singapore appears to be more indebted since Brunei has not reported any foreign borrowings for any period.

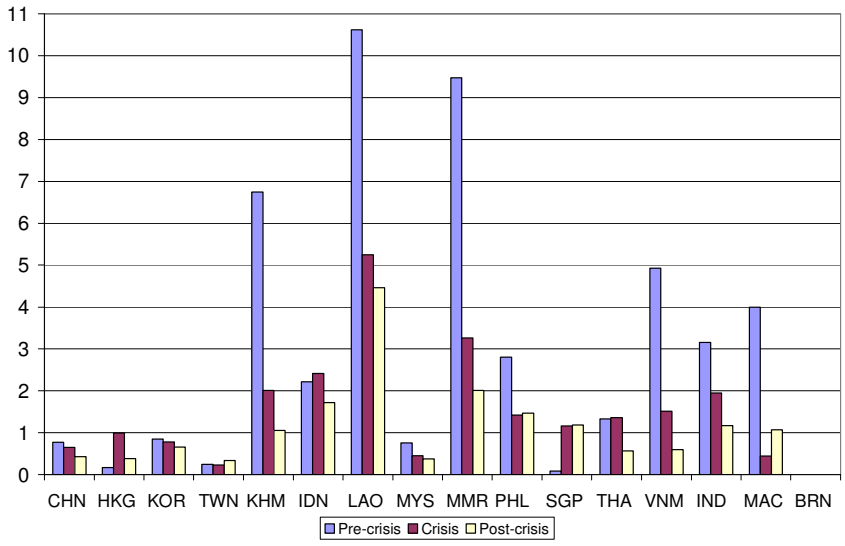


Figure 6.8 Gross external debt over exports of goods and services

[53] As explained in Chapter 4, this variable is not computed for Australia, New Zealand, Japan, and Canada.

Flexibility in the Labor Market (LAB)

Lastly, the eighth criterion is labor market flexibility and the indexes measuring this dimension are depicted in Figure 6.9. The greater the indexes, the more flexible the labor markets. Due to data constraints, only the post-crisis period could be examined.

From the graph, it is apparent that the Singapore labor market had been the most flexible, followed by the New Zealand and the Bruneian one. This finding seems to support the common currency union between Singapore and Brunei. The labor market in Hong Kong had also been highly flexible, compatible with its fixed dollar peg. Since the data for Macau are not available, inference cannot be made for Macau. Meantime, the least flexible labor markets are from Taiwan and Indonesia.

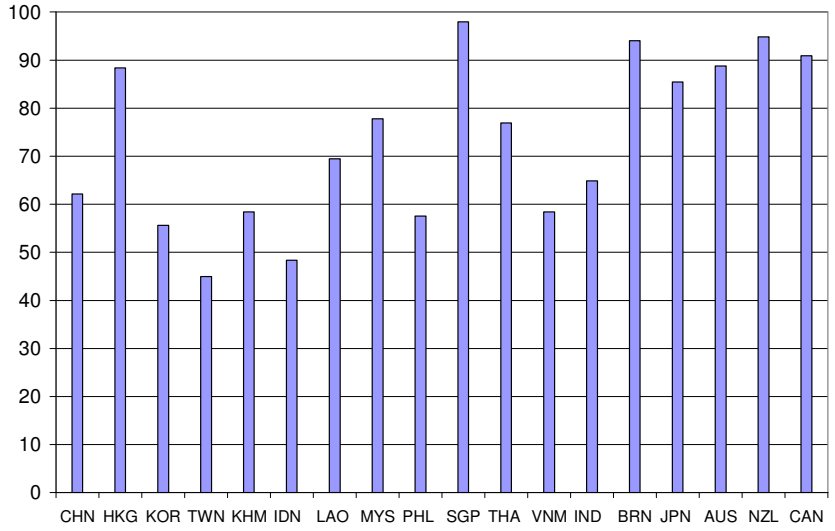


Figure 6.9 Labor flexibility index

Table 6.2 presents the averages over countries of the first 5 reference-dependent variables by reference and period (PRE=pre-crisis period, CRS=crisis period, PST=post-crisis period).

Table 6.2 OCA variable averages

	US			G3			Japan			Germany/EMU			China		
	PRE	CRS	PST	PRE	CRS	PST	PRE	CRS	PST	PRE	CRS	PST	PRE	CRS	PST
TRA	18.535	18.625	17.415	16.122	14.429	13.449	18.554	12.556	11.147	11.166	9.662	9.273	5.882	9.806	11.739
BUS	.109	-.039	.211	-.027	.106	.130	-.111	.462	.212	-.157	.052	.016	.197	.138	.246
INF	6.017	8.154	3.485	6.694	8.494	3.906	7.619	8.700	4.931	6.479	8.011	3.645	10.6	8.971	4.061
RER	2.576	4.193	1.972	3.854	6.581	2.473	6.469	6.529	2.956	3.865	10.348	2.922	4.833	4.514	2.202
INT	.238	-.026	-.349	.136	-.023	.016	-.228	-.082	.520	.145	-.004	.185	.025	.141	.487

Based on the preceding graphical analysis and the averages above, the following generalizations can be made. With respect to bilateral trade linkage, US and Japan had been the most important trade partners whilst China has risen to be as important as Japan. In terms of business cycle symmetry, only China had been consistently dominant while other reference countries had been influential in some but not all the periods.

When it comes to inflation convergence, the region's inflation rates had been increasingly convergent toward each reference level and in particular to the US and the German level in the post-crisis period. In respect of the variation in the real exchange rates, the rates had been extremely volatile in the crisis period but throughout the periods the real dollar rates had been relatively stable. Lastly, the region's real interest rate cycles had become significantly synchronous with the Japanese and Chinese cycles but asynchronous with the US cycle.

In addition to the above analysis, it may also be informative to look at the distributions of the data visualized through scatter matrices as collected in Figure 6.10. The plots are based on the US reference, for those using other reference countries, see Appendix D. The scatter matrices simply display the distributions of the variables in a matrix format.

It is clearly apparent that for nearly all of the variables there are no obvious groupings of the countries by just 'eye-balling' the data. The exceptions here are the pre-crisis RER and INT variables where there are apparent 1 and 2 clear groupings respectively. For the crisis period, once again there are no obvious groupings in general except again for RER and INT which maintain the same patterns as before. For the post-crisis period, TRA and BUS separate the cases into roughly 2 packs whilst DEB isolates one observation from the rest. Similar findings can be observed from those using other reference countries.

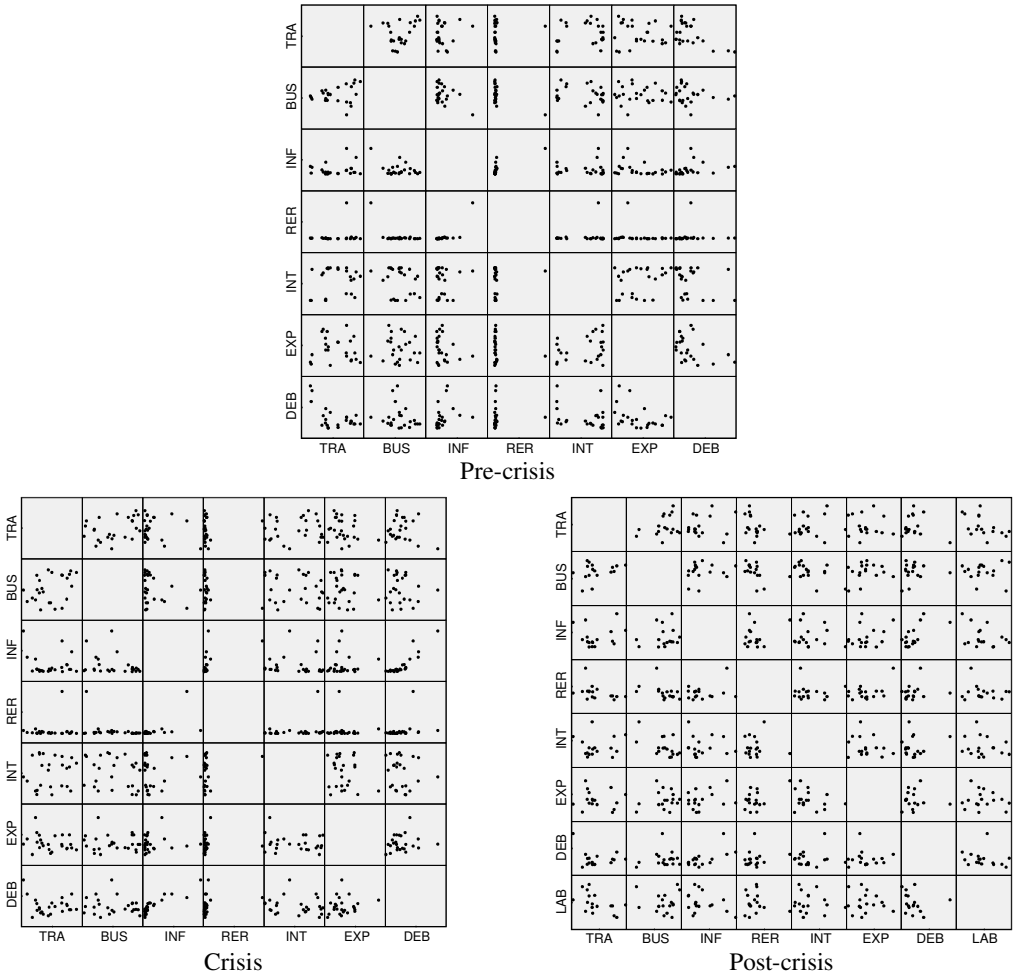


Figure 6.10 OCA-dollar scatter matrices

The discussions in this section have provided a general picture of the region in terms of the OCA features and the distributions of the variables. The following are the observations and implications.

First, no single reference country is consistently superior to be the monetary anchor country for all the countries across all the criteria. Hence, no clear evidence can be detected to answer which countries should jointly peg to which reference country.

Second, pairs of economies with similar exchange rate policies in practice, that is, Hong Kong and Macau, and Singapore and Brunei are not consistently parallel across all dimensions. This makes assessment of these existing regimes in terms of the OCA theory difficult.

Third, the grouping of data varies for each variable, so there is no easy way to

classify the data according to simple classifications such as high/medium/low groups across all variables.

All this directly justifies the use of multivariate clustering methodology as discussed in the preceding chapter, Chapter 5. And, since the distribution of the data varies across variables with some very close groupings in certain cases with some outliers, in the following analyses all data are normalized. The implications here also apply to the analysis using Maastricht criteria in Chapter 7.

In another aspect, for variables such as business cycle symmetry, exchange rate volatility, and real interest rate cycle symmetry, the data patterns for crisis period are noticeably different from those of other periods. Besides the reasons given in the previous chapter, this further justifies the segmentation of a separate crisis period so that differences in that period can be accounted for.

The subsequent section presents the results from hierarchical cluster analysis.

6.2 Hierarchical Clustering Results

The results by hierarchical cluster analysis are categorized into 4 main sections: classifications, classifications using weighted criteria, assessment of preparedness, and a recapitulation.

6.2.1 Classifications

The section is divided into 3 parts: cluster validation; findings by each monetary anchor; and comparisons of findings across the anchors.

Cluster Validation

To restate, the agglomerative algorithms used for hierarchical cluster analysis are the group average, the centroid, and the Ward's linkage method. Solutions from the linkage method yielding the highest cophenetic correlation coefficients are selected. Cophenetic correlation measures the correlation between the distances generated by the linkage

method and the inherent dissimilarities (Euclidean distances) between the objects in the data.

Table 6.3 displays the coefficients by monetary anchor and period. For pre-crisis and crisis periods, 7 variables are used. For post-crisis period, results using 7 variables excluding the labor criterion are shown in columns '7V' and those using 8 variables including the labor criterion are shown in columns '8V'.

The table shows that Ward's method consistently produces the lowest coefficients. Thus, the solutions from this method are not used. As for the centroid method, for almost all the cases the between-cluster distances are not monotonically increasing (those marked with *), making the results confusing and difficult to interpret. For this reason, the average linkage solutions are used even when the centroid method generates larger coefficients. This should not affect the findings since the coefficients from both methods are equally high. The selected coefficients are shaded.

Table 6.3 Cophenetic correlation coefficients using OCA criteria

	Dollar				Currency Basket				Yen				Euro				Yuan			
	PRE	CRS	PST		PRE	CRS	PST		PRE	CRS	PST		PRE	CRS	PST		PRE	CRS	PST	
			7V	8V			7V	8V			7V	8V			7V	8V			7V	8V
A	.804	.909	.928	.925	.835	.894	.915	.905	.846	.892	.924	.918	.800	.878	.925	.907	.927	.850	.878	.858
C	.810*	.918*	.924*	.924*	.841*	.906*	.916	.892*	.860*	.882	.919*	.920*	.798*	.870*	.912*	.897	.916*	.842*	.869*	.857*
W	.611	.840	.784	.770	.550	.837	.788	.817	.709	.737	.893	.841	.625	.703	.751	.848	.799	.745	.738	.763

Note: A=Average, C=Centroid, W=Ward linkage method.
*Distances between clusters are not monotonically increasing; the centroid method may not be appropriate.
Source: Hierarchical cluster analysis. See Appendix A for data description.

Upon selecting the right solution which best represents the data structure, the next step is to ascertain the appropriate number of clusters and hence the groupings. Table 6.4 displays the values of the stopping indexes, namely the Calinski-Harabasz Index (CHI) and the C-index (C) which are used to indicate the appropriate number of clusters. For CHI, higher values correspond to more distinct partitioning and better clustering whereas for C-index, lower values are more desirable. Selected solutions are highlighted. In cases where there is no definite number of clusters within a reasonable range of clusters (about 10 clusters), the number of clusters indicated by the CHI which has

'peaked' or risen significantly is used. Generally, the solutions indicated by CHI are corroborated by C-index.

The most distinct partitions, signified by the selected CHI and C-index are present in the yuan post-crisis solutions (the results beyond what is shown are no better). The smallest number of clusters (4 clusters) is indicated by the yen crisis period solution, suggesting that the data structure is the most homogenous when Japan is the reference and when the period is the crisis period.

Table 6.4 CHI and C-index using OCA criteria

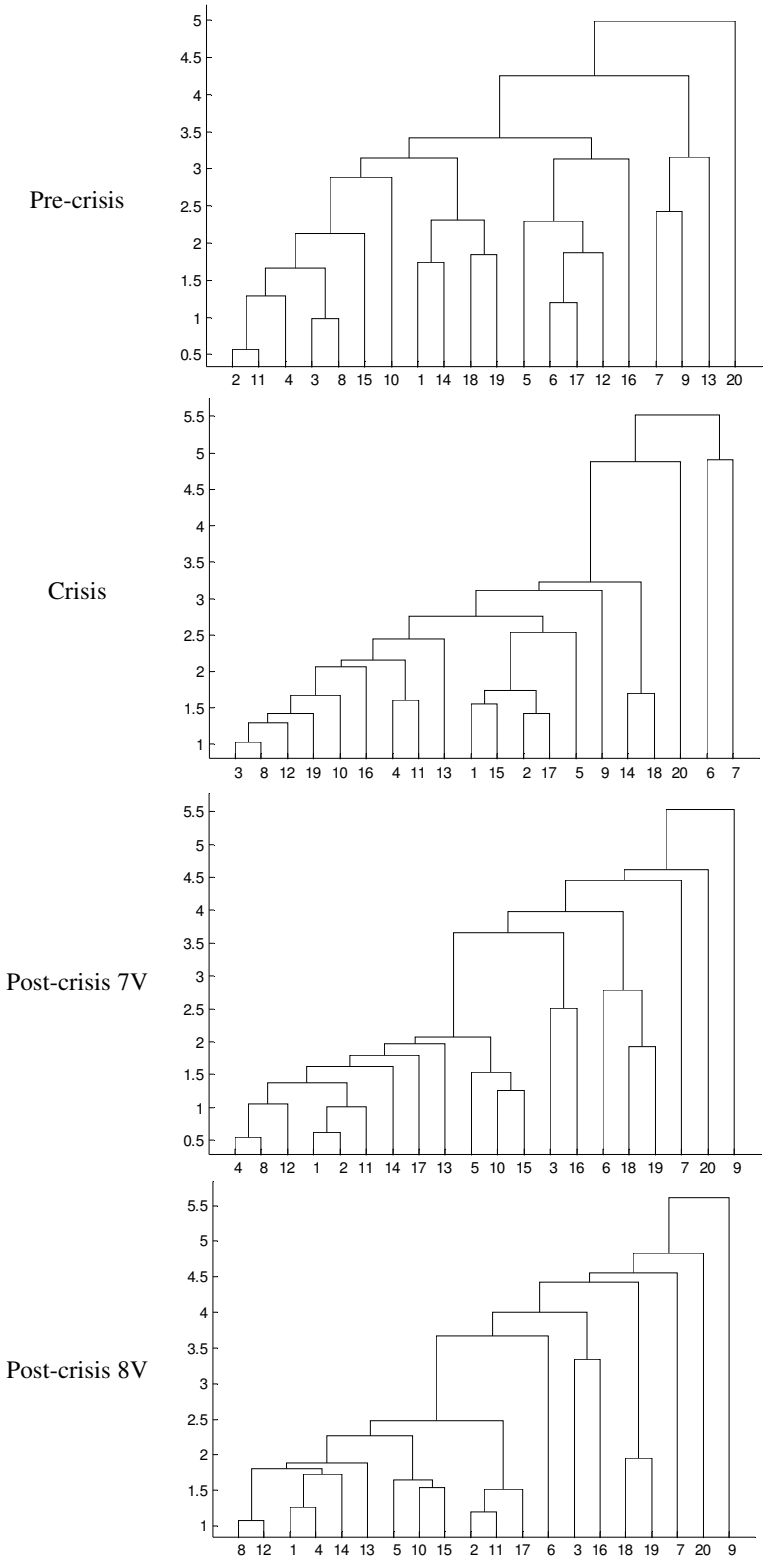
	Dollar								Currency Basket							
	Pre-crisis		Crisis		Post-crisis				Pre-crisis		Crisis		Post-crisis			
					7V		8V						7V		8V	
k	CHI	C	CHI	C	CHI	C	CHI	C	CHI	C	CHI	C	CHI	C	CHI	C
2	-.69	.50	11.27	.49	5.87	.49	7.75	.48	1.20	.50	19.88	.47	10.29	.48	5.54	.48
3	7.58	.46	5.40	.49	3.42	.50	4.52	.49	5.07	.48	9.45	.46	6.49	.46	3.78	.46
4	22.26	.33	3.32	.50	2.87	.49	3.57	.47	3.20	.47	5.93	.48	5.31	.45	3.46	.45
5	16.02	.32	3.88	.47	6.23	.41	4.63	.42	13.86	.31	9.15	.40	12.98	.33	8.15	.34
6	20.52	.25	3.73	.44	16.34	.28	10.47	.33	10.90	.33	9.06	.37	9.75	.35	6.37	.35
7	25.96	.22	13.98	.27	13.30	.27	11.14	.28	9.27	.30	15.90	.28	9.72	.32	6.57	.31
8	29.45	.18	15.84	.25	10.54	.28	8.98	.29	9.97	.24	12.50	.27	7.64	.31	9.86	.27
9	23.90	.19	14.06	.25	28.79	.17	8.16	.30	8.57	.24	13.33	.25	6.98	.31	16.88	.19
10	31.60	.17	17.68	.22	27.42	.16	28.29	.16	8.94	.20	54.97	.13	8.60	.28	16.18	.16
11	33.85	.17	16.49	.24	22.35	.16	23.07	.18	7.17	.22	47.12	.14	7.92	.27	13.05	.18

	Yen								Euro								Yuan							
	Pre-crisis		Crisis		Post-crisis				Pre-crisis		Crisis		Post-crisis				Pre-crisis		Crisis		Post-crisis			
					7V		8V						7V		8V						7V		8V	
k	CHI	C	CHI	C	CHI	C	CHI	C	CHI	C	CHI	C	CHI	C	CHI	C	CHI	C	CHI	C	CHI	C	CHI	C
2	2.2	.50	10.9	.49	3.1	.49	17.6	.47	26.3	.44	10.6	.49	14.1	.46	10.0	.48	4.5	.49	8.5	.49	10.6	.47	14.3	.47
3	2.5	.50	9.3	.48	1.8	.47	10.0	.44	22.6	.39	5.7	.49	9.9	.44	7.1	.46	12.9	.38	4.1	.47	9.0	.45	6.8	.45
4	5.7	.44	14.0	.39	3.1	.47	6.3	.45	14.6	.39	3.3	.48	10.7	.37	8.0	.41	8.1	.38	3.4	.47	14.5	.30	9.0	.35
5	4.1	.46	10.5	.41	2.8	.48	8.4	.34	14.2	.35	4.2	.45	8.2	.38	7.5	.41	15.6	.29	16.0	.26	11.5	.29	20.7	.25
6	6.9	.36	7.9	.42	2.2	.48	6.1	.35	11.7	.35	3.7	.45	8.4	.33	8.4	.36	18.9	.27	19.7	.21	74.0	.14	21.3	.24
7	5.6	.36	6.1	.40	1.7	.47	13.0	.25	8.8	.35	17.8	.24	21.7	.25	8.3	.33	14.5	.28	31.6	.15	58.1	.14	31.1	.18
8	8.7	.29	9.6	.32	1.6	.49	19.5	.20	15.4	.25	29.9	.17	19.8	.24	9.3	.31	38.0	.17	32.5	.13	47.2	.14	33.0	.18
9	6.9	.27	9.8	.28	3.3	.43	27.2	.18	13.7	.27	28.6	.16	48.2	.16	20.8	.23	30.5	.16	27.8	.13	41.9	.17	26.9	.18
10	40.2	.11	7.8	.29	2.7	.44	24.0	.19	21.2	.22	50.9	.12	39.4	.17	16.1	.22	31.9	.15	24.0	.17	44.2	.17	24.1	.18
11	32.7	.12	6.4	.28	2.3	.44	19.2	.20	47.6	.15	64.9	.11	33.3	.16	14.9	.13	58.6	.11	19.3	.17	183	.10	34.9	.16
12	21.3	.14	21.1	.19	2.0	.40	21.7	.21	38.3	.16	60.2	.11	35.6	.16	12.8	.11	52.0	.13	29.2	.17	149	.12	72.2	.14

Note: In general, an effective representation of data requires that the number of clusters be neither too small nor too large. The number of clusters considered here should suffice for meaningful interpretations.
Source: Hierarchical cluster analysis. See Appendix A for data description.

Dollar Anchor Results

This section presents the classification results using the US as the reference for the pre-crisis, crisis, and post-crisis periods. Figure 6.11 exhibits the dendrograms which illustrate the merging process for the periods. Post-crisis results based on 7 and 8 dimensions are also shown.



CHN	HKG	KOR	TWN	KHM	IDN	LAO	MYS	MMR	PHL	SGP	THA	VNM	IND	MAC	BRN	JPN	AUS	NZL	CAN
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

Source: Hierarchical cluster analysis. See Appendix A for data description.

Figure 6.11 OCA-dollar dendrograms

In each dendrogram, the horizontal axis represents the countries and the vertical axis indicates the distances between the countries. The vertical lines represent the distances at which objects are linked, with taller lines indicating farther distances and shorter lines indicating closer distances.

Table 6.5 exhibits the cluster compositions, the average silhouette widths (SW)[54], and the OCA features of the clusters. Average silhouettes of the clusters are given so that comparisons can be made as to which cluster is more tightly formed. The first 5 OCA variables are measures against the reference, the US. The number of most supportive OCA features for exchange rate fixation is shown in the last column (with label 'N'). Average values over all objects are given in the 'All Cases' rows.

Based on CHI and C-index, 8 clusters each for the pre-crisis and crisis periods; and 9 clusters for post-crisis period without labor variable and 10 clusters for post-crisis period with labor variable are indicated. According to the average silhouettes over all objects, the pre-crisis cases with the average silhouette of 0.39 are the best classified.

When one looks at the heights of the vertical links in the pre-crisis dendrogram, the most homogenous countries are Hong Kong and Singapore which are merged first. They are immediately joined by Taiwan, the Korea-Malaysia pair, and Macau to constitute the first group, as shown in Table 6.5. Displaying the group silhouette at 0.57, its group members ought to be the most tightly classified. The group also shows high degrees of real exchange rate stability, convergence of inflation, and real interest rate cycle symmetry with the US—consistent with the prevalent dollar standard amongst the Asian emerging markets prior to the 1997–98 turmoil (see McKinnon & Schnabl, 2004a).

Canada is the most prospective one for dollar peg. It enjoys the greatest levels of trade linkage, real business cycle symmetry, inflation convergence, and export

[54] As in Artis and Zhang (2002), silhouette width is set to zero when a cluster contains only a single object.

diversification. Its real dollar rate is also one of least volatile and its interest rate cycle highly synchronous with the US cycle. Meantime, the most indebted group is made up of the less liberalized countries of Laos and Myanmar.

Table 6.5 OCA-HCM-dollar clusters

		Averages									
	Cluster	SW	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
	Pre-crisis										
	All Cases	.39	18.535	.109	6.017	2.576	.238	3.290	3.011	-	
1	HKG, SGP, TWN, KOR, MYS, MAC	.57	20.418	.106	2.777	1.154	.959	3.187	1.020	-	1
2	PHL	.00	33.506	-.237	8.930	3.353	.982	4.854	2.804	-	1
3	CHN, IND, AUS, NZL	.36	14.086	.454	5.450	4.442	.494	4.340	1.964	-	0
4	KHM, IDN, JPN, THA	.53	14.985	-.076	2.884	2.624	-.972	2.629	3.434	-	0
5	BRN	.00	7.867	-.624	5.303	1.444	-	1.099	.000	-	0
6	LAO, MMR	.39	2.497	-.016	15.279	3.458	-.046	2.228	10.048	-	1
7	VNM	.00	15.261	.360	24.109	3.310	-.998	3.346	4.925	-	0
8	CAN	.00	70.274	.571	1.445	1.303	.784	5.038	n.a.[3]	-	4
	Crisis										
	All Cases	.27	18.625	-.039	8.154	4.193	-.026	3.164	1.495	-	
1	KOR, MYS, THA, NZL, PHL, BRN, TWN, SGP, VNM	.39	17.524	-.116	2.558	4.141	.603	2.753	.866	-	0
2	CHN, HKG, MAC, JPN	.45	18.592	-.448	3.193	1.423	-.737	2.388	.698	-	1
3	KHM	.00	25.003	.799	6.694	2.415	-.993	1.546	2.014	-	0
4	MMR	.00	4.034	-.560	24.586	3.340	-.353	3.412	3.261	-	0
5	IND, AUS	.57	12.828	.704	3.269	2.984	-.753	5.233	1.951	-	0
6	CAN	.00	73.515	.922	.596	1.547	.832	4.456	n.a.	-	4
7	IDN	.00	11.197	-.482	21.576	16.519	-.826	6.390	2.416	-	1
8	LAO	.00	1.013	-.028	67.298	11.101	-.159	2.674	5.252	-	1
	Post-crisis 7V										
	All Cases	.29	17.415	.211	3.485	1.972	-.349	3.411	1.094	-	
1	TWN, MYS, THA, CHN, HKG, SGP, IND, JPN, VNM	.39	16.014	.610	2.207	1.315	-.594	3.514	.631	-	1
2	KHM, PHL, MAC	.50	23.687	.246	2.552	1.110	-.726	1.565	1.200	-	1
3	IDN	.00	10.045	.100	6.663	3.931	-.685	6.159	1.722	-	1
4	KOR	.00	14.897	-.556	.975	2.023	.985	2.508	.660	-	1
5	BRN	.00	7.604	-.653	2.511	1.460	-.081	1.197	.000	-	0
6	AUS, NZL	.45	12.551	-.229	.657	5.453	.213	5.223	n.a.	-	1
7	LAO	.00	.729	.310	6.162	1.308	.213	2.442	4.457	-	1
8	CAN	.00	71.818	-.021	.882	2.333	-.565	5.025	n.a.	-	1
9	MMR	.00	2.913	-.729	23.681	2.307	.251	4.119	2.009	-	0
	Post-crisis 8V										
	All Cases	.33	17.415	.211	3.485	1.972	-.349	3.411	1.094	73.0	
1	MYS, THA, CHN, TWN, IND, VNM	.33	16.691	.457	2.002	1.189	-.543	3.941	.579	64.2	0
2	KHM, PHL, MAC	.48	23.687	.246	2.552	1.110	-.726	1.565	1.200	58.0	1
3	HKG, SGP, JPN	.63	14.659	.916	2.618	1.567	-.697	2.658	.787	90.6	1
4	IDN	.00	10.045	.100	6.663	3.931	-.685	6.159	1.722	48.4	1
5	KOR	.00	14.897	-.556	.975	2.023	.985	2.508	.660	55.6	1
6	BRN	.00	7.604	-.653	2.511	1.460	-.081	1.197	.000	94.0	1
7	AUS, NZL	.68	12.551	-.229	.657	5.453	.213	5.223	n.a.	91.8	1
8	LAO	.00	.729	.310	6.162	1.308	.213	2.442	4.457	69.4	1
9	CAN	.00	71.818	-.021	.882	2.333	-.565	5.025	n.a.	90.9	1
10	MMR	.00	2.913	-.729	23.681	2.307	.251	4.119	2.009	-	0

Notes: 1 Standard deviation (x10^2) of the log difference in bilateral real exchange rate. 2 Number of variables with highest degree of conformity to OCA criteria. 3 'n.a.' for not applicable.
Source: Hierarchical cluster analysis. See Appendix A for data description.

How stable are the groupings in the crisis period setting? While no full clusters are stable over the periods, the pre-crisis subclusters of Korea-Malaysia-Taiwan-Singapore, HongKong-Macau, and India-Australia are still intact in the crisis period solution.

In the post-crisis solution using 7 variables, Malaysia, Taiwan, and Singapore still

retain their link since the pre-crisis setting. The first group in which they belong maintains one most conforming attribute, the highest degree of business cycle symmetry with US. Nonetheless, the second group of Cambodia-Philippines-Macau trio with the silhouette 0.50 exhibits the most symmetric intra-group structure.

When labor criterion is added into the post-crisis analysis, the arrangement is slightly not as symmetrical as before; there are fewer countries in the largest group as Hong Kong, Singapore, and Japan form a separate group. These more advanced economies should be predominantly linked by similar levels of labor market flexibility. As in the post-crisis solution without the labor, Malaysia and Taiwan share the same grouping as for previous periods. Maintaining silhouette at 0.68, the most tightly formed group now is Australia-NewZealand. Unlike findings of previous periods, no cluster is especially conforming to the OCA criteria in both post-crisis results.

Based on the findings, some insights can also be gained. First, since Malaysia and Taiwan are consistently placed in the same grouping, they could have consistently shared the OCA features throughout the periods.

Second, as revealed by their merging sequences, Laos, Myanmar, Canada, and Brunei are relatively idiosyncratic. Meantime, Korea which stands alone in the post-crisis solution might have been more distinct in the post-crisis period.

Third, those economies that are put together with Hong Kong, an effective dollar area might be relatively ready for a dollar peg. For example, Japan which shares the same cluster with this Chinese territory in the crisis and post-crisis findings regardless of the labor criterion could have been more potential for dollar peg since the crisis period.

Finally, China and India, the foreign-reserves rich countries which congregate fairly early in both of the post-crisis dendrograms may imply greater feasibility for integration in the post-crisis period.

Currency Basket Anchor Results

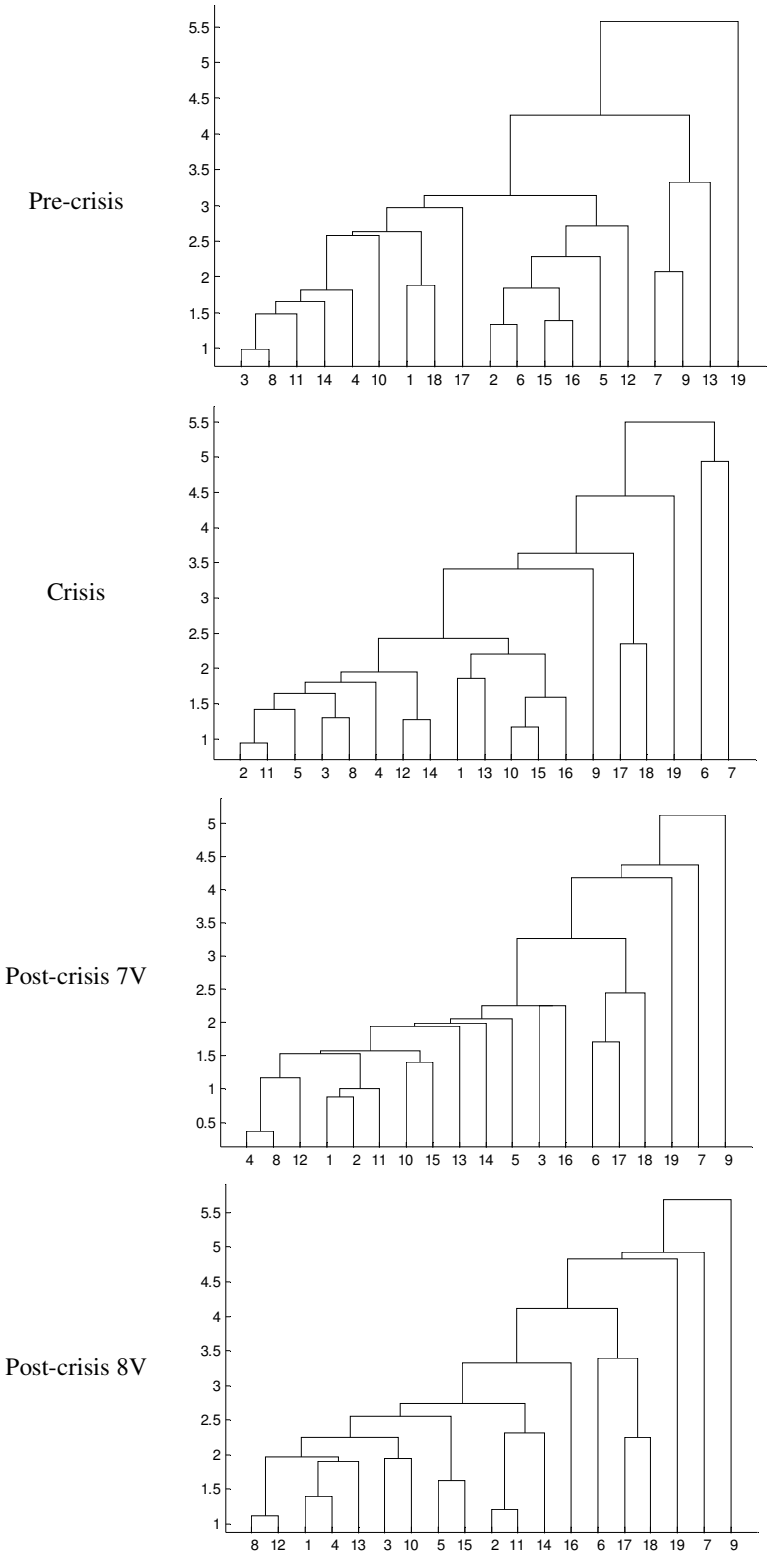
The agglomeration based on weighted group of G3 countries (the weights: US, 0.47; Japan, 0.23; Germany/EMU, 0.30) is depicted in Figure 6.12 and the groupings and features are displayed in Table 6.6. Five and ten clusters are respectively detected for pre-crisis and crisis periods. The increase in the number of clusters in the crisis period solution suggests a rise in regional divergence vis-à-vis the G3 group in the crisis period.

For post-crisis period, without labor criterion 5 clusters are indicated and with labor criterion 9 clusters are found. In this regard, the countries might have been highly divergent in the labor flexibility dimension. The all-object average silhouettes suggest that the post-crisis 7V solution with the silhouette at 0.52 is most tightly partitioned.

The dendrogram shows that the earliest merged countries for the pre-crisis period are Korea and Malaysia, acting as the center of convergence for the first group. As shown in Table 6.6, the first group only exhibits moderately conforming attributes.

Of all the pre-crisis clusters, the most indebted Laos-Myanmar pair with silhouette 0.57 is best-classified. Since US is given the heaviest weight in the G3-weighted features, Canada once again is the best candidate for a hard peg. Interestingly, Vietnam maintains the most synchronous business cycle with the G3 cycle but also the most dispersed inflation from the G3 level.

HongKong-Cambodia, Macau-Brunei, and Singapore-Korea-Malaysia-Taiwan carry forward their pre-crisis linkages to the crisis period solution. Canada is still the best candidate in the crisis period setting.



CHN	HKG	KOR	TWN	KHM	IDN	LAO	MYS	MMR	PHL	SGP	THA	VNM	IND	MAC	BRN	AUS	NZL	CAN
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

Source: Hierarchical cluster analysis. See Appendix A for data description.

Figure 6.12 OCA-basket dendrograms

Table 6.6 OCA-HCM-basket clusters

Cluster	Averages SW	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
Pre-crisis										
All Cases	.37	16.122	-.027	6.694	3.854	.136	3.357	3.011	-	
1 KOR, MYS, SGP, IND, TWN, PHL, CHN, NZL, AUS	.35	16.964	-.014	4.788	3.936	.259	4.085	1.240	-	0
2 HKG, IDN, MAC, BRN, KHM, THA	.45	14.590	-.133	4.318	2.630	-.029	2.365	2.412	-	1
3 LAO, MMR	.57	7.153	-.029	15.734	3.768	-.011	2.228	10.048	-	1
4 VNM	.00	15.710	.239	24.510	3.990	-.001	3.346	4.925	-	1
5 CAN	.00	36.071	.230	2.209	10.503	.290	5.038	n.a.[3]	-	4
Crisis										
All Cases	.22	14.429	.106	8.494	6.581	-.023	3.227	1.495	-	
1 HKG, SGP, KHM, KOR, MYS, TWN	.27	13.950	.454	3.039	5.897	.080	2.437	.940	-	0
2 THA, IND	.60	12.831	.177	4.702	6.419	-.029	4.108	1.655	-	0
3 CHN, VNM	.17	17.346	-.527	2.867	6.258	.030	3.555	1.084	-	0
4 PHL, MAC, BRN	.43	15.046	-.144	3.071	5.165	.087	1.513	.622	-	1
5 MMR	.00	5.428	-.537	24.978	5.668	.022	3.412	3.261	-	0
6 AUS	.00	13.293	.296	1.647	4.453	-.602	6.173	n.a.	-	1
7 NZL	.00	12.422	-.133	1.150	5.262	-.368	3.717	n.a.	-	0
8 CAN	.00	36.864	.753	.943	3.954	.081	4.456	n.a.	-	4
9 IDN	.00	12.878	-.087	21.985	17.345	-.114	6.390	2.416	-	0
10 LAO	.00	4.070	.127	68.106	12.122	-.188	2.674	5.252	-	1
Post-crisis 7V										
All Cases	.52	13.449	.130	3.906	2.473	.016	3.477	1.094	-	
1 TWN, MYS, THA, CHN, HKG, SGP, PHL, MAC, VNM, IND, KHM, KOR, BRN	.61	13.531	.232	2.376	1.930	.078	2.913	.716	-	2
2 IDN, AUS, NZL	.62	12.026	-.166	3.466	5.016	.062	5.535	1.722	-	1
3 CAN	.00	36.082	.264	1.216	2.522	-.364	5.025	n.a.	-	2
4 LAO	.00	3.441	.490	7.151	1.961	-.284	2.442	4.457	-	2
5 MMR	.00	4.023	-.799	24.559	2.364	-.238	4.119	2.009	-	0
Post-crisis 8V										
All Cases	.26	13.449	.130	3.906	2.473	.016	3.477	1.094	72.3	
1 MYS, THA, CHN, TWN, VNM, KOR, PHL	.24	14.708	.134	2.341	2.015	.187	3.375	.634	61.9	1
2 KHM, MAC	.57	16.244	.387	2.875	1.772	-.091	1.156	1.065	58.4	1
3 HKG, SGP, IND	.39	9.816	.646	2.323	1.888	-.066	3.579	.915	83.7	1
4 BRN	.00	11.005	-.632	1.786	1.773	.089	1.197	.000	94.0	1
5 IDN	.00	11.537	.141	7.663	4.123	.024	6.159	1.722	48.4	1
6 AUS, NZL	.52	12.270	-.319	1.367	5.462	.080	5.223	n.a.	91.8	0
7 CAN	.00	36.082	.264	1.216	2.522	-.364	5.025	n.a.	90.9	2
8 LAO	.00	3.441	.490	7.151	1.961	-.284	2.442	4.457	69.4	1
9 MMR	.00	4.023	-.799	24.559	2.364	-.238	4.119	2.009	-	0

Notes: 1 Standard deviation ($x10^2$) of the log difference in bilateral real exchange rate. 2 Number of variables with highest degree of conformity to OCA criteria. 3 'n.a.' for not applicable.
Source: Hierarchical cluster analysis. See Appendix A for data description.

The linkages above still hold in the post-crisis finding without labor criterion. Indeed, the linkages have come together in one group in the highly convergent configuration in the post-crisis 7V solution. When labor variable is added, however, only Korea, Malaysia, and Taiwan retain their grouping since the pre-crisis setting. In both of the post-crisis findings, Australia and New Zealand share high silhouettes and Canada maintains 2 most conforming features.

Over the periods, Malaysia, Taiwan, and Korea are constantly placed in the largest groups. Laos, Myanmar, and Canada always lag in the merging progression whilst Australia and New Zealand have since the crisis period drifted farther from the pack.

More importantly, without the labor criterion, the region could have been highly homogenous in the pre-crisis and the post-crisis period against the weighted G3 countries.

Yen Anchor Results

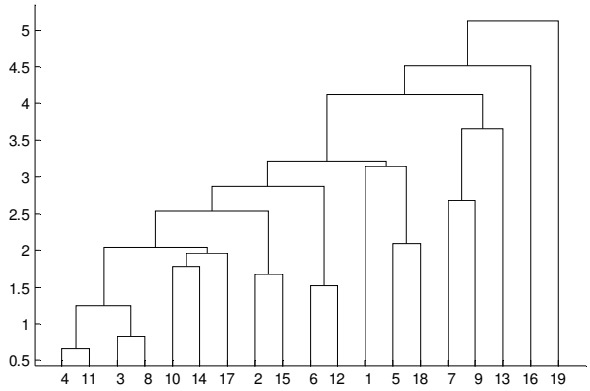
The dendrograms in Figure 6.13 illustrate the merging processes using Japan as the center country. The characteristics of the clusters are placed in Table 6.7. The stopping rules suggest 10, 4, 9, and 9 clusters for pre-crisis, crisis, post-crisis 7V, and post-crisis 8V solutions respectively. The significantly fewer clusters for the crisis period may imply highly symmetrical relationships amongst the countries against Japan during the crisis period. Correspondingly, the greatest average silhouette over all cases, at 0.44 is obtained by the crisis period solution.

The pre-crisis dendrogram illustrates that the mergers of Taiwan-Singapore and Korea-Malaysia are established at the shortest distances. They make up the foundation for the first and largest group for pre-crisis period. However, based on the silhouettes, the most tightly classified cluster is the Indonesia-Thailand pair with the silhouette at 0.64. Based on this and the pair's features, Indonesia and Thailand should have closely shared high degree of monetary policy symmetry with Japan before the Asian crisis.

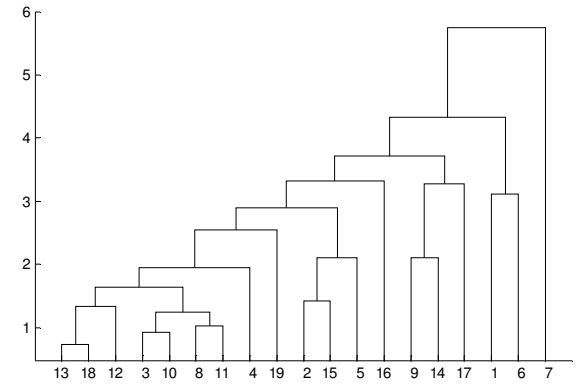
Only singletons have shown more highly conforming attributes; Vietnam, Brunei, and Canada each display 2 best attributes. Nevertheless, other features of them are somewhat inappropriate insofar as the criteria are concerned.

Moving to the crisis period solution, remarkably the largest group of 13 economies enjoys the greatest silhouette at .49, signifying highly symmetrical group structure. Taiwan, Singapore, Korea, Malaysia, and the Philippines retain their pre-crisis leading position. India and Australia also share the same grouping as before. Notably, the highly tightly clustered China-Indonesia pair exhibits four attributes most favorable for yen peg.

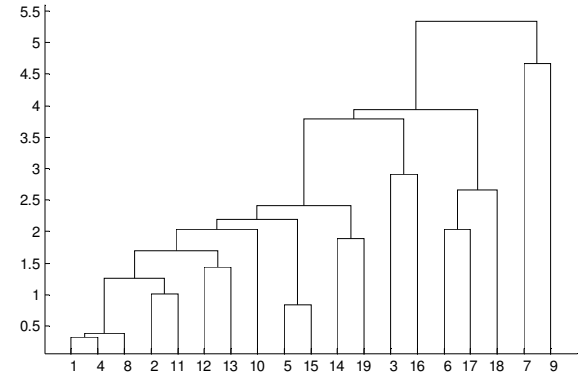
Pre-crisis



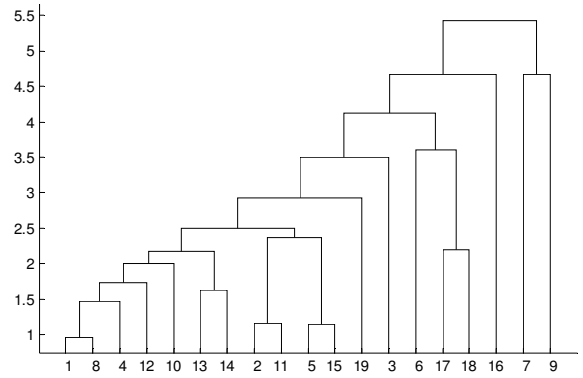
Crisis



Post-crisis 7V



Post-crisis 8V



CHN	HKG	KOR	TWN	KHM	IDN	LAO	MYS	MMR	PHL	SGP	THA	VNM	IND	MAC	BRN	AUS	NZL	CAN
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

Source: Hierarchical cluster analysis. See Appendix A for data description.

Figure 6.13 OCA-yen dendrograms

Table 6.7 OCA-HCM-yen clusters

Cluster	SW	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
	Averages									
Pre-crisis										
All Cases	.27	18.554	-.111	7.619	6.469	-.228	3.357	3.011	-	
1 TWN, SGP, KOR, MYS, PHL, IND, AUS	.32	18.049	.011	4.751	3.783	-.745	4.154	1.318	-	0
2 HKG, MAC	.52	9.397	-.337	6.397	3.320	-.975	2.287	2.085	-	0
3 IDN, THA	.64	27.769	.079	5.059	3.995	.953	3.367	1.777	-	0
4 CHN	.00	20.683	-.601	11.070	18.367	-.442	4.356	.771	-	0
5 KHM, NZL	.31	13.293	-.582	5.179	4.573	.672	2.554	6.749	-	0
6 LAO	.00	13.024	-.067	17.197	5.017	.972	1.927	10.621	-	1
7 MMR	.00	17.619	-.428	15.899	3.137	-.946	2.529	9.475	-	0
8 VNM	.00	20.626	.407	26.045	4.813	.998	3.346	4.925	-	2
9 BRN	.00	47.816	.194	5.068	2.823	-	1.099	.000	-	2
10 CAN	.00	5.495	-.010	2.944	38.503	-.782	5.038	n.a.[3]	-	2
Crisis										
All Cases	.44	12.556	.462	8.700	6.529	-.082	3.227	1.495	-	
1 VNM, NZL, THA, KOR, PHL, MYS, SGP, TWN, CAN, HKG, MAC, KHM, BRN	.49	13.064	.643	2.842	4.798	-.278	2.701	.944	-	1
2 MMR, IND, AUS	.39	9.282	-.536	11.665	4.318	.236	4.626	2.606	-	1
3 CHN, IDN	.48	18.834	.690	12.021	18.443	.704	4.821	1.535	-	4
4 LAO	.00	3.221	.639	69.312	11.836	-.063	2.674	5.252	-	1
Post-crisis 7V										
All Cases	.31	11.147	.212	4.931	2.956	.520	3.477	1.094	-	
1 CHN, TWN, MYS, HKG, SGP, THA, VNM, PHL	.33	13.115	.475	2.979	2.617	.955	3.368	.669	-	1
2 KHM, MAC,	.86	3.819	.453	3.478	2.685	.954	1.156	1.065	-	0
3 IND, CAN	.36	3.019	.470	3.669	2.580	.540	4.967	1.170	-	0
4 KOR	.00	13.562	-.442	3.318	2.503	-.586	2.508	.660	-	0
5 IDN, AUS	.35	16.188	.109	6.455	4.759	.571	6.386	1.722	-	1
6 NZL	.00	10.852	-.525	2.844	5.437	.072	3.834	n.a.	-	0
7 BRN	.00	30.361	-.647	1.073	2.135	.199	1.197	.000	-	3
8 LAO	.00	1.644	.489	9.059	2.432	-.838	2.442	4.457	-	2
9 MMR	.00	4.401	-.720	26.361	2.674	-.739	4.119	2.009	-	**0**
Post-crisis 8V										
All Cases	.24	11.147	.212	4.931	2.956	.520	3.477	1.094	72.3	
1 CHN, MYS, TWN, THA, PHL, VNM, IND	.32	13.060	.413	3.661	2.707	.957	3.718	.707	63.2	0
2 HKG, SGP, KHM, MAC	.31	6.040	.647	2.514	2.556	.947	2.035	.926	81.8	1
3 CAN	.00	3.012	.167	2.446	2.294	.142	5.025	n.a.	90.9	0
4 KOR	.00	13.562	-.442	3.318	2.503	-.586	2.508	.660	55.6	0
5 IDN	.00	17.503	.200	9.631	4.434	.998	6.159	1.722	48.4	2
6 AUS, NZL	.58	12.863	-.254	3.061	5.260	.108	5.223	n.a.	91.8	0
7 BRN	.00	30.361	-.647	1.073	2.135	.199	1.197	.000	94.0	4
8 LAO	.00	1.644	.489	9.059	2.432	-.838	2.442	4.457	69.4	1
9 MMR	.00	4.401	-.720	26.361	2.674	-.739	4.119	2.009	**-**	**0**

Notes: 1 Standard deviation ($x10^2$) of the log difference in bilateral real exchange rate. 2 Number of variables with highest degree of conformity to OCA criteria. 3 'n.a.' for not applicable.
Source: Hierarchical cluster analysis. See Appendix A for data description.

Similar to the solutions by the previous periods, Taiwan, Singapore, Malaysia, and the Philippines are placed in the largest group in the post-crisis 7V setting. Cambodia-Macau reports very high silhouette at 0.86. Hence, amongst others, Cambodia and Macau should have strongly shared moderate level of business cycle symmetry and high degree of interest rate cycle symmetry against Japan in the post-crisis era.

When labor criterion is added, Hong Kong and Singapore join Cambodia and Macau to constitute an independent group. Australia and New Zealand come together and make up the best classified cluster. The labor criterion should have been dominant

in linking these cases together. For both post-crisis results, Brunei is most potential for yen peg with the highest number of most compliant attributes.

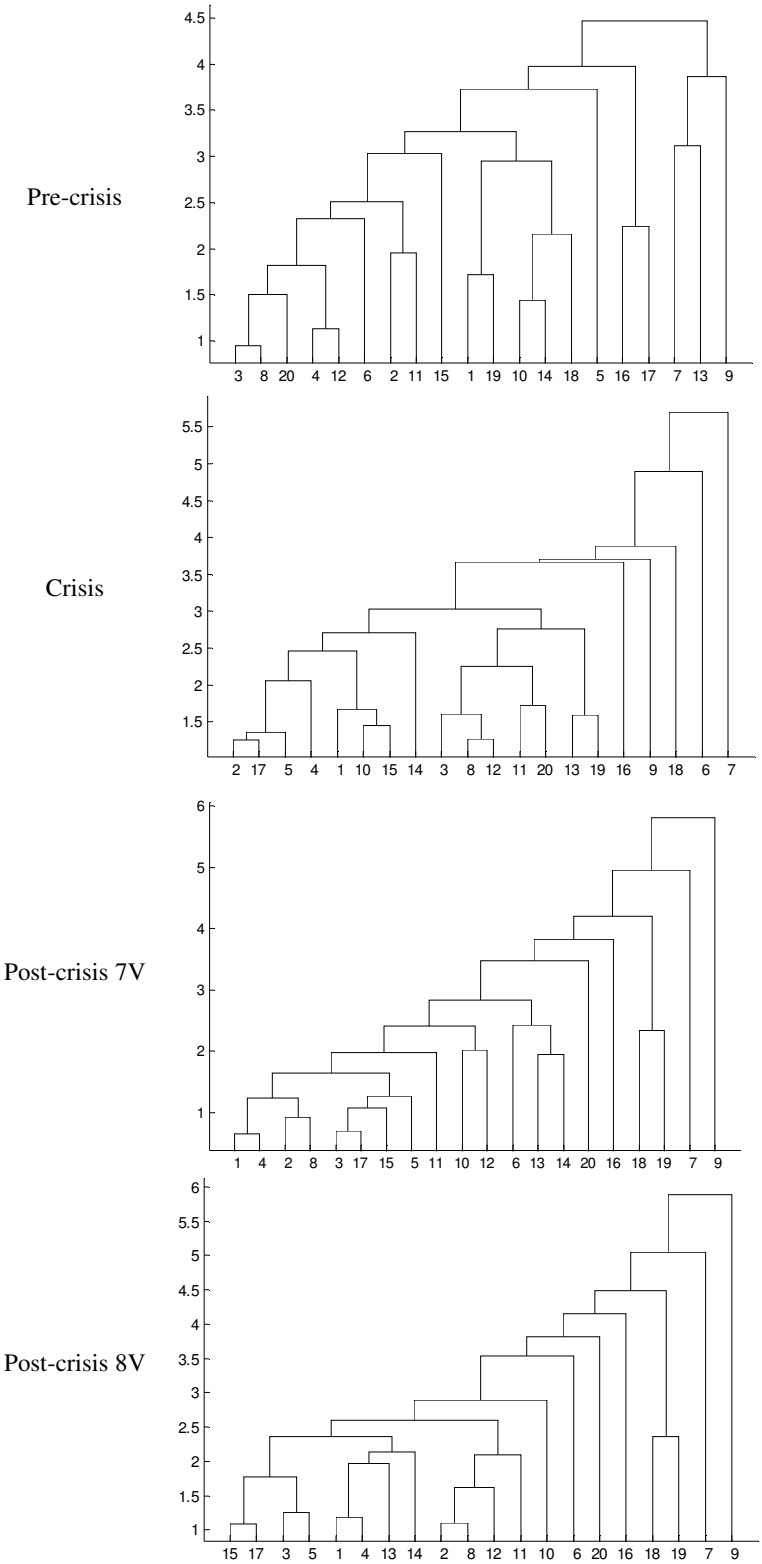
The markedly convergent layout for the crisis period could in a way imply significantly higher influence from Japan during the period of distress in relation to other periods.

Euro Anchor Results

The dendrograms by the Germany/EMU anchor are collected in Figure 6.14. The attributes that characterize the 11 pre-crisis, 11 crisis, 9 post-crisis 7V, and 9 post-crisis 8V clusters are listed in Table 6.8. Recall that while trade is measured against the founding EMU members, the other four reference-based variables are measured against Germany. The post-crisis 7V all-object average silhouette is the highest at 0.31.

The pre-crisis dendrogram shows that Korea-Malaysia and Taiwan-Thailand, both in the first group, are combined at the shortest distances. Containing also Canada, this leading cluster of 5 economies maintains the most parallel inflation toward the German level. Interestingly, China and New Zealand possessing the group silhouette of 0.59 make up the best-classified group. Hence, before the Asian crisis China and New Zealand, two very different economies, could have been the most symmetrical countries relative to Germany in the region. Nonetheless, they do not exhibit any conforming features for a German mark peg. The same is also true for other clusters.

In the crisis period solution, only Korea, Malaysia, and Thailand retain their previous linkage. The more potential countries would be Singapore and Canada which share high degree of business cycle symmetry with Germany and convergence of inflation toward the German level.



CHN	HKG	KOR	TWN	KHM	IDN	LAO	MYS	MMR	PHL	SGP	THA	VNM	IND	MAC	BRN	JPN	AUS	NZL	CAN
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

Source: Hierarchical cluster analysis. See Appendix A for data description.

Figure 6.14 OCA-euro dendrograms

Table 6.8 OCA-HCM-euro clusters

Cluster	Averages									
	SW	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
Pre-crisis										
All Cases	.26	11.166	-.157	6.479	3.865	.145	3.290	3.011	-	
1 KOR, MYS, CAN, TWN, THA	.33	9.869	-.139	2.343	3.328	.131	4.053	.799	-	1
2 IDN	.00	11.466	-.119	5.829	4.681	.654	2.904	2.220	-	0
3 HKG, SGP	.12	7.442	-.386	3.486	3.082	-.480	3.022	.128	-	0
4 MAC	.00	15.407	-.389	3.725	3.250	-.525	1.678	4.001	-	0
5 CHN, NZL	.59	10.469	-.597	7.870	5.843	.120	3.841	.771	-	0
6 PHL, IND, AUS	.38	17.485	-.219	6.933	4.579	.288	4.844	2.980	-	2
7 KHM	.00	15.206	-.211	3.023	2.917	.928	1.782	6.749	-	1
8 BRN, JPN	.53	7.286	.370	3.086	2.880	.063	1.550	.000	-	1
9 LAO	.00	7.597	.282	16.624	5.226	.617	1.927	10.621	-	1
10 VNM	.00	12.670	-.077	23.962	4.424	.794	3.346	4.925	-	0
11 MMR	.00	8.772	-.044	15.020	2.807	-.567	2.529	9.475	-	1
Crisis										
All Cases	.30	9.662	.052	8.011	10.348	-.004	3.164	1.495	-	
1 HKG, JPN, KHM, TWN	.42	9.850	.515	3.152	10.128	.721	2.273	1.082	-	0
2 CHN, PHL, MAC	.53	12.291	-.464	3.060	9.911	.571	2.187	.840	-	0
3 IND	.00	15.704	.223	6.168	10.145	.736	4.294	1.951	-	2
4 KOR, MYS, THA	.40	9.358	.132	2.555	11.386	-.565	3.077	.865	-	0
5 SGP, CAN	.38	5.593	.792	.695	9.801	-.502	3.322	1.161	-	2
6 VNM, NZL	.48	10.894	-.495	2.236	7.433	-.785	3.788	1.516	-	0
7 BRN	.00	2.777	-.197	1.365	10.077	-.808	1.229	.000	-	0
8 MMR	.00	5.980	-.823	25.197	10.075	.291	3.412	3.261	-	0
9 AUS	.00	11.553	.431	1.629	4.462	-.676	6.173	n.a.[3]	-	1
10 IDN	.00	10.402	-.224	22.092	19.395	.382	6.390	2.416	-	1
11 LAO	.00	9.512	-.023	68.446	13.940	-.330	2.674	5.252	-	1
Post-crisis 7V									-	
All Cases	.31	9.273	.016	3.645	2.922	.185	3.411	1.094	-	
1 CHN, TWN, HKG, MYS, KOR, JPN, MAC, KHM, SGP	.45	9.508	.196	1.792	2.507	.361	2.462	.688	-	0
2 PHL, THA	.32	10.711	-.824	2.456	2.514	.528	3.326	1.017	-	1
3 IDN	.00	9.299	.159	7.720	4.187	.389	6.159	1.722	-	1
4 VNM, IND	.33	12.466	.532	3.996	2.793	.360	5.007	.885	-	1
5 CAN	.00	5.448	.786	.796	2.992	-.436	5.025	n.a.	-	2
6 BRN	.00	1.494	-.586	1.196	1.985	.270	1.197	.000	-	1
7 AUS, NZL	.37	11.376	-.509	1.181	5.630	-.148	5.223	n.a.	-	0
8 LAO	.00	9.068	.772	7.239	2.625	-.639	2.442	4.457	-	1
9 MMR	.00	5.473	-.970	24.554	2.215	-.620	4.119	2.009	-	0
Post-crisis 8V									-	
All Cases	.20	9.273	.016	3.645	2.922	.185	3.411	1.094	73.0	
1 MAC, JPN, KOR, KHM, CHN, TWN, VNM, IND	.16	11.012	.347	2.501	2.640	.346	2.909	.761	61.4	0
2 HKG, MYS, THA, SGP	.34	7.886	-.161	1.383	2.304	.448	3.293	.628	85.2	0
3 PHL	.00	12.285	-.955	3.488	2.836	.466	2.382	1.471	57.5	2
4 IDN	.00	9.299	.159	7.720	4.187	.389	6.159	1.722	48.4	1
5 CAN	.00	5.448	.786	.796	2.992	-.436	5.025	n.a.	90.9	2
6 BRN	.00	1.494	-.586	1.196	1.985	.270	1.197	.000	94.0	2
7 AUS, NZL	.60	11.376	-.509	1.181	5.630	-.148	5.223	n.a.	91.8	0
8 LAO	.00	9.068	.772	7.239	2.625	-.639	2.442	4.457	69.4	1
9 MMR	.00	2.913	-.729	23.681	2.307	.251	4.119	2.009	-	0

Notes: 1 Standard deviation ($x10^2$) of the log difference in bilateral real exchange rate. 2 Number of variables with highest degree of conformity to OCA criteria. 3 'n.a.' for not applicable.
Source: Hierarchical cluster analysis. See Appendix A for data description.

In the post-crisis 7V solution, only Korea and Malaysia retain their linkage since the pre-crisis setting. They belong to the best classified group with silhouette of 0.45 which is also the largest cluster. When labor criterion is also included, Malaysia and Thailand are the only ones that retain their pre-crisis links. In both post-crisis results, notably Canada possesses 2 most supportive attributes: the highest degree of business cycle symmetry and inflation convergence with Germany. In fact, despite having close

geographical proximity with US, Canada has not shown business cycle symmetry in the US-based post-crisis findings.

The leading cluster which is significantly larger for the post-crisis period regardless of the labor criterion may signify increased convergence against Germany/EMU in that period.

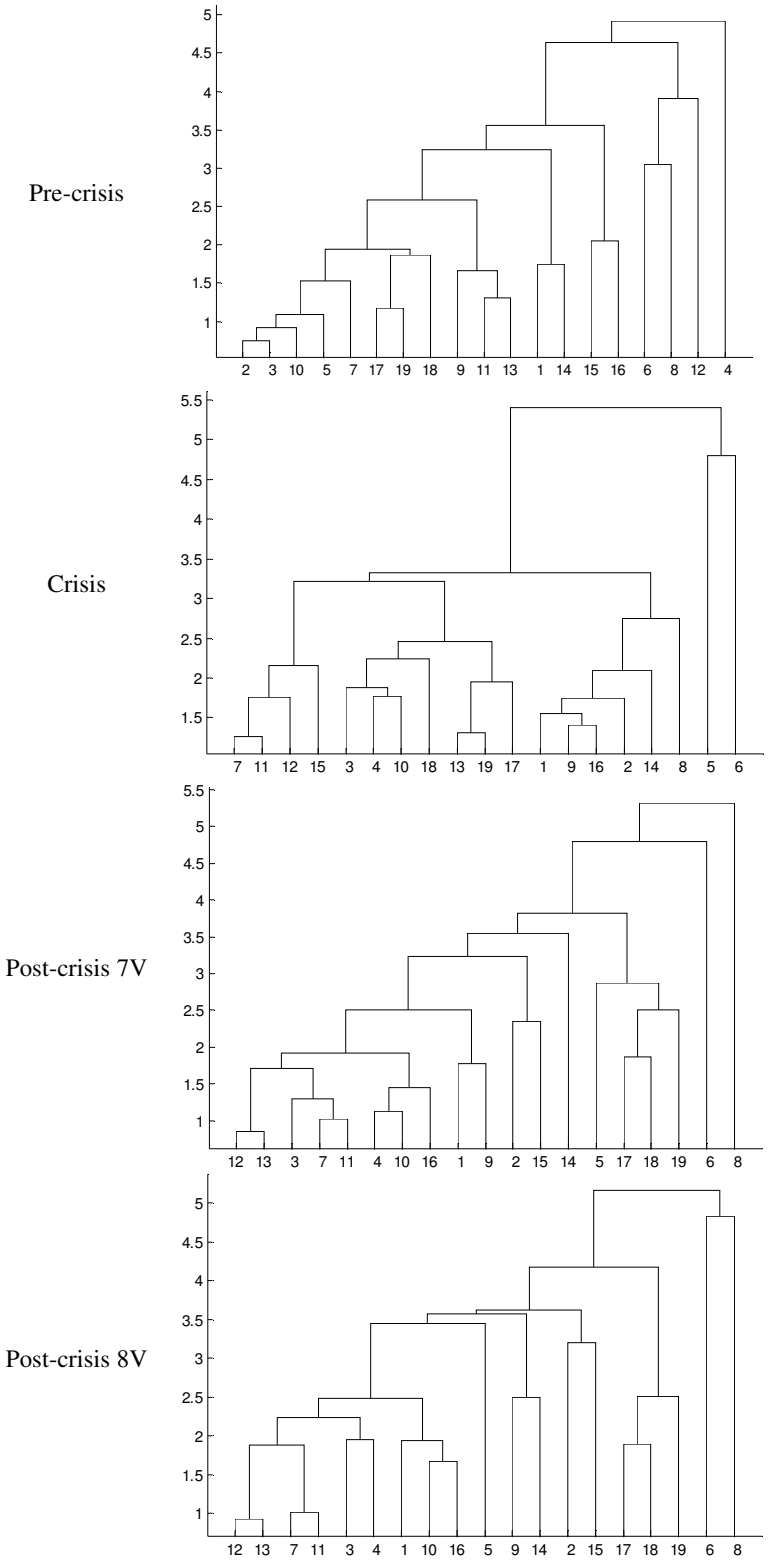
Yuan Anchor Results

The China-centered aggregations of the countries are portrayed in Figure 6.15. Table 6.9 layouts the cluster attributes. 11, 8, 11, and 12 clusters are suggested by the validation indexes for the pre-crisis, crisis, post-crisis 7V, and post-crisis 8V configurations. The largest average silhouette over all objects at 0.35 is obtained by the pre-crisis solution.

The dendrogram shows that Korea, Taiwan, Singapore, and Indonesia are the more closely clustered objects in the pre-crisis configuration. Having joined by Malaysia, they constitute the largest group which maintains the most parallel real interest rate cycle to the Chinese rate before the Asian crisis. Displaying silhouette at 0.60, the most tightly classified cluster is made up of Hong Kong and Macau. This seems logical given their geographical proximity with China.

Amongst the countries, Cambodia stands out with 2 features close to China: the greatest degree of business cycle symmetry and the least variable real exchange rate.

The arrangement is slightly more convergent for the crisis period. Taiwan-Singapore, Australia-Canada and HongKong-Macau retain their pre-crisis links. Interestingly, during this period of turbulence New Zealand's inflation and real interest rate cycle had been the most parallel with the Chinese ones.



HKG	KOR	TWN	KHM	IDN	LAO	MYS	MMR	PHL	SGP	THA	VNM	IND	MAC	BRN	JPN	AUS	NZL	CAN
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

Source: Hierarchical cluster analysis. See Appendix A for data description.

Figure 6.15 OCA-yuan dendrograms

Table 6.9 OCA-HCM-yuan clusters

Cluster	SW	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
	Averages									
Pre-crisis										
All Cases	.35	5.882	.197	10.600	4.833	.025	3.233	3.160	-	
1 KOR, TWN, SGP, IDN, MYS	.52	2.890	.258	8.861	4.554	.607	3.490	.834	-	1
2 AUS, CAN	.56	1.800	.406	9.316	5.024	.497	5.087	n.a.[3]	-	1
3 NZL	.00	1.800	.681	10.843	5.329	.279	3.327	n.a.	-	0
4 PHL, THA, IND	.59	2.850	.066	8.167	4.853	-.786	4.409	2.432	-	0
5 HKG, MAC	.60	19.120	.586	7.948	4.526	.337	2.287	2.085	-	1
6 BRN	.00	.237	-.320	11.996	4.740	-	1.099	.000	-	0
7 JPN	.00	4.947	-.601	11.070	5.565	.560	2.001	n.a	-	0
8 LAO	.00	8.611	-.177	16.614	6.139	-.086	1.927	10.621	-	1
9 MMR	.00	27.154	.060	12.857	5.465	-.654	2.529	9.475	-	1
10 VNM	.00	1.755	-.100	23.264	5.760	-1.000	3.346	4.925	-	0
11 KHM	.00	2.419	.733	11.432	2.401	-.992	1.782	6.749	-	2
Crisis										
All Cases	.30	9.806	.138	8.971	4.514	.141	3.159	1.551	-	
1 MYS, THA, VNM, BRN	.48	6.803	.598	3.117	4.019	-.776	2.871	.833	-	0
2 TWN, KHM, SGP	.27	5.824	-.529	3.352	2.478	.399	2.121	1.137	-	1
3 NZL	.00	4.545	.291	1.852	5.478	.722	3.717	n.a	-	2
4 IND, AUS, CAN	.41	5.078	-.824	4.048	2.715	.332	4.974	1.951	-	0
5 HKG, KOR, PHL, MAC, JPN	.35	18.330	.522	3.104	3.495	.698	2.212	.911	-	1
6 MMR	.00	15.993	.470	25.923	3.325	.096	3.412	3.261	-	0
7 IDN	.00	8.535	.700	23.022	16.615	.011	6.390	2.416	-	2
8 LAO	.00	5.679	.217	69.459	11.224	-.724	2.674	5.252	-	1
Post-crisis 7V										
All Cases	.24	11.739	.246	4.061	2.202	.487	3.422	1.138	-	
1 VNM, IND, TWN, MYS, THA	.35	7.674	.522	2.590	1.397	.945	4.089	.609	-	0
2 KHM, SGP, JPN	.45	10.714	.703	2.092	1.804	.957	1.968	1.121	-	1
3 HKG, PHL	.30	25.332	.592	3.132	1.335	.985	2.797	.929	-	0
4 KOR	.00	18.214	-.262	2.160	2.275	-.628	2.508	.660	-	0
5 BRN	.00	4.179	-.254	2.001	1.604	.092	1.197	.000	-	1
6 MAC	.00	27.834	-.562	2.399	.858	.997	1.171	1.074	-	3
7 IDN	.00	9.997	.363	7.336	3.980	.974	6.159	1.722	-	1
8 AUS, NZL	.44	7.724	-.355	2.253	5.742	-.172	5.223	n.a	-	0
9 CAN	.00	2.394	-.139	2.147	2.607	.053	5.025	n.a	-	0
10 LAO	.00	6.981	.662	7.225	1.471	-.841	2.442	4.457	-	1
11 MMR	.00	16.824	-.325	23.901	2.501	-.606	4.119	2.009	-	0
Post-crisis 8V									-	
All Cases	.20	11.739	.246	4.061	2.202	.487	3.422	1.138	73.7	
1 MYS, THA, VNM, IND	.36	9.235	.536	2.816	1.380	.946	4.339	.677	69.5	0
2 TWN, KHM	.20	5.619	.555	2.169	1.349	.938	2.114	.696	51.7	0
3 HKG, SGP, JPN	.36	14.537	.738	2.022	1.705	.977	2.658	.787	90.6	1
4 IDN	.00	9.997	.363	7.336	3.980	.974	6.159	1.722	48.4	1
5 PHL	.00	29.388	.433	3.823	1.735	.977	2.382	1.471	57.5	1
6 MAC	.00	27.834	-.562	2.399	.858	.997	1.171	1.074	-	2
7 KOR	.00	18.214	-.262	2.160	2.275	-.628	2.508	.660	55.6	0
8 BRN	.00	4.179	-.254	2.001	1.604	.092	1.197	.000	94.0	2
9 AUS, NZL	.43	7.724	-.355	2.253	5.742	-.172	5.223	n.a	91.8	0
10 CAN	.00	2.394	-.139	2.147	2.607	.053	5.025	n.a	90.9	0
11 LAO	.00	6.981	.662	7.225	1.471	-.841	2.442	4.457	69.4	1
12 MMR	.00	16.824	-.325	23.901	2.501	-.606	4.119	2.009	-	0

Notes: 1 Standard deviation ($x10^2$) of the log difference in bilateral real exchange rate. 2 Number of variables with highest degree of conformity to OCA criteria. 3 'n.a.' for not applicable.
Source: Hierarchical cluster analysis. See Appendix A for data description.

In the post-crisis dendrograms, in the leading position Vietnam-India and Malaysia-Thailand are the closest subclusters. When labor criterion is included, Taiwan is merged with Cambodia while Hong Kong is combined with Singapore and Japan. Macau, maintaining the stablest real yuan rate and the highest degree of real interest rate synchronicity, is the closest country to China in both post-crisis findings.

The fewer clusters for the crisis period may signify greater degree of regional homogeneity relative to China during the crisis period. Over the periods, no countries are consistently placed together in the same group.

6.2.1.1 Comparisons across Anchors

Here, results by each of the reference countries are compared. The groupings are collected in Table 6.10.

Based on the average silhouettes over all objects, the following reference countries produce the most fitting solutions: for pre-crisis period the US anchor; for crisis period the Japan anchor; for post-crisis 7V period the weighted-G3 anchor; and for post-crisis 8V period the US anchor once again. Thus, the reference country associated with best partitioning differs depending on period.

Indicated by the smallest number of clusters, the reference compatible with the most symmetrical configuration is also different by period. For pre-crisis period, the G3 reference generates the fewest clusters; for crisis period the Japan reference; and for post-crisis 7V the G3 reference again. For post-crisis 8V, while all reference countries generate similar numbers of clusters, the Germany/EMU configuration should be more convergent since its dominant cluster is the largest when compared to those by other reference countries.

To evaluate how the levels of convergence might have changed, it is best to look at the 7-variable findings over the periods. With the dominant cluster getting somewhat larger in the post-crisis solution in relation to the pre-crisis one, the levels of convergence might have increased for the dollar, basket, and euro anchors.

Based on the above, on the whole the G3 reference appears to be relatively compatible with more convergent cluster configurations.

Whilst no full groupings are consistently stable over the periods, one can find subgroups which are robust in the rows labeled ‘All Periods’. Based on 7 variables,

Singapore, Taiwan, and Malaysia are consistently placed together for the dollar, basket, and yen anchors while Korea and Malaysia are always linked for basket and euro anchors over periods. When labor criterion is included for the post-crisis period, Malaysia and Taiwan are still robust by each of those anchors.

How stable are the groupings of economies which implement fixed exchange rates in practice? Hong Kong and Macau, the effective dollar areas are, amongst others, placed together in the pre-crisis and crisis period clusters for dollar, yen, and yuan anchors. Using 7 variables for the post-crisis period, they are placed together for basket and euro anchors. When labor criterion is included for the post-crisis period, they are linked under the yen anchor. Hence, despite maintaining fixed dollar rates, they are not indicated to be consistently parallel vis-à-vis US over the periods.

Singapore and Brunei which share common monetary standards are rarely put together in the results. They are seen together for crisis period dollar and yen solutions and post-crisis 7V basket solution only. Thus, Singapore and Brunei do not constantly share the same grouping by any reference country.

The bottom part of Table 6.10 displays two features of the solutions from the post-crisis period, the most recent period. The first row shows the groups with the greatest silhouettes and the second row displays the highly closely linked subclusters as depicted by the dendrograms. These countries could have been more homogenous in the post-crisis era. Using 7 variables, Cambodia and Macau consistently share the largest group silhouette over dollar, yen, and euro anchors. Similarly, using 8 variables Australia and New Zealand are tightly classified for all anchors except for the basket anchor.

With respect to the closely linked subclusters, using 7 variables Malaysia and Taiwan are indicated by the dendrograms as closely linked for dollar, basket, and yen anchors. Using 8 variables, Malaysia-Thailand, China-Taiwan, and HongKong-Singapore are closely connected subgroups over three of the anchors.

Subclusters which are present across different anchors are listed in Table 6.11 (D=Dollar; B=Currency Basket; Y=Yen; E=Euro/Mark; R=Yuan/Renminbi). No countries consistently share the same grouping regardless of anchor and period.

Nevertheless, by and large more cross-anchor subclusters are present by the post-crisis period, the most recent period. For this period, based on 7 variables Taiwan-Malaysia is stable over all anchors. With 8 variables including the labor criterion, the subgroups are Malaysia-Thailand, HongKong-Singapore, and Australia-NewZealand.

Table 6.10 OCA-HCM summary

		Dollar	SW	Currency Basket	SW	Yen	SW	Euro	SW	Yuan	SW
Pre-crisis	1	HKG, SGP, TWN, KOR, MYS, MAC	.57	KOR, MYS, SGP, IND, TWN, PHL, CHN, NZL, AUS	.35	TWN, SGP, KOR, MYS, PHL, IND, AUS	.32	KOR, MYS, CAN, TWN, THA	.33	KOR, TWN, SGP, IDN, MYS	.52
	2	PHL	.00	HKG, IDN, MAC, BRN, KHM, THA	.45	HKG, MAC	.52	IDN	.00	AUS, CAN	.56
	3	CHN, IND, AUS, NZL	.36	LAO, MMR	.57	IDN, THA	.64	HKG, SGP	.12	NZL	.00
	4	KHM, IDN, JPN, THA	.53	VNM	.00	CHN	.00	MAC	.00	PHL, THA, IND	.59
	5	BRN	.00	CAN	.00	KHM, NZL	.31	CHN, NZL	.59	HKG, MAC	.60
	6	LAO, MMR	.39			LAO	.00	PHL, IND, AUS	.38	BRN	.00
	7	VNM	.00			MMR	.00	KHM	.00	JPN	.00
	8	CAN	.00			VNM	.00	BRN, JPN	.53	LAO	.00
	9					BRN	.00	LAO	.00	MMR	.00
	10					CAN	.00	VNM	.00	VNM	.00
	11							MMR	.00	KHM	.00
Average			.39		.37		.27		.26		.35
Crisis	1	KOR, MYS, THA, NZL, PHL, BRN, TWN, SGP, VNM	.39	HKG, SGP, KHM, KOR, MYS, TWN	.27	VNM, NZL, THA, KOR, PHL, MYS, SGP, TWN, CAN, HKG, MAC, KHM, BRN	.49	HKG, JPN, KHM, TWN	.42	MYS, THA, VNM, BRN	.48
	2	CHN, HKG, MAC, JPN	.45	THA, IND	.60	MMR, IND, AUS	.39	CHN, PHL, MAC	.53	TWN, KHM, SGP	.27
	3	KHM	.00	CHN, VNM	.17	CHN, IDN	.48	IND	.00	NZL	.00
	4	MMR	.00	PHL, MAC, BRN	.43	LAO	.00	KOR, MYS, THA	.40	IND, AUS, CAN	.41
	5	IND, AUS	.57	MMR	.00			SGP, CAN	.38	HKG, KOR, PHL, MAC, JPN	.35
	6	CAN	.00	AUS	.00			VNM, NZL	.48	MMR	.00
	7	IDN	.00	NZL	.00			BRN	.00	IDN	.00
	8	LAO	.00	CAN	.00			MMR	.00	LAO	.00
	9			IDN	.00			AUS	.00		
	10			LAO	.00			IDN	.00		
	11							LAO	.00		
Average			.27		.22		.44		.30		.30
Post-crisis 7V	1	TWN, MYS, THA, CHN, HKG, SGP, IND, JPN, VNM	.39	TWN, MYS, THA, CHN, HKG, SGP, PHL, MAC, VNM, IND, KHM, KOR, BRN	.61	CHN, TWN, MYS, HKG, SGP, THA, VNM, PHL	.33	CHN, TWN, HKG, MYS, KOR, JPN, MAC, KHM, SGP	.45	VNM, IND, TWN, MYS, THA	.35
	2	KHM, PHL, MAC	.50	IDN, AUS, NZL	.62	KHM, MAC	.86	PHL, THA	.32	KHM, SGP, JPN	.45
	3	IDN	.00	CAN	.00	IND, CAN	.36	IDN	.00	HKG, PHL	.30
	4	KOR	.00	LAO	.00	KOR	.00	VNM, IND	.33	KOR	.00
	5	BRN	.00	MMR	.00	IDN, AUS	.35	CAN	.00	BRN	.00
	6	AUS, NZL	.45			NZL	.00	BRN	.00	MAC	.00
	7	LAO	.00			BRN	.00	AUS, NZL	.37	IDN	.00
	8	CAN	.00			LAO	.00	LAO	.00	AUS, NZL	.44
	9	MMR	.00			MMR	.00	MMR	.00	CAN	.00
	10									LAO	.00
	11									MMR	.00
Average			.29		.52		.31		.31		.24
All Periods 7V	1	SGP, TWN, MYS		SGP, KOR, MYS, TWN		TWN, SGP, MYS, PHL		KOR, MYS		-	
	2			HKG, KHM							
	3			MAC, BRN							
Post-crisis 8V	1	MYS, THA, CHN, TWN, IND, VNM	.33	MYS, THA, CHN, TWN, VNM, KOR, PHL	.24	CHN, MYS, TWN, THA, PHL, VNM, IND	.32	MAC, JPN, KOR, KHM, CHN, TWN, VNM, IND	.16	MYS, THA, VNM, IND	.36
	2	KHM, PHL, MAC	.48	KHM, MAC	.57	HKG, SGP, KHM, MAC	.31	HKG, MYS, THA, SGP	.34	TWN, KHM	.20
	3	HKG, SGP, JPN	.63	HKG, SGP, IND	.39	CAN	.00	PHL	.00	HKG, SGP, JPN	.36
	4	IDN	.00	BRN	.00	KOR	.00	IDN	.00	IDN	.00
	5	KOR	.00	IDN	.00	IDN	.00	CAN	.00	PHL	.00
	6	BRN	.00	AUS, NZL	.52	AUS, NZL	.58	BRN	.00	MAC	.00
	7	AUS, NZL	.68	CAN	.00	BRN	.00	AUS, NZL	.60	KOR	.00
	8	LAO	.00	LAO	.00	LAO	.00	LAO	.00	BRN	.00
	9	CAN	.00	MMR	.00	MMR	.00	MMR	.00	AUS, NZL	.43
	10	MMR	.00							CAN	.00
	11									LAO	.00
	12									MMR	.00
Average			.33		.26		.24		.20		.20
All Periods 8V	1	MYS, TWN		KOR, MYS, TWN		MYS, TWN, PHL		MYS, THA		-	
	2					HKG, MAC					

Table 6.10 OCA-HCM summary (continued)

	Post-crisis findings	Dollar		Currency Basket		Yen		Euro		Yuan	
		7V	8V	7V	8V	7V	8V	7V	8V	7V	8V
1	Highest silhouette	KHM-PHL-MAC	AUS-NZL	IDN-AUS-NZL	KHM-MAC	KHM-MAC	AUS-NZL	CHN-TWN-HKG-MYS-KOR-JPN-MAC-KHM-SGP	AUS-NZL	KHM, SGP, JPN	AUS-NZL
2	Highly closely linked subclusters indicated by dendrograms	TWN-MYS, CHN-HKG	MYS-THA, CHN-TWN, HKG-SGP	TWN-MYS	MYS-THA, CHN-TWN, HKG-SGP	CHN-TWN-MYS	CHN-MYS, HKG-SGP, KHM-MAC	CHN-TWN, HKG-MYS, KOR-JPN	MAC-JPN, KOR-KHM, CHN-TWN, HKG-MYS	VNM-IND, MYS-THA	VNM-IND, MYS-THA

Table 6.11 OCA-HCM cross-anchor subclusters

		PRE	CRS	PST		All			PRE	CRS	PST		All	
				7V	8V	7V	8V				7V	8V	7V	8V
DB	1	SGP, TWN, KOR, MYS	SGP, TWN, KOR, MYS	TWN, MYS, THA, CHN, HKG, SGP, IND, VNM	MYS, THA, CHN, TWN, VNM	SGP, TWN, MYS	TWN, MYS	DY	SGP, TWN, KOR, MYS	KOR, MYS, THA, NZL, PHL, BRN, TWN, SGP, VNM	TWN, MYS, THA, CHN, HKG, SGP, VNM	MYS, THA, CHN, TWN, IND, VNM	SGP, TWN, MYS	TWN, MYS
	2	CHN, IND, AUS, NZL	PHL, BRN	KHM, PHL, MAC	KHM, MAC				HKG, MAC	HKG, MAC	KHM, MAC	KHM, MAC		
	3	KHM, IDN, THA		AUS, NZL	HKG, SGP				IND, AUS	IND, AUS		HKG, SGP		
	4	HKG, MAC			AUS, NZL				IDN, THA			AUS, NZL		
	5	LAO, MMR												
DE	1	TWN, KOR, MYS	KOR, MYS, THA	TWN, MYS, CHN, HKG, SGP, JPN	CHN, TWN, IND, VNM	-	-	DR	SGP, TWN, KOR, MYS	MYS, THA, VNM, BRN	VNM, IND, TWN, MYS, THA	MYS, THA, VNM, IND	-	-
	2	HKG, SGP	CHN, MAC	KHM, MAC	MYS, THA				HKG, MAC	TWN, SGP	SGP, JPN	HKG, SGP, JPN		
	3	CHN, NZL	HKG, JPN	AUS, NZL	HKG, SGP					IND, AUS	AUS, NZL	AUS, NZL		
	4	IND, AUS	VNM, NZL		KHM, MAC					KOR, PHL				
	5				AUS, NZL					MAC, JPN				
BY	1	KOR, MYS, SGP, IND, TWN, PHL, AUS	HKG, SGP, KHM, KOR, MYS, TWN	TWN, MYS, THA, CHN, HKG, SGP, PHL, VNM,	MYS, THA, CHN, TWN, VNM, PHL	MYS, SGP, TWN	TWN, MYS	BE	TWN, KOR, MYS	HKG, KHM, TWN	CHN, TWN, HKG, MYS, KOR, MAC, KHM, SGP	CHN, TWN, VNM, KOR	KOR, MYS	-
	2	HKG, MAC	PHL, MAC, BRN	IDN, AUS	KHM, MAC				PHL, IND, AUS	KOR, MYS	PHL, THA	MYS, THA,		
	3	IDN, THA		KHM, MAC	HKG, SGP				CHN, NZL	PHL, MAC	VNM, IND	KHM, MAC		
	4				AUS, NZL						AUS, NZL	HKG, SGP		
	5											AUS, NZL		
BR	1	KOR, MYS, SGP, TWN	SGP, TWN, KHM	VNM, IND, TWN, MYS, THA	MYS, THA, VNM	-	-	YE	TWN, KOR, MYS,	KOR, MYS, THA	CHN, TWN, MYS, HKG, SGP	CHN, TWN, VNM, IND	-	-
	2	PHL, IND	HKG, KOR	KHM, SGP	HKG, SGP				PHL, IND, AUS	HKG, KHM, TWN	KHM, MAC	MYS, THA,		
	3	HKG, MAC	PHL, MAC	HKG, PHL	AUS, NZL					VNM, NZL		HKG, MAC		
	4			AUS, NZL						SGP, CAN		AUS, NZL		
	5									PHL, MAC				
YR	1	TWN, SGP, KOR, MYS	MYS, THA, VNM, BRN	CHN, TWN, VNM, IND	MYS, THA, VNM, IND	-	-	ER	KOR, MYS, TWN	HKG, JPN	VNM, IND	MYS, THA	-	-
	2	PHL, IND	HKG, KOR, PHL, MAC	HKG, MYS, THA, SGP	HKG, SGP				PHL, IND	KHM, TWN	TWN, MYS	VNM, IND		
	3	HKG, MAC	TWN, KHM, SGP	KHM, MAC	AUS, NZL					PHL, MAC	KHM, SGP	TWN, KHM		
	4		IND, AUS							MYS, THA	AUS, NZL	HKG, SGP		
	5											AUS, NZL		
DBY	1	SGP, TWN, KOR, MYS	SGP, TWN, KOR, MYS	TWN, MYS, THA, CHN, HKG, SGP, VNM	MYS, THA, CHN, TWN, VNM	SGP, TWN, MYS	TWN, MYS	DBE	TWN, KOR, MYS	KOR, MYS	TWN, MYS, CHN, HKG, SGP	MYS, THA	-	-
	2	HKG, MAC	PHL, BRN	KHM, MAC	KHM, MAC				CHN, NZL		IND, VNM	CHN, TWN, VNM		
	3	IDN, THA			HKG, SGP				IND, AUS		AUS, NZL	KHM, MAC		
	4				AUS, NZL						KHM, MAC	HKG, SGP		
	5											AUS, NZL		

Table 6.11 OCA-HCM cross-anchor subclusters (continued)

		PRE	CRS	PST		All			PRE	CRS	PST		All	
				7V	8V	7V	8V				7V	8V	7V	8V
DBR	1	SGP, TWN, KOR, MYS	SGP, TWN	VNM, IND, TWN, MYS, THA	MYS, THA, VNM	-	-	DYE	TWN, KOR, MYS	KOR, MYS, THA	TWN, MYS, CHN, HKG, SGP	MYS, THA	-	-
	2	HKG, MAC		AUS, NZL	HKG, SGP				IND, AUS	NZL, VNM	KHM, MAC	CHN, TWN, IND, VNM		
	3				AUS, NZL							KHM, MAC		
	4											HKG, SGP		
	5											AUS, NZL		
DYR	1	SGP, TWN, KOR, MYS	MYS, THA, VNM, BRN	VNM, TWN, MYS, THA	MYS, THA, VNM, IND	-	-	DER	TWN, KOR, MYS	MYS, THA	TWN, MYS	VNM, IND	-	-
	2	HKG, MAC	TWN, SGP		HKG, SGP					HKG, JPN	SGP, JPN	MYS, THA		
	3		KOR, PHL		AUS, NZL						AUS, NZL	HKG, SGP		
	4		HKG, MAC									AUS, NZL		
	5		IND, AUS											
BYE	1	TWN, KOR, MYS	HKG, KHM, TWN	TWN, MYS, CHN, HKG, SGP	MYS, THA	-	-	BYR	KOR, TWN, MYS, SGP	SGP, TWN, KHM	VNM, TWN, MYS, THA	MYS, THA, VNM	-	-
	2		KOR, MYS	KHM, MAC	CHN, TWN, VNM				PHL, IND	HKG, KOR	HKG, PHL	HKG, SGP		
	3		PHL, MAC		KHM, MAC				HKG, MAC	PHL, MAC		AUS, NZL		
	4				HKG, SGP									
	5				AUS, NZL									
BER	1	TWN, KOR, MYS	KHM, TWN	VNM, IND	MYS, THA	-	-	YER	TWN, KOR, MYS	MYS, THA	TWN, MYS	VNM, IND	-	-
	2	PHL, IND	PHL, MAC	TWN, MYS	HKG, SGP				PHL, IND	KHM, TWN		MYS, THA		
	3			KHM, SGP	AUS, NZL					PHL, MAC		AUS, NZL		
	4			AUS, NZL										
DBYE	1	TWN, KOR, MYS	KOR, MYS	TWN, MYS, CHN, HKG, SGP	CHN, TWN, VNM	-	-	DBYR	SGP, TWN, KOR, MYS	SGP, TWN	VNM,TWN, MYS, THA	MYS, THA, VNM	-	-
	2			KHM, MAC	MYS, THA				HKG, MAC			HKG, SGP		
	3				KHM, MAC							AUS, NZL		
	4				HKG, SGP									
	5				AUS, NZL									
DBER	1	TWN, KOR, MYS	-	TWN, MYS	MYS, THA	-	-	DYER	TWN, KOR, MYS	MYS, THA	TWN, MYS	MYS, THA	-	-
	2			IND, VNM	HKG, SGP							VNM, IND		
	3			AUS, NZL	AUS, NZL							HKG, SGP		
	4											AUS, NZL		
BYER	1	TWN, KOR, MYS	KHM, TWN	TWN, MYS	MYS, THA	-	-	DBYER	TWN, KOR, MYS	-	TWN, MYS	MYS, THA	-	-
	2		PHL, MAC		HKG, SGP							HKG, SGP		
	3				AUS, NZL							AUS, NZL		

Note: D=Dollar; B=Currency Basket; Y=Yen; E=Euro/Mark; R=Yuan (Renminbi).

6.2.2 Classifications using Weighted Criteria

This section examines the classifications using an explicit weighting scheme, that is, weighting the sum of the 'benefit' variables (the trade and debt criteria) and the sum of the 'cost' variables (the rest of the criteria) equally. Since there are only two benefit variables, each benefit variable is given more weight under the new weighting and correspondingly each cost variable is given less weight. As before, average linkage method generally yields the configurations which best match the data structure.

The findings are put together in Table 6.12. Columns '1' contain the original groupings when all criteria are weighted equally (since there are more cost variables, costs may be given heavier weight) and columns '2' contain the solutions by the new weighting scheme.

Some of the configurations have become more convergent, divergent, or more or less unchanged after the weighting. The configurations that become significantly convergent as indicated by much fewer clusters and/or somewhat larger dominant cluster include the pre-crisis dollar and euro solutions; the post-crisis 7V dollar and euro solutions; and the post-crisis 8V dollar and yuan solutions.

Quite the reverse, by putting more weight on benefits and hence less weight on costs, the pre-crisis basket solution, the crisis period yen solution, the post-crisis 7V basket and yen solutions, and the post-crisis 8V yen solution have become rather divergent. The rest of the solutions have been more or less the same.

Since only two benefit variables are defined in this study, trade openness and external indebtedness, and only the trade variable is measured relative to a reference, on the whole putting more weight on trade linkage has brought the region closer together vis-à-vis US but farther apart vis-à-vis Japan.

Since the configurations are somewhat different after the weighting, it is instructive to identify subgrouping linkages which are robust to the new weighting. Robust non-

singleton cross-weighting common sets are shown in Table 6.13.

Using 7 variables, the subclusters which are not only stable to the weighting but also robust over the periods are Malaysia-Singapore under the US reference and Korea-Malaysia under the G3 or the Germany/EMU reference. Using 8 variables for the post-crisis period, the basket anchor Korea-Malaysia and euro anchor Malaysia-Thailand are stable over periods. Thus, regardless of the labor criterion, by the G3 reference Korea and Malaysia share the same grouping across weightings and periods.

The effective dollar areas of Hong Kong and Macau share the same common set for the US-based pre-crisis and crisis period, the Japan-based crisis period, and the Germany/EMU-based post-crisis 7V period. Hence, they are indicated to share similar OCA features against US regardless of the weighting in the pre-crisis and crisis periods. Nonetheless, the monetary union members of Singapore and Brunei do not share any common set across weightings.

Countries which are stably linked across weightings and anchors are collected in Table 6.14. Slightly more of these countries are present in the post-crisis solutions. For post-crisis 7V, Taiwan and Malaysia which are linked over all anchors without the weighting are still linked over all anchors except for yuan anchor here. For post-crisis 8V, as without the weighting Malaysia-Thailand and Australia-NewZealand are stable across all anchors whereas Hong Kong and Singapore which have been stable over all anchors previously are now robust for all anchors except for euro anchor.

Table 6.12 HCM clusters by equal and by weighted criteria

		Dollar		Currency Basket		Yen		Euro		Yuan	
		1	2	1	2	1	2	1	2	1	2
Pre-crisis	1	HKG, SGP, TWN, KOR, MYS, MAC	CHN, HKG, KOR, TWN, IDN, MYS, PHL, SGP, THA, IND, MAC, BRN, JPN, AUS, NZL	KOR, MYS, SGP, IND, TWN, PHL, CHN, NZL, AUS	KOR, TWN, MYS	TWN, SGP, KOR, MYS, PHL, IND, AUS	HKG, KOR, TWN, MYS, PHL, SGP, THA, AUS	KOR, MYS, CAN, TWN, THA	CHN, HKG, KOR, TWN, IDN, MYS, THA, AUS, NZL	KOR, TWN, IDN, MYS, SGP	KOR, TWN, IDN, MYS, SGP
	2	CHN, IND, AUS, NZL	KHM, LAO, MMR, VNM	HKG, IDN, MAC, BRN, KHM, THA	HKG, SGP, BRN	HKG, MAC	IND, MAC	PHL, IND, AUS	SGP, BRN, CAN	PHL, THA, IND	AUS, NZL, CAN
	3	KHM, IDN, JPN, THA	CAN	LAO, MMR	LAO, MMR	IDN, THA	LAO, MMR	HKG, SGP	LAO, MMR	AUS, CAN	PHL, THA, IND
	4	LAO, MMR		VNM	IDN, THA	KHM, NZL	CHN, NZL	BRN, JPN	KHM, MAC	HKG, MAC	BRN
	5	BRN		CAN	IND, NZL	CHN	KHM	CHN, NZL	PHL, IND	NZL	JPN
	6	VNM			CAN	LAO	IDN	MAC	VNM	BRN	VNM
	7	CAN			VNM	MMR	VNM	KHM	JPN	JPN	MAC
	8	PHL			KHM	VNM	BRN	IDN		LAO	HKG
	9				MAC	BRN	CAN	LAO		MMR	MAC
	10				PHL	CAN		VNM		VNM	LAO
	11				CHN			MMR		KHM	MMR
	12				AUS						
Crisis	1	KOR, MYS, THA, NZL, PHL, BRN, TWN, SGP, VNM	KOR, MYS, SGP, THA, NZL	HKG, SGP, KHM, KOR, MYS, TWN	HKG, KOR, MYS, SGP, MAC, BRN	VNM, NZL, THA, KOR, PHL, MYS, SGP, TWN, CAN, HKG, MAC, KHM, BRN	KOR, MYS, PHL, SGP, THA, VNM, NZL	HKG, JPN, KHM, TWN	HKG, KHM, JPN	HKG, KOR, PHL, MAC, JPN	IND, CAN, SGP, NZL, AUS, KHM
	2	CHN, HKG, MAC, JPN	CHN, HKG, MAC	PHL, MAC, BRN	THA, IND, NZL	MMR, IND, AUS	KHM, IND	CHN, PHL, MAC	CHN, PHL, MAC	MYS, THA, VNM, BRN	HKG, PHL, KOR, JPN
	3	IND, AUS	KHM, JPN	CHN, VNM	CHN, PHL, VNM	CHN, IDN	HKG, MAC	KOR, MYS, THA	KOR, MYS, THA	IND, AUS, CAN	MYS, THA, VNM
	4	KHM	PHL, VNM	THA, IND	TWN	LAO	LAO	SGP, CAN	VNM, AUS, NZL	TWN, KHM, SGP	TWN, BRN
	5	MMR	IND, AUS	MMR	MMR		MMR	VNM, NZL	SGP, CAN	NZL	IDN
	6	CAN	CAN	AUS	AUS		AUS	IND	IND	MMR	MAC
	7	IDN	IDN	NZL	KHM		TWN	BRN	BRN	IDN	MMR
	8	LAO	LAO	CAN	CAN		CHN	MMR	MMR	LAO	LAO
	9		MMR	IDN	IDN		IDN	AUS	TWN		
	10		TWN	LAO	LAO		BRN	IDN	IDN		
	11		BRN				CAN	LAO	LAO		
Post-crisis 7V	1	TWN, MYS, THA, CHN, HKG, SGP, IND, JPN, VNM	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN	TWN, MYS, THA, CHN, HKG, SGP, PHL, MAC, VNM, IND, KHM, KOR, BRN	MYS, THA, CHN, TWN, HKG, KOR, BRN	CHN, TWN, MYS, HKG, SGP, THA, VNM, PHL	CHN, TWN, MYS, THA, VNM	CHN, TWN, HKG, MYS, KOR, JPN, MAC, KHM, SGP	CHN, HKG, KOR, TWN, KHM, MYS, PHL, THA, VNM, MAC, JPN	VNM, IND, TWN, MYS, THA	KHM, MYS, THA, VNM, IND, JPN
	2	KHM, PHL, MAC	IDN, AUS, NZL	IDN, AUS, NZL	KHM, PHL, MAC	KHM, MAC	HKG, KHM, SGP, MAC	PHL, THA	IDN, AUS, NZL	KHM, SGP, JPN	IDN, AUS, NZL, CAN
	3	AUS, NZL	KOR, BRN	CAN	IDN, AUS, NZL	IND, CAN	IND, CAN	VNM, IND	SGP, CAN	HKG, PHL	SGP, BRN
	4	KOR	MMR	LAO	SGP, IND	IDN, AUS	AUS, NZL	AUS, NZL	BRN	AUS, NZL	PHL, MAC
	5	BRN	LAO	MMR	VNM	KOR	IDN	CAN	LAO	BRN	TWN
	6	IDN	CAN		MMR	NZL	BRN	BRN	MMR	MAC	MMR,
	7	LAO			CAN	BRN	LAO	IDN	IND	IDN	LAO
	8	CAN			LAO	LAO	MMR	LAO		KOR	HKG
	9	MMR				MMR	PHL	MMR		CAN	KOR
	10						KOR			LAO	
	11									MMR	
All Periods 7V	1	SGP, TWN, MYS	MYS, SGP, THA	SGP, KOR, MYS, TWN	KOR, MYS	TWN, SGP, MYS, PHL	MYS, THA	KOR, MYS	KOR, MYS THA	-	AUS, NZL, CAN
	2		CHN, HKG, MAC	HKG, KHM	HKG, BRN				AUS, NZL		
	3			MAC, BRN					SGP, CAN		

Table 6.12 HCM clusters by equal and by weighted criteria (continued)

		Dollar		Currency Basket		Yen		Euro		Yuan	
		1	2	1	2	1	2	1	2	1	2
Post-crisis 8V	1	MYS, THA, CHN, TWN, IND, VNM	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN	MYS, THA, CHN, TWN, VNM, KOR, PHL	CHN, KOR, TWN, MYS, THA	CHN, MYS, TWN, THA, PHL, VNM, IND	CHN, TWN, MYS, THA, VNM	MAC, JPN, KOR, KHM, CHN, TWN, VNM, IND	CHN, HKG, KOR, TWN, KHM, MYS, THA, VNM, MAC, JPN	MYS, THA, VNM, IND	MYS, THA, KHM, VNM, IND, IDN, TWN, LAO
	2	KHM, PHL, MAC	IDN, AUS, NZL	HKG, SGP, IND	KHM, PHL, MAC	HKG, SGP, KHM, MAC	HKG, SGP	HKG, MYS, THA, SGP	PHL, IND	HKG, SGP, JPN	HKG, JPN, SGP, BRN, CAN, AUS, NZL
	3	HKG, SGP, JPN	KOR, BRN	KHM, MAC	HKG, SGP	AUS, NZL	IND, CAN	AUS, NZL	IDN, AUS, NZL	TWN, KHM	KOR, PHL, MAC
	4	AUS, NZL	MMR	AUS, NZL	AUS, NZL	KOR	KHM, MAC	IDN	SGP, CAN	AUS, NZL	MMR
	5	KOR	LAO	IDN	IDN	IDN	AUS, NZL	CAN	BRN	PHL	
	6	BRN	CAN	BRN	BRN	CAN	IDN	BRN	LAO	MAC	
	7	IDN		CAN	CAN	BRN	BRN	PHL	MMR	KOR	
	8	LAO		LAO	LAO	LAO	LAO	LAO		BRN	
	9	CAN		MMR	MMR	MMR	MMR	MMR		IDN	
	10	MMR			VNM		PHL			CAN	
	11				IND		KOR			LAO	
	12									MMR	
All Periods 8v	1	MYS, TWN	MYS, SGP, THA	KOR, MYS, TWN	KOR, MYS	TWN, MYS, PHL	MYS, THA	MYS, THA	KOR, MYS, THA	-	AUS, NZL, CAN
	2		CHN, HKG, MAC		HKG, SGP	HKG, MAC			SGP, CAN		
	3								AUS, NZL		

Table 6.13 HCM cross-weighting subclusters

		Dollar	Currency Basket	Yen	Euro	Yuan
Pre-crisis	1	HKG, SGP, TWN, KOR, MYS, MAC	KOR, MYS, TWN	TWN, SGP, KOR, MYS, PHL, AUS	KOR, MYS, TWN, THA	KOR, TWN, IDN, MYS, SGP
	2	CHN, IND, AUS, NZL	HKG, BRN		PHL, IND	PHL, THA, IND
	3	IDN, JPN, THA	LAO, MMR		CHN, NZL	AUS, CAN
	4	LAO, MMR	IDN, THA			
	5		IND, NZL			
Crisis	1	KOR, MYS, THA, NZL, SGP	HKG, SGP, KOR, MYS	KOR, MYS, PHL, SGP, THA, VNM, NZL	HKG, JPN, KHM	HKG, PHL, KOR, JPN
	2	CHN, HKG, MAC	MAC, BRN	HKG. MAC	CHN, PHL, MAC	MYS, THA, VNM
	3	PHL, VNM	CHN, VNM		KOR, MYS, THA	IND, AUS, CAN
	4	IND, AUS	THA, IND		SGP, CAN	KHM, SGP
	5				VNM, NZL	
Post-crisis 7V	1	TWN, MYS, THA, CHN, HKG, SGP, IND, JPN, VNM	MYS, THA, CHN, TWN, HKG, KOR, BRN	CHN, TWN, MYS, THA, VNM	CHN, TWN, HKG, MYS, KOR, JPN, MAC, KHM	VNM, IND, MYS, THA
	2	KHM, PHL, MAC	KHM, PHL, MAC	HKG, SGP	PHL, THA	KHM, JPN
	3	AUS, NZL	IDN, AUS, NZL	KHM, MAC	AUS, NZL	AUS, NZL
	4		SGP, IND	IND, CAN		
All Periods 7V	1	MYS, SGP	KOR, MYS	-	KOR, MYS	-
Post-crisis 8V	1	MYS, THA, CHN, TWN, IND, VNM	MYS, THA, CHN, TWN, KOR	CHN, MYS, TWN, THA, VNM	MAC, JPN, KOR, KHM, CHN, TWN, VNM,	MYS, THA, VNM, IND
	2	KHM, PHL, MAC	KHM, MAC	HKG, SGP	HKG, MYS, THA	HKG, SGP, JPN
	3	HKG, SGP, JPN	HKG, SGP	KHM, MAC	AUS, NZL	TWN, KHM
	4	AUS, NZL	AUS, NZL	AUS, NZL		AUS, NZL
All Periods 8V	1	-	KOR, MYS	-	MYS, THA	-

Table 6.14 HCM cross-weighting-anchor subclusters

		PRE	CRS	PST		All			PRE	CRS	PST		All	
				7V	8V	7V	8V				7V	8V	7V	8V
DB	1	KOR, MYS, TWN	KOR, MYS, SGP	MYS, THA, CHN, TWN, HKG	MYS, THA, CHN, TWN	-	-	DY	SGP, TWN, KOR, MYS	KOR, MYS, THA, NZL, SGP	CHN, TWN, MYS, THA, VNM	MYS, THA, CHN, TWN, VNM	-	-
	2	LAO, MMR		KHM, PHL, MAC	KHM, MAC					HKG, MAC	HKG, SGP	HKG, SGP		
	3	IDN, THA		SGP, IND	HKG, SGP						KHM, MAC	KHM, MAC		
	4	IND, NZL		AUS, NZL	AUS, NZL							AUS, NZL		
DE	1	TWN, KOR, MYS	CHN, MAC	CHN, TWN, HKG, MYS, JPN	MYS, THA	-	-	DR	KOR, MYS, TWN	SGP, KOR, MYS	VNM, IND, MYS, THA	MYS, CHN, TWN	-	-
	2	CHN, NZL		KHM, MAC	CHN, TWN, VNM						AUS, NZL	KHM, MAC		
	3			AUS, NZL	KHM, MAC							HKG, SGP		
	4				AUS, NZL							AUS, NZL		
BY	1	KOR, MYS, TWN	-	CHN, TWN, MYS, THA,	MYS, THA,	-	-	BE	KOR, MYS, TWN	KOR, MYS, THA	CHN, TWN, HKG, MYS, KOR	CHN, TWN, VNM	MYS, KOR	-
	2			KHM, MAC	KHM, MAC						MAC, KHM	MYS, THA		
	3				AUS, NZL						AUS, NZL	KHM, MAC		
	4											AUS, NZL		
BR	1	KOR, MYS, TWN	HKG, KOR	MYS, THA	MYS, THA	-	-	YE	KOR, MYS, TWN	KOR, MYS, THA	CHN, TWN, MYS,	CHN, TWN, VNM	-	-
	2			AUS, NZL	HKG, SGP					VNM, NZL	KHM, MAC	MYS, THA		
	3				AUS, NZL							KHM, MAC		
	4											AUS, NZL		
YR	1	TWN, SGP, KOR, MYS	KOR, PHL	VNM, MYS, THA	MYS, THA, VNM	-	-	ER	KOR, MYS, TWN	HKG, JPN	KHM, JPN	MYS, THA	-	-
	2		MYS, THA, VNM		HKG, SGP				PHL, IND	MYS, THA	AUS, NZL	TWN, KHM		
	3				AUS, NZL							AUS, NZL		
DBY	1	KOR, MYS, TWN	KOR, MYS, SGP	MYS, THA, CHN, TWN	MYS, THA, CHN, TWN	-	-	DBE	KOR, MYS, TWN	KOR, MYS	MYS, CHN, TWN, HKG	CHN, TWN	-	-
	2			KHM, MAC	KHM, MAC						KHM, MAC	MYS, THA		
	3				HKG, SGP						AUS, NZL	KHM, MAC		
	4				AUS, NZL							AUS, NZL		
DBR	1	KOR, MYS, TWN	-	MYS, THA	MYS, THA	-	-	DYE	KOR, MYS, TWN	KOR, MYS, THA	CHN, TWN, MYS	MYS, THA	-	-
	2			AUS, NZL	HKG, SGP						KHM, MAC	CHN, TWN, VNM		
	3				AUS, NZL							KHM, MAC		
	4											AUS, NZL		
DYR	1	KOR, TWN, SGP, MYS	MYS, THA	MYS, THA	MYS, THA, VNM	-	-	DER	TWN, KOR, MYS	-	AUS, NZL	MYS, THA	-	-
	2				HKG, SGP							AUS, NZL		
	3				AUS, NZL									
BYE	1	KOR, MYS, TWN	KOR, MYS	CHN, TWN, MYS	CHN, TWN	-	-	BYR	KOR, MYS, TWN	-	MYS, THA	MYS, THA	-	-
	2			KHM, MAC	KHM, MAC							AUS, NZL		
	3				AUS, NZL									
BER	1	KOR, MYS, TWN	MYS, THA	AUS, NZL	MYS, THA	-	-	YER	KOR, MYS, TWN	MYS, THA	-	MYS, THA	-	-
	2				AUS, NZL							AUS, NZL		
DBYE	1	KOR, MYS, TWN	KOR, MYS	CHN, TWN, MYS	MYS, THA	-	-	DBYR	KOR, MYS, THA	-	MYS, THA	MYS, THA	-	-
	2			KHM, MAC	KHM, MAC							HKG, SGP		
	3				AUS, NZL							AUS, NZL		
DBER	1	KOR, MYS, TWN	-	AUS, NZL	MYS, THA	-	-	DYER	KOR, MYS, TWN	MYS, THA	-	MYS, THA	-	-
	2				AUS, NZL							AUS, NZL		
BYER	1	KOR, MYS, TWN	-	-	AUS, NZL	-	-	DB YER	KOR, MYS, TWN	-	-	MYS, THA	-	-
	2											AUS, NZL		

Note: D=Dollar; B=Currency Basket; Y=Yen; E=Euro/Mark; R=Yuan (Renminbi)

6.2.3 Assessment of Preparedness

This section explores the hierarchical clustering solutions when dollarized and euroized cases are added into the set of Asian cases.[55] The results are expected to suggest the levels of preparedness for dollarization-like and for EMU-like arrangement amongst the Asian economies. Asian cases which are merged with the dollarized and the euroized cases (the benchmarks) might most probably share characteristics appropriate for fixed peg and currency union respectively. Besides that, linkages with Hong Kong, an effective dollar area may also cast some light on the readiness for fixed exchange rate when the reference country is the US.

To reiterate, Panama (or PAN) has long dollarized since the beginning of 20th century while other dollarized cases ECU3, ELS3, and GTM3 denote Ecuador, El Salvador, and Guatemala in the post-dollarization era. The cases with suffixes 1 and 2 correspond to the pre-crisis and the crisis period of the latter three benchmarks (the pre-dollarization periods) respectively. For the euroized cases, EMU1 stands for the pre-Maastricht period, EMU2 the post-Maastricht period, and EMU3 the post-euro period.

The first part of this section provides the findings using the original unweighted criteria and the second part presents those using weighted criteria.

6.2.3.1 Preparedness Assessment using Unweighted Criteria

Table 6.15 exhibits the classifications for preparedness assessment using the original unweighted variables. Columns '1' show the original clusters comprising of Asian cases only while columns '2' provide the groupings involving the Asian cases and the benchmarks. Cells in column 2 containing Asian and benchmark cases are highlighted.

Looking at columns 2, for pre-crisis period the general level of preparedness for exchange rate fixation and for monetary union for dollar, basket, and yuan pegs could have been greater since the bulk of the Asian cases are being grouped with the post-

[55] Previous HCM methodology applies.

dollarization and/or post-euro benchmarks. Likewise, for crisis period the readiness for basket and yuan pegs might have been higher; for post-crisis 7V the readiness for basket and yen pegs could be greater; and for post-crisis 8V that for basket, yen, and yuan pegs might be higher.

In light of the above, the region on the whole could have been relatively ready for a basket peg throughout the periods.

Interestingly, for post-crisis 8V by the yuan anchor the Philippines is connected with almost all dollarization benchmarks but not even one EMU benchmark, signifying high preparedness for unilateral peg rather than multilateral monetary union based on the China reference. As for Korea, Macau, and Brunei, their degree of preparedness for yuan peg could be lower than that of Philippines as they are only linked with ELS1, the pre-crisis El Salvador.

Obviously, the groupings of the Asian cases somewhat vary when benchmark cases are added in the cluster analysis. Hence, it is compelling to identify common groupings between the with- and without-benchmark results. When a subset of Asian countries in column 1 intersects with that in column 2, the common set of countries might most probably possess common OCA features and level of preparedness.

Common (non-singleton) sets of countries by anchor are provided in the bottom part of Table 6.15. Clearly, more substantial common sets are present under the dollar and the basket anchor across the periods. Thus, overall more countries could share similar OCA dimensions and levels of preparedness when US or G3 is the reference.

Remarkably, using 7 variables, the links of Singapore-Malaysia and Singapore-Korea-Malaysia-Taiwan are consistently present in the US and the weighted-G3 common sets of countries respectively. Hence, they could have been relatively and consistently symmetrical in the OCA features and the level of preparedness over the periods. Singapore and Malaysia are even robust under both dollar and basket anchors.

Even when labor criterion is also considered for the post-crisis period, Korea, Malaysia, and Taiwan are still robust over periods by the basket anchor.

With regard to the dollar areas of Hong Kong and Macau, they are hardly seen together in the common sets; they are only put together in the crisis period yuan, post-crisis 7V basket, and post-crisis 8V yen solutions. They are not found together even under the US reference. For the monetary union members of Singapore and Brunei, they are only placed together in the crisis period dollar and post-crisis 7V basket solutions. On this evidence, though maintaining similar monetary standards, these pairs of economies are not indicated to be consistently parallel in both the OCA dimensions and the level of preparedness.

Except for the crisis period, Hong Kong and Singapore always share the same common set under US reference regardless of the labor criterion. Since Hong Kong maintains a dollar currency board, Singapore could have been relatively ready for the same regime except only in the crisis period. This observation somehow confirms the finding by Ogawa and Shimizu (2006) which suggested that two-thirds of Singapore currency basket weights were on the dollar.

Table 6.16 lists the cross-anchor common sets. Since no subgroups are stable over all anchors, it is worthwhile to note those which are stable over four anchors and since the post-crisis period is the most recent period, it is compelling to focus on this period. For post-crisis 7V, Vietnam-India is robust over dollar, basket, euro, and yuan anchors and for post-crisis 8V, Vietnam-India is robust over dollar, yen, euro, and yuan anchors. For post-crisis 8V also, Malaysia-Thailand-Vietnam and HongKong-Singapore are stable over all anchors except for euro anchor.

Table 6.17 displays the features of the groupings involving the benchmarks. This is important because while the preceding analysis identifies Asian cases which share the features maintained by the benchmarks, some countries are actually more conforming in

some OCA aspects than the benchmarks but are not clustered with them. For instance, in the US-based solutions, Canada is distanced from the benchmark clusters except only for the pre-crisis period even though Canada maintains more favorable features in the trade, inflation, exchange rate, and diversification dimensions.

By examining the variables also, the features which bring the Asian economies close to or far away from the benchmarks can be recognized. In most cases, convergent inflation, stable real exchange rates, and diversified exports predominantly link the Asian economies with the post-dollarization and post-euro benchmarks of PAN, ELS3, GTM3, and EMU3. On the other hand, low trade intensity and inflation divergence generally dissociate the Asian cases from those benchmarks.

Table 6.15 OCA-HCM preparedness assessment

		Dollar		Currency Basket		Yen		Euro		Yuan	
		1	2	1	2	1	2	1	2	1	2
Pre-crisis	1	HKG, SGP, TWN, KOR, MYS, MAC	**CHN, HKG, KOR, TWN, MYS, PHL, SGP, IND, AUS, NZL, CAN**, PAN, ELS3, GTM3, EMU1, EMU2, EMU3	KOR, MYS, SGP, IND, TWN, PHL, CHN, NZL, AUS	**CHN, HKG, KOR, TWN, IDN, MYS, PHL, SGP, THA, IND, AUS, NZL, CAN**, PAN, ELS1, ELS3, GTM3, EMU1, EMU2, EMU3	TWN, SGP, KOR, MYS, PHL, IND, AUS	**IDN, THA, AUS**, PAN, ELS3, GTM3, EMU1, EMU2, EMU3	KOR, MYS, CAN, TWN, THA	**CHN, HKG, KOR, TWN, IDN, MYS, PHL, SGP, THA, IND, AUS, NZL, CAN**, EMU2	KOR, TWN, IDN, MYS, SGP	**HKG, KOR, TWN, IDN, MYS, SGP, AUS, NZL, CAN**, PAN, ELS3, GTM3, EMU1, EMU2, EMU3
	2	CHN, IND, AUS, NZL	GTM1, ELS2, GTM2, ECU3	HKG, IDN, THA, MAC, BRN, KHM	KHM, LAO, MMR, VNM, MAC, BRN	HKG, MAC	CHN, HKG, KOR, TWN, MYS, PHL, SGP, IND, NZL, CAN	PHL, IND, AUS	ELS3, GTM3, EMU1, EMU3	PHL, THA, IND	**MAC**, GTM1, ELS2, GTM2, ECU3
	3	KHM, IDN, JPN, THA	**MAC, BRN,** ELS1	LAO, MMR	GTM1, GTM2, ECU3	IDN, THA	**BRN**, GTM1, ELS2, GTM2, ECU3	HKG, SGP	GTM1, GTM2, ECU3	AUS, CAN	PHL, THA, VNM, IND
	4	LAO, MMR	IDN, THA, VNM, JPN	VNM	ELS2	KHM, NZL	**VNM**, ECU1	BRN, JPN	MAC, BRN, JPN	HKG, MAC	**BRN, JPN**, ELS1
	5	BRN	KHM, LAO	CAN	ECU1	CHN	KHM, LAO	CHN, NZL	KHM, LAO	NZL	KHM, LAO, MMR
	6	PHL	MMR		ECU2	LAO	MMR, MAC	IDN	PAN, ELS1	BRN	ECU1
	7	CAN	ECU1			MMR	ECU2	KHM	VNM	JPN	ECU2
	8	VNM	ECU2			VNM	ELS1	MAC	ELS2	LAO	
	9					BRN		LAO	MMR	MMR	
	10					CAN		VNM	ECU1	VNM	
	11							MMR	ECU2		
Crisis	1	KOR, MYS, THA, NZL, PHL, BRN, TWN, SGP, VNM	**KOR, MYS, PHL, SGP, THA, VNM, BRN, NZL**, ELS1, EMU2	HKG, SGP, KHM, KOR, MYS, TWN	**CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, NZL, CAN**, PAN, ELS1, ELS2, ELS3, GTM3, EMU1, EMU2, EMU3	VNM, NZL, THA, KOR, PHL, MYS, SGP, TWN, CAN, HKG, MAC, KHM, BRN	KOR, MYS, PHL, SGP, THA, VNM, BRN, NZL. CAN	HKG, JPN, KHM, TWN	CHN, HKG, KOR, TWN, KHM, PHL, SGP, MAC, JPN	HKG, KOR, PHL, MAC, JPN	**HKG, KOR, PHL, MAC, JPN, NZL**, PAN, ELS2, ELS3, GTM3, EMU1, EMU2, EMU3
	2	CHN, HKG, MAC, JPN	**TWN**, PAN, ELS3, GTM3, EMU1, EMU3	PHL, MAC, BRN	GTM1, GTM2, ECU3	MMR, IND, AUS	**CHN, TWN**, PAN, ELS3, GTM3, EMU1, EMU2, EMU3	CHN, PHL, MAC	**IND**, PAN, ELS3, GTM3, EMU1, EMU2, EMU3	MYS, THA, VNM, BRN	**MYS, SGP, THA, VNM, BRN,** GTM1, GTM2, ECU3
	3	KHM	**KHM**, GTM1, ELS2, GTM2, ECU3	CHN, VNM	IDN, AUS	CHN, IDN	GTM1, ELS2, GTM2, ECU3	KOR, MYS, THA	GTM1, ELS2, GTM2, ECU3	TWN, KHM, SGP	TWN, KHM, IND, AUS, CAN
	4	MMR	CHN, HKG, MAC, JPN	THA, IND	MMR	LAO	HKG, KHM, MAC	SGP, CAN	MYS, THA, VNM, BRN, NZL	IND, AUS, CAN	ECU1, ELS1
	5	IND, AUS	IND, AUS	MMR	ECU1		MMR, IND	VNM, NZL	ECU1, ELS1	NZL	IDN, MMR
	6	CAN	CAN	AUS	LAO		ECU1, ELS1	IND	AUS, CAN	MMR	LAO
	7	IDN	IDN	NZL	ECU2		IDN	BRN	IDN	IDN	ECU2
	8	LAO	LAO	CAN			AUS	MMR	MMR	LAO	
	9		MMR	IDN			LAO	AUS	LAO		
	10		ECU1	LAO			ECU2	IDN	ECU2		
	11		ECU2					LAO			
Post-crisis 7V	1	TWN, MYS, THA, CHN, HKG, SGP, IND, JPN, VNM	**CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN**, GTM1, GTM2, ECU3	TWN, MYS, THA, CHN, HKG, SGP, PHL, MAC, VNM, IND, KHM, KOR, BRN	**CHN, HKG, KOR, TWN, KHM, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, AUS, NZL**, PAN, EMU1, EMU2, EMU3	CHN, TWN, MYS, HKG, SGP, THA, VNM, PHL	**CHN, HKG, TWN, MYS, SGP, THA, VNM, IND**, EMU1, EMU3	CHN, TWN, HKG, MYS, KOR, JPN, MAC, KHM, SGP	CHN, HKG, KOR, TWN, KHM, MYS, SGP, MAC, BRN, JPN	VNM, IND, TWN, MYS, THA	HKG, TWN, KHM, MYS, SGP, THA, JPN
	2	KHM, PHL, MAC	**NZL**, PAN, ELS2, GTM3, EMU1, EMU2, EMU3	IDN, AUS, NZL	**CAN**, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	KHM, MAC	**IDN, AUS, NZL, CAN**, EMU2	PHL, THA	**IDN, VNM, IND**, EMU1, EMU2, EMU3	KHM, SGP, JPN	**IDN, VNM, IND**, EMU1, EMU3
	3	IDN	KOR, BRN	CAN	MMR	IND, CAN	KHM, PHL, MAC	IDN	PHL, THA, NZL	HKG, PHL	**PHL**, PAN, ELS2,
	4	KOR	ELS1	LAO	ECU1, ELS1	KOR	GTM1, GTM2, ECU3	VNM, IND	GTM1, GTM3, ECU3	KOR	GTM1, GTM2, ECU3
	5	BRN	IDN, AUS	MMR	LAO	IDN, AUS	ELS3, GTM3	CAN	ELS3, GTM3	BRN	ELS3, GTM3
	6	AUS, NZL	MMR		ECU2	NZL	PAN, ELS2	BRN	AUS, CAN	MAC	MMR
	7	LAO	**CAN**, ELS3			BRN	KOR, BRN	AUS, NZL	PAN, ELS2	IDN	**AUS, NZL, CAN**, EMU2
	8	CAN	LAO			LAO	ELS1	LAO	ELS1	AUS, NZL	KOR, BRN
	9	MMR	ECU1			MMR	LAO	MMR	MMR	CAN	**MAC**, ELS1
	10		ECU2				MMR		LAO	LAO	ECU1
	11						ECU1		ECU1	MMR	LAO
	12						ECU2		ECU2		ECU2
All Periods 7V	1	SGP, TWN, MYS	MYS, PHL, SGP	SGP, KOR, MYS, TWN	CHN, HKG, KOR, TWN, MYS, PHL, SGP, THA, IND, NZL,	TWN, SGP, MYS, PHL	-	KOR, MYS	IND	-	NZL
	2		TWN	HKG, KHM	CAN						MAC
	3		KHM	MAC, BRN							
	4		NZL								

Table 6.15 OCA-HCM preparedness assessment (continued)

		Dollar		Currency Basket		Yen		Euro		Yuan	
		1	2	1	2	1	2	1	2	1	2
Post-crisis 8V	1	MYS, THA, CHN, TWN, IND, VNM	**CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN**, GTM1, GTM2, ECU3	MYS, THA, CHN, TWN, VNM, KOR, PHL	**CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC**, PAN, EMU1, EMU2, EMU3	CHN, MYS, TWN, THA, PHL, VNM, IND	**CHN, HKG, TWN, KHM, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC**, EMU1, EMU2, EMU3	MAC, JPN, KOR, KHM, CHN, TWN, VNM, IND	CHN, HKG, KOR, TWN, KHM, MYS, SGP, MAC, JPN	MYS, THA, VNM, IND	**HKG, TWN, KHM, IDN, MYS, SGP, THA, VNM, IND, JPN,** EMU1, EMU2, EMU3
	2	KHM, PHL, MAC	PAN, ELS2, ELS3, GTM3, EMU1, EMU2, EMU3	KHM, MAC	GTM1, GTM2, ECU3	HKG, SGP, KHM, MAC	PAN, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	HKG, MYS, THA, SGP	**IDN, VNM, IND**, EMU1, EMU2, EMU3	TWN, KHM	**PHL**, PAN, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3
	3	HKG, SGP, JPN	**KOR**, ELS1	HKG, SGP, IND	ELS2, ELS3, GTM3	AUS, NZL	**KOR, BRN**, ELS1	AUS, NZL	PAN, ELS2, ELS3, GTM3	HKG, SGP, JPN	**KOR, MAC, BRN**, ELS1
	4	IDN	AUS, NZL	BRN	AUS, NZL, CAN	KOR	AUS, NZL, CAN	IDN	PHL, THA, NZL	AUS, NZL	MMR, AUS, NZL, CAN
	5	KOR	IDN	IDN	IDN	IDN	LAO	CAN	GTM1, GTM2, ECU3	PHL	ECU1
	6	BRN	BRN	AUS, NZL	ELS1	CAN	MMR	BRN	AUS, CAN	MAC	LAO
	7	AUS, NZL	ECU2	CAN	BRN	BRN	ECU1	PHL	ELS1	KOR	ECU2
	8	LAO	LAO	LAO	MMR	LAO	ECU2	LAO	BRN	BRN	
	9	CAN	CAN	MMR	LAO	MMR		MMR	MMR	IDN	
	10	MMR	MMR		ECU1				LAO	CAN	
	11		ECU1		ECU2				ECU1	LAO	
	12								ECU2	MMR	
All Periods 8V	1	MYS, TWN	MYS, PHL, SGP	KOR, MYS, TWN	CHN, HKG, KOR, TWN, MYS, PHL, SGP, THA, IND	TWN, MYS, PHL	-	MYS, THA	IND	-	MYS, SGP
	2		TWN			HKG, MAC					HKG
	3		KOR								MAC
	4										JPN
	5										KOR
	6										BRN

Common sets of countries

		Dollar	Currency Basket	Yen	Euro	Yuan
Pre-crisis	1	HKG, SGP, TWN, KOR, MYS,	KOR, MYS, SGP, IND, TWN, PHL, CHN, NZL, AUS	IDN, THA	KOR, MYS, CAN, TWN, THA	KOR, TWN, IDN, MYS, SGP
	2	CHN, IND, AUS, NZL	HKG, IDN, THA		PHL, IND, AUS	AUS, CAN
	3				HKG, SGP	
	4				CHN, NZL	
Crisis	1	KOR, MYS, THA, NZL, PHL, BRN, SGP, VNM	HKG, SGP, KHM, KOR, MYS, TWN	-	-	HKG, KOR, PHL, MAC, JPN
	2		PHL, MAC, BRN			MYS, THA, VNM, BRN
	3		CHN, VNM			
	4		THA, IND			
Post-crisis 7V	1	TWN, MYS, THA, CHN, HKG, SGP, IND, JPN, VNM	TWN, MYS, THA, CHN, HKG, SGP, PHL, MAC, VNM, IND, KHM, KOR, BRN	CHN, TWN, MYS, HKG, SGP, THA, VNM	VNM, IND	VNM, IND
	2	KHM, PHL, MAC	IDN, AUS, NZL	IDN, AUS		AUS, NZL
All Periods 7V	1	SGP. MYS	SGP, KOR, MYS, TWN	-	-	-
Post-crisis 8V	1	MYS, THA, CHN, TWN, IND, VNM	MYS, THA, CHN, TWN, VNM, KOR, PHL	CHN, MYS, TWN, THA, PHL, VNM, IND	VNM, IND	MYS, THA, VNM, IND
	2	KHM, PHL, MAC	HKG, SGP, IND	HKG, SGP, KHM, MAC		TWN, KHM
	3	HKG, SGP, JPN	KHM, MAC			HKG, SGP, JPN
All Periods 8V	1	-	KOR, MYS, TWN	-	-	-

Table 6.16 OCA-HCM-preparedness cross-anchor subclusters

		PRE	CRS	PST		All			PRE	CRS	PST		All	
				7V	8V	7V	8V				7V	8V	7V	8V
DB	1	CHN, IND, AUS, NZL	KOR, MYS	TWN, MYS, THA, CHN, HKG, SGP, IND, VNM	MYS, THA, CHN, TWN, VNM	-	-	DY	-	-	CHN, TWN, MYS, HKG, SGP, THA, VNM	CHN, MYS, TWN, THA, VNM, IND	-	-
	2	SGP, TWN, KOR, MYS	PHL, BRN	KHM, PHL, MAC	KHM, MAC							HKG, SGP		
	3				HKG, SGP							KHM, MAC		
DE	1	HKG, SGP	-	VNM, IND	VNM, IND	-	-	DR	SGP, TWN, KOR,	MYS, THA, VNM, BRN	VNM, IND	MYS, THA, VNM, IND	-	-
	2	TWN, KOR, MYS								KOR, PHL		HKG, SGP, JPN		
	3	CHN, NZL												
	4	IND, AUS												
BY	1	IDN, THA	-	CHN, TWN, MYS, HKG, SGP, THA, VNM, PHL	MYS, THA, CHN, TWN, PHL, VNM	-	-	BE	KOR, MYS, TWN	-	VNM, IND	-	-	-
	2				HKG, SGP				CHN, NZL					
	3								PHL, IND, AUS					
BR	1	KOR, MYS, SGP, TWN	HKG, KOR	VNM, IND	MYS, THA, VNM	-	-	YE	-	-	-	VNM, IND	-	-
	2		PHL, MAC	AUS, NZL	HKG, SGP									
YR	1	-	-	-	MYS, THA, VNM, IND	-	-	ER	KOR, MYS, TWN	-	VNM, IND	VNM, IND	-	-
	2				HKG, SGP									
DBY	1	-	-	TWN, MYS, THA, CHN, HKG, SGP, VNM	MYS, THA, CHN, TWN, VNM	-	-	DBE	CHN, NZL	-	VNM, IND	-	-	-
	2			KHM, PHL, MAC	KHM, MAC				IND, AUS					
	3				HKG, SGP				TWN, KOR, MYS					
DBR	1	SGP, TWN, KOR, MYS	-	VNM, IND	MYS, THA, VNM	-	-	DYE	-	-	-	VNM, IND		-
	2				HKG, SGP									
DYR	1	-	-	-	MYS, THA, VNM, IND		-	DER	TWN, KOR, MYS	-	VNM, IND	VNM, IND	-	-
	2				HKG, SGP									
BYE	1	-	-	-	-	-	-	BYR	-	-	-	MYS, THA, VNM		-
												HKG, SGP		
BER	1	KOR, MYS, TWN	-	VNM, IND	-	-	-	YER	-	-	-	VNM, IND	-	-
DBYE	1	-	-	-	-	-	-	DBYR	-	-	-	MYS, THA, VNM	-	-
												HKG, SGP		
DBER	1	TWN, KOR, MYS	-	VNM, IND	-	-	-	DYER	-	-	-	VNM, IND	-	-
BYER	1	-	-	-	-	-	-	DBYER	-	-	-	-	-	-

Note: D=Dollar; B=Currency Basket; Y=Yen; E=Euro/Mark; R=Yuan (Renminbi)

Table 6.17 OCA-HCM-preparedness clusters

	Dollar Cluster	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
	Pre-crisis									
	All Cases	25.002	.182	7.752	6.813	.215	3.253	2.539		
1	**CHN, HKG, KOR, TWN, MYS, PHL, SGP, IND, AUS, NZL, CAN,** PAN, ELS3, GTM3, EMU1, EMU2, EMU3	26.344	.283	3.361	1.968	.651	4.137	1.173	-	3
2	**MAC, BRN**, ELS1	21.544	-.312	7.277	2.532	.607	1.601	1.951	-	0
3	IDN, THA, VNM, JPN	18.160	.016	8.179	2.939	-.972	3.020	2.826	-	0
4	KHM, LAO	2.145	.030	9.524	3.015	-.994	1.854	8.685	-	0
5	MMR	3.267	-.100	14.438	2.938	.897	2.529	9.475	-	2
6	GTM1, ELS2, GTM2, ECU3	39.296	.712	6.520	2.548	-.383	2.331	1.474	-	1
7	ECU1	41.699	.150	33.452	5.689	.737	2.158	3.287	-	1
8	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	0
	Crisis									
	All Cases	24.964	.121	9.006	7.790	.048	3.188	1.591		
1	**KOR, MYS, PHL, SGP, THA, VNM, BRN, NZL**, ELS1, EMU2	19.315	-.239	3.483	4.187	.570	2.849	1.068	-	0
2	**TWN**, PAN, ELS3, GTM3, EMU1, EMU3	30.579	.665	1.944	.933	.360	4.054	.974	-	1
3	**KHM**, GTM1, ELS2, GTM2, ECU3	36.437	.729	6.555	2.521	-.505	2.174	1.582	-	0
4	CHN, HKG, MAC, JPN	18.592	-.448	3.193	1.423	-.737	2.388	.698	-	0
5	IND, AUS	12.828	.704	3.269	2.984	-.753	5.233	1.951	-	0
6	CAN	73.515	.922	.596	1.547	.832	4.456	n.a.[3]	-	4
7	IDN	11.197	-.482	21.576	16.519	-.826	6.390	2.416	-	1
8	LAO	1.013	-.028	67.298	11.101	-.159	2.674	5.252	-	1
9	MMR	4.034	-.560	24.586	3.340	-.353	3.412	3.261	-	0
10	ECU1	41.699	.150	33.452	5.689	.737	2.158	3.287	-	0
11	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	0
	Post-crisis 7V									
	All Cases	24.154	.264	6.190	6.454	-.159	3.266	1.351		
1	**CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN**, GTM1, GTM2, ECU3	21.787	.553	3.461	1.648	-.635	2.916	.958	-	1
2	**NZL**, PAN, ELS2, GTM3, EMU1, EMU2, EMU3	26.914	.416	1.767	1.515	.353	3.506	1.074	-	0
3	KOR, BRN	11.250	-.605	1.743	1.741	.452	1.852	.330	-	0
4	ELS1	37.443	-.451	12.575	5.675	.231	2.028	1.853	-	0
5	IDN, AUS	11.038	.009	3.742	4.599	-.292	6.386	1.722	-	1
6	MMR	2.913	-.729	23.681	2.307	.251	4.119	2.009	-	0
7	**CAN**, ELS3	60.509	.142	1.011	1.432	-.565	4.928	1.741	-	2
8	LAO	.729	.310	6.162	1.308	.213	2.442	4.457	-	2
9	ECU1	41.699	.150	33.452	5.689	.737	2.158	3.287	-	0
10	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	1
	Post-crisis 8V									
	All Cases	24.154	.264	6.190	6.454	-.159	3.266	1.351	68.7	
1	**CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN**, GTM1, GTM2, ECU3	21.787	.553	3.461	1.648	-.635	2.916	.958	67.5	1
2	PAN, ELS2, ELS3, GTM3, EMU1, EMU2, EMU3	32.075	.514	1.859	.785	.357	3.648	1.241	56.8	1
3	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	1
4	IDN	10.045	.100	6.663	3.931	-.685	6.159	1.722	48.4	1
5	**KOR**, ELS1	26.170	-.504	6.775	3.849	.608	2.268	1.256	55.6	0
6	BRN	7.604	-.653	2.511	1.460	-.081	1.197	.000	94.0	1
7	AUS, NZL	12.551	-.229	.657	5.453	.213	5.223	n.a.	91.8	1
8	LAO	0.729	.310	6.162	1.308	.213	2.442	4.457	69.4	1
9	CAN	71.818	-.021	.882	2.333	-.565	5.025	.000	90.9	1
10	MMR	2.913	-.729	23.681	2.307	.251	4.119	2.009	-	0
11	ECU1	41.699	.150	33.452	5.689	.737	2.158	3.287	-	0

Table 6.17 OCA-HCM-preparedness clusters (continued)

	Currency Basket Cluster	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
	Pre-crisis									
	All Cases	23.772	.104	8.208	7.704	.148	3.292	2.539		
1	**CHN, HKG, KOR, TWN, IDN, MYS, PHL, SGP, THA, IND, AUS, NZL, CAN,** PAN, ELS1, ELS3, GTM3, EMU1, EMU2, EMU3	22.952	.076	4.165	3.262	.224	3.955	1.308	-	1
2	KHM, LAO, MMR, VNM, MAC, BRN	11.543	-.055	11.450	3.043	.020	2.060	5.962	-	1
3	GTM1, GTM2, ECU3	37.207	.687	8.133	3.183	-.668	2.475	1.587	-	0
4	ELS2	45.562	.788	1.682	.644	.473	1.898	1.134	-	4
5	ECU1	41.699	.150	33.452	5.689	.737	2.158	3.287	-	0
6	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	1
	Crisis									
	All Cases	22.670	.212	9.235	9.321	.053	3.226	1.591		
1	**CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, NZL, CAN**, PAN, ELS1, ELS2, ELS3, GTM3, EMU1, EMU2, EMU3	21.867	.245	3.036	4.187	.136	3.156	1.091	-	1
2	GTM1, GTM2, ECU3	37.207	.687	8.133	3.183	-.668	2.475	1.587	-	2
3	IDN, AUS	13.086	.104	11.816	10.899	-.358	6.281	2.416	-	1
4	MMR	5.428	-.537	24.978	5.668	.022	3.412	3.261	-	0
5	ECU1	41.699	.150	33.452	5.689	.737	2.158	3.287	-	1
6	LAO	4.070	.127	68.106	12.122	-.188	2.674	5.252	-	1
7	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	1
	Post-crisis 7V									
	All Cases	22.010	.217	6.524	6.892	.071	3.301	1.351		
1	**CHN, HKG, KOR, TWN, KHM, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, AUS, NZL**, PAN, EMU1, EMU2, EMU3	15.097	.216	2.351	2.176	.128	3.466	.803	-	1
2	**CAN**, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	40.324	.590	4.698	2.025	-.265	3.307	1.453	-	2
3	MMR	4.023	-.799	24.559	2.364	-.238	4.119	2.009	-	1
4	ECU1, ELS1	39.571	-.150	23.014	5.682	.484	2.093	2.570	-	0
5	LAO	3.441	.490	7.151	1.961	-.284	2.442	4.457	-	2
6	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	1
	Post-crisis 8V									
	All Cases	22.010	.217	6.524	6.892	.071	3.301	1.351	67.9	
1	**CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC**, PAN, EMU1, EMU2, EMU3	15.928	.340	2.178	1.669	.143	3.220	.794	65.0	0
2	IDN	11.537	.141	7.663	4.123	.024	6.159	1.722	48.4	1
3	ELS1	37.443	-.451	12.575	5.675	.231	2.028	1.853	-	0
4	ELS2, ELS3, GTM3	44.856	.601	2.425	.702	.387	3.567	1.319	63.0	2
5	AUS, NZL, CAN	20.207	-.124	1.317	4.482	-.068	5.157	n.a.	91.5	1
6	GTM1, GTM2, ECU3	37.207	.687	8.133	3.183	-.668	2.475	1.587	37.1	1
7	BRN	11.005	-.632	1.786	1.773	.089	1.197	.000	94.0	1
8	MMR	4.023	-.799	24.559	2.364	-.238	4.119	2.009	-	0
9	LAO	3.441	.490	7.151	1.961	-.284	2.442	4.457	69.4	1
10	ECU1	41.699	.150	33.452	5.689	.737	2.158	3.287	-	0
11	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	1

Table 6.17 OCA-HCM-preparedness clusters (continued)

	Yen Cluster	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
	Pre-crisis									
	All Cases	25.216	.054	8.757	9.257	-.066	3.292	2.539		
1	CHN, HKG, KOR, TWN, MYS, PHL, SGP, IND, NZL, CAN	15.856	-.141	5.566	8.760	-.724	3.956	1.106	-	0
2	**BRN**, GTM1, ELS2, GTM2, ECU3	41.000	.608	6.230	2.603	-.383	2.084	1.179	-	2
3	ELS1	37.443	-.451	12.575	5.675	.231	2.028	1.853	-	0
4	KHM, LAO	11.691	-.369	10.757	4.115	.986	1.854	8.685	-	2
5	**IDN, THA, AUS**, PAN, ELS3, GTM3, EMU1, EMU2, EMU3	29.156	.256	2.979	1.962	.496	4.167	1.523	-	3
6	MMR, MAC	12.136	-.357	10.956	3.192	-.950	2.104	6.738	-	0
7	**VNM**, ECU1	31.163	.278	29.749	5.251	.867	2.752	4.106	-	0
8	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	0
	Crisis									
	All Cases	21.558	.423	9.357	9.290	.017	3.226	1.591		
1	KOR, MYS, PHL, SGP, THA, VNM, BRN, NZL. CAN	15.006	.690	2.666	5.064	-.705	2.956	.956	-	0
2	GTM1, ELS2, GTM2, ECU3	39.296	.712	6.520	2.548	-.383	2.331	1.474	-	1
3	**CHN, TWN**, PAN, ELS3, GTM3, EMU1, EMU2, EMU3	27.183	.473	1.709	3.614	.376	3.986	.910	-	1
4	HKG, KHM, MAC	5.632	.649	3.849	4.312	.889	1.960	1.152	-	1
5	MMR, IND	6.228	-.402	16.233	4.199	.697	3.853	2.606	-	0
6	ECU1, ELS1	39.571	-.150	23.014	5.682	.484	2.093	2.570	-	1
7	IDN	19.543	.899	22.682	16.357	.696	6.390	2.416	-	2
8	AUS	15.390	-.803	2.530	4.555	-.685	6.173	n.a.	-	0
9	LAO	3.221	.639	69.312	11.836	-.063	2.674	5.252	-	1
10	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	0
	Post-crisis 7V									
	All Cases	20.644	.265	7.133	7.179	.380	3.301	1.351		
1	**CHN, HKG, TWN, MYS, SGP, THA, VNM, IND**, EMU1, EMU3	13.156	.604	2.652	2.262	.855	3.839	.631	-	0
2	**IDN, AUS, NZL, CAN**, EMU2	13.231	-.024	3.823	3.650	.310	5.189	1.722	-	1
3	KHM, PHL, MAC	7.600	.277	4.119	2.779	.963	1.565	1.200	-	1
4	GTM1, GTM2, ECU3	39.401	.700	6.957	3.182	-.375	2.913	1.275	-	1
5	ELS3, GTM3	44.503	.508	2.796	.731	.302	4.401	1.412	-	1
6	PAN, ELS2	38.414	.581	1.657	.621	.344	1.753	1.070	-	2
7	KOR, BRN	21.962	-.544	2.195	2.319	-.193	1.852	.330	-	0
8	ELS1	37.443	-.451	12.575	5.675	.231	2.028	1.853	-	0
9	LAO	1.644	.489	9.059	2.432	-.838	2.442	4.457	-	1
10	MMR	4.401	-.720	26.361	2.674	-.739	4.119	2.009	-	0
11	ECU1	41.699	.150	33.452	5.689	.737	2.158	3.287	-	0
12	ECU2	33.514	-.879	51.111	147.153	.791	2.406	2.760	-	0
	Post-crisis 8V									
	All Cases	20.644	.265	7.133	7.179	.380	3.301	1.351	67.9	
1	**CHN, HKG, TWN, KHM, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC**, EMU1, EMU2, EMU3	12.785	.473	3.295	2.427	.842	3.570	.864	66.4	1
2	AUS, NZL, CAN	9.579	-.114	2.856	4.271	.119	5.157	n.a.	91.5	3
3	KOR, BRN, ELS1	27.122	-.513	5.655	3.438	-.052	1.911	.838	74.8	0
4	PAN, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	39.636	.606	4.758	1.750	-.169	2.819	1.389	50.8	2
5	LAO	1.644	.489	9.059	2.432	-.838	2.442	4.457	69.4	1
6	MMR	4.401	-.720	26.361	2.674	-.739	4.119	2.009	-	0
7	ECU1	41.699	.150	33.452	5.689	.737	2.158	3.287	-	1
8	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	0

Table 6.17 OCA-HCM-preparedness clusters (continued)

	Euro Cluster	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
	Pre-crisis									
	All Cases	20.536	.021	8.032	7.594	.158	3.253	2.539		
1	**CHN, HKG, KOR, TWN, IDN, MYS, PHL, SGP, THA, IND, AUS, NZL, CAN**, EMU2	12.072	-.244	4.427	3.851	.118	3.981	1.240		0
2	PAN, ELS1	37.139	-.364	7.564	3.005	.340	2.817	1.544	-	0
3	GTM1, GTM2, ECU3	37.207	.687	8.133	3.183	-.668	2.475	1.587	-	0
4	ELS2	45.562	.788	1.682	.644	.473	1.898	1.134	-	4
5	KHM, LAO	11.401	.036	9.824	4.071	.772	1.854	8.685	-	0
6	VNM	12.670	-.077	23.962	4.424	.794	3.346	4.925	-	1
7	MAC, BRN, JPN	9.993	.117	3.299	3.003	-.231	1.593	2.000	-	0
8	ELS3, GTM3, EMU1, EMU3	31.946	.603	2.196	.812	.419	4.429	1.412	-	1
9	MMR	8.772	-.044	15.020	2.807	-.567	2.529	9.475	-	1
10	ECU1	41.699	.150	33.452	5.689	.737	2.158	3.287	-	0
11	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	0
	Crisis									
	All Cases	19.532	.176	8.919	11.521	.062	3.188	1.591		
1	CHN, HKG, KOR, TWN, KHM, PHL, SGP, MAC, JPN	10.132	.172	2.771	10.260	.461	2.297	.963	-	0
2	GTM1, ELS2, GTM2, ECU3	39.296	.712	6.520	2.548	-.383	2.331	1.474	-	1
3	**IND**, PAN, ELS3, GTM3, EMU1, EMU2, EMU3	28.166	.474	2.439	2.096	.431	4.329	1.403	-	1
4	MMR	5.980	-.823	25.197	10.075	.291	3.412	3.261	-	0
5	MYS, THA, VNM, BRN, NZL	8.735	-.202	2.185	9.412	-.827	3.041	.833	-	0
6	AUS, CAN	8.394	.678	1.225	7.005	-.582	5.314	n.a.[3]	-	1
7	IDN	10.402	-.224	22.092	19.395	.382	6.390	2.416	-	1
8	ECU1, ELS1	39.571	-.150	23.014	5.682	.484	2.093	2.570	-	1
9	LAO	9.512	-.023	68.446	13.940	-.330	2.674	5.252	-	1
10	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	1
	Post-crisis 7V									
	All Cases	19.220	.145	6.286	7.030	.175	3.266	1.351	-	
1	CHN, HKG, KOR, TWN, KHM, MYS, SGP, MAC, BRN, JPN	8.707	.118	1.732	2.454	.352	2.335	.612	-	0
2	**IDN, VNM, IND**, EMU1, EMU2, EMU3	15.488	.440	3.303	2.094	.377	4.900	1.164	-	0
3	PHL, THA, NZL	10.796	-.827	1.959	3.669	.350	3.495	1.017	-	0
4	GTM1, GTM3, ECU3	36.911	.636	8.146	2.992	-.294	2.914	1.589	-	0
5	ELS3, GTM3	44.503	.508	2.796	.731	.302	4.401	1.412	-	1
6	AUS, CAN	8.618	.301	1.097	4.137	-.363	5.818	n.a.	-	2
7	PAN, ELS2	38.414	.581	1.657	.621	.344	1.753	1.070	-	1
8	ELS1	37.443	-.451	12.575	5.675	.231	2.028	1.853	-	1
9	MMR	5.473	-.970	24.554	2.215	-.620	4.119	2.009	-	0
10	LAO	9.068	.772	7.239	2.625	-.639	2.442	4.457	-	2
11	ECU1	41.699	.150	33.452	5.689	.737	2.158	3.287	-	0
12	ECU2	33.514	-.879	51.111	147.153	.791	2.406	2.760	-	0
	Post-crisis 8V									
	All Cases	19.220	.145	6.286	7.030	.175	3.266	1.351	68.7	
1	CHN, HKG, KOR, TWN, KHM, MYS, SGP, MAC, JPN	9.508	.196	1.792	2.507	.361	2.462	.688	71.3	0
2	**IDN, VNM, IND**, EMU1, EMU2, EMU3	15.488	.440	3.303	2.094	.377	4.900	1.164	58.2	0
3	PHL, THA, NZL	10.796	-.827	1.959	3.669	.350	3.495	1.017	76.4	0
4	BRN	1.494	-.586	1.196	1.985	.270	1.197	.000	94.0	1
5	PAN, ELS2, ELS3, GTM3	41.458	.545	2.227	.676	.330	3.077	1.241	55.4	1
6	ELS1	37.443	-.451	12.575	5.675	.231	2.028	1.853	-	0
7	GTM1, GTM2, ECU3	37.207	.687	8.133	3.183	-.668	2.475	1.587	37.1	0
8	AUS, CAN	8.618	.301	1.097	4.137	-.363	5.818	n.a.	89.8	2
9	MMR	5.473	-.970	24.554	2.215	-.620	4.119	2.009	-	0
10	LAO	9.068	.772	7.239	2.625	-.639	2.442	4.457	69.4	2
11	ECU1	41.699	.150	33.452	5.689	.737	2.158	3.287	-	1
12	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	1

Table 6.17 OCA-HCM-preparedness clusters (continued)

	Yuan Cluster	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
	Pre-crisis									
	All Cases	17.692	.237	10.527	8.285	.086	3.218	2.610	-	
1	**HKG, KOR, TWN, IDN, MYS, SGP, AUS, NZL, CAN**, PAN, ELS3, GTM3, EMU1, EMU2, EMU3	14.853	.374	6.213	3.143	.480	3.966	.933	-	1
2	**MAC**, GTM1, ELS2, GTM2, ECU3	35.404	.670	6.962	2.966	-.274	2.200	1.979	-	2
3	PHL, THA, VNM, IND	2.576	.025	11.941	5.080	-.839	4.143	3.055	-	1
4	**BRN, JPN**, ELS1	14.209	-.457	11.880	5.327	.395	1.709	.926	-	0
5	KHM, LAO, MMR	12.728	.205	13.634	4.668	-.578	2.079	8.948	-	1
6	ECU1	41.699	.150	33.452	5.689	.737	2.158	3.287	-	1
7	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	1
	Crisis									
	All Cases	19.925	.231	9.518	8.094	.153	3.186	1.629	-	
1	**HKG, KOR, PHL, MAC, JPN, NZL,** PAN, ELS2, ELS3, GTM3, EMU1, EMU2, EMU3	24.862	.522	2.304	2.163	.544	3.283	1.055	-	2
2	**MYS, SGP, THA, VNM, BRN**, GTM1, GTM2, ECU3	18.072	.539	4.762	3.526	-.657	2.637	1.157	-	0
3	TWN, KHM, IND, AUS, CAN	5.394	-.785	4.194	2.599	.467	3.820	1.400	-	0
4	ECU1, ELS1	39.571	-.150	23.014	5.682	.484	2.093	2.570	-	1
5	IDN, MMR	12.264	.585	24.472	9.970	.053	4.901	2.838	-	2
6	LAO	5.679	.217	69.459	11.224	-.724	2.674	5.252	-	1
7	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	1
	Post-crisis 7V									
	All Cases	20.995	.286	6.616	6.731	.360	3.268	1.388	-	
1	HKG, TWN, KHM, MYS, SGP, THA, JPN	10.602	.549	2.070	1.489	.947	2.792	.651	-	1
2	**IDN, VNM, IND**, EMU1, EMU3	13.270	.677	3.540	1.736	.778	5.018	1.164	-	1
3	**PHL**, PAN, ELS2,	35.405	.532	2.379	.992	.555	1.963	1.204	-	0
4	GTM1, GTM2, ECU3	37.207	.687	8.133	3.183	-.668	2.475	1.587	-	1
5	ELS3, GTM3	44.503	.508	2.796	.731	.302	4.401	1.412	-	2
6	MMR	16.824	-.325	23.901	2.501	-.606	4.119	2.009	-	0
7	**AUS, NZL, CAN**, EMU2	9.440	-.207	1.892	3.774	-.023	4.946	n.a.	-	1
8	KOR, BRN	11.196	-.258	2.080	1.939	-.268	1.852	.330	-	0
9	**MAC**, ELS1	32.639	-.507	7.487	3.266	.614	1.599	1.463	-	0
10	ECU1	41.699	.150	33.452	5.689	.737	2.158	3.287	-	0
11	LAO	6.981	.662	7.225	1.471	-.841	2.442	4.457	-	1
12	ECU2	33.514	-.879	51.111	147.153	.791	2.406	2.760	-	0
	Post-crisis 8V									
	All Cases	20.995	.286	6.616	6.731	.360	3.268	1.388	69.0	
1	**HKG, TWN, KHM, IDN, MYS, SGP, THA, VNM, IND, JPN,** EMU1, EMU2, EMU3	12.345	.558	2.547	1.546	.824	3.765	.822	69.3	2
2	**PHL**, PAN, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	38.355	.584	4.641	1.748	-.005	2.765	1.399	52.2	0
3	**KOR, MAC, BRN**, ELS1	21.918	-.382	4.784	2.603	.173	1.726	.897	74.8	0
4	MMR, AUS, NZL, CAN	8.666	-.293	7.639	4.148	-.224	4.897	2.009	91.5	2
5	ECU1	41.699	.150	33.452	5.689	.737	2.158	3.287	-	1
6	LAO	6.981	.662	7.225	1.471	-.841	2.442	4.457	69.4	3
7	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	0

Notes: 1 Standard deviation ($x10^2$) of the log difference in bilateral real exchange rate. 2 Number of variables with highest degree of conformity to OCA criteria. 3 'n.a.' for not applicable.
Source: Hierarchical cluster analysis. See Appendix A for data description.

6.2.3.2 Preparedness Assessment using Weighted Criteria

It may also be instructive to investigate the levels of preparedness when the sum of the 'benefit' criteria and the sum of the 'cost' criteria are given equal weights, in a sense measuring the robustness of the preparedness when the trade and debt criteria are given larger weights whilst at the same time the cost criteria are given lesser weights. The results are shown in Table 6.18; columns '1' display the preparedness solutions using the original unweighted variables and columns '2' the solutions based on weighted variables.

Cross-weighting prepared common sets are shown in columns 2 in Table 6.19. Countries in these subsets are still equally prepared even after the weighting because they are generally linked with all the EMU benchmarks after the weighting, as good as those before the weighting. Columns 1 contain the cross-weighting subsets in the original solutions without any benchmarks. Countries that are placed together in both the subsets in columns 1 and 2 (non-singleton sets highlighted in column 1) might share common OCA features and degrees of preparedness regardless of the weighting.

For pre-crisis period, relatively substantial common sets defined above are present under dollar anchor and for crisis period under basket and yuan anchors. For post-crisis 7V, only Indonesia-Australia and Australia-NewZealand by basket and yuan anchors respectively are present. For post-crisis 8V, the US-based Cambodia-Philippines-Macau and Singapore-Japan and the G3-based Malaysia-Thailand-China-Taiwan-Korea, Cambodia-Macau, and HongKong-Singapore subsets are found.

Hong Kong and Macau as well as Singapore and Brunei are not seen sharing any common set. Rather, Hong Kong and Singapore are seen together for the crisis and post-crisis 8V periods under the basket anchor.

In brief, few countries simultaneously share common OCA features and levels of preparedness across unweighted and weighted criteria. Despite this, in relation to other

anchors, on the whole basket anchor is compatible with more substantial groups of countries exhibiting this attribute.

Table 6.18 OCA-HCM-preparedness-weighting assessment

		Dollar		Currency Basket		Yen		Euro		Yuan	
		1	2	1	2	1	2	1	2	1	2
Pre-crisis	1	**CHN, HKG, KOR, TWN, MYS, PHL, SGP, IND, AUS, NZL, CAN**, PAN, ELS3, GTM3, EMU1, EMU2, EMU3	**CHN, HKG, KOR, TWN, MYS, SGP, IND, AUS, NZL**, EMU1, EMU2, EMU3	**CHN, HKG, KOR, TWN, IDN, MYS, PHL, SGP, THA, IND, AUS, NZL, CAN**, PAN, ELS1, ELS3, GTM3, EMU1, EMU2, EMU3	CHN, HKG, KOR, TWN, IDN, MYS, SGP, THA, BRN, NZL	**IDN, THA, AUS**, PAN, ELS3, GTM3, EMU1, EMU2, EMU3	**CHN, HKG, KOR, TWN, MYS, PHL, SGP, THA, IND, MAC, AUS, NZL, CAN**, EMU1, EMU2, EMU3	**CHN, HKG, KOR, TWN, IDN, MYS, PHL, SGP, THA, IND, AUS, NZL, CAN**, EMU2	CHN, HKG, KOR, TWN, IDN, MYS, SGP, THA, AUS, NZL, CAN	**HKG, KOR, TWN, IDN, MYS, SGP, AUS, NZL, CAN**, PAN, ELS3, GTM3, EMU1, EMU2, EMU3	KOR, TWN, IDN, MYS, PHL, SGP, THA, IND, AUS, NZL, CAN
	2	**MAC, BRN,** ELS1	GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	KHM, LAO, MMR, VNM, MAC, BRN	**PHL, IND, AUS**, EMU1, EMU2, EMU3	CHN, HKG, KOR, TWN, MYS, PHL, SGP, IND, NZL, CAN	**IDN, BRN**, PAN, ECU1, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	ELS3, GTM3, EMU1, EMU3	**PHL, IND**, EMU1, EMU2, EMU3	**MAC**, GTM1, ELS2, GTM2, ECU3	PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3
	3	GTM1, ELS2, GTM2, ECU3	**PHL**, PAN, ELS1	GTM1, GTM2, ECU3	GTM1, GTM2, ECU3	**BRN**, GTM1, ELS2, GTM2, ECU3	KHM, LAO, MMR	GTM1, GTM2, ECU3	GTM1, GTM2, ECU3	PHL, THA, VNM, IND	**HKG, MAC**, EMU1, EMU2, EMU3
	4	IDN, THA, VNM, JPN	IDN, THA, JPN	ELS2	**CAN**, GTM3	**VNM**, ECU1	VNM	PAN, ELS1	ELS2, ELS3, GTM3	**BRN, JPN**, ELS1	BRN, JPN
	5	KHM, LAO	LAO, MMR	ECU1	VNM, MAC	KHM, LAO	ECU2	KHM, LAO	PAN, ELS1	KHM, LAO, MMR	KHM, VNM
	6	MMR	KHM	ECU2	LAO, MMR	MMR, MAC		MAC, BRN, JPN	MAC, JPN	ECU1	LAO, MMR
	7	ECU1	VNM		PAN, ELS1	ECU2		VNM	KHM, VNM	ECU2	ECU2
	8	ECU2	MAC		ELS3	ELS1		ELS2	LAO, MMR		ECU1
	9		BRN		ELS2			MMR	BRN		
	10		CAN		KHM			ECU1	ECU1		
	11		ECU1		ECU1			ECU2	ECU2		
	12		ECU2		ECU2						
Crisis	1	**KOR, MYS, PHL, SGP, THA, VNM, BRN, NZL,** ELS1, EMU2	**PHL, THA, VNM, IND, AUS, NZL,** EMU1, EMU2, EMU2	**CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, NZL, CAN**, PAN, ELS1, ELS2, ELS3, GTM3, EMU1, EMU2, EMU3	**CHN, HKG, KOR, TWN, KHM, IDN, MYS, MMR, PHL, SGP, THA, VNM, IND, MAC, BRN, AUS, NZL**, EMU1, EMU2, EMU3	KOR, MYS, PHL, SGP, THA, VNM, BRN, NZL. CAN	**CHN, HKG, KOR, TWN, IDN, MYS, PHL, SGP, THA, VNM, MAC, AUS, NZL, CAN**, EMU1, EMU2, EMU3	CHN, HKG, KOR, TWN, KHM, PHL, SGP, MAC, JPN	CHN, HKG, KOR, TWN, MYS, SGP, MAC, BRN	**HKG, KOR, PHL, MAC, JPN, NZL**, PAN, ELS2, ELS3, GTM3, EMU1, EMU2, EMU3	**HKG, KOR, TWN, KHM, IDN, MYS, MMR, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, AUS, NZL, CAN,** EMU1, EMU2, EMU3
	2	**TWN**, PAN, ELS3, GTM3, EMU1, EMU3	CHN, HKG, KOR, TWN, MYS, SGP, MAC, BRN	GTM1, GTM2, ECU3	**CAN**, PAN, ECU1, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	**CHN, TWN**, PAN, ELS3, GTM3, EMU1, EMU2, EMU3	**BRN**, PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	**IND**, PAN, ELS3, GTM3, EMU1, EMU2, EMU3	**KHM, IND, JPN**, EMU1, EMU2, EMU3	**MYS, SGP, THA, VNM, BRN,** GTM1, GTM2, ECU3	PAN, ECU1, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3
	3	**KHM**, GTM1, ELS2, GTM2, ECU3	PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3,	IDN, AUS	ECU2	GTM1, ELS2, GTM2, ECU3	KHM, MMR, IND	GTM1, ELS2, GTM2, ECU3	PAN, GTM1, ELS2, GTM2, ECU3, GTM3	TWN, KHM, IND, AUS, CAN	ECU2
	4	CHN, HKG, MAC, JPN	KHM, JPN	MMR	LAO	HKG, KHM, MAC	ECU1	MYS, THA, VNM, BRN, NZL	PHL, THA, VNM,, AUS, NZL, CAN	ECU1, ELS1	LAO
	5	IND, AUS	IDN, MMR	ECU1		MMR, IND	ECU2	ECU1, ELS1	ELS3	IDN, MMR	
	6	CAN	ECU1	LAO		ECU1, ELS1	LAO	AUS, CAN	IDN	LAO	
	7	IDN	ECU2	ECU2		IDN		IDN	MMR	ECU2	
	8	LAO	CAN			AUS		MMR	LAO		
	9	MMR	LAO			LAO		LAO	ECU1		
	10	ECU1				ECU2		ECU2	ECU2		
	11	ECU2							ELS1		

Table 6.18 OCA-HCM-preparedness-weighting assessment (continued)

		Dollar		Currency Basket		Yen		Euro		Yuan	
		1	2	1	2	1	2	1	2	1	2
Post-crisis 7V	1	**CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN**, GTM1, GTM2, ECU3	CHN, HKG, TWN, MYS, PHL, SGP, THA, VNM, MAC, JPN	**CHN, HKG, KOR, TWN, KHM, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, AUS, NZL**, PAN, EMU1, EMU2, EMU3	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, NZL	**CHN, HKG, TWN, MYS, SGP, THA, VNM, IND**, EMU1, EMU3	CHN, HKG, TWN, KHM, MYS, SGP, THA, VNM, IND, MAC, CAN	CHN, HKG, KOR, TWN, KHM, MYS, SGP, MAC, BRN, JPN	**CHN, HKG, KOR, TWN, KHM, IDN, MYS, MMR, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, AUS, NZL, CAN,** EMU1, EMU2, EMU3	HKG, TWN, KHM, MYS, SGP, THA, JPN	HKG, TWN, KHM, MYS, SGP, THA, VNM, IND, JPN
	2	**NZL**, PAN, ELS2, GTM3, EMU1, EMU2, EMU3	**IDN, IND, AUS, NZL,** EMU1, EMU2, EMU3	**CAN**, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	**IDN, AUS,** EMU1, EMU2, EMU3	**IDN, AUS, NZL, CAN**, EMU2	**IDN, PHL, AUS, NZL**, EMU1, EMU2, EMU3	**IDN, VNM, IND**, EMU1, EMU2, EMU3	PAN, ECU1, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	**IDN, VNM, IND**, EMU1, EMU3	**IDN, AUS, NZL, CAN**, EMU1, EMU2, EMU3
	3	KOR, BRN	**KHM**, PAN, GTM1, GTM2, ECU3	MMR	PAN, ELS2, GTM3	KHM, PHL, MAC	PAN, ELS1, GTM1, ELS2, GTM2, ECU3, GTM3	PHL, THA, NZL	LAO	**PHL**, PAN, ELS2,	**PHL, MAC**, PAN
	4	ELS1	ELS2, ELS3, GTM3	ECU1, ELS1	**CAN**, GTM1, GTM2, ECU3	GTM1, GTM2, ECU3	ELS3	GTM1, GTM3, ECU3	ECU2	GTM1, GTM2, ECU3	ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3
	5	IDN, AUS	KOR, BRN	LAO	ELS1	ELS3, GTM3	KOR	ELS3, GTM3		ELS3, GTM3	KOR, BRN
	6	MMR	ELS1	ECU2	ELS3	PAN, ELS2	BRN	AUS, CAN		MMR	MMR
	7	**CAN**, ELS3	MMR		BRN	KOR, BRN	MMR	PAN, ELS2		**AUS, NZL, CAN**, EMU2	ECU1
	8	LAO	ECU1		MMR	ELS1	ECU1	ELS1		KOR, BRN	ECU2
	9	ECU1	ECU2		ECU1	LAO	ECU2	MMR		**MAC**, ELS1	LAO
	10	ECU2	CAN		ECU2	MMR	LAO	LAO		ECU1	
	11		LAO		LAO	ECU1		ECU1		LAO	
	12					ECU2		ECU2		ECU2	
All Periods 7V	1	MYS, PHL, SGP	IND, AUS, NZL	CHN, HKG, KOR, TWN, MYS, PHL, SGP, THA, IND, NZL,	AUS	-	IDN, PHL, AUS, NZL	IND	IND	NZL	MAC
	2	TWN		CAN	CAN					MAC	
	3	KHM									
	4	NZL									
Post-crisis 8V	1	**CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN**, GTM1, GTM2, ECU3	**IDN, PHL, SGP, IND, MAC, JPN, AUS, NZL**, EMU1, EMU2, EMU3	**CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC**, PAN, EMU1, EMU2, EMU3	**CHN, HKG, KOR, TWN, KHM, IDN, MYS, MMR, PHL, SGP, THA, VNM, IND, MAC, BRN, AUS, NZL,** EMU1, EMU2, EMU3	**CHN, HKG, TWN, KHM, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC**, EMU1, EMU2, EMU3	**IDN, PHL, AUS, NZL, CAN**, EMU1, EMU2, EMU3	CHN, HKG, KOR, TWN, KHM, MYS, SGP, MAC, JPN	**CHN, HKG, KOR, TWN, KHM, IDN, MYS, MMR, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, AUS, NZL, CAN**, EMU1, EMU2, EMU3	**HKG, TWN, KHM, IDN, MYS, SGP, THA, VNM, IND, JPN**, EMU1, EMU2, EMU3	HKG, MYS, SGP, THA, BRN, JPN, AUS, NZL, CAN
	2	PAN, ELS2, ELS3, GTM3, EMU1, EMU2, EMU3	**KHM**, PAN, GTM1, ELS2, GTM2, GTM3	GTM1, GTM2, ECU3	**CAN**, PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	PAN, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	CHN, HKG, TWN, KHM, MYS, SGP, THA, VNM, IND, MAC	**IDN, VNM, IND**, EMU1, EMU2, EMU3	ECU1, ECU2, ELS2, GTM2, ECU3, ELS3, GTM3	**PHL**, PAN, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	GTM1, ELS2, GTM2, ELS3, GTM3
	3	**KOR**, ELS1	CHN, HKG, TWN, MYS, THA, VNM	ELS2, ELS3, GTM3	ECU1, ECU2	**KOR, BRN**, ELS1	PAN, GTM1, ELS2, GTM2, GTM3	PAN, ELS2, ELS3, GTM3	PAN, ELS1, GTM1	**KOR, MAC, BRN**, ELS1	**IDN, VNM, IND,** EMU1, EMU2, EMU3
	4	AUS, NZL	ELS1, ECU4	AUS, NZL, CAN	LAO	AUS, NZL, CAN	ELS2, ECU3	GTM1, GTM2, ECU3	LAO	MMR, AUS, NZL, CAN	**PHL, MAC**, ELS1
	5	IDN	BRN	IDN		LAO	BRN	PHL, THA, NZL		ECU1	TWN, KHM
	6	BRN	LAO	ELS1		MMR	MMR	AUS, CAN		LAO	KOR, MMR
	7	ECU2	CAN	BRN		ECU1	LAO	ELS1		ECU2	LAO
	8	LAO	MMR	MMR		ECU2	KOR	BRN			PAN, ECU3
	9	CAN	KOR	LAO			ECU1	MMR			ECU1
	10	MMR	ECU1	ECU1			ECU2	LAO			ECU2
	11	ECU1	ELS3	ECU2			ELS3	ECU1			
	12		ECU2					ECU2			
All Periods 8V	1	MYS, PHL, SGP	AUS, NZL	CHN, HKG, KOR, TWN, MYS, PHL, SGP, THA, IND	PHL, IND, AUS	-	PHL, AUS, NZL, CAN	IND	IND	MYS, SGP	MAC
	2	TWN	PHL		CAN		IDN			HKG	
	3	KOR								MAC	
	4									JPN	
	5									KOR	
	6									BRN	

Table 6.19 HCM cross-weighting and cross-preparedness-weighting subclusters

		Dollar		Currency Basket		Yen		Euro		Yuan	
		1	2	1	2	1	2	1	2	1	2
Pre-crisis	1	HKG, SGP, TWN, KOR, MYS, MAC	CHN, HKG, KOR, TWN, MYS, SGP, IND, AUS, NZL	KOR, MYS, TWN	PHL, IND, AUS	TWN, SGP, KOR, MYS, PHL, AUS	IDN	KOR, MYS, TWN, THA	PHL, IND	KOR, TWN, IDN, MYS, SGP	HKG
	2	CHN, IND, AUS, NZL	PHL	HKG, BRN	CAN		THA, AUS	CHN, NZL		PHL, THA, IND	MAC
	3	IDN, JPN, THA		LAO, MMR			BRN	PHL, IND		AUS, CAN	
	4	LAO, MMR		IDN, THA							
	5			IND, NZL							
Crisis	1	KOR, MYS, THA, NZL, SGP	PHL, THA, VNM	HKG, SGP, KOR, MYS	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, NZL,	KOR, MYS, PHL, SGP, THA, VNM, NZL	CHN, TWN	HKG, JPN, KHM	IND	HKG, PHL, KOR, JPN	HKG, KOR, PHL, MAC, JPN, NZL
	2	CHN, HKG, MAC	NZL	THA, IND	CAN	HKG. MAC		CHN, PHL, MAC		MYS, THA, VNM	MYS, SGP, THA, VNM, BRN
	3	IND, AUS		CHN, VNM				KOR, MYS, THA		IND, AUS, CAN	
	4	PHL, VNM		MAC, BRN				SGP, CAN		KHM, SGP	
	5							VNM, NZL			
Post-crisis 7V	1	TWN, MYS, THA, CHN, HKG, SGP, IND, JPN, VNM	IND	MYS, THA, CHN, TWN, HKG, KOR, BRN	IDN, AUS	CHN, TWN, MYS, THA, VNM	IDN, AUS, NZL	CHN, TWN, HKG, MYS, KOR, JPN, MAC, KHM	IDN, VNM, IND	VNM, IND, MYS, THA	AUS, NZL, CAN
	2	KHM, PHL, MAC	NZL	KHM, PHL, MAC	CAN	HKG, SGP		PHL, THA		KHM, JPN	IDN
	3	AUS, NZL	KHM	IDN, AUS, NZL		KHM, MAC		AUS, NZL		AUS, NZL	PHL
	4			SGP, IND		IND, CAN					MAC
All Periods 7V	1	MYS, SGP	NZL	KOR, MYS	CAN	-	-	KOR, MYS	IND	-	MAC
Post-crisis 8V	1	MYS, THA, CHN, TWN, IND, VNM	KHM, PHL, SGP, IND, MAC, JPN	MYS, THA, CHN, TWN, KOR	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	CHN, MYS, TWN, THA, VNM	IDN, PHL	MAC, JPN, KOR, KHM, CHN, TWN, VNM,	IDN, VNM, IND	MYS, THA, VNM, IND	IDN, VNM, IND
	2	KHM, PHL, MAC		KHM, MAC		HKG, SGP		HKG, MYS, THA,		HKG, SGP, JPN	PHL
	3	HKG, SGP, JPN		HKG, SGP		KHM, MAC		AUS, NZL		TWN, KHM	MAC
	4	AUS, NZL		AUS, NZL		AUS, NZL				AUS, NZL	
All Periods 8V	1	-	-	KOR, MYS	PHL, IND	-	-	MYS, THA	IND	-	MAC

6.2.4 Recapitulation

The section has discussed the results using hierarchical cluster analysis and OCA criteria. The following are the key findings using 7 variables unless specific mention to 8 variables is given.

Classifications

Using the original unweighted criteria, based on the average silhouettes over all objects, the reference country consistent with best partitioning differs depending on period but based on the structure of the partitions, on the whole the G3 reference is in line with more convergent arrangements.

Notably, Singapore, Taiwan, and Malaysia consistently share the same grouping for dollar, basket, and yen anchors whilst Korea and Malaysia are always linked for basket and euro anchors over periods. The same is still true for Taiwan and Malaysia even when the post-crisis labor criterion is included.

Despite maintaining fixed dollar rates, with reference to US, Hong Kong and Macau share the same cluster for pre-crisis and crisis periods only. Singapore and Brunei, the monetary union constituents are rarely put together in the same cluster.

For the most recent period, the post-crisis period, Taiwan and Malaysia are linked over all anchors. With 8 variables, Thailand and Malaysia, Hong Kong and Singapore, and Australia and New Zealand are linked over all anchors.

Classifications using Weighted Criteria

How have the configurations changed when benefits and costs are treated equally? In general, putting more weight on trade openness, the benefit variable which is measured relative to a reference, has brought the region closer together against US but farther apart against Japan.

Specifically, Singapore and Malaysia still share the same grouping over periods by

the US reference and the same is true for Korea and Malaysia by basket or euro reference. With labor criterion for post-crisis period, only the Korea-Malaysia link under the G3 reference is still robust.

Hong Kong and Macau still share the same grouping for the pre-crisis and crisis periods by the US reference. Singapore and Brunei do not share any same grouping across weightings.

For post-crisis period, with 7 variables no countries are still linked over all anchors. With 8 variables, Malaysia and Thailand, and Australia and New Zealand are still present across all anchors.

Assessment of Preparedness using Unweighted Criteria

Based on the number of countries connected with the post-dollarization and/or post-euro benchmarks, in general the region could have been more prepared for a fixed basket peg throughout the periods.

Singapore and Malaysia, and Singapore, Korea, Malaysia, and Taiwan might have constantly shared common OCA features and degrees of preparedness over the periods under the US and the G3 reference respectively. When 8 variables are used for post-crisis period, Korea, Malaysia, and Taiwan still maintain these features by G3 reference.

For Hong Kong and Macau, they are not indicated to be symmetrical in the dimensions and the level of preparedness by the US reference for any period. It is also rarely the case for other references. Similar finding is found for Singapore and Brunei. On this evidence, despite maintaining similar monetary standards, these pairs of economies are not indicated to be always parallel in both the OCA dimensions and the level of preparedness under any reference.

No subgroupings which are present in the same Asian-only and Asian-plus-benchmark clusters are also at the same time present across all anchors.

Assessment of Preparedness using Weighted Criteria

Extremely few countries are indicated to commonly share OCA features and levels of preparedness regardless of criteria weighting. No subgroupings which are present in the same Asian-only and Asian-plus-benchmark clusters regardless of weighting are also at the same time present over all periods or across all anchors.

Those in the post-crisis crisis findings, however, may be worth mentioning. For post-crisis 7V, Indonesia-Australia and Australia-NewZealand are present under basket and yuan anchors respectively. For post-crisis 8V, the US-based Cambodia-Philippines-Macau and Singapore-Japan and the G3-based Malaysia-Thailand-China-Taiwan-Korea, Cambodia-Macau, and HongKong-Singapore are found.

Hong Kong and Macau as well as Singapore and Brunei are not shown to be simultaneously parallel in the OCA features and the degree of preparedness across the weightings.

6.3 Fuzzy Clustering Results

The results by fuzzy cluster analysis are categorized into 4 main sections: classifications, classifications using weighted criteria, assessment of preparedness, and a recapitulation.

6.3.1 Classifications

The section is divided into 3 parts: cluster validation; findings by monetary anchor; and comparisons of findings across the anchors.

Cluster Validation

Xie-Beni's Index (XBI) is used to determine the number of clusters corresponding to the most appropriate partitioning for fuzzy cluster analysis. The lower the XBI value, the better the fuzzy partition fits the structure of the data. Meantime, Normalized Dunn's Partition Coefficient (DPC) is employed to measure the degree of fuzziness in the data where a value close to 1 indicates no fuzziness whilst a value close to 0 indicates complete fuzziness.

Table 6.20 exhibits the XBI and DPC values for a range of cluster solutions. The selected numbers of clusters are highlighted. Sometimes a compromise between the two measures has to be made to ensure more interpretable results. For instance, though the XBI for the currency basket post-crisis 8V solution is lowest at 6 clusters, the corresponding DPC is virtually zero where each object would have close to equal degree of belongingness to every cluster. Hence the solution of 7 clusters with a substantially high DPC is used.

Among the solutions, the euro solutions on the whole obtain the lowest XBIs, suggesting relatively good fit between the data and the generated partitions.

Table 6.20 XBI and DPC using OCA criteria

	Dollar								Currency Basket							
	Pre-crisis		Crisis		Post-crisis				Pre-crisis		Crisis		Post-crisis			
					7V		8V						7V		8V	
k	XBI	DPC	XBI	DPC	XBI	DPC	XBI	DPC	XBI	DPC	XBI	DPC	XBI	DPC	XBI	DPC
2	1.16	.18	1.25	.09	1.44	.34	1.17	.21	1.27	.17	1.32	.18	1.28	.23	.99	.06
3	1.09	.24	.96	.24	1.32	.23	.80	.11	.91	.24	1.05	.28	1.07	.25	.74	.09
4	1.06	.31	1.04	.22	1.33	.34	.69	.10	.92	.34	.85	.27	1.18	.26	.65	.10
5	.93	.30	.90	.25	1.10	.31	.81	.26	.82	.30	1.08	.29	1.16	.34	.56	.09
6	1.03	.32	.89	.24	1.04	.36	.85	.27	1.05	.32	1.04	.28	1.09	.35	.50	.09
7	1.10	.39	1.18	.31	1.29	.38	1.02	.31	1.18	.34	1.25	.36	1.21	.40	1.08	.34
8	1.18	.44	1.28	.36	1.28	.41	1.12	.38	1.44	.41	1.46	.39	1.60	.44	1.32	.40
9	1.23	.49	1.27	.42	1.35	.45	1.40	.44	1.59	.45	1.69	.46	1.84	.50	1.50	.46
10	1.42	.51	1.69	.48	1.37	.51	1.57	.49	1.70	.52	1.66	.52	1.61	.55	1.72	.51
11	1.57	.57	1.70	.54	1.54	.56	1.64	.55	1.71	.58	1.75	.57	1.65	.60	1.84	.57

	Yen								Euro								Yuan							
	Pre-crisis		Crisis		Post-crisis				Pre-crisis		Crisis		Post-crisis				Pre-crisis		Crisis		Post-crisis			
					7V		8V						7V		8V						7V		8V	
k	XBI	DPC	XBI	DPC	XBI	DPC	XBI	DPC	XBI	DPC	XBI	DPC	XBI	DPC	XBI	DPC	XBI	DPC	XBI	DPC	XBI	DPC	XBI	DPC
2	1.13	.14	1.47	.25	1.43	.25	1.22	.14	1.21	.11	1.22	.08	1.22	.24	.96	.09	1.14	.25	1.11	.11	1.30	.26	1.20	.16
3	.80	.15	1.43	.20	1.17	.28	.81	.08	.77	.13	.85	.08	.85	.17	.93	.14	1.03	.25	1.16	.26	.85	.21	.80	.13
4	.84	.22	1.27	.25	1.13	.31	.90	.25	1.05	.20	.89	.24	1.07	.29	.77	.16	1.11	.32	1.05	.38	.77	.21	.74	.18
5	1.01	.27	1.16	.34	1.15	.40	.78	.24	.94	.20	.76	.25	1.09	.31	.83	.25	.95	.31	.93	.33	.78	.30	.82	.21
6	1.05	.32	1.21	.32	1.31	.44	.92	.34	.86	.31	.90	.29	1.14	.36	.90	.28	1.06	.39	1.05	.33	.87	.35	.92	.32
7	1.28	.40	1.50	.37	1.19	.45	1.04	.38	.95	.35	1.22	.32	1.38	.38	1.11	.34	1.17	.42	1.27	.37	.97	.39	1.04	.38
8	1.38	.44	1.31	.44	1.49	.53	1.16	.43	1.04	.41	1.24	.37	1.34	.43	1.15	.38	1.25	.40	1.26	.41	1.15	.44	1.19	.41
9	1.45	.49	1.62	.49	1.58	.57	1.39	.48	1.13	.45	1.40	.44	1.35	.48	1.33	.44	1.26	.50	1.48	.48	1.31	.48	1.36	.47
10	1.45	.54	1.57	.53	1.57	.62	1.57	.53	1.29	.49	1.71	.49	1.52	.50	1.39	.48	1.33	.56	1.74	.52	1.43	.52	1.55	.53
11	1.56	.60	2.21	.59	1.67	.66	1.67	.58	1.49	.55	1.62	.54	1.58	.56	1.54	.55	1.49	.58	1.62	.58	1.65	.58	.83	.27

Note: In general, an effective representation of data requires that the number of clusters be neither too small nor too large. The number of clusters considered here should suffice for meaningful interpretations.
Source: Fuzzy cluster analysis. See Appendix A for data description.

Dollar Anchor Results

This section presents the US-based fuzzy clustering solutions. From the preceding Table 6.20, the indexes suggest 5 clusters for pre-crisis, 6 clusters for crisis, 6 clusters for post-crisis 7V, and 5 clusters for post-crisis 8V periods.

The cluster memberships which suggest the degree of belongingness of each object for a cluster are displayed in the first part of Table 6.21. For each object, the coefficients for all clusters add up to 100 percent. The higher the coefficient for a particular cluster, the higher the degree of belongingness to that cluster. The highest coefficient for every country is shaded.

Countries having the highest coefficients for a particular cluster are grouped together. The results in general provide clear-cut partitions with significantly large membership coefficients for only one group. Nonetheless, some cases have high degree of belongingness to more than one cluster. For instance, the pre-crisis Canada maintains comparably high degree of belongingness to groups one and five. This may suggest that

in practical terms, Canada has 2 equally good candidate clusters to merge into.

The OCA features of the groups are shown in the second part of the table. The highest group silhouettes and the most sympathetic (conforming) features to the OCA conditions are highlighted. Group silhouettes are given so that comparisons can be made as to which cluster is more tightly formed. The pre-crisis cases with the highest average silhouette over all objects at 0.34 should be the best partitioned.

Among the pre-crisis clusters, the first cluster comprising of Hong Kong, Taiwan, Singapore, and Macau obtains the highest group silhouette at 0.65, indicating that its constituents are most tightly clustered. Indeed, the membership coefficients of other countries for belonging to this group are significantly smaller. This group is also the most sympathetic in respect of inflation convergence, real dollar rate stability, and real interest rate cycle symmetry with US. Meantime, though the fifth group displays 2 most conforming attributes, it nevertheless has a slightly negative silhouette which implies that its components are somewhat misclassified.[56]

In the crisis period solution, the pre-crisis subgroups of Taiwan-Singapore and Korea-Malaysia-Canada plus Brunei make up the sixth group which exhibits 3 most suitable conditions. However, their group silhouette is the lowest. Hong Kong and Macau also carry forward their previous tie but only share one most supportive attribute this time compared to 3 for the last period. The membership coefficient of Hong Kong is significantly lower than before.

In the post-crisis setting, a considerable number of countries have resumed their linkages from either the pre-crisis or the crisis period solution. In the post-crisis 7V solution, the third group of six countries obtains the highest silhouette at 0.75 but with only one most supportive dimension. On the other hand, 2 most conforming features are maintained by the first and the sixth group each. In the post-crisis 8V solution, Australia

[56] It is not unusual to see negative silhouettes for groupings from fuzzy clustering; see for instance Tsangarides and Qureshi (2008).

and New Zealand form an independent cluster and share the greatest silhouette at 0.79 and 3 most compliant attributes. Accordingly, their memberships for grouping with each other are extremely high. Hence, Australia and New Zealand could have been more prospective for a dollar peg in the post-crisis period when the labor criterion is included.

Table 6.21 OCA-FCM-dollar clusters

Membership Coefficients (%)

	Pre-crisis					Crisis					
	I	II	III	IV	V	I	II	III	IV	V	VI
1 CHN	10.69	5.40	65.49	8.67	9.75	30.38	3.54	23.67	20.06	9.91	12.43
2 HKG	86.21	.89	1.88	2.31	8.71	51.07	1.76	10.18	13.44	15.36	8.18
3 KOR	18.75	1.49	2.50	4.26	73.00	8.32	2.00	16.68	29.68	5.06	38.26
4 TWN	56.23	3.37	10.71	8.03	21.67	17.53	2.98	14.55	18.12	18.06	28.76
5 KHM	13.69	21.78	9.68	42.42	12.42	31.88	3.83	12.94	14.45	23.97	12.93
6 IDN	3.27	2.54	3.04	87.78	3.37	.39	97.84	.40	.54	.47	.37
7 LAO	2.67	86.29	3.35	5.13	2.56	14.94	22.88	15.65	16.78	15.47	14.29
8 MYS	18.64	2.04	4.15	5.54	69.63	4.19	.98	13.93	10.53	2.36	68.02
9 MMR	12.72	48.79	11.57	14.17	12.75	19.45	8.45	19.53	23.54	16.04	12.99
10 PHL	20.50	8.78	18.48	15.61	36.62	6.27	.87	71.53	9.31	1.92	10.09
11 SGP	78.56	.92	2.01	2.76	15.75	7.98	1.53	14.47	14.16	5.83	56.02
12 THA	16.66	6.64	8.85	45.89	21.97	7.15	3.33	18.86	33.87	6.31	30.48
13 VNM	12.14	42.73	16.59	17.16	11.37	12.05	3.59	35.22	22.84	7.29	19.01
14 IND	28.54	5.81	20.82	11.87	32.96	3.53	.81	1.73	2.99	89.14	1.80
15 MAC	43.76	8.06	8.15	15.03	25.00	43.77	2.42	21.44	12.88	7.42	12.07
16 BRN	23.47	12.70	9.83	29.54	24.47	13.30	2.58	27.48	16.05	6.05	34.54
17 JPN	8.12	6.09	6.32	71.59	7.88	69.18	1.51	8.99	8.78	6.00	5.53
18 AUS	8.88	5.36	70.15	7.69	7.91	10.55	7.02	8.49	16.01	47.91	10.02
19 NZL	8.02	6.35	69.59	9.35	6.70	4.54	.85	7.11	78.56	3.10	5.84
20 CAN	25.74	10.21	20.71	16.65	26.68	16.57	8.41	18.44	18.62	17.96	20.00

	Post-crisis 7V						Post-crisis 8V				
	I	II	III	IV	V	VI	I	II	III	IV	V
1 CHN	.79	.76	84.68	7.99	.39	5.4	25.24	1.80	2.95	29.30	40.72
2 HKG	2.21	2.08	70.05	14.2	1.21	10.25	63.25	2.17	3.65	12.84	18.09
3 KOR	95.55	1.04	.78	1.06	.56	1.01	15.84	13.00	22.64	24.74	23.78
4 TWN	2.29	1.97	50.74	29.53	.87	14.61	14.62	2.92	4.69	39.38	38.38
5 KHM	4.28	3.42	27.94	14.85	2.2	47.32	23.79	3.21	4.51	45.42	23.08
6 IDN	7.83	33.11	14.57	22.68	7.94	13.88	16.68	11.96	20.65	23.07	27.64
7 LAO	16.51	13.17	17.15	17.66	14.18	21.33	21.09	17.54	15.28	24.74	21.36
8 MYS	3.47	2.41	38.61	34.75	1.17	19.58	31.64	1.53	3.07	22.57	41.19
9 MMR	.12	.11	.09	.11	99.46	.11	.42	98.10	.49	.49	.49
10 PHL	1.29	1.06	6.79	7.12	.54	83.20	5.63	.92	1.49	79.52	12.45
11 SGP	1.87	1.94	68.42	11.55	.99	15.23	71.20	1.97	3.89	10.82	12.11
12 THA	3.16	3.31	13.41	69.41	1.1	9.62	17.24	1.85	5.05	17.55	58.32
13 VNM	4.57	5.14	17.67	57.05	2.37	13.19	14.56	3.61	5.82	24.78	51.23
14 IND	3.46	5.35	35.96	38.25	2.21	14.76	24.47	2.96	5.52	23.17	43.89
15 MAC	4.82	2.82	14.75	12.52	2.11	62.98	21.68	3.40	4.53	48.29	22.10
16 BRN	30.93	8.75	14.37	17.15	6.22	22.59	23.29	10.20	17.20	25.58	23.72
17 JPN	4.18	4.88	42.95	18.24	2.26	27.49	62.30	2.18	4.70	15.83	14.99
18 AUS	2.19	90.33	1.8	2.77	1.14	1.77	5.70	3.55	78.35	5.42	6.98
19 NZL	14.63	57.36	6.56	9.11	4.51	7.83	4.70	3.04	82.44	4.70	5.11
20 CAN	12.97	15.92	17.89	24.35	7.40	21.46	22.49	9.32	19.65	23.27	25.28

Table 6.21 OCA-FCM-dollar clusters (continued)

OCA Features

Cluster	SW	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
	Averages									
Pre-crisis										
All	.34	18.535	.109	6.017	2.576	.238	3.290	3.011	-	
1 HKG, TWN, SGP, MAC	.65	20.022	.241	3.131	1.177	.952	2.806	1.126	-	3
2 LAO, MMR, VNM	.42	6.752	.109	18.223	3.409	-.363	2.601	8.340	-	1
3 CHN, AUS, NZL	.62	14.418	.536	5.495	5.130	.432	4.273	.771	-	1
4 KHM, IDN, THA, BRN. JPN	.37	13.561	-.185	3.368	2.388	-.972	2.323	2.576	-	0
5 KOR, MYS, PHL, IND, CAN	-.12	31.857	.043	3.966	1.850	.878	4.466	1.893	-	2
Crisis										
All	.09	18.625	-.039	8.154	4.193	-.026	3.164	1.495	-	
1 CHN, HKG, KHM, MAC, JPN	.21	19.875	-.199	3.893	1.622	-.788	2.219	1.027	-	1
2 IDN, LAO	-.13	6.105	-.255	44.437	13.810	-.493	4.532	3.834	-	1
3 PHL, VNM	.40	25.104	-.769	4.417	2.970	.629	2.893	1.469	-	0
4 MMR, THA, NZL	-.04	10.762	-.312	9.767	5.077	.211	3.684	2.310	-	0
5 IND, AUS	.63	12.828	.704	3.269	2.984	-.753	5.233	1.951	-	2
6 KOR, TWN, MYS, SGP, BRN, CAN	-.22	25.462	.299	1.678	3.498	.669	2.635	.526	-	3
Post-crisis 7V										
All	.22	17.415	.211	3.485	1.972	-.349	3.411	1.094	-	
1 KOR, BRN	.52	11.250	-.605	1.743	1.741	.452	1.852	.330	-	2
2 IDN, AUS, NZL	.45	11.715	-.119	2.659	4.946	-.086	5.535	1.722	-	1
3 CHN, HKG, TWN, MYS, SGP, JPN	.76	15.185	.724	2.116	1.303	-.612	2.890	.543	-	1
4 THA, VNM, IND, CAN	-.29	31.208	.282	2.012	1.588	-.561	4.827	.778	-	1
5 MMR	.00	2.913	-.729	23.681	2.307	.251	4.119	2.009	-	0
6 KHM, LAO, PHL, MAC	-.34	17.947	.262	3.454	1.159	-.491	1.784	2.014	-	2
Post-crisis 8V										
All	.11	17.415	.211	3.485	1.972	-.349	3.411	1.094	73.0	
1 HKG, MYS, SGP, JPN	.71	15.199	.787	2.210	1.373	-.620	2.762	.650	87.4	1
2 MMR	.00	2.913	-.729	23.681	2.307	.251	4.119	2.009	-	2
3 AUS, NZL	.79	12.551	-.229	.657	5.453	.213	5.223	n.a.[3]	91.8	3
4 KOR, TWN, KHM, LAO, PHL, MAC, BRN	-.16	15.654	.046	2.739	1.364	-.218	1.990	1.294	63.3	1
5 CHN, IDN, THA, VNM, IND, CAN	-.19	24.983	.323	2.783	1.863	-.609	4.778	.897	66.9	1

Notes: 1 Standard deviation ($x10^2$) of the log difference in bilateral real exchange rate. 2 Number of variables with highest degree of conformity to OCA criteria. 3 'n.a.' for not applicable.
Source: Fuzzy cluster analysis. See Appendix A for data description.

On the whole, the configuration appears to have been more convergent with the dominant cluster getting larger since the crisis period. Singapore and Taiwan might have been consistently shared the same grouping over the periods but only if the post-crisis labor criterion is not included. From another perspective, economies which are clustered with Hong Kong, an effective dollar area could be relatively feasible for a hard dollar peg. For instance, Japan which has been linked with Hong Kong since the crisis period solution may be relatively potential. In another respect, the location of China and India, two of the largest economies today in the same group in the post-crisis configuration might be desirable.

Currency Basket Anchor Results

Table 6.22 demonstrates the G3-based results. 5 groups for pre-crisis, 4 groups for crisis, 6 groups for post-crisis 7V, and 7 groups for post-crisis 8V periods are found. The slight increase in the number of groups may signify somewhat greater divergence against the weighted G3 countries (the weights: US 0.47; Japan 0.23; Germany/EMU 0.30). The memberships for the clusters are generally clear-cut in the sense that the highest membership coefficients are substantially higher than the second highest ones. The all-object average silhouettes indicate that the pre-crisis arrangement with silhouette at 0.29 is best classified.

Amongst the five groups from the pre-crisis setting, the fifth group comprising of China, Australia, and New Zealand obtains the highest silhouette at 0.40. However, the most potential cluster is obviously Canada which is most conforming in five of the facets.

Korea-Taiwan-Malaysia-Singapore and HongKong-Cambodia retain their pre-crisis links in the crisis period setting and along with Canada make up the second cluster that enjoys five most suitable features. Hence, Canada is still the best candidate for basket peg.

Without the labor dimension, Korea, Taiwan, and Malaysia maintain their link from the pre-crisis until the post-crisis solution. Taiwan and Malaysia have also increased their membership coefficients for grouping with each other significantly over the periods. Together with Thailand and Vietnam, Korea; Taiwan, and Malaysia share 2 most suitable attributes. The third group which is best classified with silhouette 0.65 also attains 2 most supportive features.

With the labor criterion, Australia-NewZealand and Thailand-Brunei maintain their links since the pre-crisis solution. Thus, regardless of the labor variable, Australia and New Zealand constantly share the same grouping. In terms of conformity to OCA

criteria, the group of Thailand-Brunei-Malaysia, the singleton Myanmar, and group four respectively exhibit 2 best features. Hong Kong and Singapore are most tightly classified at silhouette 0.78. Hence, Hong Kong and Singapore ought to be highly similar in the labor dimension.

Unlike previous periods, the results show that no single cluster is exceptionally conforming in the dimensions for the post-crisis period. Indeed, the arrangement has become more divergent in the post-crisis findings with the best features dotted over the clusters.

Table 6.22 OCA-FCM-basket clusters

Membership Coefficients (%)

	Pre-crisis					Crisis			
	I	II	III	IV	V	I	II	III	IV
1 CHN	21.63	15.37	8.29	9.10	45.61	62.85	18.27	3.39	15.49
2 HKG	11.11	74.38	1.23	3.34	9.94	20.29	69.88	1.48	8.35
3 KOR	73.80	9.02	1.76	2.12	13.3	34.94	53.21	2.29	9.56
4 TWN	47.23	19.78	4.59	5.03	23.37	22.07	63.47	3.08	11.38
5 KHM	15.38	43.00	3.52	20.62	17.48	21.49	62.66	3.49	12.36
6 IDN	16.12	51.95	2.61	6.15	23.17	23.75	20.97	24.56	30.71
7 LAO	3.29	4.85	1.57	85.74	4.55	.66	.65	97.96	.73
8 MYS	69.19	9.07	2.29	2.71	16.74	34.74	50.24	1.64	13.38
9 MMR	7.61	12.93	2.38	66.87	10.21	31.50	21.98	17.92	28.59
10 PHL	34.67	14.33	10.30	7.38	33.32	73.43	17.79	1.82	6.96
11 SGP	44.96	31.06	1.94	3.69	18.35	12.77	79.38	1.50	6.36
12 THA	20.74	40.88	5.68	12.11	20.59	34.17	31.06	2.49	32.28
13 VNM	15.64	16.82	8.62	38.52	20.4	42.68	17.63	3.60	36.08
14 IND	45.68	9.88	2.29	4.17	37.98	24.05	32.93	3.12	39.90
15 MAC	11.47	69.39	1.75	6.83	10.56	57.79	29.61	2.47	10.12
16 BRN	17.46	56.80	3.06	7.67	15.01	44.54	36.28	3.28	15.90
17 AUS	29.26	13.23	15.51	9.70	32.3	16.53	17.85	8.25	57.37
18 NZL	12.01	7.89	1.78	3.12	75.2	10.08	8.35	2.08	79.49
19 CAN	.23	.16	99.21	.12	0.28	29.56	34.71	8.85	26.88

	Post-crisis 7V						Post-crisis 8V						
	I	II	III	IV	V	VI	I	II	III	IV	V	VI	VII
1 CHN	6.38	.96	81.54	7.54	.60	2.97	85.95	.60	.30	4.12	2.51	3.67	2.86
2 HKG	10.47	2.68	63.24	15.45	2.03	6.13	13.70	2.93	1.41	10.15	53.58	12.40	5.84
3 KOR	9.24	7.19	12.29	36.57	3.42	31.29	15.28	5.88	3.06	7.78	7.86	29.97	30.19
4 TWN	3.66	1.20	10.33	79.00	.59	5.21	36.93	3.48	1.84	10.71	6.73	19.06	21.25
5 KHM	78.84	1.55	8.76	4.34	1.94	4.58	33.45	4.04	2.86	15.97	15.17	11.17	17.32
6 IDN	6.00	62.99	9.06	8.54	4.58	8.83	14.26	18.76	6.85	23.14	8.75	12.98	15.27
7 LAO	.40	.24	.36	.26	98.40	.33	14.46	9.13	11.52	20.32	17.81	11.63	15.11
8 MYS	2.48	.90	6.05	85.77	.47	4.33	12.20	1.81	.77	4.14	7.34	66.00	7.74
9 MMR	14.92	16.90	15.20	14.40	19.70	18.88	.06	.06	99.63	.07	.06	.06	.07
10 PHL	2.45	.93	2.15	3.75	.56	90.16	3.11	.70	.42	1.42	1.16	3.23	89.97
11 SGP	23.33	2.99	51.06	11.07	3.49	8.06	2.92	1.01	.51	2.84	88.27	2.66	1.80
12 THA	5.85	5.01	12.51	55.78	1.81	19.03	7.36	2.69	.97	4.34	4.74	71.60	8.31
13 VNM	11.73	9.40	23.68	36.16	3.53	15.49	25.15	6.12	2.75	16.64	8.97	24.20	16.17
14 IND	16.00	9.55	43.78	14.22	6.24	10.21	3.20	.80	.37	90.70	2.07	1.54	1.33
15 MAC	42.78	2.67	15.59	14.41	2.78	21.77	26.00	3.04	2.07	8.44	15.80	16.82	27.85
16 BRN	14.80	6.76	14.19	22.61	4.46	37.17	14.73	8.14	5.33	9.12	17.05	25.28	20.34
17 AUS	2.21	86.90	3.05	3.17	1.46	3.21	1.32	91.87	.67	1.81	1.33	1.63	1.36
18 NZL	9.35	41.93	10.71	13.91	5.63	18.46	8.22	47.45	4.66	8.01	8.67	11.86	11.13
19 CAN	22.63	15.79	19.02	16.42	8.96	17.18	16.94	14.18	6.40	17.74	15.51	14.63	14.60

Table 6.22 OCA-FCM-basket clusters (continued)

OCA Features

Cluster	SW	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
	Averages									
Pre-crisis										
All Cases	.29	16.122	-.027	6.694	3.854	.136	3.357	3.011	-	
1 KOR, TWN, MYS, PHL, SGP, IND	.29	18.116	-.032	4.063	2.735	.260	3.990	1.318	-	0
2 HKG, KHM, IDN, THA, MAC, BRN	.38	14.590	-.133	4.318	2.630	-.029	2.365	2.412	-	1
3 CAN	.00	36.071	.230	2.209	10.503	.290	5.038	-	-	5
4 LAO, MMR, VNM	.39	10.008	.061	18.659	3.842	-.008	2.601	8.340	-	1
5 CHN, AUS, NZL	.40	14.660	.024	6.238	6.338	.257	4.273	.771	-	0
Crisis										
All Cases	.18	29.533	.237	9.298	11.079	.163	3.323	2.364	-	
1 CHN, MMR, PHL, THA, VNM, MAC, BRN	.29	14.188	-.270	6.197	5.983	.044	2.712	1.237	-	0
2 HKG, KOR, TWN, KHM, MYS, SGP, CAN	.26	17.224	.497	2.739	5.619	.080	2.726	.940	-	5
3 LAO	.00	4.070	.127	68.106	12.122	-.188	2.674	5.252	-	1
4 IDN, IND, AUS, NZL	-.05	12.550	.074	7.683	7.924	-.277	5.143	2.184	-	1
Post-crisis 7V										
All Cases	.25	13.449	.130	3.906	2.473	.016	3.477	1.094	-	
1 KHM, MAC, CAN	-.37	22.857	.346	2.322	2.022	-.182	2.446	1.065	-	1
2 IDN, AUS, NZL	.54	12.026	-.166	3.466	5.016	.062	5.535	1.722	-	1
3 CHN, HKG, SGP, IND	.65	10.845	.606	2.234	1.875	-.054	3.484	.793	-	2
4 KOR, TWN, MYS, THA, VNM	.32	14.627	.134	2.190	1.988	.246	3.609	.507	-	2
5 LAO, MMR	-.14	3.732	-.154	15.855	2.163	-.261	3.281	3.233	-	1
6 PHL, BRN	.19	13.450	-.426	2.627	2.051	.091	1.789	.736	-	0
Post-crisis 8V										
All Cases	.15	12.191	.123	4.055	2.470	.038	3.391	1.094	71.1	
1 CHN, TWN, KHM, VNM	.18	13.300	-.005	1.596	2.081	.269	3.288	.520	59.2	1
2 AUS, NZL	.67	11.005	-.632	1.786	1.773	.089	1.197	-	94.0	1
3 MMR	.00	13.614	.249	1.247	1.757	.206	3.073	.377	77.8	2
4 IDN, LAO, IND, CAN	-.38	15.261	.272	4.199	3.296	.010	4.754	1.125	63.5	2
5 HKG, SGP	.78	14.912	.132	2.719	2.082	.039	2.792	.950	59.8	0
6 MYS, THA, BRN	.09	9.385	.419	3.922	1.799	-.118	2.076	2.240	83.7	2
7 KOR, PHL, MAC	.14	7.990	.182	10.001	2.082	-.120	4.080	1.189	76.6	0

Notes: 1 Standard deviation ($x10^2$) of the log difference in bilateral real exchange rate. 2 Number of variables with highest degree of conformity to OCA criteria. 3 'n.a.' for not applicable.
Source: Fuzzy cluster analysis. See Appendix A for data description.

Yen Anchor Results

Table 6.23 lays out the Japan-centered findings. 4 clusters each for pre-crisis and post-crisis 7V periods; and 5 clusters each for crisis and post-crisis 8V periods are indicated. The crisis period solution reports the highest average silhouette over all cases at 0.36. By and large, the groupings are unambiguous except perhaps for a few cases such as the post-crisis 8V Indonesia and India which show high membership coefficients for belongingness to more than one group.

In the pre-crisis arrangement, the most symmetric intra-group structure is maintained by the third group, indicated by the highest silhouette 0.56 and high membership coefficients of its members. The group boasts the highest degrees of inflation convergence and exchange rate stability with Japan. Nonetheless, the first

cluster of Indonesia-Thailand-Brunei with a much lower silhouette is most connected with Japan in 3 of the facets.

Remarkably, a subgroup of five countries, Korea, Taiwan, Malaysia, the Philippines, and Singapore carries forward their pre-crisis link till the crisis period grouping. Nonetheless, these countries only share one best attribute this time and their membership coefficients are not as high as before.

Table 6.23 OCA-FCM-yen clusters

Membership Coefficients (%)

	Pre-crisis				Crisis				
	I	II	III	IV	I	II	III	IV	V
1 CHN	18.59	44.46	23.93	13.02	19.71	13.27	17.67	16.27	33.08
2 HKG	10.25	53.22	29.49	7.04	8.76	5.02	77.05	6.31	2.87
3 KOR	6.55	7.41	84.00	2.04	68.82	3.45	11.13	13.72	2.87
4 TWN	8.88	17.64	70.59	2.88	38.12	9.75	19.90	27.20	5.04
5 KHM	19.71	31.82	16.21	32.26	12.04	28.53	42.17	11.92	5.33
6 IDN	78.73	7.15	8.10	6.02	1.21	1.28	1.09	1.31	95.11
7 LAO	6.64	6.75	4.59	82.02	15.87	29.83	16.98	16.81	20.51
8 MYS	12.21	11.48	72.63	3.68	71.98	3.07	6.38	16.04	2.53
9 MMR	13.41	25.27	15.14	46.19	1.38	93.66	1.93	1.99	1.05
10 PHL	20.68	21.92	46.08	11.32	65.68	4.42	14.36	13.11	2.44
11 SGP	10.19	22.69	62.96	4.16	60.68	4.21	9.74	23.14	2.23
12 THA	65.12	12.43	16.17	6.28	41.04	5.82	7.87	38.72	6.55
13 VNM	26.08	17.87	16.83	39.21	12.15	2.46	2.85	81.07	1.48
14 IND	11.80	39.65	39.40	9.15	10.14	50.32	16.49	15.09	7.95
15 MAC	13.94	43.07	24.54	18.45	10.37	6.14	73.54	7.02	2.92
16 BRN	39.64	19.48	24.91	15.97	43.69	9.39	15.64	22.70	8.57
17 AUS	33.52	22.57	35.17	8.73	16.89	23.85	12.76	33.28	13.21
18 NZL	15.14	60.40	14.49	9.96	3.66	1.22	1.31	93.28	.54
19 CAN	21.91	30.91	28.79	18.40	16.71	18.71	15.58	43.21	5.79

	Post-crisis 7V				Post-crisis 8V				
	I	II	III	IV	I	II	III	IV	V
1 CHN	1.55	89.93	6.68	1.84	11.02	13.04	1.80	.77	73.37
2 HKG	5.51	52.37	36.10	6.02	67.32	10.33	4.03	1.65	16.67
3 KOR	3.57	4.84	4.65	86.95	16.69	36.75	13.42	10.32	22.81
4 TWN	2.51	85.09	9.17	3.23	14.43	26.46	4.72	2.37	52.02
5 KHM	4.09	15.10	74.49	6.32	32.80	28.18	6.37	4.38	28.26
6 IDN	63.27	15.83	11.01	9.89	15.53	24.14	25.19	9.23	25.91
7 LAO	19.80	20.48	29.69	30.03	20.90	22.54	15.10	23.15	18.31
8 MYS	1.11	91.71	5.74	1.44	41.32	17.34	2.95	1.09	37.30
9 MMR	24.44	18.85	21.16	35.55	.46	.58	0.52	97.96	.48
10 PHL	12.05	37.11	31.27	19.57	10.50	58.98	4.71	2.50	23.30
11 SGP	3.80	31.10	59.50	5.60	65.09	12.80	4.99	2.45	14.67
12 THA	9.47	62.02	15.77	12.74	21.17	30.25	6.87	2.67	39.04
13 VNM	12.92	58.92	19.07	9.09	16.14	21.87	6.14	2.82	53.03
14 IND	13.96	36.14	39.57	10.33	33.09	20.75	8.44	4.24	33.48
15 MAC	3.78	15.73	73.59	6.90	37.50	30.61	5.39	3.22	23.28
16 BRN	15.90	25.88	19.16	39.06	21.34	28.23	17.52	10.02	22.89
17 AUS	82.86	6.49	4.80	5.84	5.33	5.87	80.24	2.74	5.82
18 NZL	56.48	13.16	12.34	18.02	7.72	9.20	71.00	4.57	7.51
19 CAN	15.87	28.89	31.52	23.72	35.42	21.96	14.47	6.90	21.25

Table 6.23 OCA-FCM-yen clusters (continued)

OCA Features

Cluster	SW	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
				Averages						
Pre-crisis										
All Cases	.22	19.279	-.117	7.878	4.690	-.196	3.264	3.011	-	
1 IDN, THA, BRN	.15	34.451	.118	5.062	3.604	.953	2.611	1.185	-	3
2 CHN, HKG, IND, MAC, NZL, CAN	-.16	11.609	-.317	6.759	12.185	-.600	3.639	2.024		1
3 KOR, TWN, MYS, PHL, SGP, AUS,	.56	16.841	.029	3.651	3.259	-.634	3.505	.792	-	2
4 KHM, LAO, MMR, VNM	.13	15.407	-.190	15.865	4.045	.506	2.396	7.942	-	1
Crisis										
All Cases	.36	12.556	.462	8.700	6.529	-.082	3.227	1.495	-	
1 KOR, TWN, MYS, PHL, SGP, THA, BRN	.50	17.598	.766	2.658	5.473	-.554	2.458	.773	-	1
2 LAO, MMR, IND	-.09	5.226	-.055	33.926	6.745	.444	3.460	3.488	-	1
3 HKG, KHM, MAC	.62	5.632	.649	3.849	4.312	.889	1.960	1.152		1
4 VNM, AUS, NZL, CAN	.25	11.285	.062	2.331	3.920	-.771	4.551	1.516	-	2
5 CHN, IDN	.44	18.834	.690	12.021	18.443	.704	4.821	1.535	-	2
Post-crisis 7V										
All Cases	.22	11.147	.212	4.931	2.956	.520	3.477	1.094	-	
1 IDN, AUS, NZL	.51	14.409	-.102	5.251	4.985	.404	5.535	1.722	-	2
2 CHN, HKG, TWN, MYS, PHL, THA, VNM	.51	13.810	.431	3.205	2.677	.964	3.476	.595	-	1
3 KHM, SGP, IND, MAC, CAN	.07	4.385	.526	3.139	2.545	.775	2.973	1.122	-	2
4 KOR, LAO, MMR, BRN	-.30	12.492	-.330	9.953	2.436	-.491	2.567	1.781	-	2
Post-crisis 8V										
All Cases	.27	11.147	.212	4.931	2.956	.520	3.477	1.094	72.3	
1 HKG, KHM, MYS, SGP, MAC, CAN	.39	6.678	.538	2.466	2.540	.811	2.706	.816	82.7	2
2 KOR, PHL, BRN	.02	19.695	-.388	3.263	2.535	.198	2.029	.711	69.1	2
3 AUS, NZL	.71	12.863	-.254	3.061	5.260	.108	5.223	n.a.[3]	91.8	2
4 LAO, MMR	.16	3.022	-.115	17.710	2.553	-.788	3.281	3.233	69.4	1
5 CHN, TWN, IDN, THA, VNM, IND	.20	13.477	.448	4.595	2.948	.964	4.455	.803	59.3	1

Notes: 1 Standard deviation ($x10^2$) of the log difference in bilateral real exchange rate. 2 Number of variables with highest degree of conformity to OCA criteria. 3 'n.a.' for not applicable.
Source: Fuzzy cluster analysis. See Appendix A for data description.

Taiwan-Malaysia-Philippines and Laos-Myanmar retain their pre-crisis links in the post-crisis 7V solution. Taiwan and Malaysia have on the whole increased their membership coefficients for grouping with each other over the periods. The highest silhouettes of 0.51 are obtained by the first two groups. The first group of Indonesia-Australia-NewZealand also maintains 2 most suitable features.

For post-crisis 8V, Singapore-Malaysia, Korea-Philippines, Laos-Myanmar, and HongKong-Macau retain their ties since the pre-crisis setting. Hence, Laos and Myanmar are always together irrespective of the labor criterion. Among them, only Singapore, the Philippines, and Myanmar have not reduced their membership coefficients. With respect to potentiality for a yen peg, the first three clusters in the configuration obtain 2 most suitable attributes each.

Over the periods, the most conforming attributes are scattered across the clusters.

Euro Anchor Results

The arrangements centered on Germany/EMU are displayed in Table 6.24. For pre-crisis, crisis, post-crisis 7V, and post-crisis 8V periods, 3, 5, 3, and 4 clusters are respectively detected. The all-case silhouettes signify that the post-crisis 7V solution with average silhouette 0.31 is most appropriately partitioned. The somewhat more clusters for the crisis period could indicate higher degree of regional divergence against Germany/EMU in that period. The membership coefficients are generally clear-cut.

Table 6.24 OCA-FCM-euro clusters

Membership Coefficients (%)

	Pre-crisis			Crisis				
	I	II	III	I	II	III	IV	V
1 CHN	59.82	22.32	17.86	16.43	13.49	2.46	7.19	60.43
2 HKG	25.15	50.55	24.30	70.84	5.79	1.36	9.82	12.18
3 KOR	12.44	71.42	16.14	40.41	12.92	1.79	27.04	17.84
4 TWN	13.85	75.11	11.03	41.43	13.30	3.35	22.84	19.07
5 KHM	27.31	28.88	43.82	57.25	8.14	3.37	16.12	15.12
6 IDN	44.36	24.37	31.27	20.79	21.46	18.68	17.60	21.47
7 LAO	27.80	22.30	49.90	.33	.33	98.71	0.31	.32
8 MYS	20.17	63.51	16.31	14.35	28.72	2.49	40.67	13.78
9 MMR	22.16	27.62	50.22	20.28	23.90	15.18	17.58	23.06
10 PHL	63.36	18.58	18.06	13.17	12.67	1.96	6.25	65.94
11 SGP	15.25	65.29	19.46	7.99	5.72	1.25	80.92	4.11
12 THA	18.46	67.25	14.29	9.58	58.24	2.20	19.62	10.35
13 VNM	37.66	22.13	40.21	6.52	71.69	2.14	7.83	11.81
14 IND	51.07	26.50	22.42	27.60	19.31	5.61	11.91	35.56
15 MAC	26.24	39.51	34.26	26.12	9.40	2.38	8.27	53.83
16 BRN	18.74	39.00	42.26	18.42	20.18	5.74	39.77	15.88
17 JPN	18.72	36.62	44.66	63.40	5.42	1.41	6.41	23.37
18 AUS	69.16	18.43	12.42	17.97	36.47	6.25	21.48	17.83
19 NZL	51.12	26.40	22.48	11.85	53.92	3.12	13.79	17.32
20 CAN	28.08	48.02	23.90	16.74	16.46	4.06	53.14	9.61

	Post-crisis 7V			Post-crisis 8V			
	I	II	III	I	II	III	IV
1 CHN	77.93	15.16	6.90	2.82	23.34	68.10	5.75
2 HKG	53.58	40.23	6.20	4.38	20.52	15.32	59.78
3 KOR	55.83	38.28	5.89	3.49	46.38	38.92	11.21
4 TWN	76.35	16.40	7.24	6.11	28.42	54.48	10.99
5 KHM	33.49	55.60	10.91	5.92	48.71	26.61	18.76
6 IDN	18.42	16.95	64.63	24.25	26.31	33.21	16.23
7 LAO	28.20	37.78	34.02	20.16	30.30	24.43	25.11
8 MYS	71.49	22.00	6.51	5.53	30.88	34.69	28.91
9 MMR	28.65	35.12	36.22	22.98	25.54	24.08	27.40
10 PHL	46.66	30.77	22.57	12.21	30.87	39.49	17.43
11 SGP	24.11	68.31	7.59	4.01	11.48	8.00	76.52
12 THA	51.80	30.88	17.32	10.13	25.71	34.50	29.66
13 VNM	47.96	28.41	23.63	8.58	29.63	47.87	13.92
14 IND	39.21	25.68	35.11	14.30	30.73	41.78	13.19
15 MAC	52.74	36.40	10.86	5.13	49.69	28.84	16.33
16 BRN	34.39	47.27	18.34	11.13	21.55	18.02	49.30
17 JPN	64.20	30.01	5.79	5.13	44.45	23.58	26.85
18 AUS	16.28	15.06	68.66	82.52	5.85	6.29	5.34
19 NZL	23.68	21.55	54.77	66.11	11.29	11.44	11.15
20 CAN	26.10	39.46	34.44	21.40	24.31	19.94	34.36

Table 6.24 OCA-FCM-euro clusters (continued)

OCA Features

Cluster		SW	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
		Averages									
Pre-crisis											
	All Cases	.26	11.166	-.157	6.479	3.865	.145	3.290	3.011	-	
1	CHN, IDN, PHL, IND, AUS, NZL	.35	14.143	-.328	7.062	5.017	.293	4.187	2.238	-	2
2	HKG, KOR, TWN, MYS, SGP, THA, MAC, CAN	.49	9.955	-.232	2.802	3.257	-.104	3.498	1.065	-	2
3	KHM, LAO, MMR, VNM, BRN, JPN	-.12	9.803	.115	10.800	3.522	.367	2.114	6.354	-	3
Crisis											
	All Cases	.20	9.662	.052	8.011	10.348	-.004	3.164	1.495	-	
1	HKG, KOR, TWN, KHM, JPN	.60	9.672	.456	3.037	10.510	.590	2.385	1.006	-	2
2	MMR, THA, VNM, AUS, NZL	.17	9.813	-.271	6.900	8.158	-.564	4.217	2.045	-	2
3	LAO	.00	9.512	-.023	68.446	13.940	-.330	2.674	5.252		1
4	MYS, SGP, BRN, CAN	.27	5.832	.384	1.160	10.102	-.677	2.587	0.539	-	1
5	CHN, IDN, PHL, IND, MAC	-.21	12.596	-.278	7.488	11.855	.566	3.449	1.378	-	1
Post-crisis 7V											
	All Cases	.31	9.273	.016	3.645	2.922	.185	3.411	1.094	-	
1	CHN, HKG, KOR, TWN, MYS, PHL, THA, VNM, IND, MAC, JPN	.68	10.710	.051	2.308	2.595	.431	3.188	.707	-	3
2	KHM, LAO, SGP, BRN, CAN	-.16	6.027	.319	2.576	2.446	-.104	2.484	1.675	-	2
3	IDN, MMR, AUS, NZL	-.14	9.381	-.457	8.659	4.416	-.132	5.181	1.865	-	2
Post-crisis 8V											
	All Cases	.23	9.273	.016	3.645	2.922	.185	3.411	1.094	73.0	
1	AUS, NZL	.70	11.376	-.509	1.181	5.630	-.148	5.223	n.a.[3]	91.8	3
2	KOR, KHM, LAO, MAC, JPN	.11	9.716	.504	3.269	2.600	.106	1.882	1.812	67.2	2
3	CHN, TWN, IDN, MYS, PHL, THA, VNM, IND	.40	11.056	-.077	3.049	2.811	.453	4.023	.834	61.4	1
4	HKG, MMR, SGP, BRN, CAN	-.10	5.137	-.112	5.960	2.338	-.033	3.234	.896	92.8	2

Notes: 1 Standard deviation (x10^2) of the log difference in bilateral real exchange rate. 2 Number of variables with highest degree of conformity to OCA criteria. 3 'n.a.' for not applicable.
Source: Fuzzy cluster analysis. See Appendix A for data description.

Amongst the pre-crisis clusters, the third cluster enjoys 3 most conforming attributes. Nevertheless, based on its slightly negative group silhouette and its relatively low membership coefficients of its constituents, its members should be loosely classified. On the contrary, the second group of 8 countries boasts the largest silhouette at 0.49. This group and the first group display 2 best features each.

The pre-crisis subgroups of HongKong-Korea-Taiwan and Cambodia-Japan form the most tightly classified crisis period cluster with 2 best features. Regarding the degree of belongingness, the membership coefficients of Korea and Taiwan have fallen whereas those of the rest have risen.

A number of subclusters have stayed put from the pre-crisis till the post-crisis solution. Among them, HongKong-Korea-Taiwan and China-Philippines-India belong to the first cluster which obtains the largest silhouette 0.68 and 3 most supportive attributes in the post-crisis 7V configuration.

Hence, though more clusters are present for the crisis period, judging by significantly larger dominant cluster for the post-crisis period, the region might have been on the whole more convergent against Germany/EMU.

In the post-crisis 8V arrangement, it is the cluster of Australia-NewZealand which obtains the highest silhouette at 0.70 and 3 most conforming features. Clearly, the arrangement is not as symmetrical as the post-crisis 7V one, when labor criterion is not included.

Yuan Anchor Results

The China-based configurations are presented in Table 6.25. 5 clusters for pre-crisis, crisis, and post-crisis 7V periods and 4 clusters for post-crisis 8V period are indicated. The membership coefficients suggest that the partitions are crisp. The post-crisis 8V solution obtains the highest average silhouette over all objects at 0.25.

Possessing the highest degree of trade, output variation symmetry, and real exchange rate stability against China in the pre-crisis solution, the group of HongKong-Cambodia-Macau could have been more feasible for a yuan peg in that period. Nonetheless, the group's silhouette is somewhat negative, most probably due to Cambodia which displays high memberships to other clusters. Quite the opposite, the Philippines-Thailand-India cluster obtains the highest positive silhouette at 0.58 but does not display any particularly conforming attributes.

In the crisis period setting, the first group which maintains the highest silhouette, trade linkage, and real interest rate cycle symmetry could have been the most potential group in that period. Amongst its constituents, Myanmar-Japan and HongKong-Macau have also been linked since the previous solution.

In the post-crisis setting, using 7 variables the first largest cluster obtains the greatest silhouette at 0.56 with 2 closest features with China. Regardless of the labor criterion, Australia and Canada retain their link since the pre-crisis setting and they

share the most symmetrical cluster with New Zealand at silhouette 0.61 in the post-crisis 8V configuration.

Table 6.25 OCA-FCM-yuan clusters

Membership Coefficients (%)

	Pre-crisis					Crisis				
	I	II	III	IV	V	I	II	III	IV	V
1 HKG	20.90	4.96	48.86	10.44	14.84	70.33	1.62	7.73	6.75	13.57
2 KOR	84.12	.77	1.87	3.17	10.07	33.04	2.76	11.57	20.37	32.27
3 TWN	71.90	1.61	4.94	4.99	16.56	10.36	2.85	37.92	11.64	37.24
4 KHM	20.47	13.41	24.60	21.97	19.55	15.34	3.54	24.90	11.32	44.90
5 IDN	67.14	2.50	7.03	7.17	16.16	15.98	19.95	19.55	24.61	19.91
6 LAO	2.04	91.13	2.37	2.26	2.21	0.17	99.21	0.19	0.23	0.21
7 MYS	26.03	2.44	4.41	24.73	42.38	5.05	1.53	4.71	76.72	12.00
8 MMR	11.82	32.60	28.04	14.73	12.81	27.78	9.94	16.48	21.53	24.27
9 PHL	11.49	5.72	6.29	59.31	17.20	83.82	1.31	3.07	5.23	6.57
10 SGP	76.15	2.07	4.09	5.23	12.46	6.26	1.44	11.12	16.68	64.51
11 THA	9.49	2.92	5.35	69.20	13.04	3.78	1.62	5.40	79.61	9.58
12 VNM	13.10	41.72	11.41	18.16	15.61	11.36	3.77	9.64	58.88	16.35
13 IND	6.91	3.08	3.68	73.10	13.23	1.50	0.56	90.77	1.94	5.23
14 MAC	2.01	1.10	93.99	1.36	1.53	68.92	2.84	7.07	8.99	12.18
15 BRN	28.70	16.26	16.60	20.86	17.58	13.58	4.10	11.56	42.56	28.19
16 JPN	23.76	25.16	15.01	18.27	17.80	57.26	1.74	7.07	9.50	24.43
17 AUS	16.53	4.01	5.63	14.06	59.77	8.56	3.55	61.22	9.99	16.67
18 NZL	26.63	6.16	11.21	14.48	41.52	12.34	2.72	23.60	16.17	45.17
19 CAN	15.46	2.35	3.80	9.63	68.76	5.25	2.53	60.76	12.19	19.27

	Post-crisis 7V					Post-crisis 8V			
	I	II	III	IV	V	I	II	III	IV
1 HKG	25.23	10.44	4.19	3.61	56.53	20.22	23.17	49.86	6.74
2 KOR	5.11	79.97	5.55	3.03	6.34	49.84	15.99	19.18	14.98
3 TWN	61.49	9.04	5.44	3.63	20.39	18.06	47.94	25.68	8.32
4 KHM	25.45	10.77	4.08	4.81	54.88	23.75	29.64	41.02	5.59
5 IDN	28.61	13.70	28.99	9.13	19.57	20.74	39.10	19.89	20.28
6 LAO	.64	.70	.52	97.48	.66	30.61	25.03	24.66	19.69
7 MYS	54.34	7.91	2.81	2.01	32.93	11.06	19.79	66.12	3.03
8 MMR	16.50	23.85	20.10	22.70	16.84	31.37	21.69	21.59	25.35
9 PHL	18.42	19.57	7.48	7.26	47.27	39.85	22.48	29.31	8.35
10 SGP	47.49	7.40	4.11	4.33	36.67	15.74	25.86	49.43	8.96
11 THA	69.52	7.92	4.49	2.08	15.99	14.89	39.28	38.80	7.03
12 VNM	61.92	7.20	5.17	3.78	21.93	9.70	69.06	16.85	4.38
13 IND	69.93	5.68	4.67	3.51	16.21	5.99	78.66	12.19	3.16
14 MAC	17.49	34.89	10.14	8.34	29.14	42.62	17.27	28.59	11.52
15 BRN	20.41	41.59	11.10	6.95	19.95	28.94	18.80	33.57	18.68
16 JPN	14.48	6.53	2.99	2.27	73.74	18.03	17.12	58.66	6.18
17 AUS	4.66	5.86	82.87	2.80	3.82	7.37	6.85	6.51	79.26
18 NZL	6.38	9.18	74.80	3.89	5.76	7.69	6.33	7.17	78.81
19 CAN	24.93	20.83	32.83	7.68	13.73	16.71	18.69	18.92	45.68

Table 6.25 OCA-FCM-yuan clusters (continued)

OCA Features

Cluster	SW	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
	Averages									
Pre-crisis										
All Cases	.21	5.882	.197	10.600	4.833	.025	3.233	3.160	-	
1 KOR, TWN, IDN, SGP, BRN	.20	2.576	.160	9.407	4.607	.745	2.838	.682	-	1
2 LAO, MMR, VNM, JPN	.04	10.617	-.204	15.951	5.732	-.295	2.451	8.340	-	1
3 HKG, KHM, MAC	-.10	13.553	.635	9.109	3.818	-.106	2.118	3.639		3
4 PHL, THA, IND	.58	2.850	.066	8.167	4.853	-.786	4.409	2.432		1
5 MYS, AUS, NZL, CAN	.35	1.801	.415	9.684	4.964	.332	4.465	.758	-	1
Crisis										
All Cases	.17	9.806	.138	8.971	4.514	.141	3.159	1.551	-	
1 HKG, KOR, MMR, PHL, MAC, JPN	.29	17.940	.514	6.907	3.466	.598	2.412	1.381	-	2
2 LAO	.00	5.679	.217	69.459	11.224	-.724	2.674	5.252	-	1
3 TWN, IND, AUS, CAN	.24	4.486	-.808	3.481	2.587	.431	4.388	1.093		2
4 IDN, MYS, THA, VNM, BRN	-.03	7.149	.618	7.098	6.538	-.619	3.575	1.150	-	1
5 KHM, SGP, NZL	.23	6.436	-.179	3.377	3.570	.396	2.484	1.588	-	1
Post-crisis 7V										
All Cases	.23	11.739	.246	4.061	2.202	.487	3.422	1.138	-	
1 TWN, MYS, SGP, THA, VNM, IND	.56	7.542	.578	2.369	1.413	.947	3.843	.706	-	2
2 KOR, MMR, MAC, BRN	-.29	16.763	-.351	7.615	1.809	-.036	2.249	.936	-	0
3 IDN, AUS, NZL, CAN	.34	6.960	-.121	3.497	4.518	.171	5.408	1.722	-	1
4 LAO	.00	6.981	.662	7.225	1.471	-.841	2.442	4.457	-	2
5 HKG, KHM, PHL, JPN	.23	18.982	.608	2.818	1.648	.971	2.221	.971	-	2
Post-crisis 8V										
All Cases	.25	11.739	.246	4.061	2.202	.487	3.422	1.138	73.7	
1 KOR, LAO, MMR, PHL, MAC	-.18	19.848	-.011	7.902	1.768	-.020	2.525	1.934	60.9	2
2 TWN, IDN, THA, VNM, IND	.36	7.538	.522	3.642	2.002	.959	4.706	.878	58.7	2
3 HKG, KHM, MYS, SGP, BRN, JPN	.32	11.379	.494	2.132	1.485	.810	2.231	.601	83.7	2
4 AUS, NZL, CAN	.61	5.947	-.283	2.218	4.697	-.097	5.157	n.a.[3]	91.5	2

Notes: 1 Standard deviation (x10^2) of the log difference in bilateral real exchange rate. 2 Number of variables with highest degree of conformity to OCA criteria. 3 'n.a.' for not applicable.
Source: Fuzzy cluster analysis. See Appendix A for data description.

6.3.1.1 Comparisons across Anchors

Here, results by each of the monetary anchors are compared. The groupings are collected in Table 6.26.

Based on the average silhouettes over all objects, the following anchor countries produce the most appropriate solutions: for pre-crisis period the US anchor; for crisis period the Japan anchor; for post-crisis 7V period the Germany/EMU anchor; and for post-crisis 8V period the Japan anchor once again. Hence, the reference country in line with best partitioning is different for different period.

Signified by the number of clusters and the size of the dominant clusters, different reference country corresponds to the most convergent configuration for different period. For pre-crisis period, the euro anchor solution is most convergent; for crisis period the basket anchor; and for post-crisis 7V the euro anchor again. For post-crisis 8V the euro

and the yuan anchor solution are most convergent.

To evaluate how the levels of convergence might have changed, it is apt to look at the 7-variable configurations over the periods. Judging by the similar number of clusters for pre-crisis and post-crisis periods by the yen and the euro anchor, the structure of the region in the post-crisis period might have returned to the pre-crisis one for those anchors. On the contrary, solutions by other anchors have become more fragmented.

Based on the above, in general the Germany/EMU reference is associated with more convergent cluster configurations.

The rows labeled 'All Periods' list the stable subgroupings that have weathered the periods. Notably, more stable subclusters are present under the euro anchor. In particular, China-Philippines-India, Australia-NewZealand and Singapore-Canada are robust regardless of the labor criterion. Australia-NewZealand is even stable across basket and euro anchors.

How stable are the groupings of economies which implement fixed exchange rates in practice? Hong Kong and Macau, the effective dollar areas are amongst others placed together in the pre-crisis and crisis period clusters for dollar, yen, and yuan anchors. They are also placed together for post-crisis 7V euro anchor and for post-crisis 8V yen anchor. Despite maintaining fixed dollar rates, they are not indicated to be consistently parallel vis-à-vis US over the periods.

Similar finding is detected for the prevailing monetary union members of Singapore and Brunei. They are placed together consecutively at most over crisis and post-crisis 7V periods and only by the euro anchor.

Next, it may be instructive to examine the results from the post-crisis period, the most recent period in detail. Three observations are collected in the bottom part of Table 6.26. The first row contains the clusters with the highest silhouettes; the second row lists subclusters whose countries maintain >50 percent membership coefficients; and the

third row shows countries with equally high belongingness to more than a group.

Without the labor criterion, amongst others, China, Hong Kong, Taiwan, and Malaysia belong to some of the groups with the largest silhouettes for most of the anchors. Coherently, they also always show high membership coefficients. When labor criterion is included, Australia and New Zealand demonstrate the highest group silhouettes and high membership coefficients for all anchors except for the basket anchor whilst Hong Kong and Singapore display high memberships for all except for the yuan anchor. Hence, these economies might have been relatively closely linked in the post-crisis period.

Some cases maintain high belongingness to more than one group (less than 2 percent difference between the highest and the second highest membership coefficient). Hence, these countries can be described as 'straddling the fence'. As shown by the third row, Korea and Canada for instance, represent two such countries for dollar and basket anchors in the post-crisis 8V solutions.

This characteristic may have implications for practice. Korea and Canada may have more flexibility in their choice of potential group to merge into. From another perspective, it can also be interpreted that Korea and Canada are not strongly linked to any of the groupings closer to them.

Countries that share the same grouping over anchors are listed in Table 6.27. Overall, fewer countries share the same grouping across anchors for the crisis period. Notably, based on 7 variables Taiwan-Malaysia is robust over the periods for basket and yen anchors whilst Korea-Taiwan and Australia-NewZealand are robust over the periods over basket and euro anchors.

If one looks at the subclusters for the post-crisis period, the most recent period, using 7 variables Indonesia-Australia-NewZealand, Taiwan-Malaysia, and Thailand-Vietnam are robust across all anchors; and using 8 variables HongKong-Singapore,

Australia-NewZealand, and Indonesia-India are robust over all anchors. Hence, regardless of labor Australia and New Zealand are stable across all anchors for the post-crisis period.

Table 6.26 OCA-FCM summary

		Dollar	SW	Currency Basket	SW	Yen	SW	Euro	SW	Yuan	SW
Pre-crisis	1	KOR, MYS, PHL, IND, CAN	-.12	KOR, TWN, MYS, PHL, SGP, IND	.29	CHN, HKG, IND, MAC, NZL, CAN	-.16	HKG, KOR, TWN, MYS, SGP, THA, MAC, CAN	.49	KOR, TWN, IDN, SGP, BRN	.20
	2	KHM, IDN, THA, BRN. JPN	.37	HKG, KHM, IDN, THA, MAC, BRN	.38	KOR, TWN, MYS, PHL, SGP, AUS,	.56	KHM, LAO, MMR, VNM, BRN, JPN	-.12	LAO, MMR, VNM, JPN	.04
	3	HKG, TWN, SGP, MAC	.65	LAO, MMR, VNM	.39	KHM, LAO, MMR, VNM	.13	CHN, IDN, PHL, IND, AUS, NZL	.35	MYS, AUS, NZL, CAN	.35
	4	CHN, AUS, NZL	.62	CHN, AUS, NZL	.40	IDN, THA, BRN	.15			HKG, KHM, MAC	-.10
	5	LAO, MMR, VNM	.42	CAN	.00					PHL, THA, IND	.58
Average			.34		.29		.22		.26		.21
Crisis	1	KOR, TWN, MYS, SGP, BRN, CAN	-.22	CHN, MMR, PHL, THA, VNM, MAC, BRN	.29	KOR, TWN, MYS, PHL, SGP, THA, BRN	.50	HKG, KOR, TWN, KHM, JPN	.60	HKG, KOR, MMR, PHL, MAC, JPN	.29
	2	CHN, HKG, KHM, MAC, JPN	.21	HKG, KOR, TWN, KHM, MYS, SGP, CAN	.26	VNM, AUS, NZL, CAN	.25	MMR, THA, VNM, AUS, NZL	.17	IDN, MYS, THA, VNM, BRN	-.03
	3	MMR, THA, NZL	-.04	IDN, IND, AUS, NZL	-.05	HKG, KHM, MAC	.62	CHN, IDN, PHL, IND, MAC	-.21	TWN, IND, AUS, CAN	.24
	4	IND, AUS	.63	LAO	.00	LAO, MMR, IND	-.09	MYS, SGP, BRN, CAN	.27	KHM, SGP, NZL	.23
	5	IDN, LAO	-.13			CHN, IDN	.44	LAO	.00	LAO	.00
	6	PHL, VNM	.40								
Average			.09		.18		.36		.20		.17
Post-crisis 7V	1	CHN, HKG, TWN, MYS, SGP, JPN	.76	KOR, TWN, MYS, THA, VNM	.32	CHN, HKG, TWN, MYS, PHL, THA, VNM	.51	CHN, HKG, KOR, TWN, MYS, PHL, THA, VNM, IND, MAC, JPN	.68	TWN, MYS, SGP, THA, VNM, IND	.56
	2	THA, VNM, IND, CAN	-.29	CHN, HKG, SGP, IND	.65	KHM, SGP, IND, MAC, CAN	.07	KHM, LAO, SGP, BRN, CAN	-.16	KOR, MMR, MAC, BRN	-.29
	3	KHM, LAO, PHL, MAC	-.34	KHM, MAC, CAN	-.37	KOR, LAO, MMR, BRN	-.30	IDN, MMR, AUS, NZL	-.14	IDN, AUS, NZL, CAN	.34
	4	IDN, AUS, NZL	.45	IDN, AUS, NZL	.54	IDN, AUS, NZL	.51			HKG, KHM, PHL, JPN	.23
	5	KOR, BRN	.52	LAO, MMR	-.14					LAO	.00
	6	MMR	.00	PHL, BRN	.19						
Average			.22		.25		.22		.31		.23
All Periods 7V	1	TWN, SGP		KOR, MYS, TWN		TWN, MYS, PHL		HKG, KOR, TWN		AUS, CAN	
	2			AUS, NZL		LAO, MMR		CHN, PHL, IND			
	3			HKG, SGP				AUS, NZL			
	4							SGP, CAN			
Post-crisis 8V	1	KOR, TWN, KHM, LAO, PHL, MAC, BRN	-.16	CHN, TWN, KHM, VNM	.18	HKG, KHM, MYS, SGP, MAC, CAN	.39	CHN, TWN, IDN, MYS, PHL, THA, VNM, IND	.40	KOR, LAO, MMR, PHL, MAC	-.18
	2	CHN, IDN, THA, VNM, IND, CAN	-.19	IDN, LAO, IND, CAN	-.38	CHN, TWN, IDN, THA, VNM, IND	.20	KOR, KHM, LAO, MAC, JPN	.11	TWN, IDN, THA, VNM, IND	.36
	3	HKG, MYS, SGP, JPN	.71	KOR, PHL, MAC	.14	KOR, PHL, BRN	.02	HKG, MMR, SGP, BRN, CAN	-.10	HKG, KHM, MYS, SGP, BRN, JPN	.32
	4	AUS, NZL	.79	MYS, THA, BRN	.09	LAO, MMR	.16	AUS, NZL	.70	AUS, NZL, CAN	.61
	5	MMR	.00	HKG, SGP	.78	AUS, NZL	.71				
	6			AUS, NZL	.67						
	7			MMR	.00						
Average			.11		.15		.27		.23		.25
All Periods 8V	1	-		AUS, NZL		SGP, MYS		CHN, IDN, PHL, IND		AUS, CAN	
	2			THA, BRN		KOR, PHL		KHM, JPN			
	3					LAO, MMR		SGP, CAN			
	4					HKG, MAC		AUS, NZL			

Table 6.26 OCA-FCM summary (continued)

Post-crisis findings	Dollar		Currency Basket		Yen		Euro		Yuan	
	7V	8V	7V	8V	7V	8V	7V	8V	7V	8V
1 Highest silhouette	CHN-HKG-TWN-MYS-SGP-JPN	AUS-NZL	CHN-SGP-IND	HKG-HKG-SGP	IDN-AUS-NZL; CHN-HKG-TWN-MYS-PHL-THA-VNM	AUS-NZL	CHN-HKG-KOR-TWN-MYS-PHL-THA-VNM-IND-MAC-JPN	AUS-NZL	TWN-MYS-SGP-THA-VNM-IND	AUS-NZL-CAN
2 Closely linked subclusters shown by membership coefficients > 50%	AUS-NZL; CHN-HKG-TWN-SGP; THA-VNM	HKG-SGP-JPN; AUS-NZL; THA-VNM	IDN-AUS; CHN-HKG-SGP; TWN-MYS-THA	HKG-SGP, MYS-THA	IDN-AUS-NZL; CHN-HKG-TWN-MYS-THA-VNM	HKG-SGP, AUS-NZL, CHN-TWN-VNM	CHN-PHL-IND-AUS-NZL; HKG-KOR-TWN-MYS-SGP-THA	HKG-SGP, AUS-NZL, CHN-TWN,	TWN-MYS-THA-VNM-IND; AUS-NZL; HKG-KHM-JPN	VNM-IND, MYS-JPN, AUS-NZL
3 High belongingness to more than one group (< 2 % difference in membership)	-	KOR, TWN, BRN, CAN	MMR	KOR, VNM, MAC, CAN	LAO	IDN, LAO, IND	-	MMR	MMR, IDN	THA

Table 6.27 OCA-FCM cross-anchor subclusters

		PRE	CRS	PST		All			PRE	CRS	PST		All	
				7V	8V	7V	8V				7V	8V	7V	8V
DB	1	KOR, MYS, PHL, IND	KOR, TWN, MYS, SGP, CAN	CHN, HKG, SGP	KOR, PHL, MAC	-	-	DY	IDN, THA, BRN	KOR, TWN, MYS, SGP, BRN	CHN, HKG, TWN, MYS	CHN, IDN, THA, VNM, IND	-	-
	2	KHM, IDN, THA, BRN	PHL, VNM	IDN, AUS, NZL	IDN, IND, CAN				KOR, MYS, PHL	HKG, KHM, MAC	IDN, AUS, NZL	HKG, MYS, SGP		
	3	CHN, AUS, NZL	MMR, THA	KHM, MAC	TWN, KHM				LAO, MMR, VNM		IND, CAN	KOR, PHL, BRN		
	4	LAO, MMR, VNM	IND, AUS	TWN, MYS	AUS, NZL				CHN, NZL		KHM, MAC	KHM, MAC		
	5	HKG, MAC	CHN, MAC	THA, VNM	CHN, VNM				TWN, SGP		KOR, BRN	AUS, NZL		
	6				HKG, SGP				HKG, MAC		THA, VNM			
	7								IND, CAN					
DE	1	HKG, TWN, SGP, MAC	MYS, SGP, BRN, CAN	CHN, HKG, TWN, MYS, JPN	CHN, IDN, THA, VNM, IND	-	-	DR	LAO, MMR, VNM	HKG, MAC, JPN	TWN, MYS, SGP	KOR, LAO, PHL, MAC	-	-
	2	LAO, MMR, VNM	HKG, KHM, JPN	THA, VNM, IND	KOR, KHM, LAO, MAC				MYS, CAN	MMR, THA	THA, VNM, IND	IDN, THA, VNM, IND		
	3	CHN, AUS, NZL	MMR, THA, NZL	KHM, LAO	TWN, PHL				IDN, BRN	IND, AUS	IDN, AUS, NZL	HKG, MYS, SGP, JPN		
	4	KHM, BRN, JPN	KOR, TWN	PHL, MAC	HKG, SGP				HKG, MAC	TWN, CAN	HKG, JPN	AUS, NZL		
	5	KOR, MYS, CAN	CHN, MAC	IDN, AUS, NZL	AUS, NZL				AUS, NZL	MYS, BRN	KOR, BRN	KHM, BRN		
	6	PHL, IND							SGP, TWN		KHM, PHL			
	7								PHL, IND					
BY	1	KOR, TWN, MYS, PHL, SGP	PHL, THA, BRN	TWN, MYS, THA, VNM	CHN, TWN, VNM	TWN, MYS	-	BE	KOR, TWN, MYS, SGP	CHN, PHL, MAC	KOR, TWN, MYS, THA, VNM	CHN, TWN, VNM	KOR, TWN	AUS, NZL
	2	LAO, MMR, VNM	KOR, TWN, MYS, SGP	KHM, MAC, CAN	AUS, NZL				HKG, THA, MAC	MMR, THA, VNM	CHN, HKG, IND	AUS, NZL	AUS, NZL	
	3	IDN, THA, BRN	AUS, NZL	IDN, AUS, NZL	HKG, SGP				LAO, MMR, VNM	HKG, KOR, TWN	IDN, AUS, NZL	IDN, IND		
	4	HKG, MAC	HKG, KHM	SGP, IND	KOR, PHL				CHN, AUS, NZL	MYS, SGP, CAN	KHM, CAN	HKG, SGP		
	5	CHN, NZL		LAO, MMR					PHL, IND	IDN, IND		MYS, THA		
	6			CHN, HKG						AUS, NZL		KOR, MAC		
BR	1	KOR, TWN, SGP	MMR, PHL, MAC	TWN, MYS, THA, VNM	KOR, PHL, MAC	-	-	YE	KHM, LAO, MMR, VNM	VNM, AUS, NZL	CHN, HKG, TWN, MTS, PHL, THA, VNM	CHN, TWN, IDN, THA, VNM, IND	-	-
	2	HKG, KHM, MAC	THA, VNM, BRN	SGP, IND	IDN, IND				CHN, IND, NZL	MYS, SGP, BRN	KHM, SGP, CAN	HKG, SGP, CAN		
	3	LAO, MMR, VNM	HKG, KOR	IDN, AUS, NZL	TWN, VNM				HKG, MAC, CAN	HKG, KHM	IDN, AUS, NZL	KHM, MAC		
	4	IDN, BRN	TWN, CAN		MYS, BRN				KOR, TWN, MYS	KOR, TWN	LAO, BRN	AUS, NZL		
	5	PHL, IND	KHM, SGP		HKG, SGP				PHL, AUS	CHN, IDN	IND, MAC	LAO, MMR		
	6	AUS, NZL	IND, AUS		AUS, NZL									

Table 6.27 OCA-FCM cross-anchor subclusters (continued)

		PRE	CRS	PST		All			PRE	CRS	PST		All	
				7V	8V	7V	8V				7V	8V	7V	8V
YR	1	KOR, TWN, SGP	MYS, THA, BRN	TWN, MYS, THA, VNM	TWN, IDN, THA, VNM, IND	-	-	ER	LAO, MMR, VNM, JPN	HKG, KOR, JPN	TWN, MYS, THA, VNM, IND	TWN, IDN, THA, VNM, IND	-	-
	2	LAO, MMR, VNM	AUS, CAN	KOR, MMR, BRN	HKG, KHM, MYS, SGP				KOR, TWN, SGP	THA, VNM	IDN, AUS, NZL	KOR, LAO, MAC		
	3	NZL, CAN	HKG, MAC	IDN, AUS, NZL	KOR, PHL				HKG, MAC	MYS, BRN	HKG, PHL, JPN	HKG, SGP, BRN		
	4	MYS, AUS	KOR, PHL	HKG, PHL	LAO, MMR				PHL, IND	PHL, MAC	KOR, MAC	KHM, JPN		
	5	HKG, MAC		SGP, IND	AUS, NZL				MYS, CAN			AUS, NZL		
	6	IDN, BRN							AUS, NZL					
DBY	1	KOR, MYS, PHL	KOR, TWN, MYS, SGP	CHN, HKG	HKG, SGP	--	--	DBE	LAO, MMR, VNM	MYS, SGP, CAN	CHN, HKG	KOR, MAC	--	-
	2	LAO, MMR, VNM		IDN, AUS, NZL	AUS, NZL				CHN, AUS, NZL	KOR, TWN	IDN, AUS, NZL	IDN, IND		
	3	HKG, MAC		TWN, MYS	KOR, PHL				KOR, MYS	MMR, THA	TWN, MYS	AUS, NZL		
	4	CHN, NZL		THA, VNM	CHN, VNM				PHL, IND	CHN, MAC	THA, VNM	CHN, VNM		
	5				IDN, IND				KHM, BRN			HKG, SGP		
	6								HKG, MAC					
DBR	1	LAO, MMR, VNM	TWN, CAN	IDN, AUS, NZL	KOR, PHL, MAC	-	-	DYE	LAO, MMR, VNM	KOR, TWN	CHN, HKG, TWN, MYS	CHN, IDN, THA, VNM, IND	-	-
	2	IDN, BRN	IND, AUS	TWN, MYS	IDN, IND				KOR, MYS	SGP, BRN	IDN, AUS, NZL	HKG, SGP		
	3	AUS, NZL		THA, VNM	AUS, NZL				CHN, NZL	HKG, KHM	THA, VNM	KHM, MAC		
	4	PHL, IND			HKG, SGP				TWN, SGP			AUS, NZL		
	5	HKG, MAC							HKG, MAC					
DYR	1	LAO, MMR, VNM	MYS, BRN	TWN, MYS	IDN, THA, VNM, IND	-	-	DER	LAO, MMR, VNM	MYS, BRN	TWN, MYS	IDN, THA, VNM, IND	-	-
	2	KOR, SGP	HKG, MAC	IDN, AUS, NZL	HKG, MYS, SGP				HKG, MAC	HKG, JPN	HKG, JPN	KOR, LAO, MAC		
	3	IDN, BRN		KOR, BRN	KOR, PHL				TWN, SGP		THA, VNM, IND	HKG, SGP		
	4	TWN, SGP		THA, VNM	AUS, NZL				AUS, NZL		IDN, AUS, NZL	AUS, NZL		
	5	HKG, MAC							MYS, CAN					
	6								PHL, IND					
BYE	1	KOR, TWN, MYS, SGP	HKG, KHM	TWN, MYS, THA, VNM	CHN, TWN, VNM	-	-	BYR	KOR, TWN, SGP	THA, BRN	TWN, MYS, THA, VNM	TWN, VNM	-	-
	2	LAO, MMR, VNM	KOR, TWN	IDN, AUS, NZL	AUS, NZL				LAO, MMR, VNM		IDN, AUS, NZL	AUS, NZL		
	3	HKG, MAC	MYS, SGP	KHM, CAN	HKG, SGP				IDN, BRN		SGP, IND	HKG, SGP		
	4	CHN, NZL	AUS, NZL	CHN, HKG					HKG, MAC			KOR, PHL		
BER	1	KOR, TWN, SGP	PHL, MAC	TWN, MYS, THA, VNM	TWN, VNM	-	-	YER	LAO, MMR, VNM	MYS, BRN	TWN, MYS, THA, VNM	TWN, IDN, THA, VNM, IND	-	-
	2	LAO, MMR, VNM	THA, VNM	IDN, AUS, NZL	AUS, NZL				HKG, MAC		IDN, AUS, NZL	HKG, SGP		
	3	HKG, MAC	HKG, KOR		IDN, IND				KOR, TWN		HKG, PHL	AUS, NZL		
	4	AUS, NZL			HKG, SGP							LAO, MMR		
	5	PHL, IND			KOR, MAC									
DBYE	1	LAO, MMR, VNM	KOR, TWN	IDN, AUS, NZL	HKG, SGP	-	-	DB YR	LAO, MMR, VNM	-	IDN, AUS, NZL	HKG, SGP	-	-
	2	HKG, MAC		CHN, HKG	AUS, NZL				HKG, MAC		TWN, MYS	AUS, NZL		
	3	CHN, NZL		TWN, MYS	CHN, VNM						THA, VNM	KOR, PHL		
	4	KOR, MYS		THA, VNM	IDN, IND							IDN, IND		
DBER	1	LAO, MMR, VNM	-	IDN, AUS, NZL	KOR, MAC	-	-	DY ER	LAO, MMR, VNM	-	IDN, AUS, NZL	IDN, THA, VNM, IND	-	-
	2	AUS, NZL		TWN, MYS	IDN, IND				TWN, SGP		TWN, MYS	HKG, SGP		
	3	PHL, IND		THA, VNM	AUS, NZL				HKG, MAC		THA, VNM	AUS, NZL		
	4	HKG, MAC			HKG, SGP									
BYER	1	KOR, TWN, SGP	-	TWN, MYS, THA, VNM	TWN, VNM	-	-	DB YER	HKG, MAC	-	IDN, AUS, NZL	HKG, SGP	-	-
	2	LAO, MMR, VNM		IDN, AUS, NZL	AUS, NZL				LAO, MMR, VNM		TWN, MYS	AUS, NZL		
	3	HKG, MAC			HKG, SGP						THA, VNM	IDN, IND		

Note: D=Dollar; B=Currency Basket; Y=Yen; E=Euro/Mark; R=Yuan (Renminbi)

6.3.2 Classifications using Weighted Criteria

Table 6.28 collects the solutions by original unweighted (or equally weighted) criteria in columns 1 and the solutions by weighted (or unequally weighted) criteria in columns 2. To reiterate, under weighted criteria, the sum of 'benefit' variables and the sum of 'cost' variables are given equal weights. Since there are only two benefit variables, each benefit variable is given more weight under the new weighting. As before, XBI and DPC are utilized to indicate the cluster solutions.

Some of the configurations have become more convergent, divergent, or more or less unchanged after the weighting. The configurations that become visibly more convergent include the pre-crisis basket solution; the crisis period yen and euro solutions; the post-crisis 7V yen solution; and the post-crisis 8V basket and yen solutions.

Quite the opposite, by putting more weight on benefits and hence less weight on costs, the pre-crisis euro solution, the crisis period basket solution, the post-crisis 7V euro solution, and the post-crisis 8V yuan solution become noticeably divergent. The rest of the solutions have been more or less the unchanged.

Since only two benefit variables are defined here, trade openness and external indebtedness and only the trade variable is measured relative to a reference, generally putting more weight on trade has made the region more symmetrical against Japan but more asymmetrical against Germany/EMU.

Since the configurations are somewhat different after the weighting, it is instructive to identify subgrouping linkages which are robust to the new weighting as shown in Table 6.29. Notably, the subcluster of Australia-NewZealand is not only unmoved by the weighting but is also robust through the periods by the basket and the euro anchor regardless of the post-crisis labor criterion. Also notable, Taiwan and Malaysia are robust over the periods for basket and yen anchors using 7 variables.

The pairs of countries associated with fixed exchange rates in practice, Singapore-Brunei and HongKong-Macau are rarely linked across weightings. Hong Kong and Macau are only placed together in crisis period dollar and yuan solutions and post-crisis 8V yen solution. Hence, they do not consistently share the same grouping against US. Meanwhile, Singapore and Brunei are at most placed together consecutively over crisis and post-crisis 7V periods by the euro anchor.

Table 6.30 shows the cross-weighting linkages across anchors. Notice that Indonesia, Australia, and New Zealand are always placed together over all anchors in the post-crisis 7V solutions. For post-crisis 8V, Australia and New Zealand still share the same clusters over all anchors except for the yen anchor. At the same time, Taiwan-Vietnam is robust over all anchors except for the dollar anchor in the post-crisis setting irrespective of the labor dimension.

Table 6.28 FCM clusters by equal and by weighted criteria

		Dollar		Currency Basket		Yen		Euro		Yuan	
		1	2	1	2	1	2	1	2	1	2
Pre-crisis	1	KOR, MYS, PHL, IND, CAN	HKG, TWN, SGP, KOR, MYS, PHL	KOR, TWN, MYS, PHL, SGP, IND	CHN, IDN, PHL, VNM, IND, MAC, AUS, NZL	CHN, HKG, IND, MAC, NZL, CAN	CHN, HKG, KOR, TWN, MYS, SGP	HKG, KOR, TWN, MYS, SGP, THA, MAC, CAN	CHN, KHM, IDN, VNM, MAC, AUS, NZL	KOR, TWN, IDN, SGP, BRN	HKG, KOR, TWN, IDN, MYS, SGP, BRN
	2	KHM, IDN, THA, BRN. JPN	CHN, AUS, NZL, VNM, IND	HKG, KHM, IDN, THA, MAC, BRN	HKG, KOR, TWN, MYS, SGP, THA, BRN	KOR, TWN, MYS, PHL, SGP, AUS,	IDN, PHL, THA, VNM, AUS, NZL	KHM, LAO, MMR, VNM, BRN, JPN	HKG, KOR, TWN, MYS, THA, JPN	LAO, MMR, VNM, JPN	KHM, PHL, THA, IND
	3	HKG, TWN, SGP, MAC	IDN, THA, MAC, BRN, JPN	LAO, MMR, VNM	KHM, LAO, MMR	KHM, LAO, MMR, VNM	IND, MAC, CAN	CHN, IDN, PHL, IND, AUS, NZL	SGP, BRN, CAN	HKG, KHM, MAC	AUS, NZL, CAN
	4	CHN, AUS, NZL	LAO, MMR, KHM	CHN, AUS, NZL	CAN	IDN, THA, BRN	KHM, LAO, MMR		LAO, MMR	PHL, THA, IND	MMR, MAC
	5	LAO, MMR, VNM	CAN	CAN			BRN		PHL, IND	MYS, AUS, NZL, CAN	VNM, JPN
	6										LAO
Crisis	1	KOR, TWN, MYS, SGP, BRN, CAN	KOR, TWN, MYS, SGP, BRN, THA	CHN, MMR, PHL, THA, VNM, MAC, BRN	CHN, KOR, TWN, MYS, MAC, BRN	KOR, TWN, MYS, PHL, SGP, THA, BRN	HKG, KOR, PHL, SGP, VNM, AUS, NZL	HKG, KOR, TWN, KHM, JPN	CHN, TWN, PHL, VNM, IND, MAC, JPN, AUS, NZL	HKG, KOR, MMR, PHL, MAC, JPN	KOR, KHM, IDN, MMR, JPN
	2	CHN, HKG, KHM, MAC, JPN	CHN, HKG, MAC, NZL	HKG, KOR, TWN, KHM, MYS, SGP, CAN	IDN, MMR, THA, IND, AUS, NZL	VNM, AUS, NZL, CAN	CHN, TWN, IDN, MYS, THA, BRN	MMR, THA, VNM, AUS, NZL	HKG, KOR, KHM, MYS, SGP, THA, BRN, CAN	IDN, MYS, THA, VNM, BRN	TWN, IND, AUS, NZL, CAN
	3	MMR, THA, NZL	PHL, VNM, KHM, JPN	IDN, IND, AUS, NZL	HKG, KHM, SGP	LAO, MMR, IND	KHM, MMR, IND, MAC, CAN	CHN, IDN, PHL, IND, MAC	IDN, LAO, MMR	TWN, IND, AUS, CAN	MYS, SGP, THA, VNM, BRN
	4	IND, AUS	IDN, MMR, IND, AUS	LAO	PHL, VNM, CAN	HKG, KHM, MAC	LAO	MYS, SGP, BRN, CAN		KHM, SGP, NZL	HKG, PHL, MAC
	5	IDN, LAO	CAN		LAO	CHN, IDN		LAO		LAO	LAO
	6	PHL, VNM	LAO								
Post-crisis 7V	1	CHN, HKG, TWN, MYS, SGP, JPN	CHN, HKG, TWN, MYS, THA	KOR, TWN, MYS, THA, VNM	CHN, HKG, TWN, MYS, VNM	CHN, HKG, TWN, MYS, PHL, THA, VNM	CHN, KOR, TWN, MYS, THA, VNM, BRN	CHN, HKG, KOR, TWN, MYS, PHL, THA, VNM, IND, MAC, JPN	CHN, TWN, PHL, VNM, IND, MAC, JPN	TWN, MYS, SGP, THA, VNM, IND	KOR, TWN, MYS, THA, VNM, BRN
	2	THA, VNM, IND, CAN	IDN, MMR, AUS, NZL	CHN, HKG, SGP, IND	KOR, THA, BRN	KHM, SGP, IND, MAC, CAN	HKG, KHM, MMR, SGP, IND, MAC, CAN	KHM, LAO, SGP, BRN, CAN	HKG, KOR, KHM, MYS, THA	KOR, MMR, MAC, BRN	IDN, MMR, AUS, NZL, CAN
	3	KHM, LAO, PHL, MAC	KHM, PHL, VNM, MAC	KHM, MAC, CAN	KHM, PHL, MAC	KOR, LAO, MMR, BRN	IDN, PHL, AUS, NZL	IDN, MMR, AUS, NZL	MMR, SGP, BRN, CAN	IDN, AUS, NZL, CAN	KHM, SGP, IND, JPN
	4	IDN, AUS, NZL	SGP, IND, JPN	IDN, AUS, NZL	MMR, SGP, IND	IDN, AUS, NZL	LAO		IDN, AUS, NZL	HKG, KHM, PHL, JPN	HKG, PHL, MAC
	5	KOR, BRN	KOR, BRN	LAO, MMR	IDN, AUS, NZL				LAO	LAO	LAO
	6	MMR	LAO	PHL, BRN	LAO						
	7		CAN		CAN						
All Periods 7V	1	TWN, SGP	TWN, MYS	KOR, MYS, TWN	TWN, MYS	TWN, MYS, PHL	CHN, TWN, MYS	HKG, KOR, TWN	CHN, VNM, MAC	AUS, CAN	AUS, NZL, CAN
	2			AUS, NZL	KOR, BRN	LAO, MMR	IND, MAC, CAN	CHN, PHL, IND	AUS, NZL		MYS, BRN
	3			HKG, SGP	IDN, AUS, NZL		PHL, AUS, NZL	AUS, NZL	HKG, KOR, MYS, THA,		
	4						HKG, SGP	SGP, CAN	TWN, JPN		
	5						KHM, MMR		SGP, BRN, CAN		
	6								PHL, IND		
Post-crisis 8V	1	KOR, TWN, KHM, LAO, PHL, MAC, BRN	CHN, HKG, KOR, TWN, MYS, THA, BRN	CHN, TWN, KHM, VNM	CHN, HKG, KOR, TWN, KHM, MYS, THA, VNM, MAC, BRN	HKG, KHM, MYS, SGP, MAC, CAN	CHN, KOR, TWN, IDN, MYS, PHL, THA, VNM, BRN, AUS, CAN	CHN, TWN, IDN, MYS, PHL, THA, VNM, IND	CHN, TWN, VNM, IND, MAC, JPN	KOR, LAO, MMR, PHL, MAC	KOR, TWN, KHM, LAO, VNM, IND
	2	CHN, IDN, THA, VNM, IND, CAN	KHM, PHL, VNM, MAC, JPN	IDN, LAO, IND, CAN	IDN, MMR, PHL, SGP, IND, AUS, NZL	CHN, TWN, IDN, THA, VNM, IND	HKG, KHM, MMR, SGP, IND, MAC, NZL	KOR, KHM, LAO, MAC, JPN	HKG, KOR, KHM, MYS, THA,	TWN, IDN, THA, VNM, IND	MYS, MMR, THA
	3	HKG, MYS, SGP, JPN	IDN, SGP, IND	MYS, THA, BRN	LAO	KOR, PHL, BRN	LAO	HKG, MMR, SGP, BRN, CAN	IDN, PHL, AUS, NZL	HKG, KHM, MYS, SGP, BRN, JPN	SGP, BRN, CAN
	4	AUS, NZL	LAO, MMR	KOR, PHL, MAC	CAN	LAO, MMR		AUS, NZL	MMR, SGP, BRN, CAN	AUS, NZL, CAN	PHL, MAC
	5	MMR	AUS, NZL	HKG, SGP		AUS, NZL			LAO		HKG, JPN
	6		CAN	AUS, NZL							AUS, NZL
	7			MMR							IDN
All Periods 8V	1	-	TWN, KOR, MYS	AUS, NZL	KOR, TWN, MYS, BRN	SGP, MYS	PHL, VNM, AUS	CHN, IDN, PHL, IND	HKG, KOR, MYS, THA	AUS, CAN	SGP, BRN
	2		THA, BRN	THA, BRN	IDN, IND, AUS, NZL	KOR, PHL	CHN, TWN, MYS	KHM, JPN	CHN, VNM, MAC		AUS, NZL
	3				CHN, MAC	LAO, MMR	HKG, SGP	AUS, NZL	AUS, NZL		
	4					HKG, MAC	KHM, MMR	SGP, CAN	TWN, JPN		
	5						IDN, THA		SGP, BRN		
	6						IND, MAC				

Table 6.29 FCM cross-weighting subclusters

		Dollar	Currency Basket	Yen	Euro	Yuan
Pre-crisis	1	IDN, THA, BRN, JPN	KOR, TWN, MYS, SGP	KOR, TWN, MYS, SGP	HKG, KOR, TWN, MYS, THA	KOR, TWN, IDN, SGP, BRN
	2	HKG, TWN, SGP	HKG, THA, BRN	KHM, LAO, MMR	CHN, IDN, AUS, NZL	PHL, THA, IND
	3	CHN, AUS, NZL	CHN, AUS, NZL	IND, MAC, CAN	KHM, VNM	AUS, NZL, CAN
	4	KOR, MYS, PHL	IDN, MAC	CHN, HKG	LAO, MMR	VNM, JPN
	5	LAO, MMR	LAO, MMR	PHL, AUS	PHL, IND	
	6		PHL, IND	IDN, THA	SGP, CAN	
Crisis	1	KOR, TWN, MYS, SGP, BRN	IDN, IND, AUS, NZL	TWN, MYS, THA, BRN	CHN, PHL, IND, MAC	MYS, THA, VNM, BRN
	2	CHN, HKG, MAC	KOR, TWN, MYS	KOR, PHL, SGP	MYS, SGP, BRN, CAN	TWN, IND, AUS, CAN
	3	KHM, JPN	HKG, KHM, SGP	VNM, AUS, NZL	HKG, KOR, KHM	HKG, PHL, MAC
	4	PHL, VNM	CHN, MAC, BRN	KHM, MAC	VNM, AUS, NZL	KOR, MMR, JPN
	5	IND, AUS	MMR, THA	MMR, IND	TWN, JPN	
	6		PHL, VNM	CHN, IDN		
Post-crisis 7V	1	CHN, HKG, TWN, MYS	TWN, MYS, VNM	CHN, TWN, MYS, THA, VNM	CHN, TWN, PHL, VNM, IND, MAC, JPN	IDN, AUS, NZL, CAN
	2	KHM, PHL, MAC	IDN, AUS, NZL	KHM, SGP, IND, MAC, CAN	HKG, KOR, MYS, THA	TWN, MYS, THA, VNM
	3	IDN, AUS, NZL	KOR, THA	IDN, AUS, NZL	SGP, BRN, CAN	SGP, IND
	4	KOR, BRN	CHN, HKG	KOR, BRN	IDN, AUS, NZL	KHM, JPN
	5	SGP, JPN	KHM, MAC			KOR, BRN
	6		SGP, IND			HKG, PHL
All Periods 7V	1	-	AUS, NZL	TWN, MYS	PHL, IND	AUS, CAN
	2		TWN, MYS		HKG, KOR	
	3				AUS, NZL	
	4				SGP, CAN	
Post-crisis 8V	1	KHM, PHL, MAC	CHN, TWN, KHM, VNM	CHN, TWN, IDN, THA, VNM	CHN, TWN, VNM, IND	TWN, VNM, IND
	2	KOR, TWN, BRN	MYS, THA, BRN	HKG, KHM, SGP, MAC	MMR, SGP, BRN, CAN	KOR, LAO
	3	HKG, MYS	KOR, MAC	KOR, PHL, BRN	KOR, KHM	PHL, MAC
	4	CHN, THA	IDN, IND	MYS, CAN	MAC, JPN	HKG, JPN
	5	AUS, NZL	AUS, NZL		IDN, PHL	SGP, BRN
	6	IDN, IND			MYS, THA	AUS, NZL
	7				AUS, NZL	
All Periods 8V	1	-	AUS, NZL	-	AUS, NZL	-

Table 6.30 FCM cross-weighting-anchor subclusters

	PRE	CRS	PST		All			PRE	CRS	PST		All	
			7V	8V	7V	8V				7V	8V	7V	8V
DB	1 CHN, AUS, NZL	KOR, TWN, MYS	IDN, AUS, NZL	AUS, NZL	-	-	DY	TWN, SGP	TWN, MYS	CHN, TWN, MYS	CHN, THA	-	-
	2 THA, BRN	CHN, MAC	TWN, MYS	IDN, IND				LAO, MMR	KOR, SGP	IDN, AUS, NZL			
	3 TWN, SGP	PHL, VNM	KHM, MAC					IDN, THA		KOR, BRN			
	4 LAO, MMR	IND, AUS	CHN, HKG							KHM, MAC			
DE	1 CHN, AUS, NZL	MYS, SGP, BRN	IDN, AUS, NZL	AUS, NZL	-	-	DR	TWN, SGP	MYS, BRN	IDN, AUS, NZL	PHL, MAC	-	-
	2 HKG, TWN	CHN, MAC	HKG, MYS					AUS, NZL	HKG, MAC	KOR, BRN	AUS, NZL		
	3 LAO, MMR		CHN, TWN						IND, AUS	TWN, MYS			
BY	1 KOR, TWN, MYS, SGP	TWN, MYS	TWN, MYS, VNM	CHN, TWN, VNM	TWN - MYS		BE	KOR, TWN, MYS	AUS, NZL	TWN, VNM	CHN, TWN, VNM	AUS, NZL	AUS, NZL
	2 LAO, MMR	AUS, NZL	IDN, AUS, NZL					CHN, AUS, NZL	HKG, KHM	IDN, AUS, NZL	MYS, THA		
	3		KHM, MAC					HKG, THA	CHN, MAC	KOR, THA	AUS, NZL		
	4		SGP, IND					LAO, MMR					
	5							PHL, IND					
BR	1 KOR, TWN, SGP	IND, AUS	TWN, MYS, VNM	TWN, VNM	-	-	YE	KOR, TWN, MYS	VNM, AUS, NZL	CHN, TWN, VNM	CHN, TWN, VNM	-	-
	2 AUS, NZL		IDN, AUS, NZL	AUS, NZL				LAO, MMR	MYS, BRN	IDN, AUS, NZL			
	3		SGP, IND						CHN, IND	IND, MAC			
	6									SGP, CAN			
	5									MYS, THA			
YR	1 KOR, TWN, SGP	MYS, THA, BRN	-	TWN, VNM	-	-	ER	KOR, TWN,	PHL, MAC	-	TWN, VNM, IND	-	-
	2							AUS, NZL	MYS, BRN		SGP, BRN		
	3							PHL, IND			AUS, NZL		
DBY	1 TWN, SGP	TWN, MYS	IDN, AUS, NZL	-	--	--	DBE	CHN, AUS, NZL	CHN, MAC	IDN, AUS, NZL	AUS, NZL	--	-
	2 LAO, MMR		KHM, MAC					LAO, MMR	PHL, VNM				
	3		SGP, IND										
DBR	1 AUS, NZL	IND, AUS	IDN, AUS, NZL	AUS, NZL	-	-	DYE	LAO, MMR	-	IDN, AUS, NZL	-	-	-
	2 TWN, SGP		TWN, MYS							CHN, TWN			
DYR	1 TWN, SGP	-	TWN, MYS	-	-	-	DER	AUS, NZL	MYS, BRN	IDN, AUS, NZL	AUS, NZL	-	-
	2		IDN, AUS, NZL										
	3		KOR, BRN										
BYE	1 KOR, TWN, MYS	AUS, NZL	TWN, VNM	CHN, TWN, VNM	-	-	BYR	KOR, TWN, SGP	-	TWN, MYS, VNM	TWN, VNM	-	--
	2 LAO, MMR		IDN, AUS, NZL							IDN, AUS, NZL			
										SGP, IND			
BER	1 KOR, TWN	-	TWN, VNM	TWN, VNM	-	-	YER	KOR, TWN	MYS, BRN	IDN, AUS, NZL	TWN, VNM	-	-
	2 AUS, NZL		IDN, AUS, NZL	AUS, NZL						TWN, VNM			
	3 PHL, IND									MYS, THA			
DBYE	1 LAO, MMR	-	IDN, AUS, NZL	-	-	-	DBYR	TWN, SGP	-	IDN, AUS, NZL	-	-	-
										SGP, IND			
DBER	1 AUS, NZL	-	IDN, AUS, NZL	AUS, NZL	-	-	DYER	-	-	IDN, AUS, NZL	-	-	-
BYER	1 KOR, TWN	-	TWN, VNM	TWN, VNM	-	-	DBYER	-	-	IDN, AUS, NZL	-	-	-
			IDN, AUS, NZL										

Note: D=Dollar; B=Currency Basket; Y=Yen; E=Euro/Mark; R=Yuan (Renminbi)

6.3.3 Assessment of Preparedness

This section compares the results involving the dollarized and euroized cases, the benchmarks with the original solutions. Asian cases which are put together with the benchmarks may be more ready for fixed exchange rates and/or monetary union.

The first part presents the results using the original unweighted criteria and the second part provides the analysis using weighted criteria.

6.3.3.1 Preparedness Assessment using Unweighted Criteria

Table 6.31 reports the classifications for preparedness assessment using the original unweighted variables. Columns '1' show the original groupings without the benchmarks while columns '2' provide the groupings with the benchmarks. The cells containing the Asian and the benchmark cases in columns 2 are highlighted. Associations with benchmarks from the post-dollarization or post-euro period may suggest greater preparedness.

For the pre-crisis period, shown by columns 2 the general level of preparedness for exchange rate fixation and monetary union could have been greater for dollar and yen pegs since quite a number of the Asian cases are being grouped with post-dollarization and/or post-euro benchmarks. Notice that for this period Hong Kong and a bunch of other countries are linked with PAN and ELS1 but not with any EMU benchmarks, in line with their unilateral dollar pegs before the Asian crisis.

Likewise, for crisis period the readiness for dollar and basket pegs might have been higher; for post-crisis 7V the readiness for yuan peg could be greater; and for post-crisis 8V that for dollar, basket, and euro pegs might be better.

For post-crisis 8V, most countries which are associated with dollarized benchmarks are not linked with euroized benchmarks and vice versa. For instance, under US reference, Korea, Indonesia, Laos, Myanmar, Australia, and New Zealand are connected with all the EMU benchmarks, hence they might be relatively prepared for a multilateral

monetary bloc centered on the US dollar. On the contrary, the Philippines with connection to PAN, GTM1, and ECU3 might be more suitable for a unilateral dollar peg.

In light of the above, by and large the region could have been relatively prepared for a dollar peg throughout the periods.

Obviously, the groupings of the Asian cases are somewhat different when benchmark cases are added in the analysis. Hence, it is straightforward to identify common groupings between the two results. When the groupings in columns 1 intersect with those in columns 2, the common sets of countries should share common OCA features and levels of preparedness. The common sets of countries are presented in the bottom part of Table 6.31.

No common sets are robust over the periods. For pre-crisis period, more substantial common sets are present under dollar and euro anchors; for crisis period, under dollar and basket anchors; for post-crisis 7V, under yuan anchor; and for post-crisis 8V, under dollar anchor. Hence, overall more countries could share similar OCA dimensions and levels of preparedness when US is the reference.

With regard to the dollar areas of Hong Kong and Macau, they are hardly seen together in the common sets; they are only put together in the pre-crisis dollar solution. For the monetary union members of Singapore and Brunei, they are only placed together in the crisis period dollar solution. On this evidence, though maintaining similar monetary standards, these pairs of economies are not indicated to be constantly parallel in both the OCA dimensions and in the level of preparedness.

Table 6.32 puts together the cross-anchor common sets. Since no subgroups are stable over all anchors, it may be worthwhile to note those which are stable over four anchors and since the post-crisis period is the most recent period, it is compelling to focus on this period. The subclusters of Vietnam-India and Indonesia-India are stable across four of the five anchors in the post-crisis 8V solutions.

Table 6.33 displays the features of the clusters involving the benchmarks. From the table, the characteristics shared by the Asian countries and the benchmarks can be recognized. For instance, in the pre-crisis dollar findings, high degrees of business cycle symmetry, inflation convergence, and diversification are probably the predominant features which put the Asian cases together with the benchmarks in the first group. In general, Asian countries associated with dollarized and euroized benchmarks exhibit higher levels of business cycle symmetry, inflation convergence, and real exchange rate stability. Meantime, less developed countries such as Laos and Myanmar can be seen being linked with pre-dollarization benchmarks such as ECU1 and ECU2 which maintain high degrees of inflation differential and real exchange rate variability.

Table 6.31 OCA-FCM preparedness assessment

		Dollar		Currency Basket		Yen		Euro		Yuan	
		1	2	1	2	1	2	1	2	1	2
Pre-crisis	1	KOR, MYS, PHL, IND, CAN	**CHN, TWN, IND, AUS, NZL, CAN**, ELS3, GTM3, EMU1, EMU2, EMU3	HKG, KHM, IDN, THA, MAC, BRN	**CHN, TWN, MYS, PHL, IND, AUS,** EMU1, EMU2,	CHN, HKG, IND, MAC, NZL, CAN	**THA, AUS, NZL,** PAN, ELS3, EMU1, EMU2, EMU3	HKG, KOR, TWN, MYS, SGP, THA, MAC, CAN	**CHN, MYS, PHL, IND, AUS, CAN**, EMU2, PAN	KOR, TWN, IDN, SGP, BRN	**AUS, CAN**, ELS3, GTM3, EMU1, EMU2, EMU3
	2	KHM, IDN, THA, BRN. JPN	**HKG, KOR, MYS, PHL, SGP, THA, MAC, BRN**, PAN, ELS1	KOR, TWN, MYS, PHL, SGP, IND	**CAN**, ELS2, ELS3, GTM3, EMU3	KOR, TWN, MYS, PHL, SGP, AUS	**BRN**, GTM1, ELS2, GTM2, ECU3, GTM3	KHM, LAO, MMR, VNM, BRN, JPN	**LAO, VNM**, ECU1, ECU2	LAO, MMR, VNM, JPN	GTM1, ELS2, GTM2, ECU3
	3	HKG, TWN, SGP, MAC	**JPN**, ECU1, GTM1, ELS2, GTM2, ECU3	LAO, MMR, VNM	HKG, KOR, IDN, SGP, THA, MAC, BRN, NZL	KHM, LAO, MMR, VNM	**IDN, VNM,** ECU1, ELS1, ECU2	CHN, IDN, PHL, IND, AUS, NZL	**KHM, MMR, MAC,** ELS1	HKG, KHM, MAC	KOR, TWN, IDN, MYS, SGP, NZL
	4	CHN, AUS, NZL	ECU2	CHN, AUS, NZL	KHM, LAO, MMR, VNM	IDN, THA, BRN	HKG, KOR, TWN, MYS, SGP, MAC		HKG, TWN, SGP, THA, NZL	PHL, THA, IND	**BRN, JPN,** PAN, ECU1, ELS1, ECU2
	5	LAO, MMR, VNM	KHM, IDN, LAO, MMR, VNM	CAN	PAN, ECU1, ELS1, ECU2		KHM, LAO, MMR		ELS2, ELS3, GTM3, EMU1, EMU3	MYS, AUS, NZL, CAN	PHL, THA, VNM, IND
	6				GTM1, GTM2, ECU3		CHN, PHL, IND, CAN		KOR, IDN, BRN, JPN		KHM, LAO, MMR
	7								GTM1, GTM2, ECU3		HKG, MAC
Crisis	1	CHN, HKG, KHM, MAC, JPN	**TWN, IDN, AUS, CAN**, PAN, ELS3, GTM3, EMU1, EMU2, EMU3	HKG, KOR, TWN, KHM, MYS, SGP, CAN	**CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, MAC, BRN**, ELS1	KOR, TWN, MYS, PHL, SGP, THA, BRN	**CHN, HKG, IDN,** PAN, GTM3, EMU1, EMU3	HKG, KOR, TWN, KHM, JPN	**IND, CAN**, PAN, ELS3, GTM3, EMU1, EMU2, EMU3	HKG, KOR, MMR, PHL, MAC, JPN	**IDN,** PAN, ELS3, GTM3, EMU1, EMU2, EMU3
	2	KOR, TWN, MYS, SGP, BRN, CAN	**CHN, KOR, MYS, MMR, PHL, SGP, THA, VNM, MAC, BRN, NZL** , ELS1, ECU2	CHN, MMR, PHL, THA, VNM, MAC, BRN	**CAN**, PAN, ECU1, ELS2, ELS3, GTM3, EMU1, EMU3	LAO, MMR, IND	**KHM, LAO, MMR,** ECU1, ECU2	MMR, THA, VNM, AUS, NZL	**IDN, LAO, MMR,** ECU1, ECU2	IDN, MYS, THA, VNM, BRN	ELS1, GTM1, ELS2, GTM2, ECU3
	3	PHL, VNM	**HKG, KHM, LAO, IND, JPN**, ECU1, GTM1, ELS2, GTM2, ECU3	IDN, IND, AUS, NZL	**IDN, LAO, MMR, THA, VNM, IND, AUS, NZL,** EMU2	HKG, KHM, MAC	**IND, AUS, CAN,** EMU2	CHN, IDN, PHL, IND, MAC	MYS, SGP, THA, VNM, BRN, AUS, NZL	TWN, IND, AUS, CAN	**LAO, MMR**, ECU1, ECU2
	4	MMR, THA, NZL		LAO	GTM1, GTM2, ECU3	VNM, AUS, NZL, CAN	KOR, TWN, MYS, PHL, SGP, THA, VNM, MAC, BRN, NZL	MYS, SGP, BRN, CAN	ELS1, GTM1, ELS2, GTM2, ECU3	KHM, SGP, NZL	HKG, KOR, PHL, MAC, JPN, NZL
	5	IND, AUS			ECU2	CHN, IDN	ELS1, GTM1, ELS2, GTM2, ECU3, ELS3	LAO	CHN, HKG, KOR, TWN, KHM, PHL, MAC, JPN	LAO	MYS, SGP, THA, VNM, BRN
	6	IDN, LAO									TWN, KHM, IND, AUS, CAN
Post-crisis 7V	1	CHN, HKG, TWN, MYS, SGP, JPN	**KHM, PHL, MAC,** GTM1, GTM2, ECU3	KOR, TWN, MYS, THA, VNM	**CAN**, PAN, ELS2, ELS3, GTM3, EMU1, EMU3	CHN, HKG, TWN, MYS, PHL, THA, VNM	CHN, HKG, TWN, KHM, MYS, PHL, SGP, MAC	CHN, HKG, KOR, TWN, MYS, PHL, THA, VNM, IND, MAC, JPN	CHN, HKG, TWN, MYS, THA, BRN	TWN, MYS, SGP, THA, VNM, IND	**HKG, TWN, IDN, MYS, SGP, THA, VNM, IND**, EMU1, EMU3
	2	THA, VNM, IND, CAN	**CAN**, PAN, ELS2, ELS3, GTM3, EMU3	CHN, HKG, SGP, IND	**KOR, MMR, PHL, MAC, BRN, NZL**, ELS1	KHM, SGP, IND, MAC, CAN	**VNM, IND,** ELS3, GTM3, EMU1, EMU3	KHM, LAO, SGP, BRN, CAN	**IDN, VNM, IND, CAN**, EMU1, EMU3	KOR, MMR, MAC, BRN	**LAO,** ECUJ1, GTM1, GTM2, ECU3, ELS3
	3	KHM, PHL, MAC, LAO	CHN, HKG, TWN, MYS, SGP, JPN	KHM, MAC, CAN	**LAO**, GTM1, GTM2, ECU3	KOR, LAO, MMR, BRN	**IDN, THA, AUS, CAN,** EMU2	IDN, MMR, AUS, NZL	**KOR, KHM, SGP, MAC, JPN,** PAN	IDN, AUS, NZL, CAN	**KHM, PHL, MAC, JPN**, PAN, ELS1, ELS2, GTM3
	4	IDN, AUS, NZL	KOR, LAO, MMR, BRN, NZL	IDN, AUS, NZL	**IDN, THA, VNM, IND, AUS**, EMU2	IDN, AUS, NZL	**LAO**, GTM1, GTM2, ECU3		**LAO**, GTM1, GTM2, ECU3	HKG, KHM, PHL, JPN	**KOR, MMR, BRN, AUS, NZL, CAN**, EMU2
	5	KOR, BRN	THA, VNM, IND	LAO, MMR	CHN, HKG, TWN, KHM, MYS, SGP		**BRN**, PAN, ELS2		ELS2, ELS3, GTM3	LAO	ECU2
	6	MMR	ECU1, ELS1, ECU2	PHL, BRN	ECU1, ECU2		KOR, MMR, NZL		MMR, PHL, NZL		
	7		**AUS**, EMU1, EMU2				ECU1, ELS1, ECU2		ECU1, ELS1, ECU2		
	8								**AUS**, EMU2		
All Periods 7V	1	TWN, SGP	PHL, MAC,	KOR, MYS, TWN	IND, AUS	TWN, MYS, PHL	AUS	HKG, KOR, TWN	IND, CAN	AUS, CAN	-
	2		CAN	AUS, NZL	CAN	LAO, MMR	IDN	CHN, PHL, IND	LAO		
	3		AUS	HKG, SGP	PHL			AUS, NZL			
	4		KHM					SGP, CAN			

Table 6.31 OCA-FCM preparedness assessment (continued)

		Dollar		Currency Basket		Yen		Euro		Yuan	
		1	2	1	2	1	2	1	2	1	2
Post-crisis 8V	1	KOR, TWN, KHM, LAO, PHL, MAC, BRN	**CHN, HKG, TWN, KHM, MYS, SGP, THA, VNM, IND, MAC, BRN, JPN**, GTM2	CHN, TWN, KHM, VNM	**IDN, MMR, THA, VNM, IND, AUS, NZL**, EMU1, EMU2,, EMU3	HKG, KHM, MYS, SGP, MAC, CAN	**IDN, VNM, IND**, ELS3, GTM3, EMU1, EMU2, EMU3	CHN, TWN, IDN, MYS, PHL, THA, VNM, IND	**IDN, VNM, IND, AUS, CAN**, ELS3, GTM3, EMU1, EMU2, EMU3	KOR, LAO, MMR, PHL, MAC	**TWN, IDN, VNM, IND,** EMU1, EMU2, EMU3
	2	CHN, IDN, THA, VNM, IND, CAN	**KOR, IDN, LAO, MMR, AUS, NZL**, EMU1, EMU2, EMU3	AUS, NZL	**KHM, LAO, CAN**, PAN, ECU1, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	CHN, TWN, IDN, THA, VNM, IND	**LAO**, GTM1, ELS2, GTM2, ECU3	KOR, KHM, LAO, MAC, JPN	**CHN, KOR, TWN, KHM, PHL, MAC**, PAN	TWN, IDN, THA, VNM, IND	HKG, KHM, MYS, SGP, THA, BRN, JPN
	3	HKG, MYS, SGP, JPN	**PHL**, PAN, GTM1, ECU3	MMR	CHN, HKG, KOR, TWN, MYS, PHL, SGP, MAC, BRN	KOR, PHL, BRN	**MMR**, ECU1, ELS1, ECU2	HKG, MMR, SGP, BRN, CAN	**LAO**, ELS1, GTM1, ELS2, GTM2, ECU3	HKG, KHM, MYS, SGP, BRN, JPN	**KOR, LAO**, GTM1, GTM2, ECU3
	4	AUS, NZL	**CAN**, ECU1, ELS1, ELS2, ELS3, GTM3	IDN, LAO, IND, CAN	ECU2	AUS, NZL	**PHL**, PAN	AUS, NZL	HKG, MYS, MMR, SGP, THA, BRN, JPN, NZL	AUS, NZL, CAN	**MMR, MAC**, ECU1, ELS1, ECU2
	5	MMR	ECU2	HKG, SGP		LAO, MMR	CHN, HKG, TWN, KHM, MYS, SGP, THA, MAC		ECU1, ECU2		**PHL**, PAN, ELS2, ELS3, GTM3
	6			MYS, THA, BRN			AUS, NZL, CAN				AUS, NZL, CAN
	7			KOR, PHL, MAC			KOR, BRN				
All Periods 8V	1	-	MYS, SGP, THA, MAC, BRN	AUS, NZL	IND, AUS	SGP, MYS	IDN	AUS, NZL	IND, CAN	-	-
	2		HKG	THA, BRN	CAN	KOR, PHL		KHM, JPN	LAO		
	3		JPN			LAO, MMR		CHN, IDN, PHL, IND			
	4		TWN			HKG, MAC		SGP, CAN			
	5		IND								
	6		CAN								
	7		AUS								
	8		NZL								
	9		CHN								
	10		KOR								
	11		PHL								

Common sets of countries

		Dollar	Currency Basket	Yen	Euro	Yuan
Pre-crisis	1	KOR, MYS, PHL	TWN, MYS, PHL, IND	-	CHN, PHL, IND, AUS	AUS, CAN
	2	HKG, SGP, MAC	CHN, AUS		KHM, MMR	
	3	CHN, AUS, NZL			LAO, VNM	
	4	IND, CAN			MYS, CAN	
	5	THA, BRN				
Crisis	1	KOR, MYS, SGP, BRN	HKG, KOR, TWN, KHM, MYS, SGP	LAO, MMR	-	-
	2	HKG, KHM, JPN	CHN, PHL, MAC, BRN	AUS, CAN		
	3	MMR, THA, NZL	IDN, IND, AUS, NZL	CHN, IDN		
	4	PHL, VNM	MMR, THA, VNM			
	5	CHN, MAC				
	6	TWN, CAN				
Post-crisis 7V	1	KHM, PHL, MAC	THA, VNM	IDN, AUS	KOR, MAC, JPN	TWN, MYS, SGP, THA, VNM, IND
	2		IDN, AUS		KHM, SGP	KOR, MMR, BRN
	3		PHL, BRN		VNM, IND	AUS, NZL, CAN
	4					KHM, PHL, JPN
All Periods 7V	1	-	-	-	-	-
Post-crisis 8V	1	TWN, KHM, MAC, BRN	AUS, NZL	IDN, VNM, IND	CHN, TWN, PHL	TWN, IDN, VNM, IND
	2	CHN, THA, VNM, IND	IDN, IND		IDN, VNM, IND	KOR, LAO
	3	HKG, MYS, SGP, JPN	LAO, CAN		KOR, KHM, MAC	MMR, MAC
	4	KOR, LAO				
	5	AUS, NZL				
All Periods 8V	1	-	-	-	-	-

Table 6.32 OCA-FCM-preparedness cross-anchor subclusters

	PRE	CRS	PST		All			PRE	CRS	PST		All	
			7V	8V	7V	8V				7V	8V	7V	8V
DB	1 MYS, PHL	KOR, MYS, SGP, BRN	-	AUS, NZL	-	-	DY	-	-	-	VNM, IND	-	-
	2 CHN, AUS	CHN, MAC											
	3	HKG, KHM											
	4	MMR, THA											
DE	1 CHN, AUS	-	KHM, MAC	VNM, IND	-	-	DR	-	-	KHM, PHL	KOR, LAO	-	-
	2			KHM, MAC							VNM, IND		
BY	1 -	-	IDN, AUS	IDN, IND	-	-	BE	PHL, IND	-	-	IDN, IND	-	-
	2							CHN, AUS					
BR	1 -	-	THA, VNM	IDN, IND	-	-	YE	-	-	-	IDN, VNM, IND	-	-
YR	1 -	-	-	IDN, VNM, IND	-	-	ER	-	-	VNM, IND	IDN, VNM, IND	-	-
DBY	1 -	-	-	-	-	-	DBE	CHN, AUS	-	-	-	-	-
	2												
DBR	1 -	-	-	-	-	-	DYE	-	-	-	VNM, IND	-	-
	2												
DYR	1 -	-	-	VNM, IND	-	-	DER	-	-	-	VNM, IND	-	-
	2												
BYE	1 -	-	-	IDN, IND	-	-	BYR	-	-	-	IDN, IND	-	-
BER	1 -	-	-	IDN, IND	-	-	YER	-	-	-	IDN, VNM, IND	-	-
DBYE	1 -	-	-	-	-	-	DBYR	-	-	-	-	-	-
DBER	1 -	-	-	-	-	-	DYER	-	-	-	VNM, IND	-	-
BYER	1 -	-	-	IDN, IND	-	-	DBYER	-	-	-	-	-	-

Note: D=Dollar; B=Currency Basket; Y=Yen; E=Euro/Mark; R=Yuan (Renminbi).

Table 6.33 OCA-FCM preparedness clusters

	Dollar Cluster	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
	Pre-crisis									
	All Cases	25.002	.182	7.752	6.813	.215	3.253	2.539		
1	**CHN, TWN, IND, AUS, NZL, CAN**, ELS3, GTM3, EMU1, EMU2, EMU3	27.307	.484	3.176	2.255	.511	4.357	1.400	-	3
2	**HKG, KOR, MYS, PHL, SGP, THA, MAC, BRN**, PAN, ELS1	22.715	-.161	4.563	1.790	.616	3.103	1.310	-	1
3	KHM, IDN, LAO, MMR, VNM	7.592	.051	12.441	3.138	-.602	2.498	6.798	-	1
4	**JPN**, ECU1, GTM1, ELS2, GTM2, ECU3	37.633	.325	10.418	2.973	-.158	2.233	1.874	-	1
5	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	1
	Crisis									
	All Cases	24.964	.121	9.006	7.790	.048	3.188	1.591		
1	**TWN, IDN, AUS, CAN**, PAN, ELS3, GTM3, EMU1, EMU2, EMU3	30.102	.372	3.752	2.946	.155	4.658	1.719	-	4
2	**CHN, KOR, MYS, MMR, PHL, SGP, THA, VNM, MAC, BRN, NZL** , ELS1, ECU2	19.243	-.417	8.881	14.803	.366	2.664	1.305	-	0
3	**HKG, KHM, LAO, IND, JPN**, ECU1, GTM1, ELS2, GTM2, ECU3	27.216	.421	14.577	3.558	-.469	2.491	2.155	-	2
	Post-crisis 7V									
	All Cases	24.154	.264	6.190	6.454	-.159	3.266	1.351	-	
1	**KHM, PHL, MAC,** GTM1, GTM2, ECU3	30.447	.466	5.342	2.146	-.697	2.020	1.393	-	0
2	**CAN**, PAN, ELS2, ELS3, GTM3, EMU3	42.683	.504	1.803	.916	.185	3.591	1.241	-	2
3	CHN, HKG, TWN, MYS, SGP, JPN	15.185	.724	2.116	1.303	-.612	2.890	.543	-	2
4	KOR, LAO, MMR, BRN, NZL	7.842	-.401	6.764	2.547	.339	2.820	1.781	-	0
5	THA, VNM, IND	17.671	.383	2.389	1.340	-.560	4.761	.778	-	0
6	ECU1, ELS1, ECU2	37.552	-.393	32.380	52.839	.586	2.197	2.633	-	1
7	**AUS**, EMU1, EMU2	17.426	.156	1.299	2.533	.251	5.208	n.a.	-	2
	Post-crisis 8V									
	All Cases	24.154	.264	6.190	6.454	-.159	3.266	1.351	68.7	
1	**CHN, HKG, TWN, KHM, MYS, SGP, THA, VNM, IND, MAC, BRN, JPN**, GTM2	18.840	.482	2.456	1.264	-.604	2.907	.688	73.6	4
2	**KOR, IDN, LAO, MMR, AUS, NZL**, EMU1, EMU2, EMU3	12.487	.009	4.767	2.585	.260	4.323	2.212	69.7	1
3	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	2
4	**PHL**, PAN, GTM1, ECU3	30.188	.437	6.032	2.585	-.386	2.191	1.540	45.0	0
5	**CAN**, ECU1, ELS1, ELS2, ELS3, GTM3	47.588	.247	9.031	2.634	.236	3.318	1.819	72.3	1

	Currency Basket Cluster	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
	Pre-crisis									
	All Cases	23.772	.104	8.208	7.704	.148	3.292	2.539		
1	**CHN, TWN, MYS, PHL, IND, AUS**, EMU1, EMU2,	18.303	.074	4.492	3.433	.281	4.470	1.548	-	1
2	HKG, KOR, IDN, SGP, THA, MAC, BRN, NZL	15.737	-.093	4.108	2.936	.079	2.802	1.238	-	0
3	**CAN**, ELS2, ELS3, GTM3, EMU3	37.817	.580	2.103	2.614	.313	3.990	1.319	-	3
4	KHM, LAO, MMR, VNM	9.543	-.010	14.813	3.526	.004	2.396	7.942	-	1
5	PAN, ECU1, ELS1, ECU2	37.373	-.364	24.923	39.713	.552	2.549	2.284	-	1
6	GTM1, GTM2, ECU3	37.207	.687	8.133	3.183	-.668	2.475	1.587	-	1
	Crisis									
	All Cases	22.670	.212	9.235	9.321	.053	3.226	1.591	-	
1	**CHN, HKG, KOR, TWN, KHM,, MYS, PHL, SGP, MAC, BRN,** ELS1	16.477	.117	3.820	5.866	.101	2.222	.910	-	1
2	**CAN**, PAN, ECU1, ELS2, ELS3, GTM3, EMU1, EMU3	35.708	.596	5.758	1.726	.420	3.775	1.617	-	1
3	**IDN, LAO, MMR, THA, VNM, IND, AUS, NZL**, EMU2	12.600	-.050	14.658	7.026	-.132	4.306	2.626	-	1
4	GTM1, GTM2, ECU3	37.207	.687	8.133	3.183	-.668	2.475	1.587	-	2
5	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	2
	Post-crisis 7V									
	All Cases	22.010	.217	6.524	6.892	.071	3.301	1.351	-	
1	**CAN**, PAN, ELS2, ELS3, GTM3, EMU1, EMU3	34.384	.548	1.902	1.002	.264	3.750	1.241	-	2
2	**KOR, MMR, PHL, MAC, BRN, NZL**, ELS1	15.475	-.387	6.900	3.115	.112	2.463	1.178	-	0
3	**LAO**, GTM1, GTM2, ECU3	28.766	.638	7.887	2.877	-.572	2.467	2.304	-	1
4	**IDN, THA, VNM, IND, AUS**, EMU2	14.485	.173	3.264	2.734	.079	5.228	1.014	-	1
5	CHN, HKG, TWN, KHM, MYS, SGP	13.022	.494	1.908	1.828	.021	2.722	.629	-	0
6	ECU1, ECU2	37.607	-.364	42.282	76.421	.764	2.282	3.023	-	3
	Post-crisis 8V									
	All Cases	22.010	.217	6.524	6.892	.071	3.301	1.351	67.9	
1	**IDN, MMR, THA, VNM, IND, AUS, NZL**, EMU1, EMU2,, EMU3	14.164	.109	4.851	2.625	.136	4.824	1.213	70.5	1
2	**KHM, LAO, CAN**, PAN, ECU1, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	34.450	.441	7.530	2.499	-.080	2.711	1.852	60.3	2
3	CHN, HKG, KOR, TWN, MYS, PHL, SGP, MAC, BRN	12.865	.161	2.087	1.905	.105	2.494	.658	72.3	3
4	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	2

	Yen Cluster	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
	Pre-crisis									
	All Cases	25.216	.054	8.757	9.257	-.066	3.292	2.539		
1	**THA, AUS, NZL**, PAN, ELS3, EMU1, EMU2, EMU3	25.711	.125	2.680	2.230	.434	4.245	1.437	-	2
2	**BRN**, GTM1, ELS2, GTM2, ECU3, GTM3	40.801	.625	5.934	2.324	-.246	2.399	1.163	-	2
3	HKG, KOR, TWN, MYS, SGP, MAC	15.890	-.117	3.801	3.227	-.928	3.187	1.020	-	0
4	**IDN, VNM**, ECU1, ELS1, ECU2	33.284	-.136	26.029	33.631	.745	2.568	3.009	-	1
5	KHM, LAO, MMR	13.667	-.389	12.471	3.789	.342	2.079	8.948	-	1
6	CHN, PHL, IND, CAN	13.411	-.124	8.205	16.387	-.744	4.697	2.244	-	1
	Crisis									
	All Cases	21.558	.423	9.357	9.290	.017	3.226	1.591		
1	KOR, TWN, MYS, PHL, SGP, THA, VNM, MAC, BRN, NZL	15.361	.713	2.522	5.192	-.478	2.616	.819	-	1
2	**CHN, HKG, IDN**, PAN, GTM3, EMU1, EMU3	22.739	.731	5.181	6.300	.565	4.208	1.197	-	1
3	ELS1, GTM1, ELS2, GTM2, ECU3, ELS3	40.638	.450	6.632	2.733	-.260	2.697	1.581	-	1
4	**KHM, LAO, MMR**, ECU1, ECU2	17.966	-.025	37.183	34.802	.578	2.439	3.315	-	2
5	**IND, AUS, CAN**, EMU2	10.858	-.322	3.056	2.714	-.061	4.809	1.951	-	2
6	KOR, TWN, MYS, PHL, SGP, THA, VNM, MAC, BRN, NZL	15.361	.713	2.522	5.192	-.478	2.616	.819	-	1
	Post-crisis 7V									
	All Cases	20.644	.265	7.133	7.179	.380	3.301	1.351	-	
1	CHN, HKG, TWN, KHM, MYS, PHL, SGP, MAC	10.261	.514	2.691	2.654	.955	2.485	.790	-	1
2	**VNM, IND,** ELS3, GTM3, EMU1, EMU3	23.894	.612	3.333	1.483	.637	4.622	1.148	-	0
3	**IDN, THA, AUS, CAN,** EMU2	14.644	.102	3.843	3.021	.481	5.276	1.142	-	2
4	**LAO**, GTM1, GTM2, ECU3	28.317	.637	8.364	2.995	-.710	2.467	2.304	-	1
5	**BRN**, PAN, ELS2	35.730	.172	1.462	1.126	.296	1.568	.713	-	1
6	KOR, MMR, NZL	9.605	-.562	10.841	3.538	-.418	3.487	1.334	-	0
7	ECU1, ELS1, ECU2	37.552	-.393	32.380	52.839	.586	2.197	2.633	-	2

Table 6.33 OCA-FCM preparedness clusters (continued)

	Cluster	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
	Yen									
	Post-crisis 8V									
	All Cases	20.644	.265	7.133	7.179	.380	3.301	1.351	67.9	
1	**IDN, VNM, IND**, ELS3, GTM3, EMU1, EMU2, EMU3	22.598	.487	3.818	1.792	.625	4.776	1.263	59.8	0
2	CHN, HKG, TWN, KHM, MYS, SGP, THA, MAC	10.605	.537	2.384	2.570	.948	2.721	0.676	72.4	1
3	**LAO**, GTM1, ELS2, GTM2, ECU3	31.766	.667	7.028	2.525	-.474	2.353	2.070	53.3	2
4	**MMR**, ECU1, ELS1, ECU2	29.264	-.475	30.875	40.298	.255	2.678	2.477	-	1
5	AUS, NZL, CAN	9.579	-.114	2.856	4.271	.119	5.157	n.a.[3]	91.5	2
6	PHL, PAN	23.214	.150	3.516	1.783	.597	1.996	1.239	48.9	1
7	KOR, BRN	21.962	-.544	2.195	2.319	-.193	1.852	0.330	74.8	1
	Euro									
	Cluster	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
	Pre-crisis									
	All Cases	20.592	.027	33.102	8.055	.132	3.265	2.641		
1	**CHN, MYS, PHL, IND, AUS, CAN**, PAN, EMU2	17.049	-.227	4.765	3.409	.321	4.525	1.745	-	1
2	HKG, TWN, SGP, THA, NZL	9.780	-.344	3.404	3.781	-.286	3.340	.460	-	0
3	ELS2, ELS3, GTM3, EMU1, EMU3	34.669	.640	2.094	.779	.433	3.923	1.319	-	2
4	**LAO, VNM**, ECU1, ECU2	23.870	-.131	31.287	40.623	.735	2.459	5.398	-	1
5	**KHM, MMR, MAC**, ELS1,	19.207	-.274	8.586	3.662	.016	2.004	5.519	-	1
6	KOR, IDN, BRN, JPN	8.781	.145	3.889	3.458	.342	2.386	1.025	-	0
7	GTM1, GTM2, ECU3	37.207	.687	8.133	3.183	-.668	2.475	1.587	-	2
	Crisis									
	All Cases	19.532	.176	8.919	11.521	.062	3.188	1.591		
1	**IND, CAN**, PAN, ELS3, GTM3, EMU1, EMU2, EMU3	25.299	.531	2.237	3.027	.299	4.344	1.403	-	3
2	CHN, HKG, KOR, TWN, KHM, PHL, MAC, JPN	10.654	.111	3.046	10.285	.583	2.311	.935	-	1
3	MYS, SGP, THA, VNM, BRN, AUS, NZL	8.740	.011	1.875	8.797	-.761	3.366	.899	-	1
4	ELS1, GTM1, ELS2, GTM2, ECU3	38.925	.479	7.731	3.173	-.260	2.270	1.549	-	1
5	**IDN, LAO, MMR**, ECU1, ECU2	20.222	-.360	40.060	39.250	.374	3.408	3.395	-	1
	Post-crisis 7V									
	All Cases	19.220	.145	6.286	7.030	.175	3.266	1.351		
1	CHN, HKG, TWN, MYS, THA, BRN	8.529	-.215	1.431	2.397	.454	3.007	.349	-	0
2	**IDN, VNM, IND, CAN**, EMU1, EMU3	13.076	.567	3.284	2.425	.272	5.019	1.164	-	0
3	**KOR, KHM, SGP, MAC, JPN,** PAN	12.716	.358	1.966	2.159	.267	1.866	.997	-	0
4	**LAO**, GTM1, GTM2, ECU3	30.173	.708	7.909	3.043	-.661	2.467	2.304	-	1
5	ELS2, ELS3, GTM3	44.856	.601	2.425	.702	.387	3.567	1.319	-	2
6	MMR, PHL, NZL	9.574	-.919	9.669	3.677	-.054	3.445	1.740	-	0
7	ECU1, ELS1, ECU2	37.552	-.393	32.380	52.839	.586	2.197	2.633	-	2
8	**AUS**, EMU2	15.852	-.082	1.156	3.142	-.046	5.462	n.a.	-	2
	Post-crisis 8V									
	All Cases	19.220	.145	6.286	7.030	.175	3.266	1.351	68.7	
1	**IDN, VNM, IND, AUS, CAN**, ELS3, GTM3, EMU1, EMU2, EMU3	19.917	.426	2.761	2.230	.204	4.984	1.263	67.3	2
2	HKG, MYS, MMR, SGP, THA, BRN, JPN, NZL	7.477	-.341	4.270	2.751	.227	3.059	.754	87.9	1
3	ECU1, ECU2	37.607	-.364	42.282	76.421	.764	2.282	3.023	-	3
4	**LAO**, ELS1, GTM1, ELS2, GTM2, ECU3	33.949	.528	7.649	3.082	-.323	2.299	2.034	53.3	1
5	**CHN, KOR, TWN, KHM, PHL, MAC**, PAN	13.768	.119	2.175	2.336	.336	2.157	.862	53.2	1
	Yuan									
	Cluster	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
	Pre-crisis									
	All Cases	17.692	.237	10.527	8.285	.086	3.218	2.610		
1	**AUS, CAN**, ELS3, GTM3, EMU1, EMU2, EMU3	21.614	.463	4.047	2.043	.408	4.601	1.412	-	3
2	GTM1, ELS2, GTM2, ECU3	39.296	.712	6.520	2.548	-.383	2.331	1.474	-	2
3	KOR, TWN, IDN, MYS, SGP, NZL	2.708	.328	9.191	4.683	.552	3.463	.834	-	0
4	**BRN, JPN,** PAN, ECU1, ELS1, ECU2	25.779	-.396	20.459	28.193	.554	2.216	1.827	-	1
5	PHL, THA, VNM, IND	2.576	.025	11.941	5.080	-.839	4.143	3.055	-	0
6	KHM, LAO, MMR	12.728	.205	13.634	4.668	-.578	2.079	8.948	-	1
7	HKG, MAC	19.120	.586	7.948	4.526	.337	2.287	2.085	-	0
	Crisis									
	All Cases	19.925	.231	9.518	8.094	.153	3.186	1.629		
1	**IDN**, PAN, ELS3, GTM3, EMU1, EMU2, EMU3	27.142	.542	4.847	3.020	.310	4.628	1.520	-	2
2	ELS1, GTM1, ELS2, GTM2, ECU3	38.925	.479	7.731	3.173	-.260	2.270	1.549	-	1
3	**LAO, MMR,** ECU1, ECU2	24.221	-.010	44.986	41.848	.225	2.663	3.640	-	1
4	HKG, KOR, PHL, MAC, JPN, NZL	16.032	.484	2.895	3.825	.702	2.463	.911	-	1
5	MYS, SGP, THA, VNM, BRN	6.590	.451	2.739	3.732	-.650	2.735	.899	-	1
6	TWN, KHM, IND, AUS, CAN	5.394	-.785	4.194	2.599	.467	3.820	1.400	-	1
	Post-crisis 7V									
	All Cases	19.925	.231	9.518	8.094	.153	3.186	1.629		
1	**HKG, TWN, IDN, MYS, SGP, THA, VNM, IND**, EMU1, EMU3	10.344	.247	5.104	3.946	.050	3.763	1.261	-	1
2	**LAO,** ECU1, GTM1, GTM2, ECU3, ELS3	34.700	.456	21.408	4.499	-.398	2.848	2.507	-	2
3	**KHM, PHL, MAC, JPN**, PAN, ELS1, ELS2, GTM3	28.011	.390	4.438	2.417	.529	2.336	1.256	-	2
4	**KOR, MMR, BRN, AUS, NZL, CAN**, EMU2	9.766	-.009	5.495	3.723	.175	3.733	1.347	-	0
5	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	2
	Post-crisis 8V									
	All Cases	20.995	.286	6.616	6.731	.360	3.268	1.388	69.0	
1	**TWN, IDN, VNM, IND,** EMU1, EMU2, EMU3	12.528	.553	2.900	1.593	.719	4.641	.957	55.6	1
2	HKG, KHM, MYS, SGP, THA, BRN, JPN	10.994	.446	2.115	1.509	.825	2.522	.595	82.7	2
3	**KOR, LAO**, GTM1, GTM2, ECU3	27.363	.492	6.757	2.659	-.695	2.475	1.975	54.0	0
4	**MMR, MAC,** ECU1, ELS1, ECU2	31.463	-.413	24.688	32.375	.430	2.376	2.196	-	1
5	**PHL**, PAN, ELS2, ELS3, GTM3	39.044	.522	2.546	.888	.492	2.938	1.287	55.9	2
6	AUS, NZL, CAN	5.947	-.283	2.218	4.697	-.097	5.157	n.a.	91.5	2

Notes: 1 Standard deviation ($x10^2$) of the log difference in bilateral real exchange rate. 2 Number of variables with highest degree of conformity to OCA criteria. 3 'n.a.' for not applicable.
Source: Fuzzy cluster analysis. See Appendix A for data description.

6.3.3.2 Preparedness Assessment using Weighted Criteria

Table 6.34 compares the benchmark-added solutions using the original criteria (columns '1') with those using weighted criteria (columns '2'). Under weighted criteria, the sum of the 'benefit' criteria and the sum of the 'cost' criteria are weighted equally.

Countries which stay grouped with the benchmarks regardless of the new weighting are shown in columns 2 in Table 6.35. Columns 1 contain the cross-weighting subclusters without the benchmarks. Countries that are placed together in both the subsets in columns 1 and 2 (non-singleton sets highlighted in column 1) might share common OCA features and degrees of preparedness regardless of the weighting.

For pre-crisis period, the common sets of Australia-NewZealand by US reference, Australia-Canada by China reference and Philippines-India by G3 and Germany/EMU references can be seen. A number of these common sets of countries can be found in the crisis period dollar solution. Remarkably, for post-crisis 7V, Indonesia and Australia are robustly parallel and prepared to be placed together for basket and yen anchors. For post-crisis 8V, Korea-Laos is a common set against China.

Hong Kong and Macau are not seen sharing any common set. As for Singapore and Brunei, they might have been parallel in the OCA facets and level of preparedness regardless of weighting but only for the crisis period against US.

In brief, few countries simultaneously share common OCA features and levels of preparedness across unweighted and weighted criteria.

Table 6.34 OCA-FCM-preparedness-weighting assessment

		Dollar		Currency Basket		Yen		Euro		Yuan	
		1	2	1	2	1	2	1	2	1	2
Pre-crisis	1	**CHN, TWN, IND, AUS, NZL, CAN,** ELS3, GTM3, EMU1, EMU2, EMU3	**IDN, THA, VNM, IND, MAC, AUS, NZL**, EMU1, EMU2, EMU3	**CHN, TWN, MYS, PHL, IND, AUS,** EMU1, EMU2,	**CAN**, PAN, ECU1, ELS1, ECU2, ELS2, ELS3, GTM3	**THA, AUS, NZL,** PAN, ELS3, EMU1, EMU2, EMU3	**LAO, PHL, THA, VNM, AUS, NZL,** EMU1, EMU2, EMU3	**CHN, MYS, PHL, IND, AUS, CAN**, EMU2, PAN	**PHL, IND, AUS**, EMU1, EMU2, EMU3	**AUS, CAN**, ELS3, GTM3, EMU1, EMU2, EMU3	**PHL, THA, VNM, IND, MAC, AUS, NZL, CAN**, EMU1, EMU2, EMU3
	2	**HKG, KOR, MYS, PHL, SGP, THA, MAC, BRN**, PAN, ELS1	**CAN**, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	**CAN**, ELS2, ELS3, GTM3, EMU3	**PHL, IND, AUS**, EMU1, EMU2, EMU3	**BRN**, GTM1, ELS2, GTM2, ECU3, GTM3	**BRN**, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	**LAO, VNM**, ECU1, ECU2	PAN, ECU1, ELS1, ECU2, ELS2, ELS3, GTM3	GTM1, ELS2, GTM2, ECU3	PAN, ECU1, ELS1, GTM1, ECU2, ELS2, GTM2, ECU3, ELS3, GTM3
	3	**JPN**, ECU1, GTM1, ELS2, GTM2, ECU3	**PHL**, JPN, PAN, ECU1, ELS1, ECU2	HKG, KOR, IDN, SGP, THA, MAC, BRN, NZL	CHN, HKG, KOR, TWN, MYS, SGP, THA, BRN	**IDN, VNM**, ECU1, ELS1, ECU2	**IDN**, PAN, ECU1, ELS1, ECU2	**KHM, MMR, MAC**, ELS1	CHN, HKG, KOR, TWN, MYS, SGP, THA, BRN	KOR, TWN, IDN, MYS, SGP, NZL	HKG, KOR, TWN, IDN, MYS, SGP, BRN, JPN
	4	ECU2	CHN, HKG, KOR, TWN, MYS, SGP, BRN	KHM, LAO, MMR, VNM	IDN, VNM, MAC, NZL	HKG, KOR, TWN, MYS, SGP, MAC	CHN, HKG, KOR, TWN, MYS, SGP	HKG, TWN, SGP, THA, NZL	IDN, VNM, MAC, JPN, NZL, CAN	**BRN, JPN**, PAN, ECU1, ELS1, ECU2	KHM, LAO, MMR
	5	KHM, IDN, LAO, MMR, VNM	KHM, LAO, MMR	PAN, ECU1, ELS1, ECU2	KHM, LAO, MMR	KHM, LAO, MMR	IND, MAC, CAN	ELS2, ELS3, GTM3, EMU1, EMU3	KHM, LAO, MMR	PHL, THA, VNM, IND	
	6			GTM1, GTM2, ECU3	GTM1, GTM2, ECU3	CHN, PHL, IND, CAN	KHM, MMR	KOR, IDN, BRN, JPN	GTM1, GTM2, ECU3	KHM, LAO, MMR	
	7							GTM1, GTM2, ECU3		HKG, MAC	
Crisis	1	**CHN, KOR, MYS, MMR, PHL, SGP, THA, VNM, MAC, BRN, NZL** , ELS1, ECU2	**CHN, HKG, KOR, TWN, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, AUS, NZL**, EMU1, EMU2, EMU3	**CHN, HKG, KOR, TWN, KHM,, MYS, PHL, SGP, MAC, BRN**, ELS1	**CAN**, PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	**CHN, HKG, IDN**, PAN, GTM3, EMU1, EMU3	**CHN, HKG, KOR, TWN, MYS, PHL, SGP, THA, VNM, MAC, BRN, AUS, NZL, CAN**, EMU1, EMU2, EMU3	**IND, CAN**, PAN, ELS3, GTM3, EMU1, EMU2, EMU3	**KHM, IDN, IND,** EMU1, EMU2, EMU3	**IDN**, PAN, ELS3, GTM3, EMU1, EMU2, EMU3	**HKG, PHL, MAC, JPN**, EMU1, EMU2, EMU3
	2	**TWN, IDN, AUS, CAN**, PAN, ELS3, GTM3, EMU1, EMU2, EMU3	**KHM, CAN**, PAN, ECU1, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	**CAN**, PAN, ECU1, ELS2, ELS3, GTM3, EMU1, EMU3	**PHL, VNM**, EMU1, EMU2, EMU3	**KHM, LAO, MMR**, ECU1, ECU2	**KHM, IDN, LAO, MMR, IND**, ECU2	**IDN, LAO, MMR**, ECU1, ECU2	PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	ELS1, GTM1, ELS2, GTM2, ECU3	PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3
	3	**HKG, KHM, LAO, IND, JPN,** ECU1, GTM1, ELS2, GTM2, ECU3	**IDN, LAO, MMR**, ECU2	**IDN, LAO, MMR, THA, VNM, IND, AUS, NZL,** EMU2	CHN, HKG, KOR, TWN, MYS, SGP, MAC, BRN	**IND, AUS, CAN**, EMU2	PAN, ECU1, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	MYS, SGP, THA, VNM, BRN, AUS, NZL	PHL, THA, VNM, AUS, NZL, CAN	**LAO, MMR**, ECU1, ECU2	KOR, TWN, MYS, SGP, THA, VNM, BRN
	4			GTM1, GTM2, ECU3	KHM, IDN, MMR, THA, IND, AUS, NZL	KOR, TWN, MYS, PHL, SGP, THA, VNM, MAC, BRN, NZL		ELS1, GTM1, ELS2, GTM2, ECU3	CHN, HKG, KOR, TWN, MYS, SGP, MAC, BRN, JPN	HKG, KOR, PHL, MAC, JPN, NZL	KHM, IDN, IND, AUS, NZL, CAN
	5			ECU2	ECU1, ECU2	ELS1, GTM1, ELS2, GTM2, ECU3, ELS3		CHN, HKG, KOR, TWN, KHM, PHL, MAC, JPN	LAO, MMR	MYS, SGP, THA, VNM, BRN	**LAO, MMR**, ECU1, ECU2,
	6				LAO				ECU1, ECU2	TWN, KHM, IND, AUS, CAN	
Post-crisis 7V	1	**KHM, PHL, MAC,** GTM1, GTM2, ECU3	**KOR, IDN, MMR, AUS, NZL**, EMU1, EMU2, EMU3	**CAN**, PAN, ELS2, ELS3, GTM3, EMU1, EMU3	CHN, HKG, KOR, TWN, KHM, MYS, SGP, THA, VNM, MAC, BRN	CHN, HKG, TWN, KHM, MYS, PHL, SGP, MAC	CHN, HKG, TWN, KHM, MYS, SGP, THA, VNM, IND, MAC	CHN, HKG, TWN, MYS, THA, BRN	CHN, HKG, KOR, TWN, MYS, THA, VNM, BRN	**HKG, TWN, IDN, MYS, SGP, THA, VNM, IND**, EMU1, EMU3	HKG, TWN, KHM, MYS, SGP, THA, VNM, IND, BRN
	2	**CAN**, PAN, ELS2, ELS3, GTM3, EMU3	CHN, HKG, TWN, MYS, THA, BRN	**KOR, MMR, PHL, MAC, BRN, NZL,** ELS1	**CAN**, PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	**VNM, IND,** ELS3, GTM3, EMU1, EMU3	**KOR, IDN, MMR, PHL, AUS, NZL, CAN,** EMU1, EMU2, EMU3	**IDN, VNM, IND, CAN,** EMU1, EMU3	PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	**LAO**, ECUJ1, GTM1, GTM2, ECU3, ELS3	**IDN, JPN**, EMU1, EMU2, EMU3
	3	CHN, HKG, TWN, MYS, SGP, JPN	**KHM, VNM**, PAN, ELS2, GTM3	**LAO**, GTM1, GTM2, ECU3	**IDN, MMR, PHL, IND, AUS, NZL**, EMU1, EMU2, EMU3	**IDN, THA, AUS, CAN**, EMU2	**BRN**, PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	**KOR, KHM, SGP, MAC, JPN**, PAN	KHM, PHL, SGP, MAC, JPN	**KHM, PHL, MAC, JPN,** PAN, ELS1, ELS2, GTM3	ELS2, GTM2, ELS3, GTM3
	4	KOR, LAO, MMR, BRN, NZL	ELS1, GTM1, GTM2, ECU3	**IDN, THA, VNM, IND, AUS**, EMU2	**LAO**, ECU1, ECU2	**LAO**, GTM1, GTM2, ECU3	**LAO**, ECU1, ECU2	**LAO**, GTM1, GTM2, ECU3	**IND**, EMU1, EMU2, EMU3	**KOR, MMR, BRN, AUS, NZL, CAN**, EMU2	ELS1, GTM1, ECU3
	5	AUS, EMU1, EMU2	PHL, SGP, IND, MAC, JPN	CHN, HKG, TWN, KHM, MYS, SGP		**BRN**, PAN, ELS2		ELS2, ELS3, GTM3	IDN, MMR, AUS, NZL, CAN	ECU2	**KOR, PHL, MAC**, PAN
	6	ECU1, ELS1, ECU2	**LAO**, ECU1, ECU2	ECU1, ECU2		KOR, MMR, NZL		MMR, PHL, NZL	**LAO**, ECU1, ECU2		MMR, Aus, NZL, CAN
	7	THA, VNM, IND	**CAN**, ELS3			ECU1, ELS1, ECU2		ECU1, ELS1, ECU2			**LAO**, ECU1, ECU2
	8							**AUS**, EMU2			
	9										

Table 6.34 OCA-FCM-preparedness-weighting assessment (continued)

		Dollar		Currency Basket		Yen		Euro		Yuan	
		1	2	1	2	1	2	1	2	1	2
All Periods 7V	1	PHL, MAC,	AUS, NZL	IND, AUS	CAN	AUS	PHL, AUS, NZL	IND, CAN	IND	-	PHL, MAC
	2	CAN	VNM	CAN	PHL	IDN	BRN	LAO			
	3	AUS	IDN	PHL			LAO				
	4	KHM	CAN				IDN,				
Post-crisis 8V	1	**CHN, HKG, TWN, KHM, MYS, SGP, THA, VNM, IND, MAC, BRN, JPN,** GTM2	**CAN**, ELS2, GTM2, ELS3, GTM3	**IDN, MMR, THA, VNM, IND, AUS, NZL**, EMU1, EMU2,, EMU3	**KHM, PHL**, EMU1, EMU2, EMU3	**IDN, VNM, IND,** ELS3, GTM3, EMU1, EMU2, EMU3	**IDN, MMR, PHL, AUS, NZL, CAN,** EMU1, EMU2, EMU3	**IDN, VNM, IND, AUS, CAN**, ELS3, GTM3, EMU1, EMU2, EMU3	**IDN, IND**, EMU1, EMU2, EMU3	**TWN, IDN, VNM, IND**, EMU1, EMU2, EMU3	**HKG, KOR, LAO, MYS, MMR, THA**, EMU1, EMU2, EMU3
	2	**KOR, IDN, LAO, MMR, AUS, NZL,** EMU1, EMU2, EMU3	**KHM, VNM**, PAN	**KHM, LAO, CAN**, PAN, ECU1, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	**CAN**, PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	**LAO**, GTM1, ELS2, GTM2, ECU3	**LAO**, ECU1, ECU2	**CHN, KOR, TWN, KHM, PHL, MAC,** PAN	**LAO**, ECU1, ECU2	HKG, KHM, MYS, SGP, THA, BRN, JPN	GTM1, ELS2, GTM2, ELS3, GTM3
	3	**PHL**, PAN, GTM1, ECU3	CHN, HKG, TWN, MYS, THA, BRN	CHN, HKG, KOR, TWN, MYS, PHL, SGP, MAC, BRN	CHN, HKG, KOR, TWN, MYS, THA, VNM, MAC, BRN	**MMR**, ECU1, ELS1, ECU2	CHN, HKG, KOR, TWN, KHM, MYS, SGP, THA, VNM, IND, MAC, BRN	**LAO**, ELS1, GTM1, ELS2, GTM2, ECU3	PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	**KOR, LAO**, GTM1, GTM2, ECU3	SGP, BRN, JPN, AUS, NZL, CAN
	4	**CAN**, ECU1, ELS1, ELS2, ELS3, GTM3	PHL, SGP, IND, MAC, JPN	ECU2	IDN, LAO, MMR, SGP, IND, AUS, NZL	**PHL**, PAN	PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	HKG, MYS, MMR, SGP, THA, BRN, JPN, NZL	CHN, HKG, KOR, TWN, MYS, THA, VNM, BRN	**MMR, MAC**, ECU1, ELS1, ECU2	TWN, KHM, IDN, VNM, IND
	5	ECU2	KOR, IDN, MMR, AUS, NZL		ECU1, ECU2	CHN, HKG, TWN, KHM, MYS, SGP, THA, MAC		ECU1, ECU2	KHM, MMR, PHL, SGP, MAC, JPN, AUS, NZL, CAN	**PHL**, PAN, ELS2, ELS3, GTM3	**PHL, MAC**, ECU1, ELS1, ECU2
	6		EMU1, EMU2, EMU3			AUS, NZL, CAN				AUS, NZL, CAN	PAN, ECU3
	7		ELS1, GTM1, ECU3			KOR, BRN					
	8		ECU1, ECU2								
	9		LAO								
All Periods 8V	1	MYS, SGP, THA, MAC, BRN	CAN	IND, AUS	PHL	IDN	PHL, AUS, NZL	IND, CAN	IND	-	PHL, MAC
	2	HKG	VNM	CAN	CAN		LAO	LAO			
	3	JPN					IDN				
	4	TWN									
	5	IND									
	6	CAN									
	7	AUS									
	8	NZL									
	9	CHN									
	10	KOR									
	11	PHL									

Table 6.35 FCM cross-weighting and cross-preparedness-weighting subclusters

		Dollar		Currency Basket		Yen		Euro		Yuan	
		1	2	1	2	1	2	1	2	1	2
Pre-crisis	1	IDN, THA, BRN, JPN	THA, MAC	KOR, TWN, MYS, SGP	PHL, IND, AUS	KOR, TWN, MYS, SGP	THA, AUS, NZL	HKG, KOR, TWN, MYS, THA	PHL, IND, AUS	KOR, TWN, IDN, SGP, BRN	AUS, CAN
	2	HKG, TWN, SGP	IND, AUS, NZL	HKG, THA, BRN	CAN	KHM, LAO, MMR	BRN	CHN, IDN, AUS, NZL		PHL, THA, IND	
	3	CHN, AUS, NZL	CAN	CHN, AUS, NZL		IND, MAC, CAN	IDN	KHM, VNM		AUS, NZL, CAN	
	4	KOR, MYS, PHL	PHL	IDN, MAC		CHN, HKG	VNM	LAO, MMR		VNM, JPN	
	5	LAO, MMR		LAO, MMR		PHL, AUS		PHL, IND			
	6			PHL, IND		IDN, THA		SGP, CAN			
Crisis	1	KOR, TWN, MYS, SGP, BRN	CHN, KOR, MYS, PHL, SGP, THA, VNM, MAC, BRN, NZL	IDN, IND, AUS, NZL	CAN	TWN, MYS, THA, BRN	KHM, LAO, MMR	CHN, PHL, IND, MAC	IDN	MYS, THA, VNM, BRN	LAO, MMR
	2	CHN, HKG, MAC	HKG, IND, JPN, KHM	KOR, TWN, MYS	PHL	KOR, PHL, SGP	CHN, HKG	MYS, SGP, BRN, CAN		TWN, IND, AUS, CAN	
	3	KHM, JPN	TWN, AUS, CAN	HKG, KHM, SGP	VNM	VNM, AUS, NZL	AUS, CAN	HKG, KOR, KHM		HKG, PHL, MAC	
	4	PHL, VNM	IDN	CHN, MAC, BRN		KHM, MAC	IND	VNM, AUS, NZL		KOR, MMR, JPN	
	5	IND, AUS	LAO	MMR, THA		MMR, IND	IDN	TWN, JPN			
	6		MMR	PHL, VNM		CHN, IDN					
Post-crisis 7V	1	CHN, HKG, TWN, MYS	KHM	TWN, MYS, VNM	IDN, IND, AUS	CHN, TWN, MYS, THA, VNM	IDN, AUS, CAN	CHN, TWN, PHL, VNM, IND, MAC, JPN	IND	IDN, AUS, NZL, CAN	PHL, MAC
	2	KHM, PHL, MAC	CAN	IDN, AUS, NZL	MMR, PHL, NZL	KHM, SGP, IND, MAC, CAN	LAO	HKG, KOR, MYS, THA	LAO	TWN, MYS, THA, VNM	JPN
	3	IDN, AUS, NZL	AUS	KOR, THA	LAO	KOR, BRN	BRN	SGP, BRN, CAN		SGP, IND	KOR
	4	KOR, BRN		CHN, HKG	CAN	IDN, AUS, NZL		IDN, AUS, NZL		KHM, JPN	IDN
	5	SGP, JPN		KHM, MAC						KOR, BRN	LAO
	6			SGP, IND						HKG, PHL	
All Periods 7V	1	-	AUS, NZL	AUS, NZL	CAN	TWN, MYS	PHL, AUS, NZL	PHL, IND	IND	AUS, CAN	PHL, MAC
	2		VNM		PHL		BRN	HKG, KOR			
	3		IDN				LAO	AUS, NZL			
	4		CAN				IDN,				
Post-crisis 8V	1	KHM, PHL, MAC	CAN	CHN, TWN, KHM, VNM	KHM	CHN, TWN, IDN, THA, VNM	IDN	CHN, TWN, VNM, IND	IDN, IND	TWN, VNM, IND	KOR, LAO
	2	KOR, TWN, BRN	KHM, VNM	MYS, THA, BRN	CAN	HKG, KHM, SGP, MAC	LAO	MMR, SGP, BRN, CAN	LAO	KOR, LAO	MMR
	3	HKG, MYS		KOR, MAC		KOR, PHL, BRN	MMR	KOR, KHM		PHL, MAC	MAC
	4	CHN, THA		IDN, IND		MYS, CAN	PHL	MAC, JPN		HKG, JPN	PHL
	5	AUS, NZL		AUS, NZL				IDN, PHL		SGP, BRN	
	6	IDN, IND						MYS, THA		AUS, NZL	
	7							AUS, NZL			
All Periods 8V	1	-	CAN	AUS, NZL	CAN	-	IDN	AUS, NZL	-	-	-

6.3.4 Recapitulation

This section has discussed the findings using fuzzy cluster analysis and OCA criteria. The following are the key findings using 7 variables unless specific mention is made for 8 variables.

Classifications

Using the original unweighted criteria, based on the average silhouettes over all objects, the reference country consistent with best partitioning differs depending on period but based on the structure of the partitions, on the whole the Germany/EMU reference is in line with more convergent arrangements.

Notably, more subclusters are robust over periods by the euro anchor. In particular, China-Philippines-India, Australia-NewZealand and Singapore-Canada are robust regardless of the labor criterion.

Despite maintaining fixed dollar rates, against US, Hong Kong and Macau share the same cluster for pre-crisis and crisis periods only. Singapore and Brunei, the existing monetary union constituents are placed together consecutively at most over crisis and post-crisis periods and only under euro anchor.

For post-crisis period, Indonesia, Australia, and New Zealand; Taiwan and Malaysia; as well as Thailand and Vietnam are linked over all anchors. With 8 variables, Hong Kong and Singapore, Australia and New Zealand, and Indonesia and India are linked over all anchors.

Classifications using Weighted Criteria

How have the configurations changed when benefits and costs are treated equally? In general, under the weighting scheme the arrangements have become more convergent against Japan but more divergent against Germany/EMU.

Remarkably, the link between Taiwan and Malaysia is not only unmoved by the

weighting but is also robust through the periods for basket and yen anchors. The linkage of Australia-NewZealand is robust over the periods under the basket and the euro anchor regardless of the post-crisis labor criterion.

After the weighting, against the US reference Hong Kong and Macau only share the same grouping for the crisis period whilst Singapore and Brunei are still placed together consecutively over crisis and post-crisis periods against Germany/EMU.

For post-crisis period, Indonesia, Australia, and New Zealand are still placed together over all anchors. For post-crisis 8V, Australia and New Zealand still share the same clusters over all anchors except for the yen anchor.

Assessment of Preparedness using Unweighted Criteria

Based on the number of countries connected with the post-dollarization and/or post-euro benchmarks, in general the region might have been relatively prepared for a dollar peg through the periods.

No countries which are indicated to commonly share OCA features and level of preparedness are also shown to be robust over all periods. Nonetheless, more such homogenous countries are present under the US reference in relation to other references.

For Hong Kong and Macau, they are indicated to be symmetrical in the OCA dimensions and the level of preparedness only for the pre-crisis period and only under US anchor. For Singapore and Brunei, they are only placed together in the crisis period dollar solution. On this evidence, despite maintaining similar monetary standards, these pairs of economies are not indicated to be constantly parallel in both the OCA dimensions and the level of preparedness under any reference.

No subgroupings which are present in the same Asian-only and Asian-plus-benchmark clusters are also at the same time exist across all anchors.

Assessment of Preparedness using Weighted Criteria

Extremely few countries are indicated to commonly share OCA features and levels of preparedness regardless of criteria weighting. No subgroupings which are present in the same Asian-only and Asian-plus-benchmark clusters across the weightings are also at the same time present over all periods or across all anchors.

Those in the post-crisis crisis findings, however, may be worth mentioning. For post-crisis 7V, Indonesia and Australia are indicated to share OCA features and level of preparedness regardless of criteria weighting for basket and yen anchors. For post-crisis 8V, Korea and Laos display those features by the China reference.

Hong Kong and Macau are not shown to be simultaneously parallel in the OCA features and the degree of preparedness across the weightings. As for Singapore and Brunei, they might possess those attributes but only for the crisis period and only against US.

6.4 Model-based Clustering Results

The results by model-based cluster analysis are categorized into 4 main sections: classifications, classifications using weighted criteria, assessment of preparedness, and a recapitulation.

6.4.1 Classifications

The previous sections have presented the results from hierarchical and fuzzy cluster analysis methods. Before the discussion on model-based clustering results begins, it is worthwhile to review the steps involved in model-based cluster analysis to better understand the results.

First, the constraints on the component covariance matrices (i.e. model 9) are chosen before the agglomerative model-based clustering is applied. This provides an initial partition of the data for any given number of groups and any desired model. This partition is used to get the initial estimates of the component density parameters for use in the Expectation-Maximization (EM) algorithm. Once the estimates converge, Bayesian Information Criterion (BIC) is calculated. The process is repeated for various models (the number of groups and forms of the covariance matrices). The final model, together with the number of clusters that is chosen is the one that produces the highest BIC. The parameterizations of covariance matrices for the models have been shown earlier in Chapter 5.

In a nutshell, a cluster solution is selected based on the maximum BIC which indicates the best fit between the partition, depending on the parameterization of covariance matrix model, and the data.

In the analysis, some BIC estimates could not be generated, as the covariance matrix associated with one or more of the mixture components is ill-conditioned, so that the log likelihood and hence the BIC cannot be computed. Nonetheless, this does not affect the analysis as ample BICs are generated which can then be selected.

In the findings, the largest difference between the highest BIC and the second highest BIC is detected in the post-crisis 8V yen and post-crisis 7V euro results. The differences are highly above 10, the conventional threshold for strong statistical evidence for a chosen solution.

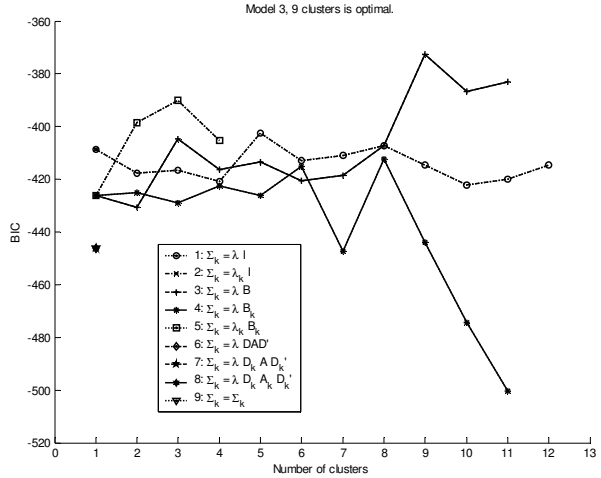
The remainder of the section is divided into findings by each monetary anchor and comparisons of solutions across the anchors.

Dollar Anchor Results

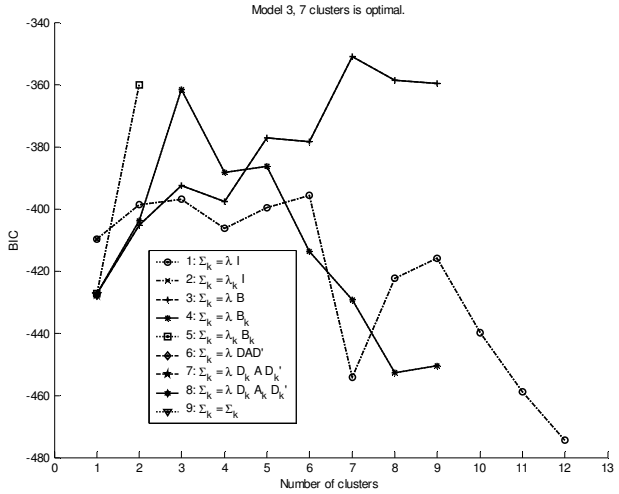
Figure 6.16 displays the BIC plots for the US-based analysis. 9 groups and model 3 are selected for pre-crisis period; 7 groups (model 3) for crisis period; 6 groups (model 3) for post-crisis 7V; and 10 groups (model 1) for post-crisis 8V. Based on the average silhouette over all objects at 0.55, the post-crisis 7V solution should be most appropriately classified.

Table 6.36 exhibits the features of the groupings. For pre-crisis period, the group comprising of the four Asian Tigers (Hong Kong, Korea, Taiwan, and Singapore), Malaysia, and Macau enjoys the highest silhouette 0.57 and the most stable real dollar rate. This finding is compatible with the strong dollar pegs among them at that time. Amongst the clusters, Canada is the most viable for a hard dollar peg since it maintains the greatest degree of trade, business cycle symmetry, and inflation convergence with the US as well as the most varied exports.

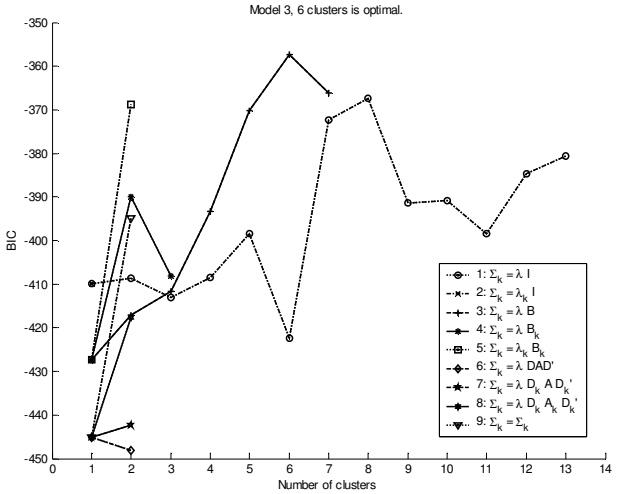
In the crisis period setting, Korea-Malaysia-Singapore, HongKong-Macau, and India-Australia retain their pre-crisis links. HongKong-Macau plus China and Japan constitute the most tightly classified cluster. The most prospective country is still Canada.



Pre-crisis

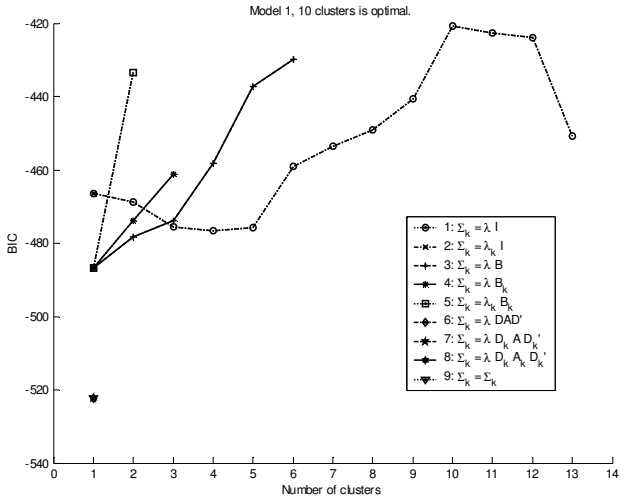


Crisis



Post-crisis 7V

Figure 6.16 OCA-dollar BICs



Post-crisis 8V

Figure 6.16 OCA-dollar BICs (continued)

Malaysia-Singapore and HongKong-Macau retain their links since the pre-crisis period in the post-crisis 7V arrangement. They also belong to the largest cluster which obtains the largest silhouette 0.72. Nonetheless, when labor criterion is included, the configuration becomes significantly fragmented and no countries carry forward their pre-crisis ties till the post-crisis setting. Hence, the countries could have been predominantly divergent with respect to labor market flexibility.

Reduction in the number of clusters and increase in the size of the dominant group across the 7-variable solutions indicate greater convergence vis-à-vis US over the periods. Also, unlike those of the previous periods, the findings of the post-crisis period show that the most conforming attributes are more distributed over the clusters.

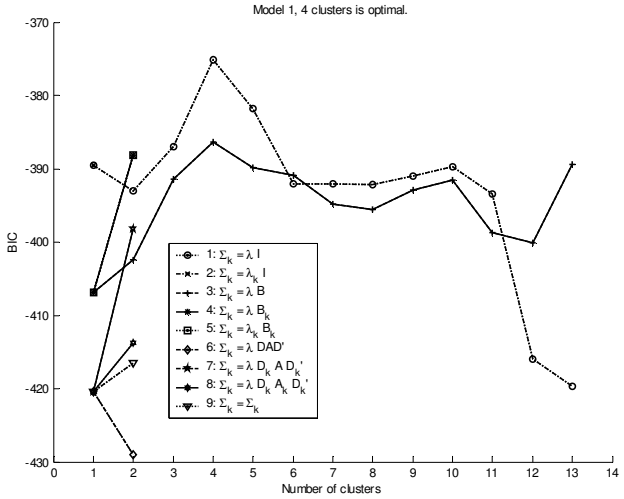
Table 6.36 OCA-MBC-dollar clusters

Cluster	SW	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
				Averages						
Pre-crisis										
All Cases	.34	18.535	.109	6.017	2.576	.238	3.290	3.011	-	
1 HKG, KOR, TWN, MYS, SGP, MAC	.57	20.418	.106	2.777	1.154	.959	3.187	1.020	-	1
2 CHN, IND, AUS, NZL	.36	14.086	.454	5.450	4.442	.494	4.340	1.964	-	0
3 KHM, IDN, THA, JPN	.51	14.985	-.076	2.884	2.624	-.972	2.629	3.434	-	0
4 PHL	.00	33.506	-.237	8.930	3.353	.982	4.854	2.804	-	1
5 VNM	.00	15.261	.360	24.109	3.310	-.998	3.346	4.925	-	0
6 BRN	.00	7.867	-.624	5.303	1.444	.000	1.099	.000	-	0
7 LAO	.00	1.728	.068	16.120	3.979	-.989	1.927	10.621	-	1
8 MMR	.00	3.267	-.100	14.438	2.938	.897	2.529	9.475	-	0
9 CAN	.00	70.274	.571	1.445	1.303	.784	5.038	n.a.[3]	-	4
Crisis										
All Cases	.33	18.625	-.039	8.154	4.193	-.026	3.164	1.495	-	
1 KOR, MYS, PHL, SGP, THA, VNM, BRN, NZL	.45	16.973	-.245	2.668	4.399	.660	2.769	.956	-	0
2 TWN, KHM, IND, AUS	.18	18.148	.781	3.727	2.616	-.587	3.661	1.400	-	0
3 CHN, HKG, MAC, JPN	.57	18.592	-.448	3.193	1.423	-.737	2.388	.698	-	1
4 IDN	.00	11.197	-.482	21.576	16.519	-.826	6.390	2.416	-	1
5 LAO	.00	1.013	-.028	67.298	11.101	-.159	2.674	5.252	-	1
6 MMR	.00	4.034	-.560	24.586	3.340	-.353	3.412	3.261	-	0
7 CAN	.00	73.515	.922	.596	1.547	.832	4.456	n.a.	-	4
Post-crisis 7V										
All Cases	.55	17.415	.211	3.485	1.972	-.349	3.411	1.094		
1 CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN	.72	17.932	.519	2.293	1.264	-.627	3.026	.786	-	2
2 IDN, AUS, NZL	.48	11.715	-.119	2.659	4.946	-.086	5.535	1.722	-	1
3 KOR, BRN	.50	11.250	-.605	1.743	1.741	.452	1.852	.330	-	1
4 LAO	.00	.729	.310	6.162	1.308	.213	2.442	4.457	-	1
5 MMR	.00	2.913	-.729	23.681	2.307	.251	4.119	2.009	-	0
6 CAN	.00	71.818	-.021	.882	2.333	-.565	5.025	n.a.	-	2
Post-crisis 8V										
All Cases	.29	17.415	.211	3.485	1.972	-.349	3.411	1.094	73.0	
1 CHN, TWN, MYS, THA, VNM, IND	.31	16.691	.457	2.002	1.189	-.543	3.941	.579	64.2	0
2 HKG, SGP, JPN	.63	14.659	.916	2.618	1.567	-.697	2.658	.787	90.6	1
3 KHM, PHL, MAC	.48	23.687	.246	2.552	1.110	-.726	1.565	1.200	58.0	1
4 AUS, NZL	.68	12.551	-.229	.657	5.453	.213	5.223	n.a.	91.8	1
5 KOR	.00	14.897	-.556	.975	2.023	.985	2.508	.660	55.6	1
6 IDN	.00	10.045	.100	6.663	3.931	-.685	6.159	1.722	48.4	1
7 BRN	.00	7.604	-.653	2.511	1.460	-.081	1.197	.000	94.0	1
8 LAO	.00	.729	.310	6.162	1.308	.213	2.442	4.457	69.4	1
9 MMR	.00	2.913	-.729	23.681	2.307	.251	4.119	2.009	-	0
10 CAN	.00	71.818	-.021	.882	2.333	-.565	5.025	n.a.	90.9	1

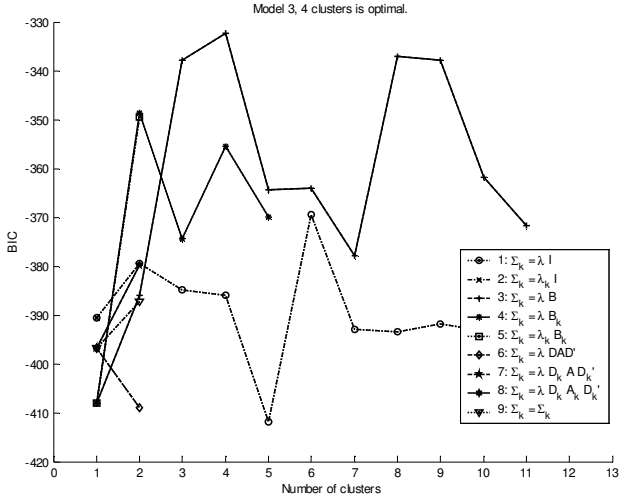
Notes: 1 Standard deviation (x10^2) of the log difference in bilateral real exchange rate. 2 Number of variables with highest degree of conformity to OCA criteria. 3 'n.a.' for not applicable.
Source: Model-based cluster analysis. See Appendix A for data description.

Currency Basket Anchor Results

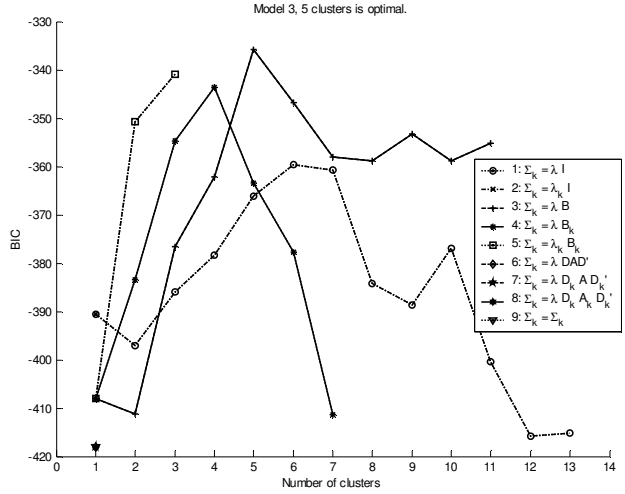
Figure 6.17 collects the G3-based BIC plots. 4 groups (model 1) are appropriate for pre-crisis period; 4 groups (model 3) for crisis period; 5 groups (model 3) for post-crisis 7V; and 5 groups (model 3) for post-crisis 8V period. Table 6.37 puts together the groupings and their features. Based on the average silhouette over all objects at 0.52, the post-crisis 7V solution should be most appropriately classified.



Pre-crisis

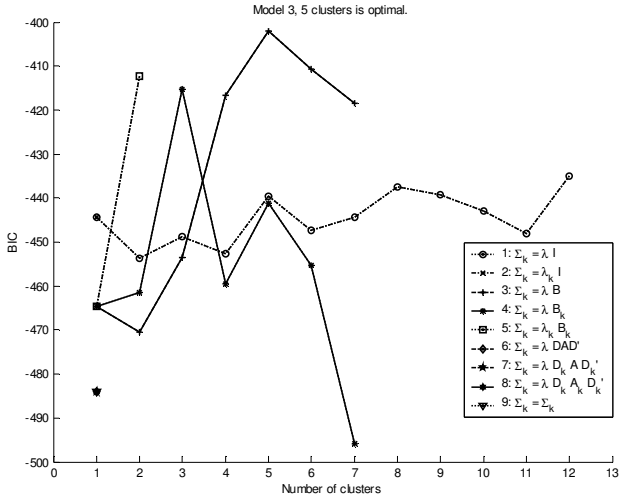


Crisis



Post-crisis 7V

Figure 6.17 OCA-basket BICs



Post-crisis 8V

Figure 6.17 OCA-basket BICs (continued)

The best classified group for the pre-crisis period is the 7-country second cluster with silhouette 0.46 which exhibits the most stable G3-weighted real exchange rate. Canada is most desirable in 5 of the 7 dimensions. The Indo-China countries Laos, Myanmar, and Vietnam make up the most indebted group. The first and second pre-crisis clusters basically form the best classified cluster in the crisis period configuration. However, the most potential cluster is still the singleton Canada.

For post-crisis7V, the cluster configurations are the same regardless of the labor criterion. Countries from the largest crisis period cluster, except Australia and New Zealand, once again constitute the cluster with high silhouette 0.61 which almost encompasses the whole region. The group enjoys the least variable real exchange rate and the most symmetrical monetary policy with the weighted G3 countries.

The significantly larger dominant cluster since the pre-crisis period signifies increased convergence vis-à-vis the G3 reference over the periods. Also, the post-crisis configuration is robust to inclusion of the labor criterion.

Table 6.37 OCA-MBC-basket clusters

Cluster	SW	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
	Averages									
Pre-crisis										
All Cases	.39	16.122	-.027	6.694	3.854	.136	3.357	3.011	-	
1 CHN, KOR, TWN, MYS, PHL, IND, AUS, NZL	.35	17.437	-.009	5.186	4.164	.269	4.202	1.432	-	0
2 HKG, KHM, IDN, SGP, THA, MAC, BRN	.46	14.389	-.122	3.929	2.555	.005	2.476	2.080	-	1
3 LAO, MMR, VNM	.43	10.008	.061	18.659	3.842	-.008	2.601	8.340	-	1
4 CAN	.00	36.071	.230	2.209	10.503	.290	5.038	n.a.[3]	-	5
Crisis										
All Cases	.43	14.429	.106	8.494	6.581	-.023	3.227	1.495	-	
1 CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, AUS, NZL	.56	14.327	.117	3.025	5.730	-.015	2.959	.999	-	0
2 IDN, MMR	-.15	9.153	-.312	23.482	11.506	-.046	4.901	2.838	-	1
3 LAO	.00	4.070	.127	68.106	12.122	-.188	2.674	5.252	-	1
4 CAN	.00	36.864	.753	.943	3.954	.081	4.456	n.a.	-	5
Post-crisis 7V										
All Cases	.52	13.449	.130	3.906	2.473	.016	3.477	1.094	-	
1 CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN	.61	13.531	.232	2.376	1.930	.078	2.913	.716	-	2
2 IDN, AUS, NZL	.62	12.026	-.166	3.466	5.016	.062	5.535	1.722	-	1
3 MMR	.00	4.023	-.799	24.559	2.364	-.238	4.119	2.009	-	0
4 CAN	.00	36.082	.264	1.216	2.522	-.364	5.025	n.a.	-	2
5 LAO	.00	3.441	.490	7.151	1.961	-.284	2.442	4.457	-	2
Post-crisis 8V										
All Cases	.45	13.449	.130	3.906	2.473	.016	3.477	1.094	72.3	
1 CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN	.56	13.531	.232	2.376	1.930	.078	2.913	.716	69.7	2
2 IDN, AUS, NZL	.39	12.026	-.166	3.466	5.016	.062	5.535	1.722	77.3	1
3 LAO	.00	3.441	.490	7.151	1.961	-.284	2.442	4.457	69.4	2
4 MMR	.00	4.023	-.799	24.559	2.364	-.238	4.119	2.009	-	0
5 CAN	.00	36.082	.264	1.216	2.522	-.364	5.025	n.a.	90.9	3

Notes: 1 Standard deviation ($x10^2$) of the log difference in bilateral real exchange rate. 2 Number of variables with highest degree of conformity to OCA criteria. 3 'n.a.' for not applicable.
Source: Model-based cluster analysis. See Appendix A for data description.

Yen Anchor Results

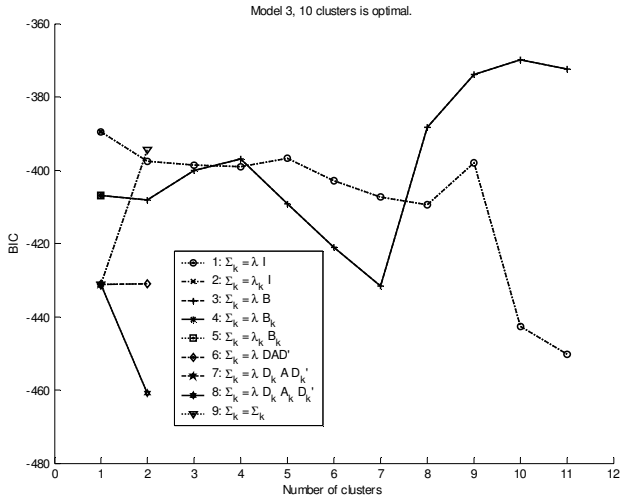
Figure 6.18 displays the Japan-based BIC plots. 10 clusters and model 3 are selected for the pre-crisis period; 7 clusters and model 4 for the crisis period; 2 clusters and model 5 for the post-crisis 7V period; and 3 clusters and model 2 for the post-crisis 8V period. Table 6.38 puts together the groupings and their attributes. Based on the average silhouette over all objects at 0.36, the post-crisis 7V solution should be most appropriately classified.

Among the pre-crisis groupings, the highest silhouette 0.64 is obtained by the Indonesia-Thailand pair. Despite this, other than somewhat high degrees of trade intensity and real interest rate cycle symmetry with Japan, other attributes are not very conforming. On the other hand, the singletons of Brunei, Vietnam, and Canada each possess 2 most suitable features.

Several pre-crisis subgroups maintain their ties in the crisis period. Among them, the notable one is HongKong-Macau which attains the highest silhouette as well as high degree of business cycle synchronicity and real interest rate cycle symmetry.

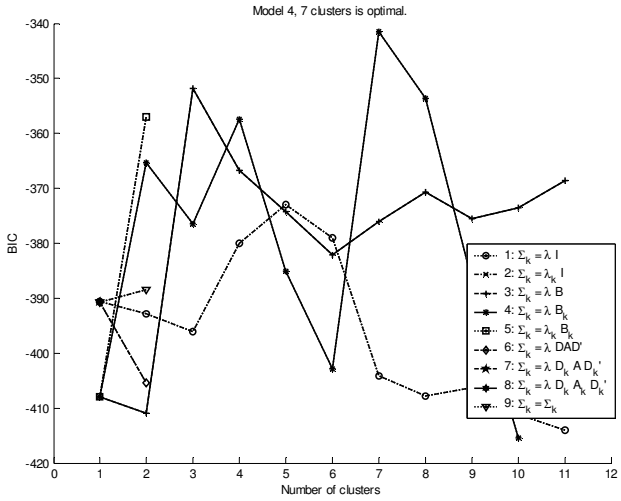
The region becomes significantly convergent in the post-crisis solution in which without the labor criterion only 2 clusters are present and with the labor criterion only 3 clusters are present. In both results, Malaysia-Philippines, HongKong-Macau, and Taiwan-Singapore remain linked since the pre-crisis period and form the largest group which is also the most tightly classified cluster with silhouettes at least 0.70. The largest cluster also maintains significantly more best-features when 7 variables are used.

The reduction of clusters from 10 in the pre-crisis setting to only 2 or 3 in the post-crisis configuration might indicate significantly higher degree of regional symmetry against Japan. Furthermore, the dominant cluster for the post-crisis period also obtains substantially high group silhouette, suggesting highly symmetrical intra-group structure despite its large size.

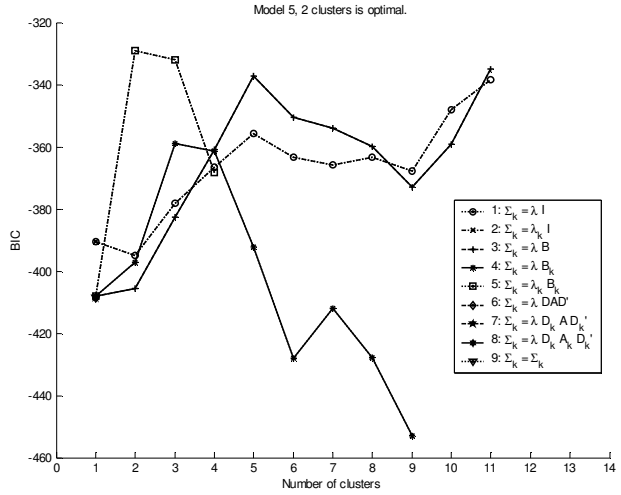


Pre-crisis

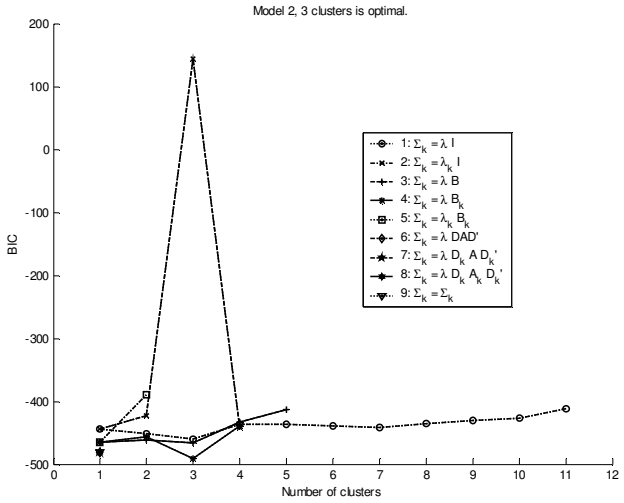
Figure 6.18 OCA-yen BICs



Crisis



Post-crisis 7V



Post-crisis 8V

Figure 6.18 OCA-yen BICs (continued)

Table 6.38 OCA-MBC-yen clusters

Cluster	SW	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
				Averages						
Pre-crisis										
All Cases	.24	18.554	-.111	7.619	6.469	-.228	3.357	3.011	-	
1 KOR, MYS, PHL, IND, AUS	.25	18.350	.070	5.996	4.043	-.700	4.486	1.893	-	0
2 HKG, TWN, SGP, MAC	.37	13.347	-.237	4.018	3.226	-.916	2.806	1.126	-	0
3 IDN, THA	.64	27.769	.079	5.059	3.995	.953	3.367	1.777	-	0
4 KHM, NZL	.32	13.293	-.582	5.179	4.573	.672	2.554	6.749	-	0
5 CHN	.00	20.683	-.601	11.070	18.367	-.442	4.356	.771	-	0
6 BRN	.00	47.816	.194	5.068	2.823	-	1.099	.000	-	2
7 LAO	.00	13.024	-.067	17.197	5.017	.972	1.927	10.621	-	1
8 MMR	.00	17.619	-.428	15.899	3.137	-.946	2.529	9.475	-	0
9 VNM	.00	20.626	.407	26.045	4.813	.998	3.346	4.925	-	2
10 CAN	.00	5.495	-.010	2.944	38.503	-.782	5.038	n.a.[3]	-	2
Crisis										
All Cases	.23	12.556	.462	8.700	6.529	-.082	3.227	1.495	-	
1 KOR, MYS, PHL, THA,	.50	15.994	.875	3.782	6.712	-.575	2.790	1.004	-	0
2 VNM, AUS, NZL, CAN	.08	11.285	.062	2.331	3.920	-.771	4.551	1.516	-	0
3 TWN, SGP, BRN	-.33	19.736	.622	1.160	3.821	-.526	2.015	.465	-	3
4 KHM, MMR, IND	.31	5.431	-.242	13.004	4.350	.794	3.084	2.408	-	0
5 HKG, MAC	.71	6.530	.934	2.500	4.142	.839	2.167	.721	-	2
6 CHN, IDN	.34	18.834	.690	12.021	18.443	.704	4.821	1.535	-	1
7 LAO	.00	3.221	.639	69.312	11.836	-.063	2.674	5.252	-	1
Post-crisis 7V										
All Cases	.36	11.147	.212	4.931	2.956	.520	3.477	1.094		
1 CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	.78	10.507	.498	3.244	2.652	.953	3.106	.786	-	4
2 KOR, IDN, LAO, MMR, BRN, AUS, NZL, CAN	-.22	12.026	-.182	7.251	3.374	-.076	3.987	1.769	-	3
Post-crisis 8V										
All Cases	.35	11.147	.212	4.931	2.956	.520	3.477	1.094	72.3	
1 CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	.70	10.507	.498	3.244	2.652	.953	3.106	.786	68.7	2
2 KOR, IDN, LAO, MMR, AUS, NZL, CAN	-.14	9.407	-.116	8.134	3.551	-.115	4.386	2.212	74.7	2
3 BRN	.00	30.361	-.647	1.073	2.135	.199	1.197	.000	94.0	4

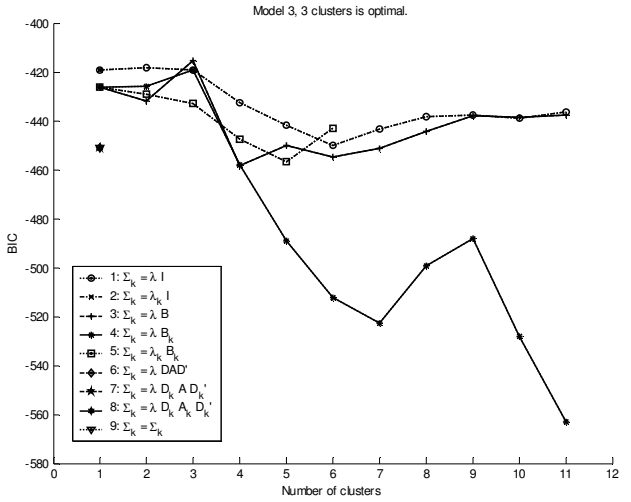
Notes: 1 Standard deviation ($x10^2$) of the log difference in bilateral real exchange rate. 2 Number of variables with highest degree of conformity to OCA criteria. 3 'n.a.' for not applicable.
Source: Model-based cluster analysis. See Appendix A for data description.

Euro Anchor Results

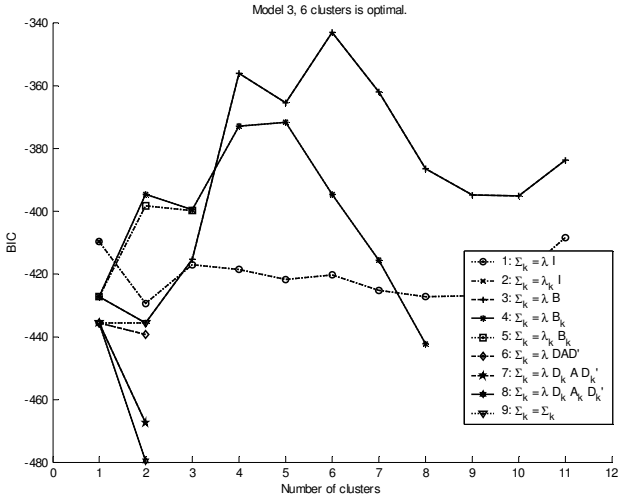
Figure 6.19 collects the BIC plots using Germany/EMU as the reference. 3 clusters and model 3 are indicated for the pre-crisis period; 6 clusters and model 3 for the crisis period; 5 clusters and model 2 for the post-crisis 7V period; and 10 clusters and model 1 for the post-crisis 8V period. The characteristics of the groups are reported in Table 6.39. Based on the average silhouette over all objects at 0.38, the post-crisis 7V solution should be most appropriately classified.

Among the three groups identified for the pre-crisis period, the highest silhouette 0.44 is attained by the second group which demonstrates the greatest trade linkage with the EMU founding members, the most symmetrical monetary policy with Germany, and the broadest range of exports. The other 2 groups display 2 most favorable conditions

for German mark peg each. A number of countries retain their previous subgroupings in the crisis period arrangement but Australia-NewZealand could possibly be of high potential for fixed exchange rate.

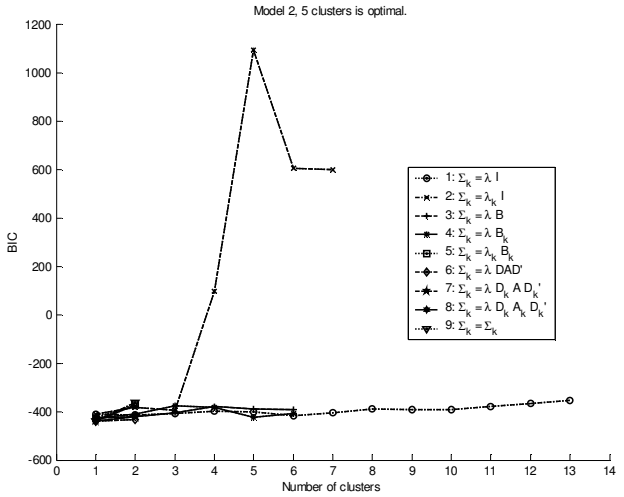


Pre-crisis

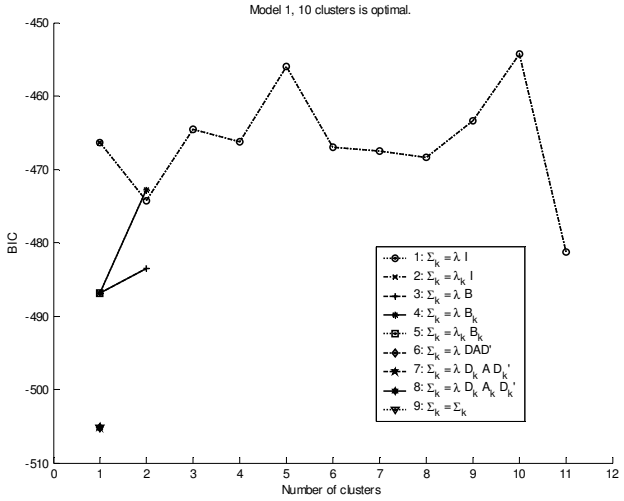


Crisis

Figure 6.19 OCA-euro BICs



Post-crisis 7V



Post-crisis 8V

Figure 6.19 OCA-euro BICs (continued)

The post-crisis 7V arrangement appears to be more convergent than the crisis period solution but more divergent than the pre-crisis one. A number of countries maintain their groupings since the pre-crisis solution and share the highest silhouette 0.60 in the largest group. This group, however, exhibits only one most conforming feature.

When the labor criterion is also considered in the post-crisis analysis, the region becomes significantly more fragmented. The degree of asymmetry in the labor market flexibility dimension could have overwhelmed the degree of symmetry in the rest of the dimensions.

Table 6.39 OCA-MBC-euro clusters

Cluster	SW	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
				Averages						
Pre-crisis										
All Cases	.32	11.166	-.157	6.479	3.865	.145	3.290	3.011	-	
1 HKG, KOR, TWN, KHM, MYS, SGP, THA, MAC, BRN, JPN, CAN	.29	9.947	-.121	2.874	3.157	.016	2.988	1.578	-	2
2 CHN, IDN, PHL, IND, AUS, NZL	.44	14.143	-.328	7.062	5.017	.293	4.187	2.238	-	3
3 LAO, MMR, VNM	.20	9.680	.054	18.535	4.152	.281	2.601	8.340	-	2
Crisis										
All Cases	.32	9.662	.052	8.011	10.348	-.004	3.164	1.495	-	
1 CHN, HKG, KOR, TWN, KHM, PHL, IND, MAC, JPN	.45	11.215	.124	3.393	10.270	.600	2.531	1.062	-	2
2 MYS, SGP, THA, VNM, BRN, CAN	.25	7.347	.157	1.927	10.228	-.743	3.021	.899	-	1
3 AUS, NZL	.48	11.167	.032	1.191	4.878	-.678	4.945	n.a.[3]	-	2
4 IDN	.00	10.402	-.224	22.092	19.395	.382	6.390	2.416	-	1
5 LAO	.00	9.512	-.023	68.446	13.940	-.330	2.674	5.252	-	1
6 MMR	.00	5.980	-.823	25.197	10.075	.291	3.412	3.261	-	0
Post-crisis 7V										
All Cases	.38	9.273	.016	3.645	2.922	.185	3.411	1.094	-	
1 CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC, JPN	.60	9.787	.056	2.171	2.529	.409	2.826	.740	-	1
2 IDN, IND, AUS, NZL, CAN	.08	10.397	.088	2.772	4.253	-.045	5.308	1.446	-	2
3 LAO	.00	9.068	.772	7.239	2.625	-.639	2.442	4.457	-	2
4 BRN	.00	1.494	-.586	1.196	1.985	.270	1.197	.000	-	2
5 MMR	.00	5.473	-.970	24.554	2.215	-.620	4.119	2.009	-	0
Post-crisis 8V										
All Cases	.23	9.273	.016	3.645	2.922	.185	3.411	1.094	73.0	
1 CHN, TWN, VNM, IND	.16	12.146	.258	2.726	2.686	.400	4.076	.634	57.6	0
2 HKG, MYS, SGP, THA	.28	7.886	-.161	1.383	2.304	.448	3.293	.628	85.2	0
3 KOR, KHM, MAC, JPN	.41	9.878	.437	2.277	2.594	.293	1.742	.930	66.5	0
4 AUS, NZL	.61	11.376	-.509	1.181	5.630	-.148	5.223	n.a.	91.8	0
5 IDN	.00	9.299	.159	7.720	4.187	.389	6.159	1.722	48.4	1
6 BRN	.00	1.494	-.586	1.196	1.985	.270	1.197	.000	94.0	2
7 PHL	.00	12.285	-.955	3.488	2.836	.466	2.382	1.471	57.5	2
8 LAO	.00	9.068	.772	7.239	2.625	-.639	2.442	4.457	69.4	1
9 MMR	.00	5.473	-.970	24.554	2.215	-.620	4.119	2.009	-	0
10 CAN	.00	5.448	.786	.796	2.992	-.436	5.025	n.a.	90.9	2

Notes: 1 Standard deviation ($x10^2$) of the log difference in bilateral real exchange rate. 2 Number of variables with highest degree of conformity to OCA criteria. 3 'n.a.' for not applicable.
Source: Model-based cluster analysis. See Appendix A for data description.

Yuan Anchor Results

Figure 6.20 displays the China-based BIC plots. 10 clusters and model 3 are suggested by the BICs for the pre-crisis solution; 6 clusters and model 3 for the crisis period solution; 2 clusters and model 5 for the post-crisis 7V solution; and 13 clusters and model 1 for the post-crisis 8V solution. Obviously, without the post-crisis labor dimension, the region could have been significantly more convergent vis-à-vis China over the periods. Based on the average silhouette over all objects at 0.41, the crisis period solution should be most appropriately classified.

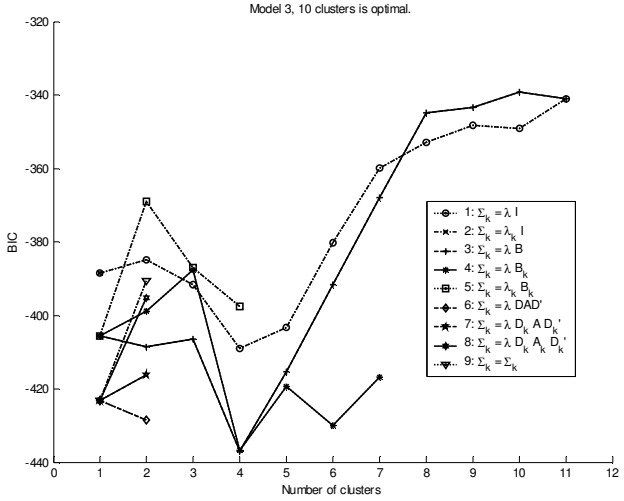
Table 6.40 collects the features of the clusters. In the pre-crisis setting, the most appropriately classified group is the Korea-Taiwan-Indonesia-Singapore cluster with silhouette 0.73. The third and fourth clusters are also somewhat well-classified. Despite

this, the relatively feasible candidate for a yuan peg might be Cambodia whose real business cycle is most synchronous with the Chinese cycle and whose real yuan rate is the most stable.

Amongst the countries that retain their pre-crisis links, Hong Kong and Macau could be relatively feasible for a yuan peg for the crisis period. In combination with Korea, the Philippines, and Japan, they share the greatest degree of trade linkage, inflation convergence, and real interest rate cycle symmetry with China.

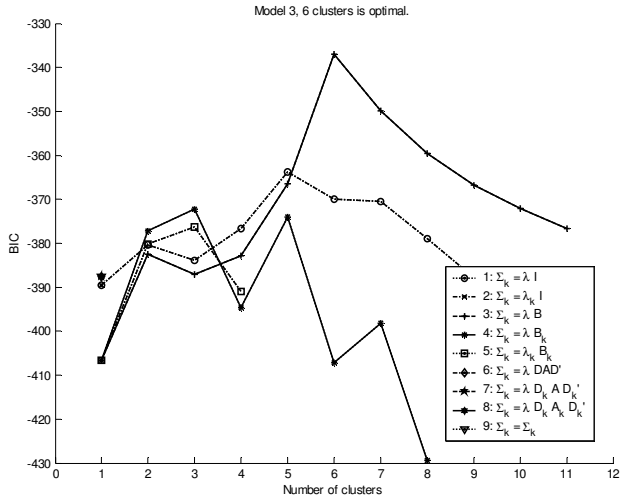
The configuration becomes significantly more convergent in the post-crisis 7V solution with the presence of only 2 groups. A number of countries carry on their links since the pre-crisis solution. The first cluster containing Hong Kong, Taiwan, and Macau, the close neighbors to China, obtains the greatest silhouette 0.49 and 5 closest features with China.

The configuration becomes highly fragmented in the post-crisis 8V solution, that is, when the labor criterion is included. Hence, the countries ought to be predominantly divergent in the labor dimension.

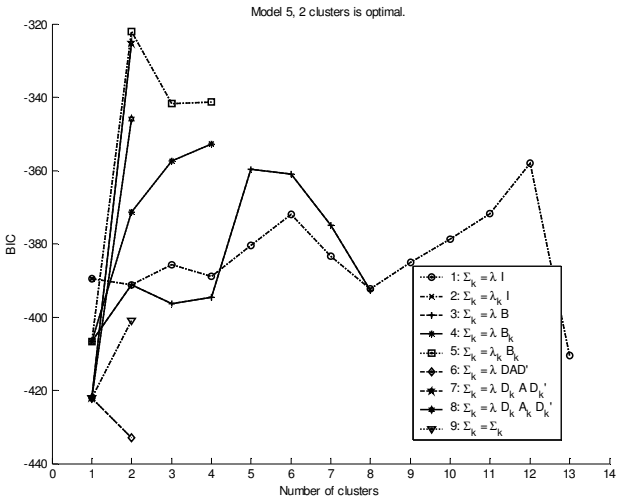


Pre-crisis

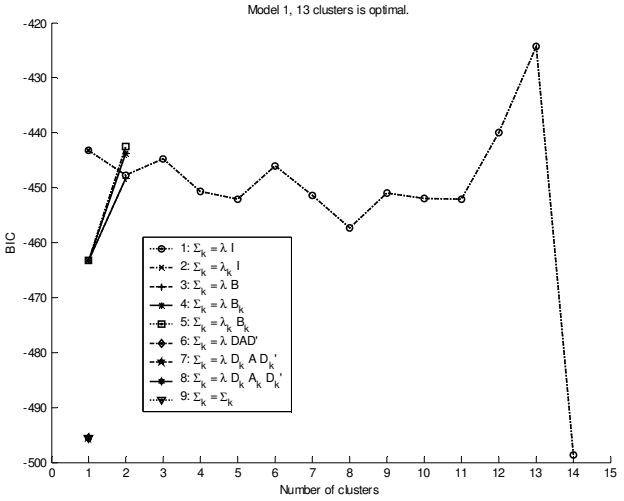
Figure 6.20 OCA-yuan BICs



Crisis



Post-crisis 7V



Post-crisis 8V

Figure 6.20 OCA-yuan BICs (continued)

Table 6.40 OCA-MBC-yuan clusters

Cluster	SW	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
	Averages									
Pre-crisis										
All Cases	.33	5.882	.197	10.600	4.833	.025	3.233	3.160	-	
1 KOR, TWN, IDN, SGP	.73	3.161	.280	8.760	4.573	.745	3.273	.853	-	0
2 MYS, AUS, NZL, CAN	.12	1.801	.415	9.684	4.964	.332	4.465	.758	-	1
3 PHL, THA, IND	.58	2.850	.066	8.167	4.853	-.786	4.409	2.432	-	1
4 HKG, MAC	.58	19.120	.586	7.948	4.526	.337	2.287	2.085	-	1
5 BRN	.00	0.237	-.320	11.996	4.740	-	1.099	.000	-	0
6 JPN	.00	4.947	-.601	11.070	5.565	.560	2.001	n.a.[3]	-	0
7 LAO	.00	8.611	-.177	16.614	6.139	-.086	1.927	10.621	-	1
8 MMR	.00	27.154	.060	12.857	5.465	-.654	2.529	9.475	-	1
9 VNM	.00	1.755	-.100	23.264	5.760	-1.000	3.346	4.925	-	0
10 KHM	.00	2.419	.733	11.432	2.401	-.992	1.782	6.749	-	2
Crisis										
All Cases	.41	9.806	.138	8.971	4.514	.141	3.159	1.551	-	
1 TWN, KHM, SGP, IND, AUS, NZL, CAN	.38	5.322	-.539	3.436	3.008	.416	3.572	1.340	-	1
2 HKG, KOR, PHL, MAC, JPN	.54	18.330	.522	3.104	3.495	.698	2.212	.911	-	3
3 MYS, THA, VNM, BRN	.60	6.803	.598	3.117	4.019	-.776	2.871	.833	-	0
4 MMR	.00	15.993	.470	25.923	3.325	.096	3.412	3.261	-	0
5 IDN	.00	8.535	.700	23.022	16.615	.011	6.390	2.416	-	2
6 LAO	.00	5.679	.217	69.459	11.224	-.724	2.674	5.252	-	1
Post-crisis 7V										
All Cases	.36	9.806	.138	8.971	4.514	.141	3.159	1.551	-	
1 HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN	.49	11.242	.163	3.674	2.989	.215	2.649	1.156	-	5
2 KOR, IDN, LAO, MMR, BRN, AUS, NZL, CAN	.19	7.833	.104	16.254	6.612	.039	3.861	2.342	-	2
Post-crisis 8V										
All Cases	.23	11.739	.246	4.061	2.202	.487	3.422	1.138	73.7	
1 HKG, SGP, JPN	.13	14.537	.738	2.022	1.705	.977	2.658	.787	90.6	0
2 TWN, KHM	.17	5.619	.555	2.169	1.349	.938	2.114	.696	51.7	0
3 MYS, THA	.67	9.682	.258	2.045	1.305	.912	3.672	.470	77.3	0
4 VNM, IND	.76	8.788	.815	3.586	1.456	.979	5.007	.885	61.6	1
5 AUS, NZL	.43	7.724	-.355	2.253	5.742	-.172	5.223	n.a.	91.8	0
6 CAN	.00	2.394	-.139	2.147	2.607	.053	5.025	n.a.	90.9	0
7 PHL	.00	29.388	.433	3.823	1.735	.977	2.382	1.471	57.5	1
8 MAC	.00	27.834	-.562	2.399	.858	.997	1.171	1.074	-	2
9 KOR	.00	18.214	-.262	2.160	2.275	-.628	2.508	.660	55.6	0
10 IDN	.00	9.997	.363	7.336	3.980	.974	6.159	1.722	48.4	1
11 BRN	.00	4.179	-.254	2.001	1.604	.092	1.197	.000	94.0	2
12 LAO	.00	6.981	.662	7.225	1.471	-.841	2.442	4.457	69.4	1
13 MMR	.00	16.824	-.325	23.901	2.501	-.606	4.119	2.009	-	0

Notes: 1 Standard deviation (x10^2) of the log difference in bilateral real exchange rate. 2 Number of variables with highest degree of conformity to OCA criteria. 3 'n.a.' for not applicable.
Source: Model-based cluster analysis. See Appendix A for data description.

6.4.1.1 Comparisons across Anchors

The MBC classifications by the five alternative anchors are arranged in Table 6.41. The average silhouettes for all objects suggest that the currency basket partitions are more fitting for all period solutions except for post-crisis 7V in which the dollar solution is best partitioned. Thus, the reference country consistent with best partitioning is virtually the G3 reference.

The reference country compatible with the most convergent arrangement, signified

by the smallest number of clusters and/or the largest dominant cluster is different for each period. For pre-crisis period, the basket and euro solutions; for crisis period the basket solution; and for post-crisis 7V the yen and yuan solutions are most convergent. For post-crisis 8V the basket and the yen configurations are most convergent.

To evaluate how the levels of convergence might have changed, it is appropriate to examine the 7-variable configurations over the periods. Virtually all reference countries have produced increasingly convergent configurations. Nevertheless, amongst the references only the G3 reference consistently generates highly symmetrical solutions for every period even when 8 variables are used for post-crisis period.

The 'All Periods' rows list the stable subgroups that have stayed through the periods. Regardless of the labor criterion, more substantial cross-period subsets are found under the basket and euro anchors.

Notice that the current monetary union members of Singapore and Brunei consistently share the same grouping over the periods under the basket anchor regardless of labor. This is consistent with the union which pegs its currency to an undisclosed basket of currencies with about two-thirds of the weight on the US dollar (see Ogawa & Shimizu, 2006).

For the dollar areas of Hong Kong and Macau, they constantly share the same grouping over the periods by any anchor when 7 variables are used and by basket and yen anchors when 8 variables are used, compatible with their parallel exchange regimes.

The bottom part of Table 6.41 shows the clusters possessing the highest silhouettes for the post-crisis period. Remarkably, by the Japan reference at least half the countries are found to share the highest group silhouette regardless of the labor criterion.

Cross-anchor subclusters are listed in Table 6.42. Remarkably, based on 7 variables, Hong Kong and Macau the effective dollar areas in practice are linked over the periods across all anchors. For post-crisis period, the most recent period, HongKong-Singapore

and Australia-NewZealand maintain their links over all anchors regardless of the labor criterion.

Table 6.41 OCA-MBC summary

		Dollar	SW	Currency Basket	SW	Yen	SW	Euro	SW	Yuan	SW
Pre-crisis	1	HKG, KOR, TWN, MYS, SGP, MAC	.57	CHN, KOR, TWN, MYS, PHL, IND, AUS, NZL	.35	KOR, MYS, PHL, IND, AUS	.25	HKG, KOR, TWN, KHM, MYS, SGP, THA, MAC, BRN, JPN, CAN	.29	KOR, TWN, IDN, SGP	.73
	2	CHN, IND, AUS, NZL	.36	HKG, KHM, IDN, SGP, THA, MAC, BRN	.46	HKG, TWN, SGP, MAC	.37	CHN, IDN, PHL, IND, AUS, NZL	.44	MYS, AUS, NZL, CAN	.12
	3	KHM, IDN, THA, JPN	.51	LAO, MMR, VNM	.43	IDN, THA	.64	LAO, MMR, VNM	.20	PHL, THA, IND	.58
	4	PHL	.00	CAN	.00	KHM, NZL	.32			HKG, MAC	.58
	5	VNM	.00			CHN	.00			BRN	.00
	6	BRN	.00			BRN	.00			JPN	.00
	7	LAO	.00			LAO	.00			LAO	.00
	8	MMR	.00			MMR	.00			MMR	.00
	9	CAN	.00			VNM	.00			VNM	.00
	10					CAN	.00			KHM	.00
Average			.34		.39		.24		.32		.33
Crisis	1	KOR, MYS, PHL, SGP, THA, VNM, BRN, NZL	.45	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, AUS, NZL	.56	KOR, MYS, PHL, THA	.50	CHN, HKG, KOR, TWN, KHM, PHL, IND, MAC, JPN	.45	TWN, KHM, SGP, IND, AUS, NZL, CAN	.38
	2	TWN, KHM, IND, AUS	.18	IDN, MMR	-.15	VNM, AUS, NZL, CAN	.08	MYS, SGP, THA, VNM, BRN, CAN	.25	HKG, KOR, PHL, MAC, JPN	.54
	3	CHN, HKG, MAC, JPN	.57	LAO	.00	TWN, SGP, BRN	-.33	AUS, NZL	.48	MYS, THA, VNM, BRN	.60
	4	IDN	.00	CAN	.00	KHM, MMR, IND	.31	IDN	.00	MMR	.00
	5	LAO	.00			HKG, MAC	.71	LAO	.00	IDN	.00
	6	MMR	.00			CHN, IDN	.34	MMR	.00	LAO	.00
	7	CAN	.00			LAO	.00				
Average			.33		.43		.23		.32		.41
Post-crisis 7V	1	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN	.72	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN	.61	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	.78	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC, JPN	.60	HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN	.49
	2	IDN, AUS, NZL	.48	IDN, AUS, NZL	.62	KOR, IDN, LAO, MMR, BRN, AUS, NZL, CAN	-.22	IDN, IND, AUS, NZL, CAN	.08	KOR, IDN, LAO, MMR, BRN, AUS, NZL, CAN	.19
	3	KOR, BRN	.50	MMR	.00			LAO	.00		
	4	LAO	.00	CAN	.00			BRN	.00		
	5	MMR	.00	LAO	.00			MMR	.00		
	6	CAN	.00								
Average			.55		.52		.36		.38		.36
All Periods 7V	1	HKG, MAC		CHN, KOR, TWN, MYS, PHL, IND		MYS, PHL		HKG, KOR, TWN, KHM, MAC, JPN		AUS, NZL, CAN	
	2	MYS, SGP		HKG, KHM, SGP, THA, MAC, BRN		HKG, MAC		MYS, SGP, THA		HKG, MAC	
	3			AUS, NZL		TWN, SGP		CHN, PHL		TWN, SGP	
	4							AUS, NZL			
Post-crisis 8V	1	CHN, TWN, MYS, THA, VNM, IND	.31	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN	.56	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	.70	CHN, TWN, VNM, IND	.16	HKG, SGP, JPN	.13
	2	HKG, SGP, JPN	.63	IDN, AUS, NZL	.39	KOR, IDN, LAO, MMR, AUS, NZL, CAN	-.14	HKG, MYS, SGP, THA	.28	TWN, KHM	.17
	3	KHM, PHL, MAC	.48	LAO	.00	BRN	.00	KOR, KHM, MAC, JPN	.41	MYS, THA	.67
	4	AUS, NZL	.68	MMR	.00			AUS, NZL	.61	VNM, IND	.76
	5	KOR	.00	CAN	.00			IDN	.00	AUS, NZL	.43
	6	IDN	.00					BRN	.00	CAN	.00
	7	BRN	.00					PHL	.00	PHL	.00
	8	LAO	.00					LAO	.00	MAC	.00
	9	MMR	.00					MMR	.00	KOR	.00
	10	CAN	.00					CAN	.00	IDN	.00
	11									BRN	.00
	12									LAO	.00
	13									MMR	.00
Average			.29		.45		.35		.23		.23
All Periods 8V	1	-		CHN, KOR, TWN, MYS, PHL, IND		MYS, PHL		KOR, KHM, MAC, JPN		AUS, NZL	
	2			HKG, KHM, SGP, THA, MAC, BRN		HKG, MAC		MYS, SGP, THA			
	3			AUS, NZL		TWN, SGP		CHN, IND			
	4							AUS, NZL			

Table 6.41 OCA-MBC summary (continued)

Post-crisis findings	Dollar		Currency Basket		Yen		Euro		Yuan	
	7V	8V	7V	8V	7V	8V	7V	8V	7V	8V
1 Highest silhouette	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN	AUS-NZL	IDN, AUS, NZL	CHN-HKG-KOR-TWN-KHM-MYS-PHL-SGP-THA-VNM-IND-MAC-BRN	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	CHN-HKG-TWN-KHM-MYS-PHL-SGP-THA-VNM-IND-MAC	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC, JPN	AUS-NZL	HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN	VNM-IND

Table 6.42 OCA-MBC cross-anchor subclusters

		PRE	CRS	PST		All			PRE	CRS	PST		All	
				7V	8V	7V	8V				7V	8V	7V	8V
DB	1	CHN, IND, AUS, NZL	KOR, MYS, PHL, SGP, THA, VNM, BRN, NZL	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	CHN, TWN, MYS, THA, VNM, IND	HKG, MAC	-	DY	HKG, TWN, SGP, MAC	KOR, MYS, PHL, THA	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC,	CHN, TWN, MYS, THA, VNM, IND	HKG, MAC	-
	2	HKG, SGP, MAC	TWN, KHM, IND, AUS	IDN, AUS, NZL	KHM, PHL, MAC				KOR, MYS	VNM, NZL	IDN, AUS, NZL	KHM, PHL, MAC		
	3	KHM, IDN, THA	CHN, HKG, MAC	KOR, BRN	HKG, SGP				IND, AUS	SGP, BRN	KOR, BRN	HKG, SGP		
	4	KOR, TWN, MYS			AUS, NZL				IDN, THA	KHM, IND		AUS, NZL		
	5									HKG, MAC				
DE	1	HKG, KOR, TWN, MYS, SGP, MAC	MYS, SGP, THA, VNM, BRN	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC, JPN	CHN, TWN, VNM, IND	MYS, SGP	-	DR	KOR, TWN, SGP	MYS, THA, VNM, BRN	HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN	HKG, SGP, JPN	HKG, MAC	-
	2	CHN, IND, AUS, NZL	CHN, HKG, MAC, JPN	IDN, AUS, NZL	HKG, SGP	HKG, MAC			HKG, MAC	TWN, KHM, IND, AUS	IDN, AUS, NZL	MYS, THA		
	3	KHM, THA, JPN	TWN, KHM, IND		MYS, THA				AUS, NZL	HKG, MAC, JPN	KOR, BRN	VNM, IND		
	4		KOR, PHL		KHM, MAC					SGP, NZL		AUS, NZL		
	5				AUS, NZL					KOR, PHL				
BY	1	KOR, MYS, PHL, IND, AUS	KOR, MYS, PHL, THA	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	MYS, PHL	MYS, PHL	BE	HKG, KHM, SGP, THA, MAC, BRN	CHN, HKG, KOR, TWN, KHM, PHL, IND, MAC	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC	CHN, TWN, VNM, IND	HKG, KHM, MAC	CHN, IND
	2	HKG, SGP, MAC	VNM, AUS, NZL	IDN, AUS, NZL	IDN, AUS, NZL	HKG, MAC	HKG, MAC		CHN, PHL, IND, AUS, NZL	MYS, SGP, THA, VNM, BRN	IDN, AUS, NZL	HKG, MYS, SGP, THA	CHN, PHL	SGP, THA
	3	IDN, THA	TWN, SGP, BRN	KOR, BRN					LAO, MMR, VNM	AUS, NZL		KOR, KHM, MAC	KOR, TWN	AUS, NZL
	4		KHM, IND						KOR, TWN, MYS			AUS, NZL	SGP, THA	KHM MAC
	5		HKG, MAC										AUS, NZL	
BR	1	MYS, AUS, NZL	TWN, KHM, SGP, IND, AUS, NZL	HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN	HKG, SGP	AUS, NZL	AUS, NZL	YE	HKG, TWN, SGP, MAC	KOR, PHL	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC	CHN, TWN, VNM, IND	HKG, MAC	-
	2	IDN, SGP	HKG, KOR, PHL, MAC	IDN, AUS, NZL	TWN, KHM	HKG, MAC			PHL, IND, AUS	MYS, THA	IDN, AUS, NZL, CAN	HKG, MYS, SGP, THA		
	3	PHL, IND	MYS, THA, VNM, BRN		MYS, THA				KOR, MYS	VNM, CAN		KHM, MAC		
	4	HKG, MAC			VNM, IND					AUS, NZL		AUS, NZL		
	5	KOR, TWN			AUS, NZL					SGP, BRN				
	6									KHM, IND				
	7									HKG, MAC				
YR	1	PHL, IND	AUS, NZL, CAN	HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	HKG, SGP	HKG, MAC	-	ER	KOR, TWN, SGP	HKG, KOR, PHL, MAC, JPN	HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC, JPN	VNM, IND	HKG, MAC	AUS, NZL
	2	MYS, AUS	KOR, PHL	KOR, IDN, LAO, MMR, BRN, AUS, NZL, CAN	TWN, KHM	TWN, SGP			MYS, CAN	MYS, THA, VNM, BRN	IDN, AUS, NZL, CAN	HKG, SGP		
	3	HKG, MAC	MYS, THA		MYS, THA				AUS, NZL	TWN, KHM, IND		MYS, THA		
	4	TWN, SGP	TWN, SGP		VNM, IND				PHL, IND	AUS, NZL		AUS, NZL		
	5		KHM, IND		AUS, NZL				HKG, MAC	SGP, CAN				
	6		HKG, MAC											

Table 6.42 OCA-MBC cross-anchor subclusters (continued)

		PRE	CRS	PST		All			PRE	CRS	PST		All	
				7V	8V	7V	8V				7V	8V	7V	8V
DBY	1	HKG, SGP, MAC	KOR, MYS, PHL, THA	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC	CHN, TWN, MYS, THA, VNM, IND	HKG, MAC	-	DBE	CHN, IND, AUS, NZL	MYS, SGP, THA, VNM, BRN	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC	CHN, TWN VNM, IND	HKG, MAC	-
	2	IND, AUS	VNM, NZL	IDN, AUS, NZL	KHM, PHL, MAC				HKG, SGP, MAC	TWN, KHM, IND	IDN, AUS, NZL	HKG, SGP		
	3	IDN, THA	SGP, BRN		AUS, NZL				KOR, TWN, MYS	CHN, HKG, MAC		MYS, THA		
	4	KOR, MYS	HKG, MAC		HKG, SGP				KHM, THA	KOR, PHL		KHM, MAC		
	5		KHM, IND									AUS, NZL		
DBR	1	AUS, NZL	MYS, THA, VNM, BRN	HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	HKG, SGP	HKG, MAC	-	DYE	HKG, TWN, SGP, MAC	KOR, PHL	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC	CHN, TWN, VNM, IND	HKG, MAC	-
	2	HKG, MAC	TWN, KHM, IND, AUS	IDN, AUS, NZL	MYS, THA				KOR, MYS	MYS, THA	IDN, AUS, NZL	MYS, THA		
	3	KOR, TWN	SGP, NZL	KOR, BRN	VNM, IND				IND, AUS	SGP, BRN		HKG, SGP		
	4		KOR, PHL		AUS, NZL					KHM, IND		AUS, NZL		
	5		HKG, MAC							HKG, MAC		KHM, MAC		
DYR	1	TWN, SGP	KOR, PHL	HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC,	HKG, SGP	HKG, MAC	-	DER	KOR, TWN, SGP	MYS, THA, VNM, BRN	HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC, JPN	VNM, IND	HKG, MAC	-
	2	HKG, MAC	MYS, THA	IDN, AUS, NZL	MYS, THA				HKG, MAC	HKG, MAC, JPN	IDN, AUS, NZL	HKG, SGP		
	3		KHM, IND	KOR, BRN	VNM, IND				AUS, NZL	TWN, KHM, IND		AUS, NZL		
	4		HKG, MAC		AUS, NZL					KOR, PHL				
BYE	1	HKG, SGP, MAC	KOR, PHL	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC	CHN, TWN, VNM, IND	HKG, MAC	-	BYR	MYS, AUS	KOR, PHL	HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	HKG, SGP	HKG, MAC	-
	2	PHL, IND, AUS	MYS, THA	IDN, AUS, NZL	HKG, MYS, SGP, THA				PHL, IND	MYS, THA	IDN, AUS, NZL	TWN, KHM		
	3	KOR, MYS	AUS, NZL		KHM, MAC				HKG, MAC	AUS, NZL	KOR, BRN	MYS, THA		
	4		SGP, BRN		AUS, NZL					TWN, SGP		VNM, IND		
	5		KHM, IND							KHM, IND		AUS, NZL		
	6		HKG, MAC							HKG, MAC				
BER	1	PHL, IND	HKG, KOR, PHL, MAC	HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC	VNM, IND	HKG, MAC	AUS, NZL	YER	TWN, SGP	KOR, PHL	HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC	VNM, IND	HKG, MAC	-
	2	AUS, NZL	TWN, KHM, IND	IDN, AUS, NZL	HKG, SGP	AUS, NZL			HKG, MAC	MYS, THA	IDN, AUS, NZL, CAN	MYS, THA		
	3	KOR, TWN	MYS, THA, VNM, BRN		MYS, THA				PHL, IND	AUS, NZL		HKG, SGP		
	4	HKG, MAC	AUS, NZL		AUS, NZL					KHM, IND		AUS, NZL		
	5									HKG, MAC				
DBYE	1	HKG, SGP, MAC	KOR, MYS	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC	CHN, TWN, VNM, IND	HKG, MAC	-	DBYR	HKG, MAC	KOR, PHL	HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC	MYS, THA	HKG, MAC	-
	2	IND, AUS	HKG, MAC	IDN, AUS, NZL	HKG, SGP					HKG, MAC	IDN, AUS, NZL	VNM, IND		
	3		IND, AUS		AUS, NZL					IND, AUS		AUS, NZL		
	4											HKG, SGP		
DBER	1	AUS, NZL	THA, VNM, BRN	HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC	VNM, IND	HKG, MAC	-	DYER	TWN, SGP	KOR, PHL	HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC	VNM, IND	HKG, MAC	-
	2	HKG, MAC	TWN, KHM, IND	IDN, AUS, NZL	HKG, SGP				HKG, MAC	MYS, THA	IDN, AUS, NZL	MYS, THA		
	3		HKG, MAC		MYS, THA					KHM, IND		HKG, SGP		
	4		KOR, PHL							HKG, MAC		AUS, NZL		
BYER	1	HKG, MAC	KOR, PHL	HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC	VNM, IND	HKG, MAC	-	DBYER	HKG, MAC	HKG, MAC	HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC	VNM, IND	HKG, MAC	-
	2	PHL, IND	MYS, THA	IDN, AUS, NZL	HKG, SGP					IND, AUS	IDN, AUS, NZL	HKG, SGP		
	3		AUS, NZL		MYS, THA							AUS, NZL		
	4		KHM, IND		AUS, NZL									
	5		HKG, MAC											

Note: D=Dollar; B=Currency Basket; Y=Yen; E=Euro/Mark; R=Yuan (Renminbi)

6.4.2 Classifications using Weighted Criteria

This section compares the classifications by the original unweighted criteria with those by the weighted criteria. Under the weighted criteria scheme, the sum of the 'benefit' variables is weighted equally with the sum of the 'cost' variables. The findings are put together in Table 6.43 in which columns '1' contain the original groupings and columns '2' display the groupings with the new weighting introduced. Previous MBC methodology applies.

Some of the configurations have become more convergent, divergent, or more or less the same after the weighting. The configurations that become significantly convergent include the pre-crisis dollar, basket, yen, and euro solutions; the crisis period dollar, yen, and euro solutions; the post-crisis 7V euro solution; and the post-crisis 8V dollar, euro, and yuan solutions.

Quite the opposite, by putting more weight on benefits and hence less weight on costs, the pre-crisis yuan solution, the crisis period basket solution, and the post-crisis 7V yuan solution have become somewhat more divergent. The rest of the solutions have been similar after the weighting.

Since only two benefit variables are defined here, trade openness and external indebtedness, and only the trade variable is measured relative to a reference, on the whole putting more weight on trade has brought the region closer together against Germany/EMU and against US but farther apart against China.

As the configurations are somewhat different after the weighting, it is instructive to identify subgrouping linkages which are robust to the new weighting. Non-singleton cross-weighting subclusters are shown in Table 6.44.

Notably, the subcluster of Australia-NewZealand is not only unmoved by the weighting but is also robust through the periods under the basket and the euro anchor regardless of the post-crisis labor criterion.

Meantime, using 7 variables, the effective dollar areas of Hong Kong and Macau are stable in such a manner for dollar, yen, and euro anchors. Previously without the weighting they share the same grouping over the periods by any anchor. As before, the monetary union members of Singapore and Brunei share the same grouping over the periods under the basket anchor irrespective of the post-crisis labor criterion.

Cross-weighting cases which are also linked across anchors are collected in Table 6.45. No countries are consistently linked simultaneously across all periods and anchors regardless of the weighting.

Nonetheless, for the most recent period the post-crisis period, irrespective of the labor criterion the subgroupings of Malaysia-Thailand and Australia-NewZealand are stable across all anchors.

Table 6.43 MBC clusters by equal and by weighted criteria

		Dollar		Currency Basket		Yen		Euro		Yuan	
		1	2	1	2	1	2	1	2	1	2
Pre-crisis	1	HKG, KOR, TWN, MYS, SGP, MAC	CHN, HKG, KOR, TWN, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, AUS, NZL	CHN, KOR, TWN, MYS, PHL, IND, AUS, NZL	CHN, HKG, KOR, TWN, IDN, MYS, SGP, THA, VNM, IND, MAC, BRN, AUS, NZL	KOR, MYS, PHL, IND, AUS	HKG, KOR, TWN, IDN, MYS, SGP, THA, MAC, BRN, AUS	HKG, KOR, TWN, KHM, MYS, SGP, THA, MAC, BRN, JPN, CAN	CHN, HKG, KOR, TWN, IDN, MYS, SGP, THA, MAC, BRN, JPN, AUS, NZL, CAN	KOR,TWN, IDN, SGP	KOR, TWN, IDN, SGP
	2	CHN, IND, AUS, NZL	KHM, LAO, MMR	HKG, KHM, IDN, SGP, THA, MAC, BRN	KHM, LAO, MMR	HKG, TWN, SGP, MAC	KHM, LAO, MMR, VNM, NZL	CHN, IDN, PHL, IND, AUS, NZL	KHM, LAO, MMR, VNM	MYS, AUS, NZL, CAN	MYS, THA
	3	KHM, IDN, THA, JPN	CAN	LAO, MMR, VNM	PHL, CAN	IDN, THA	CHN, PHL, IND, CAN	LAO, MMR, VNM	PHL, IND	PHL, THA, IND	AUS, CAN
	4	PHL		CAN		KHM, NZL				HKG, MAC	PHL, IND
	5	VNM				CHN				BRN	HKG
	6	BRN				BRN				JPN	MAC
	7	LAO				LAO				LAO	BRN
	8	MMR				MMR				MMR	JPN
	9	CAN				VNM				VNM	LAO
	10					CAN				KHM	VNM
	11										KHM
	12										MMR
	13										NZL
Crisis	1	KOR, MYS, PHL, SGP, THA, VNM, BRN, NZL	CHN, HKG, KOR, TWN, KHM, MYS PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, AUS, NZL	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, AUS, NZL	CHN, KOR, TWN, MYS, SGP, MAC, BRN	KOR, MYS, PHL, THA	KOR, TWN, MYS, PHL, SGP, THA, VNM, BRN, AUS, NZL	CHN, HKG, KOR, TWN, KHM, PHL, IND, MAC, JPN	CHN, HKG, KOR, TWN, KHM, MYS, PHL, THA, VNM, IND, MAC, JPN	TWN, KHM, SGP, IND, AUS, NZL, CAN	TWN, KHM, SGP, IND, AUS, NZL, CAN
	2	TWN, KHM, IND, AUS	IDN, MMR	IDN, MMR	HKG, KHM, PHL, THA, VNM, IND	VNM, AUS, NZL, CAN	HKG, KHM, MMR, IND, MAC, CAN	MYS, SGP, THA, VNM, BRN, CAN	SGP, BRN, CAN	HKG, KOR, PHL, MAC, JPN	HKG, KOR, PHL, MAC, JPN
	3	CHN, HKG, MAC, JPN	LAO	LAO	AUS, NZL	TWN, SGP, BRN	CHN, IDN	AUS, NZL	AUS, NZL	MYS, THA, VNM, BRN	MYS, THA, VNM, BRN
	4	IDN	CAN	CAN	IDN	KHM, MMR, IND	LAO	IDN	IDN	MMR	MMR
	5	LAO			LAO	HKG, MAC		LAO	LAO	IDN	IDN
	6	MMR			MMR	CHN, IDN		MMR	MMR	LAO	LAO
	7	CAN			CAN	LAO					

Table 6.43 MBC clusters by equal and by weighted criteria (continued)

		Dollar		Currency Basket		Yen		Euro		Yuan	
		1	2	1	2	1	2	1	2	1	2
Post-crisis 7V	1	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, MAC, BRN	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC, JPN	CHN, HKG, KOR, TWN, KHM, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, AUS, NZL, CAN	HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN	TWN, KHM, MYS, SGP, THA, VNM, IND, BRN, JPN, CAN
	2	IDN, AUS, NZL	IDN, AUS, NZL	IDN, AUS, NZL	IDN, AUS, NZL	KOR, IDN, LAO, MMR, BRN, AUS, NZL, CAN	KOR, IDN, LAO, MMR, BRN, AUS, NZL, CAN	IDN, IND, AUS, NZL, CAN	LAO, MMR	KOR, IDN, LAO, MMR, BRN, AUS, NZL, CAN	HKG, KOR, PHL, MAC
	3	KOR, BRN	KOR, BRN	MMR	VNM, IND, CAN			LAO			IDN, LAO
	4	LAO	LAO	CAN	LAO, MMR			BRN			AUS, NZL
	5	MMR	MMR	LAO				MMR			MMR
	6	CAN	CAN								
	7										
	8										
	9										
	10										
All Periods 7V	1	HKG, MAC	CHN, HKG, TWN, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN	CHN, KOR, TWN, MYS, PHL, IND	CHN, KOR, TWN, MYS, SGP, MAC, BRN	MYS, PHL	TWN, MYS, SGP, THA	HKG, KOR, TWN, KHM,, JPN	CHN, HKG, KOR, TWN, MYS, THA, MAC, JPN	AUS, NZL, CAN	TWN, SGP
	2	MYS, SGP	AUS, NZL	HKG, KHM, SGP, THA, MAC, BRN	HKG, KHM, PHL, THA,	TWN, SGP	KOR, BRN, AUS	MYS, SGP, THA	SGP, BRN, CAN	HKG, MAC	MYS, THA
	3		KOR, BRN	AUS, NZL	VNM, IND	HKG, MAC	HKG,,MAC,	CHN, PHL	PHL, IND	TWN, SGP	
	4				AUS, NZL			AUS, NZL	AUS, NZL		
	5								KHM, VNM		
Post-crisis 8V	1	CHN, TWN, MYS, THA, VNM, IND	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	CHN, HKG, TWN, KHM, MYS, SGP, THA, VNM, IND, MAC, BRN, CAN	CHN, TWN, VNM, IND	CHN, HKG, KOR, TWN, KHM, MYS, PHL, THA, VNM, IND, MAC, JPN	HKG, SGP, JPN	HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN
	2	HKG, SGP, JPN	IDN, MMR, AUS, NZL	IDN, AUS, NZL	IDN, AUS, NZL	KOR, IDN, LAO, MMR, AUS, NZL, CAN	KOR, IDN, PHL, AUS, NZL	HKG, MYS, SGP, THA	IDN, AUS, NZL	TWN, KHM	BRN, AUS, NZL, CAN
	3	KHM, PHL, MAC	LAO	LAO	LAO	BRN	LAO, MMR	KOR, KHM, MAC, JPN	SGP, BRN, CAN	MYS, THA	IDN, LAO
	4	AUS, NZL	CAN	MMR	MMR			AUS, NZL	LAO	VNM, IND	KOR, MMR
	5	KOR		CAN	CAN			IDN	MMR	AUS, NZL	
	6	IDN						BRN		CAN	
	7	BRN						PHL		PHL	
	8	LAO						LAO		MAC	
	9	MMR						MMR		KOR	
	10	CAN						CAN		IDN	
	11									BRN	
	12									LAO	
	13									MMR	
All Periods 8V	1	-	CHN, HKG, KOR, TWN, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN	CHN, KOR, TWN, MYS, PHL, IND	CHN, KOR, TWN, MYS, SGP, MAC, BRN	MYS, PHL	KOR, TWN, MYS, SGP, THA, BRN, AUS	KOR, KHM, MAC, JPN	CHN, HKG, KOR, TWN, MYS, THA, MAC, JPN	AUS, NZL	TWN, SGP
	2		AUS, NZL	HKG, KHM, SGP, THA, MAC, BRN	HKG, THA, VNM, IND	HKG, MAC	HKG, MAC	MYS, SGP, THA	AUS, NZL		MYS, THA
	3			AUS, NZL	AUS, NZL	TWN, SGP	IND, CAN	CHN, IND	SGP, BRN, CAN		AUS, CAN
	4							AUS, NZL			

Table 6.44 MBC cross-weighting subclusters

		Dollar	Currency Basket	Yen	Euro	Yuan
Pre-crisis	1	HKG, KOR, TWN, MYS, SGP, MAC	CHN, KOR, TWN, MYS, IND, AUS, NZL	HKG, TWN, SGP, MAC	HKG, KOR, TWN, MYS, SGP, THA, MAC, BRN, JPN, CAN	KOR, TWN, IDN, SGP
	2	CHN, IND, AUS, NZL	HKG, IDN, SGP, THA, MAC, BRN	KOR, MYS, AUS	CHN, IDN, AUS, NZL	AUS, CAN
	3	IDN, THA, JPN	LAO, MMR	PHL, IND	LAO, MMR, VNM	PHL, IND
	4			IDN, THA	PHL, IND	
	5			KHM, NZL		
Crisis	1	KOR, MYS, PHL, SGP, THA, VNM, BRN, NZL	CHN, KOR, TWN, MYS, SGP, MAC, BRN	KOR, MYS, PHL, THA	CHN, HKG, KOR, TWN, KHM, PHL, IND, MAC, JPN	TWN, KHM, SGP, IND, AUS, NZL, CAN
	2	TWN, KHM, IND, AUS	HKG, KHM, PHL, THA, VNM, IND	VNM, AUS, NZL	MYS, THA, VNM	HKG, KOR, PHL, MAC, JPN
	3	CHN, HKG, MAC, JPN	AUS, NZL	TWN, SGP, BRN	SGP, BRN, CAN	MYS, THA, VNM, BRN
	4			KHM, MMR, IND	AUS, NZL	
	5			HKG, MAC		
	6			CHN, IDN		
Post-crisis 7V	1	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, MAC, BRN	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC, JPN	TWN, KHM, MYS, SGP, THA, VNM, IND, JPN
	2	IDN, AUS, NZL	IDN, AUS, NZL	KOR, IDN, LAO, MMR, BRN, AUS, NZL, CAN	IDN, IND, AUS, NZL, CAN	HKG, PHL, MAC
	3	KOR, BRN	VNM, IND			BRN, CAN
	4					IDN, LAO
	5					AUS, NZL
All Periods 7V	1	HKG, MAC	CHN, KOR, TWN, MYS	HKG, MAC	HKG, KOR, TWN, MAC, JPN	TWN, SGP
	2	MYS, SGP	SGP, MAC, BRN	TWN, SGP	AUS, NZL	
	3		AUS, NZL			
	4		HKG, THA			
Post-crisis 8V	1	CHN, TWN, MYS, THA, VNM, IND	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN	CHN, HKG, TWN, KHM, MYS, SGP, THA, VNM, IND, MAC	CHN, TWN, VNM, IND	HKG, SGP, JPN
	2	HKG, SGP, JPN	IDN, AUS, NZL	KOR, IDN, AUS, NZL	KOR, KHM, MAC, JPN	TWN, KHM
	3	KHM, PHL, MAC		LAO, MMR	HKG, MYS, THA	MYS, THA
	4	AUS, NZL			AUS, NZL	VNM, IND
	5					AUS, NZL
All Periods 8V	1	-	CHN, KOR, TWN, MYS	TWN, SGP	KOR, MAC, JPN	-
	2		SGP, MAC, BRN	HKG, MAC	MYS, THA	
	3		AUS, NZL		AUS, NZL	
	4		HKG, THA			

Table 6.45 MBC cross-weighting-anchor subclusters

		PRE	CRS	PST		All			PRE	CRS	PST		All	
				7V	8V	7V	8V				7V	8V	7V	8V
DB	1	CHN, IND, AUS, NZL	KOR, MYS, SGP, BRN	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, MAC	CHN, TWN, MYS, THA, VNM, IND	-	-	DY	HKG, TWN, SGP, MAC	KOR, MYS, PHL, THA	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	CHN, TWN, MYS, THA, VNM, IND	HKG, MAC	-
	2	KOR, TWN, MYS	PHL, THA, VNM	IDN, AUS, NZL	HKG, SGP, JPN				KOR, MYS	SGP, BRN	IDN, AUS, NZL	HKG, SGP		
	3	HKG, SGP, MAC	KHM, IND	KOR, BRN	KHM, PHL, MAC				IDN, THA	VNM, NZL	KOR, BRN	KHM, MAC		
	4	IDN, THA	CHN, MAC	VNM, IND	AUS, NZL					KHM, IND		AUS, NZL		
	5									HKG, MAC		VNM, IND		
DE	1	HKG, KOR, TWN, MYS, SGP, MAC	CHN, HKG, MAC, JPN	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC, JPN	CHN, TWN, VNM, IND	HKG, MAC	-	DR	KOR, TWN	TWN, KHM, IND, AUS	TWN, KHM, MYS, SGP, THA, VNM, IND, JPN	HKG, SGP, JPN	-	--
	2	CHN, AUS, NZL	MYS, THA, VNM	IDN, AUS, NZL	MYS, THA					MYS, THA, VNM, BRN	HKG, PHL, MAC	AUS, NZL		
	3	THA, JPN	TWN, KHM, IND		KHM, MAC					HKG, MAC, JPN	AUS, NZL	MYS, THA		
	4		SGP, BRN		AUS, NZL					KOR, PHL		VNM, IND		
	5		KOR, PHL							SGP, NZL				
BY	1	KOR, MYS, AUS	KOR, MYS	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, MAC	CHN, HKG, TWN, KHM, MYS, SGP, THA, VNM, IND, MAC	-	-	BE	SGP, THA, MAC, BRN	CHN, KOR, TWN, MAC	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, MAC	CHN, TWN, VNM, IND	AUS, NZL	AUS, NZL
	2	SGP, MAC	TWN, SGP, BRN	IDN, AUS, NZL	IDN, AUS, NZL				KOR, TWN, MYS	HKG, KHM, PHL, IND	IDN, AUS, NZL	KOR, KHM, MAC	KOR, TWN	
	3	IDN, THA	AUS, NZL	VNM, IND					LAO, MMR	THA, VNM	VNM, IND	HKG, MYS, THA		

	4	KHM, IND						AUS, NZL	SGP, BRN		AUS, NZL				
	5	PHL, THA							AUS, NZL						
BR	1 KOR, TWN	KOR, MAC	TWN, KHM, MYS, SGP, THA	HKG, SGP	-	-	YE	HKG, TWN, SGP, MAC	KOR, PHL	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC	CHN, TWN, VNM, IND	HKG, MAC	-		
	2 IDN, SGP	TWN, SGP	HKG, PHL, MAC	TWN, KHM				KOR, MYS	MYS, THA	AUS, NZL, CAN	HKG, MYS, THA				
	3	MYS, BRN	AUS, NZL	MYS, THA				PHL, IND	AUS, NZL		KHM, MAC				
	4	HKG, PHL	VNM, IND	VNM, IND					SGP, BRN		AUS, NZL				
	5	THA, VNM		AUS, NZL					KHM, IND						
	6	AUS, NZL							HKG, MAC						
YR	1 TWN, SGP	KOR, PHL	TWN, KHM, MYS, SGP, THA, VNM, IND	VNM, IND	TWN, SGP	-	ER	KOR, TWN, SGP	HKG, KOR, PHL, MAC, JPN	TWN, KHM, MYS, SGP, THA, VNM, JPN	MYS, THA	-	-		
	2 PHL, IND	MYS, THA	HKG, PHL, MAC	MYS, THA				PHL, IND	MYS, THA, VNM	HKG, PHL, MAC	AUS, NZL				
	3	AUS, NZL	BRN, CAN	AUS, NZL					TWN, KHM, IND	AUS, NZL					
	4	TWN, SGP	IDN, LAO						SGP, CAN						
	5	KHM, IND	AUS, NZL						AUS, NZL						
	6	HKG, MAC													
DBY	1 HKG, SGP, MAC	KOR, MYS	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, MAC	CHN, TWN, MYS, THA, VNM, IND	-	-	DBE	CHN, AUS, NZL	SGP, BRN	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, MAC	CHN, TWN, VNM, IND	-	-		
	2 IDN, THA	SGP, BRN	IDN, AUS, NZL	HKG, SGP				KOR, TWN, MYS	THA, VNM	IDN, AUS, NZL	MYS, THA				
	3 KOR, MYS	PHL, THA	KOR, BRN	AUS, NZL				HKG, SGP, MAC	KHM, IND	VNM, IND	KHM, MAC				
	4	KHM, IND	VNM, IND						CHN, MAC		AUS, NZL				
DBR	1 KOR, TWN	MYS, BRN	TWN, KHM, MYS, SGP, THA,	HKG, SGP, JPN			DYE	HKG, TWN, SGP, MAC	MYS, THA	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC	CHN, TWN, VNM, IND	HKG, MAC	-		
	2	THA, VNM	HKG, PHL, MAC	MYS, THA				KOR, MYS	KOR, PHL	IDN, AUS, NZL	MYS, THA				
	3	KHM, IND	AUS, NZL	VNM, IND					SGP, BRN		KHM, MAC				
	4		VNM, IND	AUS, NZL					KHM, IND		AUS, NZL				
	5								HKG, MAC						
DYR	1 TWN, SGP	KOR, PHL	TWN, KHM, MYS, SGP, THA, VNM, IND	HKG, SGP	-	-	DER	KOR, TWN, SGP	HKG, MAC, JPN	TWN, KHM, MYS, SGP, THA, VNM, JPN	MYS, THA	-	-		
	2	MYS, THA	HKG, PHL, MAC	MYS, THA					MYS, THA, VNM	HKG, PHL, MAC	VNM, IND				
	3	KHM, IND	AUS, NZL	VNM, IND					TWN, KHM, IND	AUS, NZL	AUS, NZL				
	4	HKG, MAC		AUS, NZL					KOR, PHL						
BYE	1 KOR, MYS	AUS, NZL	TWN, KHM, MYS, SGP, THA,	CHN, TWN, VNM, IND	-	-	BYR	-	AUS, NZL	TWN, KHM, MYS, SGP, THA	HKG, SGP	-	-		
	2 SGP, MAC	SGP, BRN	HKG, PHL, MAC	KHM, MAC					TWN, SGP	HKG, PHL, MAC	TWN, KHM				
	3	KHM, IND	AUS, NZL	HKG, MYS, THA					KHM, IND	AUS, NZL	MYS, THA				
	4			AUS, NZL						VNM, IND	VNM, IND				
	5										AUS, NZL				
BER	1 KOR, TWN	KOR, MAC	TWN, KHM, MYS, SGP, THA	MYS, THA	-	-	YER	TWN, SGP	KOR, PHL	TWN, KHM, MYS, SGP, THA, VNM,	VNM, IND	-	-		
	2	HKG, PHL	HKG, PHL, MAC	VNM, IND				PHL, IND	MYS, THA	HKG, PHL, MAC	MYS, THA				
	3	KHM, IND	AUS, NZL	AUS, NZL					AUS, NZL	AUS, NZL	AUS, NZL				
	4	THA, VNM							KHM, IND						
	5	AUS, NZL							HKG, MAC						
DB YE	1 HKG, SGP, BRN	SGP, BRN	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, MAC	CHN, TWN, VNM, IND	-	-	DB YR	-	KHM, IND	TWN, KHM, MYS, SGP, THA	HKG, SGP	-	-		
	2 KOR, MYS	KHM, IND	IDN, AUS, NZL	MYS, THA						HKG, PHL, MAC	MYS, THA				
	3			AUS, NZL						VNM, IND	AUS, NZL				
	4										VNM, IND				
DB ER	1 KOR, TWN	THA, VNM	TWN, KHM, MYS, SGP, THA	VNM, IND	-	-	DY ER	TWN, SGP	MYS, THA	TWN, KHM, MYS, SGP, THA	VNM, IND	-	-		
	2	KHM, IND	HKG, PHL, MAC	MYS, THA					KOR, PHL	HKG, PHL, MAC	MYS, THA				
	3		AUS, NZL	AUS, NZL					KHM, IND	AUS, NZL	AUS, NZL				
	4								HKG, MAC						
BY ER	1 -	AUS, NZL	TWN, KHM, MYS, SGP, THA,	VNM, IND	-	-	DB YER	-	KHM, IND	TWN, KHM, MYS, SGP, THA	VNM, IND	-	-		
	2	KHM, IND	HKG, PHL, MAC	MYS, THA						HKG, PHL, MAC	MYS, THA				
	3		AUS, NZL	AUS, NZL						AUS, NZL	AUS, NZL				

Note: D=Dollar; B=Currency Basket; Y=Yen; E=Euro/Mark; R=Yuan (Renminbi)

6.4.3 Assessment of Preparedness

The preceding analysis may indicate relatively homogenous subsets of countries with respect to the OCA dimensions. This section compares the results involving the dollarized and euroized benchmarks with the original results to infer the levels of preparedness amongst the countries. The level of preparedness for monetary unification can be inferred by looking at the associations with which benchmarks. Associations with post-dollarization (PAN, GTM3, ECU3, and ELS3) and post-euro (EMU3) benchmarks might indicate higher degrees of preparedness. Previous MBC methodology applies.

The first part presents the results using the original unweighted criteria and the second part provides the analysis using weighted criteria.

6.4.3.1 Preparedness Assessment using Unweighted Criteria

Table 6.46 exhibits the solutions for preparedness assessment using the original unweighted criteria. Columns '1' display the original groupings containing only Asian cases while columns '2' provide the solutions involving the Asian cases and benchmarks.

For the pre-crisis period, the general level of preparedness for exchange rate fixation and monetary union centered on the dollar, basket, and euro anchors could have been greater since the bulk of the Asian cases in columns 2 are being grouped with the post-dollarization and/or post-euro benchmarks.

Likewise, for crisis period the readiness for yen and euro pegs might have been higher; for post-crisis 7V that for dollar, basket, and yuan pegs could be greater; and for post-crisis 8V the levels of preparedness for any of the monetary anchors appear to be equally high.

Against this backdrop, except for the crisis period, the region on the whole could have been comparatively ready for dollar, basket, or euro peg.

Interestingly, in pre-crisis and post-crisis 7V basket solutions, Canada is connected with almost all dollarized benchmarks but not even one euroized benchmark, signifying relatively high preparedness for unilateral peg rather than multilateral monetary union centered on the basket reference.

Meantime, those linked with pre-dollarization cases (e.g. ELS1, GTM1) such as Laos and Myanmar in some of the findings could also be relatively feasible for unilateral peg on the respective anchor than those not linked with any benchmarks.

Clearly, the groupings of the Asian cases are somewhat different when benchmark cases are added in the analysis. Hence, it is compelling to identify common groupings between the with- and without-benchmarks results. When a subset of Asian countries in column 1 intersects with that in column 2, the common set of countries might most probably maintain common OCA features and level of preparedness.

These common sets of countries are presented in the bottom part of Table 6.46. Remarkably, without the labor criterion, the effective dollar areas of Hong Kong and Macau, and the adjacent neighbors of Malaysia and Singapore are indicated to share similar OCA characteristics and levels of preparedness over the periods under the US reference. The finding is line with the currency board systems implemented by Hong Kong and Macau. The existing monetary union members of Singapore and Brunei do share some groupings but not consistently over the periods.

Table 6.47 provides the common sets of countries which are robust across anchors. Most of these subgroups can be found in the post-crisis 8V solutions where HongKong-Singapore, Malaysia-Thailand, Vietnam-India, and Australia-NewZealand are the common subgroups across all the five anchors.

The characteristics shared by the Asian cases and the benchmarks can be seen in Table 6.48. In general, Asian cases sharing the same clusters with EMU benchmarks exhibit more favorable conditions for exchange rate fixation in business cycle symmetry,

inflation convergence, and real exchange rate stability with the reference country and high degree of export diversification.

Table 6.46 OCA-MBC preparedness assessment

		Dollar		Currency Basket		Yen		Euro		Yuan	
		1	2	1	2	1	2	1	2	1	2
Pre-crisis	1	HKG, KOR, TWN, MYS, SGP, MAC	**CHN, HKG, KOR, TWN, KHM, IDN, MYS, PHL, SGP, THA, IND, MAC, BRN, JPN, AUS, NZL, CAN**, PAN, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	CHN, KOR, TWN, MYS, PHL, IND, AUS, NZL	**CHN, HKG, KOR, TWN, IDN, MYS, PHL, SGP, THA, IND, MAC, BRN, AUS, NZL**, EMU1, EMU2, EMU3	KOR, MYS, PHL, IND, AUS	**IDN, THA, BRN, AUS, NZL**, PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	HKG, KOR, TWN, KHM, MYS, SGP, THA, MAC, BRN, JPN, CAN	**CHN, HKG, KOR, TWN, IDN, MYS, PHL, SGP, THA, IND, MAC, BRN, JPN, AUS, NZL, CAN**, EMU1, EMU2, EMU3	KOR, TWN, IDN, SGP	HKG, KOR, TWN, IDN, MYS, PHL, SGP, THA, IND, MAC, BRN, JPN, AUS, NZL, CAN
	2	CHN, IND, AUS, NZL	**LAO, MMR, VNM**, ECU1, ELS1, GTM1	HKG, KHM, IDN, SGP, THA, MAC, BRN	**CAN**, PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	HKG, TWN, SGP, MAC	CHN, HKG, KOR, TWN, MYS, PHL, SGP, IND, CAN	CHN, IDN, PHL, IND, AUS, NZL	PAN, ECU1, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	MYS, AUS, NZL, CAN	PAN, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3
	3	KHM, IDN, THA, JPN	ECU2	LAO, MMR, VNM	KHM, LAO, MMR, VNM	IDN, THA	KHM, LAO, MMR, VNM, MAC	LAO, MMR, VNM	KHM, LAO, MMR, VNM	PHL, THA, IND	**KHM, LAO, MMR, VNM**, ELS1, GTM1
	4	PHL		CAN	ECU1, ECU2	KHM, NZL	ECU1, ECU2		ECU2	HKG, MAC	ECU1, ECU2
	5	VNM				CHN				BRN	
	6	BRN				BRN				JPN	
	7	LAO				LAO				LAO	
	8	MMR				MMR				MMR	
	9	CAN				VNM				VNM	
	10					CAN				KHM	
Crisis	1	KOR, MYS, PHL, SGP, THA, VNM, BRN, NZL	**CHN, HKG, KOR, TWN, MYS, PHL, SGP, THA, VNM, MAC, BRN, JPN, NZL**, EMU2	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, AUS, NZL	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN	KOR, MYS, PHL, THA	**CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, AUS, NZL, CAN**, EMU1, EMU2, EMU3	CHN, HKG, KOR, TWN, KHM, PHL, IND, MAC, JPN	**CHN, HKG, KOR, TWN, KHM, IDN, MYS, MMR, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, AUS, NZL, CAN,** PAN, ECU1, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	TWN, KHM, SGP, IND, AUS, NZL, CAN	**HKG, KOR, PHL, MAC, JPN, NZL**, PAN, ELS2, ELS3, GTM3, EMU1, EMU2, EMU3
	2	TWN, KHM, IND, AUS	**KHM, IND, AUS, CAN**, PAN, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU3	IDN, MMR	**CAN**, PAN, ELS2, ELS3, GTM3, EMU1, EMU2, EMU3	VNM, AUS, NZL, CAN	PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	MYS, SGP, THA, VNM, BRN, CAN	**LAO**, ECU2	HKG, KOR, PHL, MAC, JPN	**TWN, KHM, IND, AUS, CAN**, ELS1,
	3	CHN, HKG, MAC, JPN	**IDN, LAO, MMR,** ECU1, ELS1, ECU2	LAO	**MMR**, ECU1, ELS1	TWN, SGP, BRN	IDN, MMR, ECU1	AUS, NZL		MYS, THA, VNM, BRN	**VNM**, GTM1, GTM2, ECU3
	4	IDN		CAN	IDN, AUS, NZL	KHM, MMR, IND	LAO	IDN		MMR	MYS, SGP, THA, BRN
	5	LAO			GTM1, GTM2, ECU3	HKG, MAC	ECU2	LAO		IDN	**IDN, MMR**, ECU1
	6	MMR			LAO	CHN, IDN		MMR		LAO	LAO
	7	CAN			ECU2	LAO					ECU2

Table 6.46 OCA-MBC preparedness assessment (continued)

		Dollar		Currency Basket		Yen		Euro		Yuan	
		1	2	1	2	1	2	1	2	1	2
Post-crisis 7V	1	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN	**CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, CAN**, PAN, ELS2, ELS3, GTM3, EMU1, EMU2, EMU3	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN	**CHN, HKG, KOR, TWN, KHM, LAO, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN**, EMU1, EMU2, EMU3	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	CHN, HKG, TWN, KHM, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC, JPN	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, MAC, BRN, JPN, NZL	HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN	**HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, CAN**, PAN, ELS2, GTM2, ELS3, GTM3, EMU1, EMU2, EMU3
	2	IDN, AUS, NZL	**JPN**, GTM1, GTM2, ECU3	IDN, AUS, NZL	**CAN**, PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	KOR, IDN, LAO, MMR, BRN, AUS, NZL, CAN	**AUS, CAN**, EMU1, EMU2, EMU3	IDN, IND, AUS, NZL, CAN	**IDN, VNM, IND, AUS, CAN,** EMU1, EMU2, EMU3	KOR, IDN, LAO, MMR, BRN, AUS, NZL, CAN	**IDN, LAO, MMR, AUS, NZL**, ECU1, ELS1, GTM1, ECU2, ECU3
	3	KOR, BRN	**LAO, MMR**, ELS1	MMR	IDN, MMR, AUS, NZL		**KOR, BRN, NZL**, ELS1	LAO	PAN, ELS2, GTM2, ELS3, GTM3		
	4	LAO	IDN, AUS, NZL	CAN	ECU1, ECU2		GTM1, GTM2, ECU3	BRN	ELS1, GTM1, ECU3		
	5	MMR	ECU1, ECU2	LAO			PAN, ELS2, ELS3, GTM3	MMR	ECU1		
	6	CAN					ECU1, ECU2		ECU2		
	7						LAO		LAO		
	8						MMR		MMR		
All Periods 7V	1	HKG, MAC	CHN, HKG, KOR, TWN, MYS, PHL, SGP, THA, MAC, BRN, JPN, NZL,	CHN, KOR, TWN, MYS, PHL, IND	CAN	MYS, PHL	BRN, NZL	HKG, KOR, TWN, KHM, MAC, JPN	IDN, IND, AUS, CAN	AUS, NZL, CAN	KHM
	2	MYS, SGP	KHM, IND, CAN	HKG, KHM, SGP, THA, MAC, BRN		HKG, MAC	AUS	MYS, SGP, THA		HKG, MAC	MMR
	3		LAO, MMR	AUS, NZL		TWN, SGP		CHN, PHL		TWN, SGP	VNM
	4							AUS, NZL			
Post-crisis 8V	1	CHN, TWN, MYS, THA, VNM, IND	**CHN, HKG, KOR, TWN, KHM, IDN, LAO, MYS, MMR, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, AUS, NZL, CAN**, PAN, ECU1, ELS1, GTM1, GTM2, ELS2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN	**CHN, HKG, KOR, TWN, KHM, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, AUS, NZL, CAN**, PAN, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	**CHN, HKG, KOR, TWN, KHM, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, AUS, NZL, CAN**, PAN, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	CHN, TWN, VNM, IND	**CHN, HKG, KOR, TWN, KHM, IDN, LAO, MYS, MMR, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, AUS, NZL, CAN**, EMU1, EMU2, EMU3	HKG, SGP, JPN	**HKG, KOR, TWN, KHM, IDN, LAO, MYS, MMR, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, AUS, NZL, CAN**, PAN, ECU1, ELS1, GTM1, GTM2, ELS2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3
	2	HKG, SGP, JPN	ECU2	IDN, AUS, NZL	**LAO, MMR**, ECU1, ELS1, GTM1	KOR, IDN, LAO, MMR, AUS, NZL, CAN	**LAO, MMR**, ECU1, ELS1, GTM1	HKG, MYS, SGP, THA	PAN, ECU1, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	TWN, KHM	ECU2
	3	KHM, PHL, MAC		LAO	ECU2	BRN	ECU2	KOR, KHM, MAC, JPN	ECU2	MYS, THA	
	4	AUS, NZL		MMR				AUS, NZL		VNM, IND	
	5	KOR		CAN				IDN		AUS, NZL	
	6	IDN						BRN		CAN	
	7	BRN						PHL		PHL	
	8	LAO						LAO		MAC	
	9	MMR						MMR		KOR	
	10	CAN						CAN		IDN	
	11									BRN	
	12									LAO	
	13									MMR	
All Periods 8V	1	-	CHN, HKG, KOR, TWN, MYS, PHL, SGP, THA, MAC, BRN, JPN, NZL	CHN, KOR, TWN, MYS, PHL, IND	CAN	MYS, PHL	THA, BRN, AUS, NZL	KOR, KHM, MAC, JPN	CHN, HKG, KOR, TWN, IDN, MYS, PHL, SGP, THA, IND, MAC, BRN, JPN, AUS, NZL, CAN	AUS, NZL	KHM
	2		KHM, IND, AUS, CAN	HKG, KHM, SGP, THA, MAC, BRN		HKG, MAC		MYS, SGP, THA			MMR
	3		LAO, MMR	AUS, NZL		TWN, SGP		CHN, IND			VNM
	4							AUS, NZL			
	5										

Table 6.46 OCA-MBC preparedness assessment (continued)

Common sets of countries

		Dollar	Currency Basket	Yen	Euro	Yuan
Pre-crisis	1	HKG, KOR, TWN, MYS, SGP, MAC	CHN, KOR, TWN, MYS, PHL, IND, AUS, NZL	IDN, THA	HKG, KOR, TWN, MYS, SGP, THA, MAC, BRN, JPN, CAN	-
	2	CHN, IND, AUS, NZL	HKG, IDN, SGP, THA, MAC, BRN		CHN, IDN, PHL, IND, AUS, NZL	
	3	KHM, IDN, THA, JPN				
Crisis	1	KOR, MYS, PHL, SGP, THA, VNM, BRN, NZL	-	KOR, MYS, PHL, THA	CHN, HKG, KOR, TWN, KHM, PHL, IND, MAC, JPN	TWN, KHM, IND, AUS, CAN
	2	CHN, HKG, MAC, JPN		VNM, AUS, NZL, CAN	MYS, SGP, THA, VNM, BRN, CAN	HKG, KOR, PHL, MAC, JPN
	3	KHM, IND, AUS		TWN, SGP, BRN	AUS, NZL	
	4			KHM, IND		
	5			HKG, MAC		
Post-crisis 7V	1	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN	KOR, BRN, NZL	IDN, IND, AUS, CAN	HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN
	2	KOR, BRN		AUS, CAN		KOR, BRN, CAN
	3					IDN, LAO, MMR, AUS, NZL
All Periods 7V	1	HKG, MAC	-	-	-	-
	2	MYS, SGP				
Post-crisis 8V	1	CHN, TWN, MYS, THA, VNM, IND	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	CHN, TWN, VNM, IND	HKG, SGP, JPN
	2	HKG, SGP, JPN	IDN, AUS, NZL	KOR, IDN, LAO, MMR, AUS, NZL, CAN	HKG, MYS, SGP, THA	TWN, KHM
	3	KHM, PHL, MAC			KOR, KHM, MAC, JPN	MYS, THA
	4	AUS, NZL			AUS, NZL	VNM, IND
	5					AUS, NZL
All Periods 8V	1	-	-		-	-

Table 6.47 OCA-MBC-preparedness cross-anchor subclusters

		PRE	CRS	PST		All			PRE	CRS	PST		All	
				7V	8V	7V	8V				7V	8V	7V	8V
DB	1	HKG, SGP, MAC	-	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	CHN, TWN, MYS, THA, VNM, IND	-	-	DY	IDN, THA	KOR, MYS, PHL, THA	KOR, BRN	CHN, TWN, MYS, THA, VNM, IND	-	-
	2	CHN, IND, AUS, NZL		KOR, BRN	KHM, PHL, MAC					SGP, VNM, BRN, NZL		KHM, PHL, MAC		
	3	KOR, TWN, MYS			HKG, SGP					KHM, IND		HKG, SGP		
	4	IDN, THA			AUS, NZL					HKG, MAC		AUS, NZL		
DE	1	HKG, KOR, TWN, MYS, SGP, MAC	MYS, SGP, THA, VNM, BRN	-	CHN, TWN, VNM, IND	-	-	DR	-	KHM, IND, AUS	-	MYS, THA	-	-
	2	CHN, IND, AUS, NZL	CHN, HKG, MAC, JPN		HKG, SGP					HKG, MAC, JPN		HKG, SGP, JPN		
	3	THA, JPN	KOR, PHL		KHM, MAC					KOR, PHL		VNM, IND		
	4		KHM, IND		AUS, NZL							AUS, NZL		
BY	1	IDN, THA	-	KOR, BRN	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	-	-	BE	CHN, PHL, IND, AUS, NZL	-	-	CHN, TWN, VNM, IND	-	-
	2				IDN, AUS, NZL				HKG, SGP, THA, MAC, BRN			HKG, MYS, SGP, THA		
	3								KOR, TWN, MYS			KOR, KHM, MAC		

Table 6.47 OCA-MBC-preparedness cross-anchor subclusters (continued)

		PRE	CRS	PST		All				PRE	CRS	PST		All	
				7V	8V	7V	8V					7V	8V	7V	8V
BR	1	-	-	HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN	HKG, SGP	-	-	YE	-	KOR, PHL	AUS, CAN	CHN, TWN, VNM, IND	-	-	
	2			KOR, BRN	TWN, KHM					MYS, THA		HKG, MYS, SGP, THA			
	3				MYS, THA					VNM, CAN		KHM, MAC			
	4				VNM, IND					AUS, NZL		AUS, NZL			
	5				AUS, NZL					SGP, BRN					
	6									KHM, IND					
	7									HKG, MAC					
YR	1	-	KOR, PHL	KOR, BRN	HKG, SGP	-	-	ER	-	HKG, KOR, PHL, MAC, JPN	IDN, AUS	VNM, IND	-	-	
	2		AUS, CAN		TWN, KHM					TWN, KHM, IND		HKG, SGP			
	3		HKG, MAC		MYS, THA							MYS, THA			
	4		KHM, IND		VNM, IND							AUS, NZL			
	5				AUS, NZL										
DBY	1	IDN, THA	-	KOR, BRN	CHN, TWN, MYS, THA, VNM, IND	-	-	DBE	CHN, IND, AUS, NZL	-	-	CHN, TWN, MYS, THA, VNM, IND	-	-	
	2				HKG, SGP				KOR, TWN, MYS			KHM, PHL, MAC			
	3				KHM, PHL, MAC				HKG, SGP, MAC			HKG, SGP			
	4				AUS, NZL							AUS, NZL			
DBR	1	-	-	HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	HKG, SGP	-	-	DYE	-	SGP, VNM, BRN	-	CHN, TWN, MYS, THA, VNM, IND	-	-	
	2			KOR, BRN	MYS, THA					KOR, PHL		KHM, PHL, MAC			
	3				VNM, IND					MYS, THA		HKG, SGP			
	4				AUS, NZL					KHM, IND		AUS, NZL			
	5									HKG, MAC					
DYR	1	-	KOR, PHL	KOR, BRN	HKG, SGP	-	-	DER	-	HKG, MAC, JPN	-	HKG, SGP	-	-	
	2		KHM, IND		MYS, THA					KOR, PHL		VNM, IND			
	3		HKG, MAC		VNM, IND					KHM, IND		AUS, NZL			
	4				AUS, NZL										
BYE	1	-	-	-	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	-	-	BYR	-	-	KOR, BRN	HKG, SGP	-	-	
	2				IDN, AUS, NZL							TWN, KHM			
	3											MYS, THA			
	4											VNM, IND			
	5											AUS, NZL			
BER	1	-	-	-	HKG, SGP	-	-	YER	-	KOR, PHL	-	HKG, SGP	-	-	
	2				MYS, THA					HKG, MAC		MYS, THA			
	3				VNM, IND					KHM, IND		VNM, IND			
	4											AUS, NZL			
DB YE	1	-	-	-	CHN, TWN, VNM, IND	-	-	DB YR	-	-	KOR, BRN	HKG, SGP	-	-	
	2				KHM, PHL, MAC							MYS, THA			
	3				HKG, SGP							VNM, IND			
	4				MYS, THA,							AUS, NZL			
	5				AUS, NZL										
DB ER	1	-	-	-	HKG, SGP	-	-	DY ER	-	KOR, PHL	-	HKG, SGP	-	-	
	2				MYS, THA					KHM, IND		MYS, THA			
	3				VNM, IND					HKG, MAC		VNM, IND			
	4				AUS, NZL							AUS, NZL			
BY ER	1	-	-	-	HKG, SGP	-	-	DB YER	-	-	-	HKG, SGP	-	-	
	2				TWN, KHM							MYS, THA			
	3				MYS, THA							VNM, IND			
	4				VNM, IND							AUS, NZL			
	5				AUS, NZL										

Note: D=Dollar; B=Currency Basket; Y=Yen; E=Euro/Mark; R=Yuan (Renminbi)

Table 6.48 OCA-MBC-preparedness clusters

	Dollar									
	Cluster	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
	Pre-crisis									
	All Cases	25.002	.182	7.752	6.813	.215	3.253	2.539	-	
1	**CHN, HKG, KOR, TWN, KHM, IDN, MYS, PHL, SGP, THA, IND, MAC, BRN, JPN, AUS, NZL, CAN**, PAN, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	25.171	.244	3.539	1.883	.274	3.494	1.655	-	4
2	**LAO, MMR, VNM**, ECU1, ELS1, GTM1	22.850	.092	18.783	4.784	-.121	2.350	5.304	-	1
3	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	2
	Crisis									
	All Cases	24.964	.121	9.006	7.790	.048	3.188	1.591	-	
1	**CHN, HKG, KOR, TWN, MYS, PHL, SGP, THA, VNM, MAC, BRN, JPN, NZL**, EMU2	18.001	-.201	2.622	3.140	.191	2.760	.820	-	2
2	**KHM, IND, AUS, CAN**, PAN, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU3	34.069	.696	3.838	1.819	-.129	3.653	1.502	-	4
3	**IDN, LAO, MMR,** ECU1, ELS1, ECU2	21.483	-.375	35.100	31.579	.070	3.178	3.138	-	1
	Post-crisis 7V									
	All Cases	24.154	.264	6.190	6.454	-.159	3.266	1.351	-	
1	**CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, CAN**, PAN, ELS2, ELS3, GTM3, EMU1, EMU2, EMU3	24.475	.365	1.997	1.137	-.217	3.259	.840	-	2
2	**JPN**, GTM1, GTM2, ECU3	32.917	.748	6.842	3.035	-.676	2.394	1.587	-	1
3	**LAO, MMR**, ELS1	13.695	-.290	14.140	3.096	.232	2.863	2.773	-	0
4	IDN, AUS, NZL	11.715	-.119	2.659	4.946	-.086	5.535	1.722	-	1
5	ECU1, ECU2	37.607	-.364	42.282	76.421	.764	2.282	3.023	-	3
	Post-crisis 8V									
	All Cases	24.154	.264	6.190	6.454	-.159	3.266	1.351	68.66	
1	**CHN, HKG, KOR, TWN, KHM, IDN, LAO, MYS, MMR, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, AUS, NZL, CAN**, PAN, ECU1, ELS1, GTM1, GTM2, ELS2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	23.862	.299	4.786	2.058	-.190	3.293	1.294	68.66	5
2	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	3

	Currency Basket									
	Cluster	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
	Pre-crisis									
	All Cases	23.772	.104	8.208	7.704	.148	3.292	2.539	-	
1	**CHN, HKG, KOR, TWN, IDN, MYS, PHL, SGP, THA, IND, MAC, BRN, AUS, NZL**, EMU1, EMU2, EMU3	17.104	.042	4.107	3.024	.206	3.670	1.367	-	3
2	**CAN**, PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	39.615	.374	5.445	3.130	-.029	3.200	1.476	-	2
3	KHM, LAO, MMR, VNM	9.543	-.010	14.813	3.526	.004	2.396	7.942	-	1
4	ECU1, ECU2	37.607	-.364	42.282	76.421	.764	2.282	3.023	-	1
	Crisis									
	All Cases	22.670	.212	9.235	9.321	.053	3.226	1.591	-	
1	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN	14.554	.123	3.276	5.864	.057	2.653	.999	-	0
2	**CAN**, PAN, ELS2, ELS3, GTM3, EMU1, EMU2, EMU3	32.985	.580	1.691	1.140	.343	4.045	1.199	-	2
3	**MMR**, ECU1, ELS1	28.190	-.279	23.669	5.677	.330	2.532	2.800	-	0
4	IDN, AUS, NZL	12.864	.025	8.261	9.020	-.361	5.427	2.416	-	1
5	GTM1, GTM2, ECU3	37.207	.687	8.133	3.183	-.668	2.475	1.587	-	2
6	LAO	4.070	.127	68.106	12.122	-.188	2.674	5.252	-	1
7	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	1
	Post-crisis 7V									
	All Cases	22.670	.212	9.235	9.321	.053	3.226	1.591	-	
1	**CHN, HKG, KOR, TWN, KHM, LAO, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN**, EMU1, EMU2, EMU3	14.821	.185	6.753	5.362	.100	2.964	1.303	-	0
2	**CAN**, PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	39.361	.537	5.155	2.395	-.066	3.176	1.426	-	4
3	IDN, MMR, AUS, NZL	11.005	-.115	12.440	8.182	-.265	4.923	2.838	-	1
4	ECU1, ECU2	37.607	-.364	42.282	76.421	.764	2.282	3.023	-	2
	Post-crisis 8V									
	All Cases	22.010	.217	6.524	6.892	.071	3.301	1.351	67.89	
1	**CHN, HKG, KOR, TWN, KHM, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, AUS, NZL, CAN**, PAN, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	19.785	.272	3.558	1.961	.039	3.461	1.162	67.89	4
2	**LAO, MMR**, ECU1, ELS1, GTM1	24.862	-.017	17.948	4.561	-.032	2.572	2.654	69.44	1
3	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	3

	Yen									
	Cluster	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
	Pre-crisis									
	All Cases	25.216	.054	8.757	9.257	-.066	3.292	2.539	-	
1	**IDN, THA, BRN, AUS, NZL**, PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	15.814	-.101	5.513	9.074	-.843	4.026	1.106	-	1
2	CHN, HKG, KOR, TWN, MYS, PHL, SGP, IND, CAN	32.567	.275	4.786	2.643	.215	3.330	1.396	-	3
3	KHM, LAO, MMR, VNM, MAC	13.656	-.209	13.894	3.886	.214	2.253	7.154	-	1
4	ECU1, ECU2	37.607	-.364	42.282	76.421	.764	2.282	3.023	-	2
	Crisis									
	All Cases	21.558	.423	9.357	9.290	.017	3.226	1.591	-	
1	**CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, AUS, NZL, CAN**, EMU1, EMU2, EMU3	14.050	.462	2.732	4.946	-.077	3.267	.999	-	1
2	PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	39.674	.510	5.682	2.200	-.087	3.016	1.426	-	2
3	IDN, MMR, ECU1	22.934	.311	27.209	8.909	.623	3.986	2.988	-	1
4	LAO	3.221	.639	69.312	11.836	-.063	2.674	5.252	-	2
5	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	1

Table 6.48 OCA-MBC-preparedness clusters (continued)

	Yen Cluster	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
	Post-crisis 7V									
	All Cases	20.644	.265	7.133	7.179	.380	3.301	1.351		
1	CHN, HKG, TWN, KHM, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC	11.090	.473	3.776	2.800	.957	3.361	.864	-	1
2	**AUS, CAN**, EMU1, EMU2, EMU3	15.316	.320	1.966	2.034	.288	4.973	n.a.	-	2
3	**KOR, BRN, NZL**, ELS1	23.055	-.516	4.952	3.937	-.021	2.392	.838	-	0
4	GTM1, GTM2, ECU3	37.207	.687	8.133	3.183	-.668	2.475	1.587	-	1
5	PAN, ELS2, ELS3, GTM3	41.458	.545	2.227	.676	.330	3.077	1.241	-	2
6	ECU1, ECU2	37.607	-.364	42.282	76.421	.764	2.282	3.023	-	0
7	LAO	1.644	.489	9.059	2.432	-.838	2.442	4.457	-	1
8	MMR	4.401	-.720	26.361	2.674	-.739	4.119	2.009	-	0
	Post-crisis 8V									
	All Cases	20.644	.265	7.133	7.179	.380	3.301	1.351	67.89	
1	**CHN, HKG, KOR, TWN, KHM, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, AUS, NZL, CAN**, PAN, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	19.392	.361	3.219	2.269	.488	3.475	.954	67.82	4
2	**LAO, MMR**, ECU1, ELS1, GTM1	24.578	-.001	18.690	4.717	-.243	2.572	2.654	69.44	1
3	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	3

	Euro Cluster	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
	Pre-crisis									
	All Cases	20.536	.021	8.032	7.594	.158	3.253	2.539	-	
1	**CHN, HKG, KOR, TWN, IDN, MYS, PHL, SGP, THA, IND, MAC, BRN, JPN, AUS, NZL, CAN**, EMU1, EMU2, EMU3	12.514	-.088	3.951	3.406	.119	3.654	1.367	-	2
2	PAN, ECU1, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	40.241	.365	8.917	2.595	.024	2.880	1.677	-	3
3	KHM, LAO, MMR, VNM	11.061	-.012	14.657	3.843	.443	2.396	7.942	-	1
4	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	1
	Crisis									
	All Cases	19.532	.176	8.919	11.521	.062	3.188	1.591	-	
1	**CHN, HKG, KOR, TWN, KHM, IDN, MYS, MMR, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, AUS, NZL, CAN,** PAN, ECU1, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	19.404	.217	5.638	7.068	.051	3.230	1.390	-	4
2	**LAO**, ECU2	21.513	-.451	59.779	80.546	.231	2.540	4.006	-	3
	Post-crisis 7V									
	All Cases	19.220	.145	6.286	7.030	.175	3.266	1.351		
1	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, MAC, BRN, JPN, NZL	9.189	-.100	1.785	2.735	.352	2.603	.686	-	1
2	**IDN, VNM, IND, AUS, CAN,** EMU1, EMU2, EMU3	13.770	.405	2.752	2.605	.192	5.130	1.164	-	1
3	PAN, ELS2, GTM2, ELS3, GTM3	41.305	.608	2.664	0.841	.042	2.993	1.208	-	1
4	ELS1, GTM1, ECU3	36.124	.249	10.853	4.574	-.317	2.266	1.846	-	0
5	ECU1	41.699	.150	33.452	5.689	.737	2.158	3.287	-	1
6	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	1
7	LAO	9.068	.772	7.239	2.625	-.639	2.442	4.457	-	2
8	MMR	5.473	-.970	24.554	2.215	-.620	4.119	2.009	-	0
	Post-crisis 8V									
	All Cases	19.220	.145	6.286	7.030	.175	3.266	1.351	68.66	
1	**CHN, HKG, KOR, TWN, KHM, IDN, LAO, MYS, MMR, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, AUS, NZL, CAN**, EMU1, EMU2, EMU3	10.616	.076	3.348	2.662	.211	3.541	1.094	72.41	3
2	PAN, ECU1, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	39.622	.438	8.815	2.624	-.006	2.658	1.651	50.83	3
3	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	2

	Yuan Cluster	TRA (%)	BUS	INF (%)	RER[1]	INT	EXP	DEB	LAB	N[2]
	Pre-crisis									
	All Cases	17.692	.237	10.527	8.285	.086	3.218	2.610	-	
1	HKG, KOR, TWN, IDN, MYS, PHL, SGP, THA, IND, MAC, BRN, JPN, AUS, NZL, CAN	4.788	.215	9.149	4.804	.227	3.457	1.421	-	0
2	PAN, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	33.779	.497	2.925	.852	.122	3.650	1.381	-	4
3	**KHM, LAO, MMR, VNM**, ELS1, GTM1	19.181	.099	14.791	5.426	-.518	2.287	5.881	-	1
4	ECU1, ECU2	37.607	-.364	42.282	76.421	.764	2.282	3.023	-	2
	Crisis									
	All Cases									
1	All Cases	17.692	.237	10.527	8.285	.086	3.218	2.610	-	
2	**HKG, KOR, PHL, MAC, JPN, NZL**, PAN, ELS2, ELS3, GTM3, EMU1, EMU2, EMU3	21.708	.326	5.296	2.650	.322	3.525	1.628	-	2
3	**TWN, KHM, IND, AUS, CAN**, ELS1,	8.361	.274	9.930	4.661	.024	3.671	3.002	-	1
4	**VNM**, GTM1, GTM2, ECU3	28.344	.490	11.915	3.827	-.751	2.693	2.421	-	1
5	MYS, SGP, THA, BRN	1.774	.069	9.984	4.614	-.002	3.109	.545	-	0
6	**IDN, MMR**, ECU1	23.721	.171	17.707	5.218	.294	2.530	4.994	-	0
7	LAO	8.611	-.177	16.614	6.139	-.086	1.927	10.621	-	1
8	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	2
	Post-crisis 7V									
	All Cases	20.995	.286	6.616	6.731	.360	3.268	1.388	-	
1	**HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, CAN**, PAN, ELS2, GTM2, ELS3, GTM3, EMU1, EMU2, EMU3	20.298	.373	2.349	1.316	.564	3.096	.889	-	4
2	**IDN, LAO, MMR, AUS, NZL**, ECU1, ELS1, GTM1, ECU2, ECU3	23.283	.001	16.009	18.600	-.024	3.453	2.471	-	3
	Post-crisis 8V									
	All Cases	20.995	.286	6.616	6.731	.360	3.268	1.388	69.0	
1	**HKG, KOR, TWN, KHM, IDN, LAO, MYS, MMR, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, AUS, NZL, CAN**, PAN, ECU1, ELS1, GTM1, GTM2, ELS2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	20.592	.324	5.181	2.202	.346	3.295	1.330	69.0	6
2	ECU2	33.514	-.879	51.111	147.15	.791	2.406	2.760	-	2

Notes: 1 Standard deviation ($x10^2$) of the log difference in bilateral real exchange rate. 2 Number of variables with highest degree of conformity to OCA criteria. 3 'n.a.' for not applicable.
Source: Model-based cluster analysis. See Appendix A for data description.

6.4.3.2 Preparedness Assessment using Weighted Criteria

Table 6.49 puts together the Asian-plus-benchmark groupings using the original unweighted criteria (columns '1') and those using the weighted criteria (columns '2'). Recall that under weighted criteria, the sum of the 'benefit' criteria and the sum of the 'cost' criteria are weighted equally.

Cross-weighting Asian-plus-benchmark subgroupings are placed in columns 2 of Table 6.50. Columns 1 contain the cross-weighting Asian-only subgroups. The common set of countries between the two subgroups should maintain common OCA features and levels of preparedness even when the criteria are weighted. Non-singleton common sets are shaded in columns 1.

For pre-crisis period, three common subclusters can be seen under dollar and euro anchors. For crisis period, all anchors except the basket anchor exhibit common sets of countries. For post-crisis 7V period, substantial common sets can be found under dollar and basket anchors. For post-crisis 8V period, substantial common sets are present under dollar and yen anchors.

Remarkably, based on 7-variable findings the subclusters of Hong Kong and Macau, the effective dollar areas and Malaysia-Singapore possess common OCA features and levels of preparedness regardless of criteria weighting and period under the dollar anchor. Singapore and Brunei are seen together in some of the common sets but not consistently over the periods.

Using 8 variables for post-crisis period, the subcluster of Australia-NewZealand displays common OCA features and level of preparedness regardless of criteria weighting over the periods under the euro anchor.

In light of the above, the US reference seems to have consistently produced more substantial common sets and hence might be more suitable as the monetary anchor country compared to other references.

Table 6.49 OCA-MBC-preparedness-weighting assessment

		Dollar		Currency Basket		Yen		Euro		Yuan	
		1	2	1	2	1	2	1	2	1	2
Pre-crisis	1	**CHN, HKG, KOR, TWN, KHM, IDN, MYS, PHL, SGP, THA, IND, MAC, BRN, JPN, AUS, NZL, CAN**, PAN, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	**CHN, HKG, KOR, TWN, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, AUS, NZL, CAN,** PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	**CHN, HKG, KOR, TWN, IDN, MYS, PHL, SGP, THA, IND, MAC, BRN, AUS, NZL**, EMU1, EMU2, EMU3	CHN, HKG, KOR, TWN, IDN, MYS, SGP, THA, IND, MAC, BRN, NZL	**IDN, THA, BRN, AUS, NZL,** PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	**HKG, KOR, TWN, IDN, MYS, PHL, SGP, THA, IND, MAC, BRN, AUS, NZL**, PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	**CHN, HKG, KOR, TWN, IDN, MYS, PHL, SGP, THA, IND, MAC, BRN, JPN, AUS, NZL, CAN**, EMU1, EMU2, EMU3	**CHN, HKG, KOR, TWN, IDN, MYS, PHL, SGP, THA, IND, MAC, BRN, JPN, AUS, NZL, CAN**, EMU1, EMU2, EMU3	HKG, KOR, TWN, IDN, MYS, PHL, SGP, THA, IND, MAC, BRN, JPN, AUS, NZL, CAN	HKG, KOR, TWN, KHM, IDN, LAO, MYS, MMR, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, AUS, NZL, CAN
	2	**LAO, MMR, VNM**, ECU1, ELS1, GTM1	KHM, LAO, MMR	**CAN**, PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	CHN, HKG, KOR, TWN, MYS, PHL, SGP, IND, CAN	**CHN, KHM, LAO, MMR, VNM, CAN**, ECU1, ECU2,	PAN, ECU1, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	PAN, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3
	3	ECU2	ECU1, ECU2	KHM, LAO, MMR, VNM	**PHL, AUS, CAN**, EMU1, EMU2, EMU3	KHM, LAO, MMR, VNM, MAC		KHM, LAO, MMR, VNM	KHM, LAO, MMR, VNM	**KHM, LAO, MMR, VNM**, ELS1, GTM1	ECU1, ECU2
	4			ECU1, ECU2	KHM, LAO, MMR, VNM	ECU1, ECU2		ECU2	ECU1, ECU2	ECU1, ECU2	
	5				ECU1, ECU2						
Crisis	1	**CHN, HKG, KOR, TWN, MYS, PHL, SGP, THA, VNM, MAC, BRN, JPN, NZL**, EMU2	**CHN, HKG, KOR, TWN, MYS, PHL, SGP, THA, VNM, MAC, BRN, JPN, NZL**, EMU2	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, NZL	**CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, AUS, NZL, CAN,** EMU1, EMU2, EMU3	**HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, AUS, NZL, CAN**, PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	**CHN, HKG, KOR, TWN, KHM, IDN, MYS, MMR, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, AUS, NZL, CAN**, PAN, ECU1, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	**CHN, HKG, KOR, TWN, KHM, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, AUS, NZL, CAN**, EMU1, EMU2, EMU3	**HKG, KOR, PHL, MAC, JPN, NZL**, PAN, ELS2, ELS3, GTM3, EMU1, EMU2, EMU3	TWN, KHM, MYS, SGP, THA, VNM, IND, BRN, AUS, NZL, CAN
	2	**KHM, IND, AUS, CAN**, PAN, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU3	**KHM, IND, AUS, CAN**, PAN, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU3	**CAN**, PAN, ELS2, ELS3, GTM3, EMU1, EMU2, EMU3	**CAN**, PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	**CHN, IDN, LAO, MMR**, ECU1, ECU2	**LAO**, ECU2	PAN, ECU1, ELS1, GTM1, ECU2, ELS2, GTM2, ECU3, ELS3, GTM3	**TWN, KHM, IND, AUS, CAN**, ELS1	PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3
	3	**IDN, LAO, MMR**, ECU1, ELS1, ECU2	**IDN, LAO, MMR**, ECU1, ELS1, ECU2	**MMR**, ECU1, ELS1	**IDN, AUS**, EMU1, EMU2, EMU3	**IDN, MMR**, ECU1			**MMR**, ECU2	**VNM**, GTM1, GTM2, ECU3	**HKG, KOR, PHL, MAC, JPN**, EMU1, EMU2, EMU3
	4			IDN, AUS, NZL	ECU1, ECU2	LAO				MYS, SGP, THA, BRN	IDN, MMR
	5			GTM1, GTM2, ECU3	LAO, MMR	ECU2				**IDN, MMR**, ECU1	ECU1
	6			LAO						LAO	LAO
	7			ECU2						ECU2	ECU2

Table 6.49 OCA-MBC-preparedness-weighting assessment (continued)

		Dollar		Currency Basket		Yen		Euro		Yuan	
		1	2	1	2	1	2	1	2	1	2
Post-crisis 7V	1	**CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, CAN**, PAN, ELS2, ELS3, GTM3, EMU1, EMU2, EMU3	**CHN, HKG, KOR, TWN, KHM, LAO, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN**, PAN, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	**CHN, HKG, KOR, TWN, KHM, LAO, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN**, EMU1, EMU2, EMU3	**CHN, HKG, KOR, TWN, KHM, LAO, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN**, EMU1, EMU2, EMU3	CHN, HKG, TWN, KHM, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC	**CHN, HKG, TWN, KHM, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC**, EMU1, EMU3	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, MAC, BRN, JPN, NZL	CHN, HKG, KOR, TWN, KHM, LAO, MYS, PHL, SGP, THA, VNM, MAC, BRN, JPN	**HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, CAN**, PAN, ELS2, GTM2, ELS3, GTM3, EMU1, EMU2, EMU3	HKG, TWN, KHM, IDN, PHL, SGP, VNM, IND, JPN
	2	**JPN**, GTM1, GTM2, ECU3	**IDN, MMR, AUS, NZL, CAN**, ELS1, GTM1	**CAN**, PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	**CAN**, PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	**AUS, CAN**, EMU1, EMU2, EMU3	**BRN**, PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	**IDN, VNM, IND, AUS, CAN,** EMU1, EMU2, EMU3	PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	**IDN, LAO, MMR, AUS, NZL**, ECU1, ELS1, GTM1, ECU2, ECU3	**MAC**, PAN, ELS2, ELS3, EMU2, EMU3
	3	**LAO, MMR**, ELS1	ECU1, ECU2	IDN, MMR, AUS, NZL	IDN, MMR, AUS, NZL	**KOR, BRN, NZL**, ELS1	**KOR, AUS, NZL, CAN**, EMU2	PAN, ELS2, GTM2, ELS3, GTM3	**IDN, MMR, IND, AUS, NZL, CAN,** EMU1, EMU2, EMU3		ELS1, GTM1, GTM2, GTM3
	4	IDN, AUS, NZL		ECU1, ECU2	ECU1, ECU2	GTM1, GTM2, ECU3	MMR	ELS1, GTM1, ECU3	ECU1, ECU2		**KOR, MYS, THA, BRN, CAN,** EMU1
	5	ECU1, ECU2				PAN, ELS2, ELS3, GTM3	ECU1	ECU1			MMR, AUS, NZL
	6					ECU1, ECU2	ECU2	ECU2			**LAO**, ECU3
	7					LAO	LAO	LAO			ECU1, ECU2
	8					MMR		MMR			
All Periods 7V	1	CHN, HKG, KOR, TWN, MYS, PHL, SGP, THA, MAC, BRN, JPN, NZL,	CHN, HKG, KOR, TWN, MYS, PHL, SGP, THA, VNM, MAC, BRN, JPN	CAN	CAN	BRN, NZL		IDN, IND, AUS, CAN		KHM	
	2	KHM, IND, CAN	AUS, CAN			AUS				MMR	
	3	LAO, MMR	IDN							VNM	
	4		NZL								
	5		IND								
	6										
Post-crisis 8V	1	**CHN, HKG, KOR, TWN, KHM, IDN, LAO, MYS, MMR, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, AUS, NZL, CAN**, PAN, ECU1, ELS1, GTM1, GTM2, ELS2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	**CHN, HKG, KOR, TWN, KHM, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, AUS, NZL, CAN**, PAN, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	**CHN, HKG, KOR, TWN, KHM, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, AUS, NZL, CAN**, PAN, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	CHN, HKG, KOR, TWN, KHM, MYS, THA, VNM, MAC, BRN	**CHN, HKG, KOR, TWN, KHM, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, AUS, NZL, CAN**, PAN, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	**CHN, HKG, KOR, TWN, KHM, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, AUS, NZL, CAN**, PAN, ELS2, GTM2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	**CHN, HKG, KOR, TWN, KHM, IDN, LAO, MYS, MMR, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, AUS, NZL, CAN**, EMU1, EMU2, EMU3	**IDN, MMR, PHL, SGP, IND, JPN, AUS, NZL, CAN,** EMU1, EMU2, EMU3	**HKG, KOR, TWN, KHM, IDN, LAO, MYS, MMR, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, AUS, NZL, CAN**, PAN, ECU1, ELS1, GTM1, GTM2, ELS2, ECU3, ELS3, GTM3, EMU1, EMU2, EMU3	**PHL, MAC**, PAN, ECU1, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3
	2	ECU2	**LAO, MMR**, ECU1, ELS1, GTM1, ECU2	**LAO, MMR**, ECU1, ELS1, GTM1	**IDN, MMR, PHL, SGP, IND, AUS, NZL,** EMU1, EMU2, EMU3	**LAO, MMR**, ECU1, ELS1, GTM1	**LAO, MMR**, ECU1, ELS1, GTM1, ECU2	PAN, ECU1, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	CHN, HKG, KOR, TWN, KHM, MYS, THA, VNM, MAC, BRN	ECU2	**KOR, TWN, KHM, IDN, LAO, MMR, VNM, IND**, EMU1, EMU2, EMU3
	3			ECU2	**CAN**, PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3	ECU2		ECU2	PAN, ELS1, GTM1, ELS2, GTM2, ECU3, ELS3, GTM3		HKG, MYS, SGP, THA, BRN, JPN, AUS, NZL, CAN
	4				LAO				ECU1, ECU2		ECU2
	5				ECU1, ECU2				LAO		
All Periods 8V	1	CHN, HKG, KOR, TWN, MYS, PHL, SGP, THA, MAC, BRN, JPN, NZL	CHN, HKG, KOR, TWN, MYS, PHL, SGP, THA, VNM, MAC, BRN, JPN, NZL	CAN	CAN	THA, BRN, AUS, NZL	HKG, KOR, TWN, MYS, PHL, SGP, THA, IND, MAC, BRN, AUS, NZL	CHN, HKG, KOR, TWN, IDN, MYS, PHL, SGP, THA, IND, MAC, BRN, JPN, AUS, NZL, CAN	IDN, PHL, SGP, IND, JPN, AUS, NZL, CAN	KHM	-
	2	KHM, IND, AUS, CAN	IND, AUS, CAN		AUS		LAO, MMR			MMR	
	3	LAO, MMR	IDN				KHM, VNM			VNM	
	4						IDN				
	5						CAN				
	6						CHN				

Table 6.50 MBC cross-weighting and cross-preparedness-weighting subclusters

		Dollar		Currency Basket		Yen		Euro		Yuan	
		1	2	1	2	1	2	1	2	1	2
Pre-crisis	1	HKG, KOR, TWN, MYS, SGP, MAC	CHN, HKG, KOR, TWN, IDN, MYS, PHL, SGP, THA, IND, MAC, BRN, JPN, AUS, NZL, CAN	CHN, KOR, TWN, MYS, IND, AUS, NZL	PHL, AUS	HKG, TWN, SGP, MAC	IDN, THA, BRN, AUS, NZL	HKG, KOR, TWN, MYS, SGP, THA, MAC, BRN, JPN, CAN	CHN, HKG, KOR, TWN, IDN, MYS, PHL, SGP, THA, IND, MAC, BRN, JPN, AUS, NZL, CAN	KOR, TWN, IDN, SGP	-
	2	CHN, IND, AUS, NZL	VNM	HKG, IDN, SGP, THA, MAC, BRN	CAN	KOR, MYS, AUS		CHN, IDN, AUS, NZL		AUS, CAN	
	3	IDN, THA, JPN		LAO, MMR		PHL, IND		LAO, MMR, VNM		PHL, IND	
	4					IDN, THA		PHL, IND			
	5					KHM, NZL					
Crisis	1	KOR, MYS, PHL, SGP, THA, VNM, BRN, NZL	CHN, HKG, KOR, TWN, MYS, PHL, SGP, THA, VNM, MAC, BRN, JPN, NZL	CHN, KOR, TWN, MYS, SGP, MAC, BRN	CAN	KOR, MYS, PHL, THA	HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, AUS, NZL, CAN	CHN, HKG, KOR, TWN, KHM, PHL, IND, MAC, JPN	CHN, HKG, KOR, TWN, KHM, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, AUS, NZL, CAN	TWN, KHM, SGP, IND, AUS, NZL, CAN	HKG, KOR, PHL, MAC, JPN
	2	TWN, KHM, IND, AUS	KHM, IND, AUS, CAN	HKG, KHM, PHL, THA, VNM, IND		VNM, AUS, NZL	IDN, MMR	MYS, THA, VNM	MMR	HKG, KOR, PHL, MAC, JPN	
	3	CHN, HKG, MAC, JPN	IDN, LAO, MMR	AUS, NZL		TWN, SGP, BRN	CHN	SGP, BRN, CAN		MYS, THA, VNM, BRN	
	4					KHM, MMR, IND		AUS, NZL			
	5					HKG, MAC					
	6					CHN, IDN					
Post-crisis 7V	1	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, MAC, BRN	CHN, HKG, KOR, TWN, KHM, LAO, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	AUS, CAN	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, MAC, JPN	IDN, IND, AUS, CAN	TWN, KHM, MYS, SGP, THA, VNM, IND, JPN	KOR, MYS, THA, BRN, CAN
	2	IDN, AUS, NZL	CAN	IDN, AUS, NZL	CAN	KOR, IDN, LAO, MMR, BRN, AUS, NZL, CAN	KOR, NZL	IDN, IND, AUS, NZL, CAN		HKG, PHL, MAC	LAO
	3	KOR, BRN		VNM, IND			BRN			BRN, CAN	MAC
	4									IDN, LAO	
	5									AUS, NZL	
All Periods 7V	1	HKG, MAC	CHN, HKG, KOR, TWN, MYS, PHL, SGP, THA, MAC, BRN	CHN, KOR, TWN, MYS	CAN	HKG, MAC	AUS	HKG, KOR, TWN, MAC, JPN	IDN, IND, AUS, CAN	TWN, SGP	-
	2	MYS, SGP	IND	SGP, MAC, BRN		TWN, SGP	NZL	AUS, NZL			
	3		MAC	AUS, NZL			BRN				
	4		CAN	HKG, THA							
Post-crisis 8V	1	CHN, TWN, MYS, THA, VNM, IND	CHN, HKG, KOR, TWN, KHM, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, JPN, AUS, NZL, CAN	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN	IDN, PHL, SGP, IND, AUS, NZL	CHN, HKG, TWN, KHM, MYS, SGP, THA, VNM, IND, MAC	CHN, HKG, KOR, TWN, KHM, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, AUS, NZL, CAN	CHN, TWN, VNM, IND	IDN, MMR, PHL, SGP, IND, JPN, AUS, NZL, CAN	HKG, SGP, JPN	KOR, TWN, KHM, IDN, LAO, MMR, VNM, IND
	2	HKG, SGP, JPN	LAO, MMR	IDN, AUS, NZL	MMR	KOR, IDN, AUS, NZL	LAO, MMR	KOR, KHM, MAC, JPN		TWN, KHM	PHL, MAC
	3	KHM, PHL, MAC			CAN			HKG, MYS, THA		MYS, THA	
	4	AUS, NZL						AUS, NZL		VNM, IND	
	5									AUS, NZL	
All Periods 8V	1	-	CHN, HKG, KOR, TWN, MYS, PHL, SGP, THA, VNM, MAC, BRN, JPN, NZL	CHN, KOR, TWN, MYS	CAN	TWN, SGP	THA, BRN, AUS, NZL	KOR, MAC, JPN	IDN, PHL, SGP, IND, JPN, AUS, NZL, CAN,	-	-
	2		IND, AUS, CAN	SGP, MAC, BRN		HKG, MAC		MYS, THA			
	3			AUS, NZL				AUS, NZL			
	4			HKG, THA							

6.4.4 Recapitulation

The section has discussed the results using model-based cluster analysis and OCA criteria. The following are the key findings using 7 variables unless specific mention to 8 variables is given.

Classifications

Using the original unweighted criteria, based on the average silhouettes over all objects, the reference country consistent with best partitioning is virtually the weighted-G3 reference and based on the structure of the partitions, the G3 anchor consistently generates highly convergent solutions for every period even when 8 variables are used for the post-crisis period.

Regardless of the post-crisis labor criterion, more substantial cross-period subsets are found under the basket and euro anchors. Particularly, the current monetary union members of Singapore and Brunei consistently share the same grouping over the periods under the basket anchor regardless of labor.

For the dollar areas of Hong Kong and Macau, they constantly share the same grouping over the periods by any anchor and by basket and yen anchors when 8 variables are used, compatible with their parallel exchange regimes.

For post-crisis period, HongKong-Singapore and Australia-NewZealand maintain their links over all anchors regardless of the labor criterion.

Classifications using Weighted Criteria

How have the configurations changed when benefits and costs are treated equally? In general, putting more weight on trade openness, the benefit variable which is measured relative to a reference, on the whole putting more weight on trade has brought the region closer together against Germany/EMU and against US but farther apart against China.

Specifically, the subcluster of Australia-NewZealand is not only unmoved by the

weighting but is also robust through the periods under the basket and the euro anchor regardless of the post-crisis labor criterion.

The effective dollar areas of Hong Kong and Macau are still stable in such a manner for dollar, yen, and euro anchors. The monetary union members of Singapore and Brunei still share the same grouping over the periods under the basket anchor even when the labor criterion is included.

For post-crisis period, irrespective of the labor criterion the subgroupings of Malaysia-Thailand and Australia-NewZealand are stable across all anchors.

Assessment of Preparedness using Unweighted Criteria

Based on the number of countries connected with the post-dollarization and/or post-euro benchmarks, in general the region on the whole could have been comparatively more ready for dollar, basket, or euro peg.

Remarkably, the effective dollar areas of Hong Kong and Macau, and the adjacent neighbors of Malaysia and Singapore are indicated to share similar OCA characteristics and levels of preparedness over the periods under the US reference. The existing monetary union members of Singapore and Brunei do share some groupings but not consistently over the periods.

No subgroupings which are present in the same Asian-only and Asian-plus-benchmark clusters are also at the same time present across all anchors.

Assessment of Preparedness using Weighted Criteria

Extremely few countries are indicated to commonly share OCA features and levels of preparedness regardless of criteria weighting. In general, the US reference appears to have consistently produced more of these countries for all periods when compared to other references.

Remarkably, the subclusters of Hong Kong and Macau, the effective dollar areas and Malaysia-Singapore still possess common OCA features and levels of preparedness over the periods under the dollar anchor even when criteria are weighted. This confirms the strict dollar pegs implemented by Hong Kong and Macau since the 1980s.

Meantime, using 8 variables for post-crisis period, Australia and New Zealand display common OCA features and level of preparedness regardless of criteria weighting over the periods under the euro anchor.

Singapore and Brunei are seen together in some of the common sets but not consistently over the periods.

6.5 Comparisons across Methods

The preceding sections have presented the results from three cluster analysis methods, namely hierarchical cluster analysis (HCM), fuzzy cluster analysis (FCM), and model-based cluster analysis (MBC) using OCA dimensions and the findings are somewhat different across the methods, most probably due to differences in the respective methodologies and algorithms used. The following general observations based on 7-variable results, unless specified 8 variables, may be noteworthy.

- Based on the average silhouettes over all objects, the reference country consistent with best partitioning differs depending on period for HCM and FCM but for MBC the weighted-G3 reference virtually corresponds to the most appropriate partitions over the periods.
- By HCM, the G3 reference is associated with more convergent arrangements; by FCM, it is the Germany/EMU reference; and by MBC it is the G3 reference once again.
- Weighted criteria have made the configurations more convergent against US by HCM, against Japan by FCM, and against US and against Germany/EMU by MBC.
- Based on the number of countries connected with the post-dollarization and/or post-

euro benchmarks, in general throughout the periods the region could have been more prepared for a fixed basket peg by HCM, for dollar peg by FCM, and for dollar, basket, or euro peg by MBC.

- By HCM, Singapore-Malaysia and Singapore-Korea-Malaysia-Taiwan are the links suggested to constantly maintain common OCA features and levels of preparedness over the periods by US and G3 references respectively. By FCM, no such links are found. By MBC, HongKong-Macau and Malaysia-Singapore links maintain those features by US reference; the same Singapore-Malaysia link has been found by HCM.
- For HCM and FCM, no countries which are indicated to share common OCA features and level of preparedness regardless of criteria weighting are also at the same time suggested to maintain those features over all the periods. Quite the opposite, by MBC, the subclusters of Hong Kong and Macau, and Malaysia and Singapore are found to share those features consistently over the periods by the US reference.

The succeeding sections compare the findings across the methods in detail and identify the subgroupings which are robust over the methods.

6.5.1 Classifications and PCA

First part of Table 6.51 collects the individual silhouettes of the countries by HCM, FCM, and MBC. Silhouette width is used here to assess the results over clustering methods (the reason for its use has been explained in Chapter 5). A high positive silhouette for an object indicates that it is more appropriately classified, that is, more tightly connected with its assigned cluster.

The second part of Table 6.51 shows the average number of clusters and some measures based on the silhouettes by reference country, period, and method from 7-variable findings.

Looking at the first item, the average number of clusters over methods, increasingly convergent configuration approximated by reduced clusters through periods can be observed when the reference of US, Japan, or China is used; the greatest reduction in the number of clusters on the whole is shown by the Japan reference. Based on the averages over periods, the smallest number of clusters is seen by the basket anchor.

From the second item, the average number of clusters over periods by method, over the reference countries FCM is associated with the fewest clusters. This could be due to the 'fuzzy' partitioning approach employed by FCM.

The rest of the items are measured over periods: the percentage of positive individual silhouettes, mean silhouette, and median silhouette. Based on the averages over the methods and over the references respectively, the basket anchor and the MBC are consistent with the most fitting partitions for the data. FCM, with its 'fuzzy' approach in assigning objects to clusters, provides the lowest mean and median silhouettes.

On the above evidence, in general the G3 reference appears to be consistent with the most symmetrical cluster configurations and the most data-fitting solutions whilst MBC is compatible with the most data-fitting solutions.

Despite the above, it is still compelling to compare the cluster solutions across the methods and identify subsets of countries which consistently appear across the three methods. These subgroupings can be regarded as 'robust' over the clustering methods.

Table 6.52 compares the original solutions over the cluster analysis methods for the US reference. Figure 6.21 exhibits the principal component analysis (PCA) plots which provide spatial distances between the objects.[57] Using the PCA plots as a reference, it is clear that the three clustering methods have partitioned the objects in different ways, justifying the importance to recognize linkages of countries which are robust over the

[57] Recall that for PCA used here, the chosen number of components depends on the *k*th component at which the slope in the scree plot starts to level off markedly. If that condition is not present, the components should collectively explain at least 60-70 percent of the variation in the data.

methods. These countries should be so close to each other as different ways of partitioning could not separate them. Tables and Figures E.1–E.4 in Appendix E present the results by other monetary anchors.

The cluster silhouettes are also given in the tables. Remarkably, the dollar-based post-crisis 8V Australia-NewZealand pair (see Table 6.52) obtains very high silhouette regardless of clustering method (even when compared to other clusters in the whole set of OCA results).

Cross-method subclusters are collected by monetary anchor in Table 6.53. Using 7 variables, notably the subclusters of Korea-Malaysia-Taiwan and Malaysia-Philippines are not only stable over the methods but also over the periods under the basket and the yen anchor respectively.

When labor criterion is included for post-crisis period, only Hong Kong and Macau, the effective dollar areas are robust over methods and periods and only against Japan. Also notable, they are linked consecutively over pre-crisis and crisis periods by the US and the China reference.

The monetary union constituents of Singapore and Brunei are placed together in some of the results but not consecutively over periods.

Table 6.54 displays the cross-method-and-anchor subclusters by period. No sets of countries which are robust over all methods and all periods are also robust across all anchors. Amongst the stable subgroups, HongKong-Singapore and Australia-NewZealand are robust over all anchors in the post-crisis 8V solutions. Since China is a reference country, China-HongKong and China-Vietnam are also robust over all anchors in the post-crisis 7V and post-crisis 8V solutions respectively.

Table 6.51 OCA silhouettes

	Dollar				Currency Basket				Yen				Euro				Yuan			
HCM																				
	PRE	CRS	PST		PRE	CRS	PST		PRE	CRS	PST		PRE	CRS	PST		PRE	CRS	PST	
			7V	8V			7V	8V			7V	8V			7V	8V			7V	8V
No. of clusters	8	8	9	10	5	10	5	9	10	4	9	9	11	11	9	9	11	8	11	12
1 CHN	.45	.58	.53	.35	.35	.05	.76	-.26	.00	.40	.66	.47	.59	.59	.27	.36	n.a.[1]	n.a.	n.a.	n.a.
2 HKG	.76	.40	.54	.52	.54	.05	.73	.50	.45	.52	.20	.26	.20	.53	.62	.57	.55	.54	.18	.29
3 KOR	.51	.50	.00	.00	.42	.03	.49	.46	.58	.66	.00	.00	.32	.08	.69	.45	.74	-.08	.00	.00
4 TWN	.54	-.25	.47	.21	.25	.50	.76	.38	.29	.53	.66	.51	-.24	.30	.17	-.05	.58	.31	.23	.09
5 KHM	.40	.00	.52	.56	.22	.39	.54	.64	.54	-.02	.88	.30	.00	.64	.61	.37	.00	.45	.65	.31
6 IDN	.69	.00	.00	.00	.36	.00	.53	.00	.68	.54	.59	.00	.00	.00	.00	.00	.57	.00	.00	.00
7 LAO	.25	.00	.00	.00	.53	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8 MYS	.35	.65	.33	.00	.53	.00	.76	.29	.65	.71	.60	.05	.63	.61	.23	.45	.06	.67	.11	.06
9 MMR	.52	.00	.00	.00	.60	.00	.00	.00	.00	.27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10 PHL	.00	.06	.30	.29	.50	.20	.58	-.01	.55	.72	.10	.33	.60	.51	.41	.00	.58	.56	.42	.00
11 SGP	.80	.55	.26	.79	-.07	.55	.63	.40	-.09	.73	-.28	.26	.03	.20	.19	.09	.67	.06	.32	.35
12 THA	.38	.57	.47	.41	.43	.56	.56	.42	.59	.54	.56	.40	.49	.39	.24	.23	.54	.36	.46	.40
13 VNM	.00	.20	.40	.49	.00	.08	.48	.40	.00	.53	.15	.47	.00	.41	.19	-.01	.00	.48	.48	.47
14 IND	-.27	.37	.50	.39	.53	.61	.39	.25	.26	.55	.27	-.01	.51	.00	.48	.21	.63	.45	.48	.52
15 MAC	.46	.66	.67	.59	.61	.69	.75	.49	.59	.53	.85	.41	.00	.50	.59	.34	.66	.64	.00	.00
16 BRN	.00	.31	.00	.00	.51	.40	.56	.00	.00	.56	.00	.00	.57	.00	.00	.00	.00	.41	.00	.00
17 JPN	.62	.06	-.01	.58	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	.49	.20	.68	-.27	.00	.08	.39	.45
18 AUS	.65	.76	.31	.64	.39	.00	.76	.38	.00	.35	.12	.49	.00	.00	.22	.55	.58	.43	.44	.42
19 NZL	.60	.04	.60	.72	.32	.00	.58	.66	.08	.43	.00	.68	.58	.54	.53	.67	.00	.00	.45	.43
20 CAN	.00	.00	.00	.00	.00	.00	.00	.00	.00	-.09	.45	.00	.44	.55	.00	.00	.55	.35	.00	.00
Average	.39	.27	.29	.33	.37	.22	.52	.26	.27	.44	.31	.24	.26	.30	.31	.20	.35	.30	.24	.20
FCM																				
	PRE	CRS	PST		PRE	CRS	PST		PRE	CRS	PST		PRE	CRS	PST		PRE	CRS	PST	
			7V	8V			7V	8V			7V	8V			7V	8V			7V	8V
No. of clusters	5	6	6	5	5	4	6	7	4	5	4	5	3	5	3	4	5	5	5	4
1 CHN	.59	-.01	.84	-.60	.01	.54	.56	.29	.05	.36	.67	.00	.49	-.06	.80	.43	n.a.	n.a.	n.a.	n.a.
2 HKG	.77	.43	.82	.78	.41	.08	.63	.76	-.35	.51	.09	.48	.51	.70	.64	-.43	-.32	.44	.23	.38
3 KOR	-.54	-.39	.61	.06	.67	.09	.06	.08	.76	.51	-.38	.21	.50	.39	.64	-.25	.03	.03	-.11	-.07
4 TWN	.57	.05	.79	-.27	.44	.57	.28	.10	.65	.37	.68	.33	.63	.58	.82	.49	-.06	-.24	.67	.34
5 KHM	.45	.08	-.59	-.44	.50	.37	-.50	.12	-.08	.65	.30	.33	-.08	.69	-.40	.37	.06	.28	-.10	.05
6 IDN	.51	-.30	.25	.09	.27	.00	.44	-.36	.44	.51	.31	.22	.00	.03	-.35	.33	.27	.05	.00	.43
7 LAO	.55	.06	.10	.00	.61	.00	-.34	-.28	.56	.24	-.32	.04	.28	.00	.11	.28	.52	.00	.00	-.09
8 MYS	-.41	-.44	.71	.55	.60	-.04	.46	-.06	.79	.69	.64	.07	.47	.06	.76	.35	-.08	-.05	.42	.30
9 MMR	.36	.05	.00	.00	.09	.33	.06	.00	.03	-.07	.04	.29	-.07	.01	-.11	.04	.05	.03	-.14	.02
10 PHL	.22	.32	-.52	-.09	.07	.36	-.06	.38	.60	.40	.35	-.49	.55	-.30	.61	.36	.59	.66	.53	-.39
11 SGP	.73	-.04	.78	.81	.05	.40	.74	.80	.57	.55	-.09	.59	.68	.33	-.34	-.01	.43	.39	.39	.46
12 THA	.29	-.26	-.59	-.44	.35	-.04	.51	.15	-.36	.37	.64	.09	.50	-.07	.66	.49	.51	.08	.61	-.06
13 VNM	.40	.48	-.16	.08	.40	.46	.27	.21	.01	-.20	.50	.54	-.24	.40	.66	.47	.02	.07	.56	.53
14 IND	-.39	.57	-.64	-.30	.32	-.46	.66	-.60	-.55	-.46	.03	-.10	.21	-.08	.59	.27	.63	.41	.68	.53
15 MAC	.60	.36	-.33	-.31	.52	.23	-.69	-.03	-.07	.68	.10	.49	.32	-.53	.60	.07	-.04	.56	-.47	-.37
16 BRN	.14	-.47	.42	-.06	.40	.06	.44	.19	.36	.60	-.52	.35	-.29	.42	-.17	.07	.33	-.32	-.44	.29
17 JPN	.48	.58	.63	.71	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-.25	.66	.69	-.01	-.45	.04	.27	.46
18 AUS	.74	.70	.71	.77	-.09	.37	.73	.70	.55	.52	.68	.68	.44	.27	.02	.68	.57	.45	.69	.74
19 NZL	.74	.00	.38	.81	-.02	-.23	.46	.65	-.08	.06	.53	.74	.27	.41	-.12	.70	.30	.03	.61	.74
20 CAN	.03	-.03	.22	.01	.00	.29	.08	-.27	.00	.51	.02	.26	.31	.08	.02	-.07	.62	.34	.06	.37
Average	.34	.09	.22	.11	.29	.18	.25	.15	.22	.36	.22	.27	.26	.20	.31	.23	.21	.17	.23	.25
MBC																				
	PRE	CRS	PST		PRE	CRS	PST		PRE	CRS	PST		PRE	CRS	PST		PRE	CRS	PST	
			7V	8V			7V	8V			7V	8V			7V	8V			7V	8V
No. of clusters	9	7	6	10	4	4	5	5	10	7	2	3	3	6	5	10	10	6	2	13
1 CHN	.45	.55	.86	.30	.34	.44	.76	.73	.00	.25	.86	.81	.60	.39	.73	.03	n.a.	n.a.	n.a.	n.a.
2 HKG	.76	.49	.82	.59	.60	.74	.73	.64	.65	.66	.85	.76	.26	.51	.66	.43	.50	.58	.76	.05
3 KOR	.51	.54	.61	.00	.30	.64	.49	.48	.04	.60	-.25	-.32	.38	.09	.75	.30	.75	.36	-.15	.00
4 TWN	.54	.01	.80	.57	.10	.25	.76	.65	.05	-.26	.84	.73	.31	.38	.77	.01	.69	.61	.64	.12
5 KHM	.34	-.05	.74	.23	.51	.57	.54	.49	.55	-.07	.75	.71	.08	.47	.54	.64	.00	.30	.73	.21
6 IDN	.69	.00	.31	.00	.40	.07	.53	.08	.68	.42	-.35	-.31	.07	.00	.15	.00	.72	.00	-.25	.00
7 LAO	.00	.00	.00	.00	.63	.00	.00	.00	.00	.00	-.13	-.05	.49	.00	.00	.00	.00	.00	-.03	.00
8 MYS	.35	.69	.75	.00	.43	.75	.76	.71	.51	.48	.86	.78	.27	.42	.71	.38	-.27	.75	.77	.67
9 MMR	.00	.00	.00	.00	.23	-.37	.00	.00	.00	.50	.15	.21	.03	.00	.00	.00	.00	.00	.20	.00
10 PHL	.00	.31	.70	.51	.51	.63	.58	.56	.63	.41	.65	.60	.62	.48	.54	.00	.59	.56	.60	.00
11 SGP	.80	.52	.83	.79	.07	.67	.63	.46	.45	-.68	.84	.68	.54	.40	-.01	.09	.74	-.18	.73	.13
12 THA	.38	.63	.62	.09	.45	.58	.56	.53	.59	.51	.71	.52	.24	.29	.52	.23	.52	.59	.64	.68
13 VNM	.00	.32	.55	.43	.43	.51	.48	.48	.00	-.47	.74	.68	.10	-.28	.45	.21	.00	.48	.66	.78
14 IND	-.27	.37	.70	.05	.47	.59	.39	.41	.06	.50	.72	.65	.35	.36	-.34	.39	.63	.66	.62	.73
15 MAC	.46	.65	.52	.21	.65	.68	.75	.70	.35	.76	.76	.73	.23	.65	.73	.65	.66	.64	.42	.00
16 BRN	.00	.36	.40	.00	.57	.72	.56	.47	.00	-.04	-.14	.00	.43	.41	.00	.00	.00	.60	.41	.00
17 JPN	.62	.60	.75	.60	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	.45	.70	.79	.06	.00	.53	.71	.21
18 AUS	.65	.38	.76	.64	.40	.20	.76	.64	.01	.41	-.14	-.05	.58	.61	.51	.55	.44	.49	.31	.42
19 NZL	.60	.21	.38	.72	.26	.48	.58	.46	.09	-.07	-.05	.01	.43	.35	.20	.67	-.03	.28	.27	.43
20 CAN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.43	-.60	-.48	.00	.25	-.13	.00	.33	.48	-.04	.00
Average	.34	.33	.55	.29	.39	.43	.52	.45	.24	.23	.36	.35	.32	.32	.38	.23	.33	.41	.36	.23

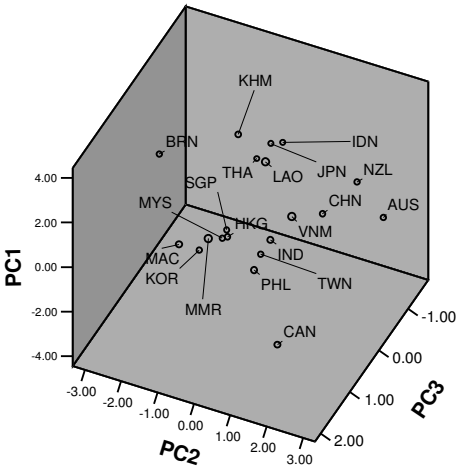
Note: 1 'n.a.' for not applicable.

Table 6.51 OCA silhouettes (continued)

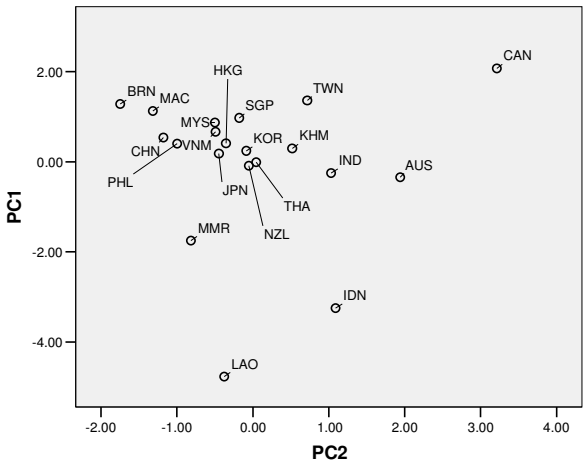
Aggregate measures (7 variables)							
		Dollar	Basket	Yen	Euro	Yuan	Average
1 Average number of clusters over methods	Pre-crisis	7.3	4.7	8.0	5.7	8.7	6.9
	Crisis	7.0	6.0	5.3	7.3	6.3	6.4
	Post-crisis 7V	7.0	5.3	5.0	5.7	6.0	5.8
Average		7.1	5.3	6.1	6.2	7.0	
2 Average number of clusters over periods	HCM	8.3	6.7	7.7	10.3	10.0	8.6
	FCM	5.7	5.0	4.3	3.7	5.0	4.7
	MBC	7.3	4.3	6.3	4.7	6.0	5.7
Average		7.1	5.3	6.1	6.2	7.0	
3 Positive individual silhouettes (%) over periods	HCM	70.0	77.2	70.2	68.3	66.7	70.5
	FCM	68.3	77.2	75.4	70.0	71.9	72.6
	MBC	75.0	87.7	64.9	81.7	71.9	76.2
Average		71.1	80.7	70.2	73.3	70.2	
4 Mean silhouette over periods	HCM	.32	.37	.34	.29	.30	.32
	FCM	.22	.24	.26	.26	.21	.24
	MBC	.41	.44	.28	.34	.39	.37
Average		.32	.35	.29	.30	.30	
5 Median silhouette over periods	HCM	.38	.43	.43	.26	.36	.37
	FCM	.31	.32	.36	.32	.23	.31
	MBC	.48	.51	.41	.39	.49	.46
Average		.39	.42	.40	.32	.36	

Table 6.52 OCA-dollar cross-method subclusters

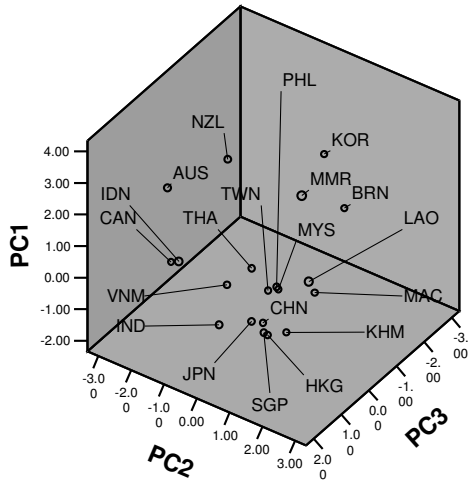
		HCM	SW	FCM	SW	MBC	SW	Cross-method
Pre-crisis	1	HKG, SGP, TWN, KOR, MYS, MAC	.57	KOR, MYS, PHL, IND, CAN	-.12	HKG, KOR, TWN, MYS, SGP, MAC	.57	HKG, TWN, SGP, MAC
	2	CHN, IND, AUS, NZL	.36	KHM, IDN, THA, BRN. JPN	.37	CHN, IND, AUS, NZL	.36	KHM, IDN, THA, JPN
	3	KHM, IDN, THA, JPN	.53	HKG, TWN, SGP, MAC	.65	KHM, IDN, THA, JPN	.51	CHN, AUS, NZL
	4	LAO, MMR	.39	CHN, AUS, NZL	.62	PHL	.00	KOR, MYS
	5	BRN	.00	LAO, MMR, VNM	.42	VNM	.00	
	6	VNM	.00			BRN	.00	
	7	PHL	.00			LAO	.00	
	8	CAN	.00			MMR	.00	
	9					CAN	.00	
Average			.39		.34		.34	
Crisis	1	KOR, MYS, THA, NZL, PHL, BRN, TWN, SGP, VNM	.39	KOR, TWN, MYS, SGP, BRN, CAN	-.22	KOR, MYS, THA, NZL, PHL, BRN, SGP, VNM	.45	KOR, MYS, SGP, BRN
	2	CHN, HKG, MAC, JPN	.45	CHN, HKG, KHM, MAC, JPN	.21	TWN, KHM, IND, AUS	.18	CHN, HKG, MAC, JPN
	3	IND, AUS	.57	MMR, THA, NZL	-.04	CHN, HKG, MAC, JPN	.57	PHL, VNM
	4	KHM	.00	IND, AUS	.63	MMR	.00	THA, NZL
	5	MMR	.00	IDN, LAO	-.13	LAO	.00	IND, AUS
	6	LAO	.00	PHL, VNM	.40	IDN	.00	
	7	IDN	.00			CAN	.00	
	8	CAN	.00					
Average			.27		.09		.33	
Post-crisis 7V	1	TWN, MYS, THA, CHN, HKG, SGP, IND, JPN, VNM	.39	CHN, HKG, TWN, MYS, SGP, JPN	.76	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN	.72	CHN, HKG, TWN, MYS, SGP, JPN
	2	KHM, PHL, MAC	.50	KHM, LAO, PHL, MAC	-.29	IDN, AUS, NZL	.48	KHM, PHL, MAC
	3	AUS, NZL	.45	THA, VNM, IND, CAN	-.34	KOR, BRN	.50	THA, VNM, IND
	4	KOR	.00	IDN, AUS, NZL	.45	LAO	.00	AUS, NZL
	5	BRN	.00	KOR, BRN	.52	MMR	.00	
	6	IDN	.00	MMR	.00	CAN	.00	
	7	LAO	.00					
	8	CAN	.00					
	9	MMR	.00					
	10							
Average			.29		.22		.55	
All Periods 7V	1	SGP, TWN, MYS		TWN, SGP		HKG, MAC		-
	2					MYS, SGP		
Post-crisis 8V	1	MYS, THA, CHN, TWN, IND, VNM	.33	KOR, TWN, KHM, LAO, PHL, MAC, BRN	-.16	MYS, THA, CHN, TWN, IND, VNM	.31	CHN, THA, VNM, IND
	2	KHM, PHL, MAC	.48	CHN, IDN, THA, VNM, IND, CAN	-.19	HKG, SGP, JPN	.63	KHM, PHL, MAC
	3	HKG, SGP, JPN	.63	HKG, SGP, JPN, MYS	.71	KHM, PHL, MAC	.48	HKG, SGP, JPN
	4	AUS, NZL	.68	AUS, NZL	.79	AUS, NZL	.68	AUS, NZL
	5	KOR	.00	MMR	.00	KOR	.00	
	6	IDN	.00			IDN	.00	
	7	BRN	.00			BRN	.00	
	8	LAO	.00			LAO	.00	
	9	MMR	.00			MMR	.00	
	10	CAN	.00			CAN	.00	
Average			.33		.11		.29	
All Periods 8V	1	MYS, TWN		-		-		-
	2							



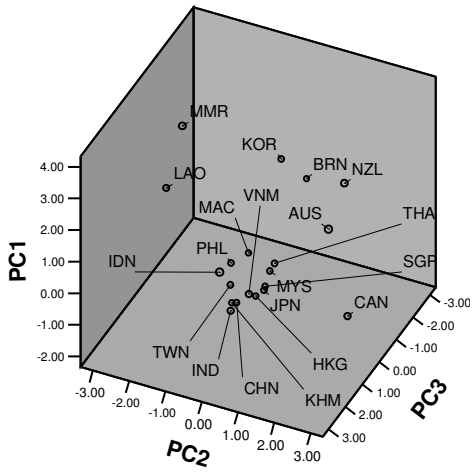
Pre-crisis



Crisis



Post-crisis 7V



Post-crisis 8V

Figure 6.21 OCA-dollar PCA plots

Table 6.53 OCA cross-method subclusters

		Dollar	Currency Basket	Yen	Euro	Yuan
Pre-crisis	1	HKG, SGP, TWN, MAC	HKG, IDN, MAC, BRN, KHM, THA	KOR, MYS, PHL, AUS	KOR, MYS, CAN, TWN, THA	KOR, TWN, IDN, SGP
	2	KHM, IDN, THA, JPN	KOR, TWN, MYS, PHL, IND	TWN, SGP	PHL, IND, AUS	PHL, THA, IND
	3	CHN, AUS, NZL	CHN, AUS, NZL	HKG, MAC	BRN, JPN	HKG, MAC
	4	KOR, MYS	LAO, MMR	IDN, THA	HKG, SGP	AUS, CAN
	5				CHN, NZL	
Crisis	1	KOR, MYS, SGP, BRN	HKG, SGP, KHM, KOR, MYS, TWN	KOR, MYS, PHL, THA	HKG, JPN, KHM, TWN	HKG, KOR, PHL, MAC, JPN
	2	CHN, HKG, MAC, JPN	PHL, MAC, BRN	VNM, NZL, CAN	CHN, PHL, MAC	MYS, THA, VNM, BRN
	3	PHL, VNM	CHN, VNM	TWN, SGP, BRN	SGP, CAN	IND, AUS, CAN
	4	THA, NZL		MMR, IND	VNM, NZL	KHM, SGP
	5	IND, AUS		HKG, MAC		
	6			CHN, IDN		
Post-crisis 7V	1	CHN, HKG, TWN, MYS, SGP, JPN	KOR, TWN, MYS, THA, VNM	CHN, TWN, MYS, HKG, THA, VNM, PHL	CHN, HKG, MYS, KOR, JPN, MAC	VNM, IND, TWN, MYS, THA
	2	KHM, PHL, MAC	CHN, HKG, SGP, IND	KHM, MAC	KHM, SGP	KHM, JPN
	3	THA, VNM, IND	IDN, AUS, NZL	IDN, AUS	PHL, THA	HKG, PHL
	4	AUS, NZL	KHM, MAC		AUS, NZL	AUS, NZL
	5		PHL, BRN			

Table 6.53 OCA cross-method subclusters (continued)

		Dollar	Currency Basket	Yen	Euro	Yuan
All Periods 7V	1	-	KOR, MYS, TWN	MYS, PHL	-	-
Post-crisis 8V	1	CHN, THA, VNM, IND	CHN, TWN, VNM	CHN, TWN, THA, VNM, IND	MAC, JPN, KOR, KHM	HKG, SGP, JPN
	2	KHM, PHL, MAC	MYS, THA	HKG, SGP, KHM, MAC	CHN, TWN, VNM, IND	AUS, NZL
	3	HKG, SGP, JPN	KOR, PHL	AUS, NZL	HKG, SGP	VNM, IND
	4	AUS, NZL	HKG, SGP		MYS, THA	
	5		AUS, NZL		AUS, NZL	
All Periods 8V	1	-	-	HKG, MAC	-	-

Table 6.54 OCA cross-method-anchor subclusters

		PRE	CRS	PST		All			PRE	CRS	PST		All	
				7V	8V	7V	8V				7V	8V	7V	8V
DB	1	CHN, AUS, NZL	KOR, MYS, SGP	CHN, HKG, SGP	CHN, VNM	-	-	DY	HKG, MAC	KOR, MYS	CHN, TWN, MYS	CHN, THA, VNM, IND	-	-
	2	IDN, THA, KHM		TWN, MYS	HKG, SGP				SGP, TWN	SGP, BRN	KHM, MAC	KHM, MAC		
	3	HKG, MAC		KHM, MAC	AUS, NZL				IDN, THA	HKG, MAC		HKG, SGP		
	4	KOR, MYS		THA, VNM					KOR, MYS			AUS, NZL		
	5			AUS, NZL										
DE	1	HKG, SGP	HKG, JPN	CHN, HKG, MYS, JPN	CHN, VNM, IND	-	-	DR	TWN, SGP	MYS, BRN	VNM, IND, THA	HKG, SGP, JPN	-	-
	2	CHN, NZL	CHN, MAC	AUS, NZL	KHM, MAC				HKG, MAC	HKG, MAC, JPN	TWN, MYS	AUS, NZL		
	3	KOR, MYS			HKG, SGP					IND, AUS	AUS, NZL	VNM, IND		
	4				AUS, NZL									
BY	1	KOR, MYS, PHL	SGP, TWN	TWN, MYS, THA, VNM	CHN, TWN, VNM	-	-	BE	KOR, TWN, MYS	HKG, KHM, TWN	CHN, HKG	CHN, TWN, VNM	-	-
	2	HKG, MAC	KOR, MYS	CHN, HKG	HKG, SGP				PHL, IND	PHL, MAC	KOR, MYS	MYS, THA		
	3	IDN, THA		IDN, AUS	AUS, NZL				CHN, NZL		AUS, NZL	HKG, SGP		
	4			KHM, MAC								AUS, NZL		
BR	1	HKG, MAC	HKG, KOR	VNM, TWN, MYS, THA	HKG, SGP	-	-	YE	KOR, MYS	VNM, NZL	CHN, HKG, MYS	CHN, TWN, VNM, IND	-	-
	2	KOR, TWN	SGP, KHM	AUS, NZL	AUS, NZL				PHL, AUS			HKG, SGP		
	3	PHL, IND	PHL, MAC		VNM, IND							KHM, MAC		
	4											AUS, NZL		
YR	2	TWN, SGP	KOR, PHL	VNM, TWN, MYS, THA	HKG, SGP	-	-	ER	PHL, IND	HKG, JPN	AUS, NZL	HKG, SGP	-	-
	3	HKG, MAC	MYS, THA	HKG, PHL	AUS, NZL					PHL, MAC		AUS, NZL		
	4		HKG, MAC		VNM, IND							VNM, IND		
DBY	1	IDN, THA	KOR, MYS	CHN, HKG	CHN, VNM	--	--	DBE	CHN, NZL	-	CHN, HKG	CHN, VNM	--	-
	2	HKG, MAC		TWN, MYS	HKG, SGP				KOR, MYS		AUS, NZL	HKG, SGP		
	3	KOR, MYS		KHM, MAC	AUS, NZL							AUS, NZL		
	4			THA, VNM										
DBR	1	HKG, MAC	-	TWN, MYS	HKG, SGP	-	-	DYE	KOR, MYS	-	CHN, MYS	CHN, VNM, IND	-	-
	2			THA, VNM	AUS, NZL							KHM, MAC		
	3			AUS, NZL								HKG, SGP		
	4											AUS, NZL		
DYR	1	HKG, MAC	HKG, MAC	TWN, MYS	HKG, SGP	-	-	DER	-	HKG, JPN	AUS, NZL	HKG, SGP	-	-
	2	SGP, TWN			AUS, NZL							AUS, NZL		
	3				VNM, IND							VNM, IND		
BYE	1	KOR, MYS	-	CHN, HKG	CHN, TWN, VNM	-	-	BYR	HKG, MAC	-	TWN, MYS, THA, VNM	HKG, SGP	-	-
	2				HKG, SGP							AUS, NZL		
	3				AUS, NZL									
BER	1	KOR, TWN	PHL, MAC	AUS, NZL	HKG, SGP	-	-	YER	-	-	-	HKG, SGP	-	-
	2	PHL, IND			AUS, NZL							AUS, NZL		
	3											VNM, IND		
DBYE	1	KOR, MYS	-	CHN, HKG	CHN, VNM	-	-	DBYR	HKG, MAC	-	TWN, MYS	HKG, SGP	-	-
	2				HKG, SGP						THA, VNM	AUS, NZL		
	3				AUS, NZL									
DBER	1	-	-	AUS, NZL	HKG, SGP	-	-	DYER	-	-	-	HKG, SGP	-	-
	2				AUS, NZL							AUS, NZL		
	3											VNM, IND		
BYER	1	-	-	-	HKG, SGP	-	-	DBYER	-	-	-	HKG, SGP	-	-
	2				AUS, NZL							AUS, NZL		

Note: D=Dollar; B=Currency Basket; Y=Yen; E=Euro/Mark; R=Yuan (Renminbi)

6.5.2 Classifications using Weighted Criteria

Table 6.55 compares the cross-weighting subclusters across methods by the US reference. Those by other references are shown respectively in Tables E.5–E.8 in Appendix E. Table 6.56 collects the cross-weighting-and-method subclusters by anchor. These subsets of countries are stable over methods even when criteria are weighted

No cross-weighting-method subcluster is also robust over all periods or all anchors. Hence, it may be appealing to look at the subclusters which are robust across four of the five anchors.

In this regard, the cross-method Korea-Malaysia is robust across the first four anchors for the pre-crisis period and across dollar and basket anchors for the crisis period even when criteria are weighted.

For post-crisis 8V, the cross-method Australia-NewZealand which is robust across all anchors previously is also robust here over all anchors but the yen anchor. For post-crisis 7V, Australia-NewZealand is stable over the same set of anchors, similar to the previous finding when criteria are not weighted.

What about the pairs of countries associated with similar exchange rate regimes? Hong Kong and Macau, the dollar areas are only seen together for the crisis period by the US reference. The rest of the previous linkages are not seen when criteria are weighted. Singapore and Brunei are not seen together in any solution.

Table 6.55 OCA-dollar cross-weighting-method subclusters

		Cross-weighting			Cross-weighting-method
		HCM	FCM	MBC	
Pre-crisis	1	HKG, SGP, TWN, KOR, MYS, MAC	IDN, THA, BRN, JPN	HKG, KOR, TWN, MYS, SGP, MAC	IDN, THA, JPN
	2	CHN, IND, AUS, NZL	HKG, TWN, SGP	CHN, IND, AUS, NZL	HKG, TWN, SGP
	3	IDN, JPN, THA	CHN, AUS, NZL	IDN, THA, JPN	CHN, AUS, NZL
	4	LAO, MMR	KOR, MYS, PHL		KOR, MYS
	5		LAO, MMR		
Crisis	1	KOR, MYS, THA, NZL, SGP	KOR, TWN, MYS, SGP, BRN	KOR, MYS, PHL, SGP, THA, VNM, BRN, NZL	KOR, MYS, SGP
	2	CHN, HKG, MAC	CHN, HKG, MAC	TWN, KHM, IND, AUS	CHN, HKG, MAC
	3	IND, AUS	KHM, JPN	CHN, HKG, MAC, JPN	IND, AUS
	4	PHL, VNM	PHL, VNM		PHL, VNM
	5		IND, AUS		
Post-crisis 7V	1	TWN, MYS, THA, CHN, HKG, SGP, IND, JPN, VNM	CHN, HKG, TWN, MYS	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, JPN	CHN, HKG, TWN, MYS
	2	KHM, PHL, MAC	KHM, PHL, MAC	IDN, AUS, NZL	KHM, PHL, MAC
	3	AUS, NZL	IDN, AUS, NZL	KOR, BRN	AUS, NZL
	4		KOR, BRN		SGP, JPN
	5		SGP, JPN		
All Periods 7V	1	MYS, SGP	-	HKG, MAC	-
	2			MYS, SGP	
Post-crisis 8V	1	MYS, THA, CHN, TWN, IND, VNM	KHM, PHL, MAC	CHN, TWN, MYS, THA, VNM, IND	KHM, PHL, MAC
	2	KHM, PHL, MAC	KOR, TWN, BRN	HKG, SGP, JPN	AUS, NZL
	3	HKG, SGP, JPN	HKG, MYS	KHM, PHL, MAC	CHN, THA
	4	AUS, NZL	CHN, THA	AUS, NZL	
	5		AUS, NZL		
	6		IDN, IND		
All Periods 8V	1	-	-	-	-

Table 6.56 OCA cross-weighting-method subclusters

	Dollar	Currency Basket	Yen	Euro	Yuan
Pre-crisis	IDN, THA, JPN	KOR, TWN, MYS	KOR, MYS	KOR, TWN, MYS, THA	KOR, TWN, IDN, SGP
	HKG, TWN, SGP	HKG, BRN	TWN, SGP	CHN, NZL	PHL, IND
	CHN, AUS, NZL	LAO, MMR		PHL, IND	AUS, CAN
	KOR, MYS				
Crisis	KOR, MYS, SGP	MAC, BRN	MYS, THA	CHN, PHL, MAC	IND, AUS, CAN
	CHN, HKG, MAC	KOR, MYS	VNM, NZL	HKG, KHM,	MYS, THA, VNM
	IND, AUS		KOR, PHL	SGP, CAN	HKG, PHL
	PHL, VNM				KOR, JPN
Post-crisis 7V	CHN, HKG, TWN, MYS	IDN, AUS, NZL	CHN, TWN, MYS, THA, VNM	CHN, TWN, JPN, MAC	MYS, THA
	KHM, PHL, MAC	KOR, THA	KHM, MAC	HKG, KOR, MYS	AUS, NZL
	AUS, NZL	CHN, HKG		AUS, NZL	KHM, JPN
	SGP, JPN	KHM, MAC			
		TWN, MYS			
All Periods 7V	-	-	-	-	-
Post-crisis 8V	KHM, PHL, MAC	CHN, TWN	CHN, TWN, THA, VNM	CHN, TWN, VNM	HKG, JPN
	AUS, NZL	MYS, THA	HKG, SGP	KOR, KHM	AUS, NZL
	CHN, THA	AUS, NZL	KHM, MAC	MAC, JPN	VNM, IND
				MYS, THA	
				AUS, NZL	
All Periods 8V	-	-	-	-	-

6.5.3 Assessment of Preparedness

The first part compares over the methods the assessment preparedness findings using the original unweighted criteria and the second part compares those using weighted criteria.

6.5.3.1 Preparedness Assessment using Unweighted Criteria

Table 6.57 puts together the subsets of countries which are shown to share similar OCA features and degrees of preparedness by method for the US reference. Subsets which are robust over methods are also shown. The findings by other references are shown respectively in Tables E.9–E.12, Appendix E.

Table 6.58 compares the cross-method sets of countries by anchor. Very few countries still share the same cluster under the considerations here. Nevertheless, one can see more cases by the dollar anchor. Against the US, Korea and Malaysia are linked consecutively over pre-crisis and crisis periods. Against US also, Hong Kong and Singapore belong to same grouping in the pre-crisis and post-crisis 8V solutions.

In another respect, Vietnam and India are always together for dollar, yen, euro, and yuan anchors in the post-crisis 8V solution; in the post-crisis 7V solution they only share the same grouping for yuan anchor. Hence, Vietnam and India should have been predominantly linked by the labor criterion between themselves and with the dollarized and/or euroized benchmarks by each of the four reference countries.

Hong Kong and Macau are not seen together whilst Singapore and Brunei share the same grouping only for the US-reference crisis period.

Table 6.57 OCA-dollar-preparedness cross-method subclusters

		HCM	FCM	MBC	Cross-method
Pre-crisis	1	HKG, SGP, TWN, KOR, MYS,	KOR, MYS, PHL	HKG, KOR, TWN, MYS, SGP, MAC	CHN, AUS, NZL
	2	CHN, IND, AUS, NZL	HKG, SGP, MAC	CHN, IND, AUS, NZL	KOR, MYS
	3		CHN, AUS, NZL	KHM, IDN, THA, JPN	HKG, SGP
	4		IND, CAN		
	5		THA, BRN		
Crisis	1	KOR, MYS, THA, NZL, PHL, BRN, SGP, VNM	KOR, MYS, SGP, BRN	KOR, MYS, PHL, SGP, THA, VNM, BRN, NZL	KOR, MYS, SGP, BRN
	2		HKG, KHM, JPN	CHN, HKG, MAC, JPN	THA, NZL
	3		MMR, THA, NZL	KHM, IND, AUS	PHL, VNM
	4		PHL, VNM		
	5		CHN, MAC		
	6		TWN, CAN		
Post-crisis 7V	1	TWN, MYS, THA, CHN, HKG, SGP, IND, JPN, VNM	KHM, PHL, MAC	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	KHM, PHL, MAC
	2	KHM, PHL, MAC		KOR, BRN	
All Periods 7V	1	SGP. MYS	-	HKG, MAC	-
	2			MYS, SGP	
Post-crisis 8V	1	MYS, THA, CHN, TWN, IND, VNM	TWN, KHM, MAC, BRN	CHN, TWN, MYS, THA, VNM, IND	CHN, VNM, IND
	2	KHM, PHL, MAC	CHN, THA, VNM, IND	HKG, SGP, JPN	HKG, SGP, JPN
	3	HKG, SGP, JPN	HKG, MYS, SGP, JPN	KHM, PHL, MAC	KHM, MAC
	4		KOR, LAO	AUS, NZL	
	5		AUS, NZL		
All Periods 8V	1	-	-	-	-

Table 6.58 OCA-preparedness cross-method subclusters

		Dollar	Currency Basket	Yen	Euro	Yuan
Pre-crisis	1	CHN, AUS, NZL	TWN, MYS, PHL, IND	-	PHL, IND, AUS	-
	2	KOR, MYS	CHN, AUS		MYS, CAN	
	3	HKG, SGP				
Crisis	1	KOR, MYS, SGP, BRN	-	-	-	-
	2	THA, NZL				
	3	PHL, VNM				
Post-crisis 7V	1	KHM, PHL, MAC	THA, VNM	-	-	VNM, IND
	2		PHL, BRN			AUS, NZL
All Periods 7V	1	-	-	-	-	-
Post-crisis 8V	1	CHN, VNM, IND	-	VNM, IND	VNM, IND	VNM, IND
	2	HKG, SGP, JPN				
	3	KHM, MAC				
All Periods 8V	1	-	-	-	-	-

6.5.3.2 Preparedness Assessment using Weighted Criteria

Table 6.59 puts together the US-based common sets of countries which are relatively symmetrical in OCA features and degree of preparedness regardless of criteria weighting. The cross-method sets of countries are also provided. The tables for other anchors are placed in Tables E.13-E.16, Appendix E. For all anchors, larger common sets can be seen by MBC.

Table 6.60 collects the cross-method sets by anchor. It is apparent that only the US-based pre-crisis Australia-NewZealand and crisis period Philippines-Vietnam, and the Germany/EMU-based pre-crisis Philippines-India maintain the above stated features.

Table 6.59 OCA-dollar-preparedness cross-weighting-method subclusters

		HCM	FCM	MBC	Cross-method
Pre-crisis	1	HKG, SGP, TWN, KOR, MYS	AUS, NZL	HKG, KOR, TWN, MYS, SGP, MAC	AUS, NZL
	2	CHN, IND, AUS, NZL		CHN, IND, AUS, NZL	
	3			IDN, THA, JPN	
Crisis	1	PHL, VNM	KOR, MYS, SGP, BRN	KOR, MYS, PHL, SGP, THA, VNM, BRN, NZL	PHL, VNM
	2		KHM, JPN	CHN, HKG, MAC, JPN	
	3		PHL, VNM	KHM, IND, AUS	
	4		CHN, MAC		
Post-crisis 7V	1	-	-	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	-
	2			KOR, BRN	
All Periods 7V	1	-	-	HKG, MAC	-
	2			MYS, SGP	
Post-crisis 8V	1	KHM, PHL, MAC	-	CHN, TWN, MYS, THA, VNM, IND	-
	2	SGP, JPN		HKG, SGP, JPN	
	3			KHM, PHL, MAC	
	4			AUS, NZL	
All Periods 8V	1	-	-	-	-

Table 6.60 OCA-preparedness cross-weighting-method subclusters

		Dollar	Currency Basket	Yen	Euro	Yuan
Pre-crisis	1	AUS, NZL	-	-	PHL, IND	-
Crisis	1	PHL, VNM	-	-	-	-
Post-crisis 7V	1		-	-	-	-
All Periods 7V	1		-	-	-	-
Post-crisis 8V	1		-	-	-	-
All Periods 8V	1		-	-	-	-

6.5.4 Recapitulation

The section has assessed and compared the OCA findings across the cluster analysis methods as well as detected subsets of countries which are robust over the methods in the original classification, criteria weighting, preparedness assessment, and preparedness assessment with criteria weighting exercises. The following are the key general findings from the original classifications:

- On average, over methods; increasingly convergent configuration approximated by consistently fewer clusters over the periods can be observed when the US, Japan, or China is the reference country where the greatest reduction in the number of clusters is shown by the Japan reference.
- On average, over methods and periods; the smallest number of clusters is produced when the G3 reference (basket anchor) is used.
- On average, over methods and periods; the G3 reference is compatible with the greatest number of positive and higher silhouettes.
- On average, over anchors and periods; MBC generates the greatest number of positive and higher silhouettes. FCM produces the lowest silhouettes.

In view of the findings above, the G3 reference appears to be consistent with most convergent and most data-fitting arrangements whilst MBC is compatible with most data-fitting solutions. Indeed, based on the number of East Asian countries associated with the post-dollarization and/or post-euro benchmarks from the HCM and MBC findings, in general throughout the periods the countries could have been more prepared for a fixed common currency basket peg.

Other key findings, including some notable cross-method subsets of countries will be revisited in Chapter 8 Discussion and Conclusion. The subsequent section presents some analyses on the OCA variables.

6.6 Subsidiary Analysis

Whilst the preceding exercises concern about classifications of the countries given the OCA variables, this subsidiary analysis concerns about the variables instead. The first part of this section presents the criterion dominance exercise and the second part presents the variable selection exercise.

6.6.1 Criterion Dominance

This section investigates whether certain criteria are dominant or representative of the rest of the criteria in generating the original cluster solutions. At the same time, the less important criteria can also be recognized. Basically, the exercise is done by removing the original OCA variables one at a time using all possible ways of sequencing as long as the objects displaced from their original position do not exceed 3. The rest of the discussion sequentially presents the criterion dominance findings from HCM, FCM, and MBC, before ending with a comparison over the methods.

The HCM results are shown in Table 6.61. Columns '1' display the original groupings using all variables, that is, 7 variables for pre-crisis and crisis periods and 8 variables (inclusive of labor criterion) for post-crisis period. Columns '2' contain the solutions generated by smaller sets of more dominant variables. The number of objects 'moved' is also given.

The subsets of dominant criteria differ depending on period and anchor. Nonetheless, the business cycle (BUS), interest rate cycle (INT), and export (EXP) variables are the more dominant criteria as they indicated more frequently; BUS has a count of 12, INT a count of 11, and EXP a count of 11. In contrast, the less dominant criteria are the debt (DEB), exchange rate (RER), trade (TRA), and inflation (INF) variables in which each is present 8, 7, 7, and 4 times respectively. Labor flexibility (LAB) which is available only for the post-crisis period is indicated to be dominant for all anchors.

Moving across the anchors by period, INT consistently appears in the pre-crisis subsets of dominant criteria. For the crisis and post-crisis periods, BUS, and BUS and LAB, respectively are always present.

The bottom of Table 6.61 shows the criteria which are consistently indicated and not indicated to be dominant over the periods. Under dollar anchor, RER is not

indicated throughout the periods, implying that real dollar rate volatility is not dominant in molding the cluster configurations; hence, the region could have been highly homogeneous with respect to this dimension. By G3 reference, EXP is constantly indicated to be dominant while TRA is not; by Japan, BUS, RER, and EXP dominant while TRA and DEB are not; by Germany/EMU, TRA, BUS, and INT dominant while INF is not; and by China, TRA and EXP are dominant.

The FCM results are arranged in Table 6.62. The more dominant criteria are INT, BUS, and EXP which have been indicated 12, 11, and 11 times respectively. The smaller counts are from the inflation criterion with count of 9, and the exchange rate (RER), trade (TRA), and debt (DEB) dimensions with counts of 7 each. Labor flexibility (LAB) which is only available for the post-crisis period is present for all anchors.

Inspecting the results by period, only LAB is consistently indicated to be dominant across anchors and only for the post-crisis period. For other periods, no variable is constantly dominant for all anchors.

The bottom of the table shows the criteria which are constantly found to be dominant and not dominant over the periods. Against US, TRA and RER are not indicated as dominant. Viewed in this light, trade intensity with US and real dollar rate volatility may not be as important as other criteria in shaping the partitions. One possible explanation is that the region could be highly symmetrical in these two dimensions. Similarly, the inflation dimension should be relatively unimportant when the reference is Germany/EMU. Meanwhile, INT and EXP are always dominant in the dollar and yuan solutions.

The MBC results are collected in Table 6.63. There are four criteria which are indicated to be dominant more frequently; they are INT, TRA, and DEB that obtain counts of 11, 9, and 8 respectively. Those for the crisis period yen and post-crisis euro

solutions where not even one variable can be dropped are not counted. Meantime, the less dominant criteria are BUS, INF, RER, and EXP that respectively obtain counts of 7, 7, 7, and 4.

Looking at the findings by period, no variable is dominant across all anchors for the pre-crisis period. For the crisis period, TRA is dominant over all anchors and for the post-crisis period, INT.

The bottom rows of the table list the cross-period variables. Interestingly, unlike other anchors, the basket anchor does not have any variable which is always dominant but it is the only anchor which has at least one consistently not dominant variable, namely BUS.

Comparisons across Methods

The dominant criteria indicated by the clustering methods are collected in Table 6.64. Criteria which are indicated to be dominant across methods are given too. The following common findings may be noteworthy.

For pre-crisis period, INT is dominant across methods for all anchors except for euro anchor. For crisis period, BUS and INT are common across methods for dollar, euro, and yuan anchors. For post-crisis period, EXP is common for dollar, basket, and yuan anchors. No criterion is consistently dominant across all methods and periods for any anchor.

In conclusion, different dominant variables are indicated by different clustering method.

Table 6.61 HCM clusters by all and by subsets of criteria

		Dollar		Currency Basket		Yen		Euro		Yuan	
		1	2	1	2	1	2	1	2	1	2
		All	TRA, INF, INT	All	INF, INT, EXP	All	BUS, INF, RER, INT, EXP	All	TRA, BUS, RER, INT, EXP, DEB	All	TRA, INT, EXP, DEB
Moved			2		2		1		1		2
Pre-crisis	1	HKG, SGP, TWN, KOR, MYS, MAC	HKG, SGP, TWN, KOR, MYS, MAC	KOR, MYS, SGP, IND, TWN, PHL, CHN, NZL, AUS	KOR, MYS, SGP, IND, TWN, PHL, CHN, NZL, AUS, CAN	TWN, SGP, KOR, MYS, PHL, IND, AUS	TWN, SGP, KOR, MYS, PHL, IND, AUS	KOR, MYS, CAN, TWN, THA	KOR, MYS, CAN, TWN, THA	KOR, TWN, IDN, MYS, SGP	KOR, TWN, SGP, IDN, NZL
	2	CHN, IND, AUS, NZL	CHN, IND, AUS, NZL, BRN	HKG, IDN, MAC, BRN, KHM, THA	HKG, IDN, MAC, BRN, KHM	HKG, MAC	HKG, MAC, MMR	PHL, IND, AUS	PHL, IND, AUS	AUS, CAN	PHL, IND, THA
	3	KHM, IDN, JPN, THA	KHM, IDN, JPN, THA	LAO, MMR	LAO, MMR	IDN, THA	IDN, THA	HKG, SGP	HKG, SGP	PHL, THA, IND	AUS, CAN
	4	LAO, MMR	MMR	VNM	VNM	KHM, NZL	KHM, NZL	CHN, NZL	CHN, NZL	HKG, MAC	HKG, MAC
	5	BRN	LAO	CAN	THA	LAO	LAO	BRN, JPN	BRN, JPN	NZL	MYS
	6	VNM	VNM			BRN	BRN	IDN	IDN, VNM	BRN	BRN
	7	CAN	CAN			CHN	CHN	MAC	MAC	JPN	JPN
	8	PHL	PHL			VNM	VNM	KHM	KHM	LAO	LAO
	9					CAN	CAN	LAO	LAO	MMR	MMR
	10					MMR		VNM	MMR	VNM	VNM
	11							MMR		KHM	KHM

		All	BUS, INT, DEB	All	BUS, EXP, DEB	All	BUS, RER, EXP	All	TRA, BUS, RER, INT, DEB	All	TRA, BUS, INT, EXP, DEB
Moved			3		2		2		0		1
Crisis	1	KOR, MYS, THA, NZL, PHL, BRN, TWN, SGP, VNM	KOR, MYS, THA, NZL, PHL, BRN, TWN, SGP, VNM, CAN	HKG, SGP, KHM, KOR, MYS, TWN	HKG, SGP, KHM, KOR, MYS, TWN	VNM, NZL, THA, KOR, PHL, MYS, SGP, TWN, CAN, HKG, MAC, KHM, BRN	VNM, NZL, THA, KOR, PHL, MYS, SGP, TWN, CAN, HKG, MAC, KHM, BRN, LAO, MMR	HKG, JPN, KHM, TWN	HKG, JPN, KHM, TWN	HKG, KOR, PHL, MAC, JPN	THA, VNM, MYS, BRN, SGP
	2	CHN, HKG, MAC, JPN	CHN, HKG, MAC, JPN	PHL, MAC, BRN	THA, IND, NZL	MMR, IND, AUS	IND, AUS	CHN, PHL, MAC	CHN, PHL, MAC	MYS, THA, VNM, BRN	HKG, KOR, JPN, PHL, MAC
	3	IND, AUS	KHM, IND, AUS	CHN, VNM	PHL, MAC, BRN	CHN, IDN	CHN, IDN	KOR, MYS, THA	KOR, MYS, THA	IND, AUS, CAN	IND, CAN, AUS
	4	MMR	IDN, MMR	THA, IND	CHN, VNM	LAO		SGP, CAN	SGP, CAN	TWN, KHM, SGP	TWN, KHM
	5	KHM	LAO	MMR	AUS, IDN			VNM, NZL	VNM, NZL	MMR	NZL
	6	CAN		AUS	MMR			IND	IND	IDN	MMR
	7	IDN		NZL	CAN			BRN	BRN	LAO	IDN
	8	LAO		CAN	LAO			MMR	MMR	NZL	LAO
	9			IDN				AUS	AUS		
	10			LAO				IDN	IDN		
	11							LAO	LAO		

		All	BUS, EXP, DEB, LAB	All	BUS, RER, INT, EXP, DEB, LAB	All	BUS, RER, INT, EXP, LAB	All	TRA, BUS, INT, LAB	All	TRA, BUS, INF, RER, EXP, LAB
Moved			1		1		2		2		1
Post-crisis	1	MYS, THA, CHN, TWN, IND, VNM	MYS, THA, CHN, TWN, IND, VNM	MYS, THA, CHN, TWN, VNM, KOR, PHL	MYS, THA, CHN, TWN, VNM, KOR, PHL	CHN, MYS, TWN, THA, PHL, VNM, IND	CHN, MYS, TWN, THA, VNM, IND	MAC, JPN, KOR, KHM, CHN, TWN, VNM, IND	MAC, JPN, KOR, KHM, CHN, TWN, VNM, IND, IDN	MYS, THA, VNM, IND	MYS, THA, VNM, IND
	2	KHM, PHL, MAC	KHM, PHL, MAC	KHM, MAC	KHM, MAC	HKG, SGP, KHM, MAC	HKG, SGP, KHM, MAC, PHL	HKG, MYS, THA, SGP	HKG, MYS, THA, SGP	TWN, KHM	TWN, KHM, LAO
	3	HKG, SGP, JPN	HKG, SGP, JPN	HKG, SGP, IND	HKG, SGP	AUS, NZL	AUS, NZL	AUS, NZL	AUS, NZL	HKG, SGP, JPN	HKG, SGP, JPN
	4	AUS, NZL	AUS, NZL, CAN	AUS, NZL	AUS, NZL	KOR	KOR, MMR	IDN	LAO, CAN	IDN	BRN
	5	IDN	IDN	IDN	IND, CAN	IDN	IDN	CAN	BRN	PHL	KOR
	6	KOR	KOR	BRN	BRN	CAN	CAN	BRN	MMR	MAC	PHL
	7	BRN	BRN	CAN	IDN	BRN	BRN	LAO	PHL	KOR	MAC
	8	LAO	LAO	LAO	LAO	LAO	LAO	MMR		BRN	IDN
	9	CAN	MMR	MMR	MMR	MMR		PHL		AUS, NZL	AUS, NZL
	10	MMR								CAN	CAN
	11									LAO	MMR
	12									MMR	

All Periods	Yes		-		EXP		BUS, RER, EXP		TRA, BUS, INT		TRA, EXP
	Np		RER		TRA		TRA, DEB		INF		-

Table 6.62 FCM clusters by all and by subsets of criteria

		Dollar		Currency Basket		Yen		Euro		Yuan	
		1	2	1	2	1	2	1	2	1	2
		All	BUS, INF, INT, EXP	All	INF, RER, INT	All	TRA, BUS, INF, INT, DEB	All	RER, EXP, DEB	All	BUS, INT, EXP, DEB
Moved			3		2		2		3		3
Pre-crisis	1	HKG, TWN, SGP, MAC	HKG, MMR, SGP, MAC	KOR, TWN, MYS, PHL, SGP, IND	KOR, MYS, SGP, IND	IDN, THA, BRN	IDN, THA, BRN, AUS	CHN, IDN, PHL, IND, AUS, NZL	CHN, IDN, PHL, VNM, AUS, NZL	KOR, TWN, IDN, SGP, BRN	HKG, KOR, TWN, IDN, SGP, BRN, NZL
	2	LAO, MMR, VNM	LAO, MMR	HKG, KHM, IDN, THA, MAC, BRN	HKG, TWN, KHM, IDN, THA, MAC, BRN	CHN, HKG, IND, MAC, NZL, CAN	CHN, HKG, KHM, IND, MAC, NZL, CAN	HKG, KOR, TWN, MYS, SGP, THA, MAC, CAN	HKG, KOR, TWN, MYS, SGP, THA, IND, CAN	LAO, MMR, VNM, JPN	LAO, MMR, JPN
	3	CHN, AUS, NZL	CHN, TWN, AUS, NZL, CAN	CAN	CAN	KOR, TWN, MYS, PHL, SGP, AUS,	KOR, TWN, MYS, PHL, SGP	KHM, LAO, MMR, VNM, BRN, JPN	KHM, LAO, MMR, MAC, BRN, JPN	HKG, KHM, MAC	KHM, MAC
	4	KHM, IDN, THA, BRN. JPN	KHM, IDN, THA, BRN. JPN	LAO, MMR, VNM	LAO, MMR, VNM	KHM, LAO, MMR, VNM	LAO, MMR, VNM			PHL, THA, IND	PHL, THA, VNM, IND
	5	KOR, MYS, PHL, IND, CAN	KOR, MYS, PHL, IND,	CHN, AUS, NZL	CHN, PHL, AUS, NZL					MYS, AUS, NZL, CAN	MYS, AUS, CAN
		All	BUS, INF, INT, EXP, DEB	All	BUS, INF, RER, EXP	All	INF, RER, INT, EXP	All	TRA, BUS, INT, DEB	All	TRA, BUS, INF, RER, INT, EXP
Moved			2		3		3		3		1
Crisis	1	CHN, HKG, KHM, MAC, JPN	CHN, HKG, KHM, MAC, JPN	CHN, MMR, PHL, THA, VNM, MAC, BRN	CHN, MMR, PHL, VNM, MAC, BRN	KOR, TWN, MYS, PHL, SGP, THA, BRN	KOR, TWN, MYS, PHL, SGP, BRN	HKG, KOR, TWN, KHM, JPN	HKG, KOR, TWN, KHM, JPN	HKG, KOR, MMR, PHL, MAC, JPN	HKG, KOR, MMR, PHL, MAC, JPN
	2	IDN, LAO	IDN, LAO, MMR	HKG, KOR, TWN, KHM, MYS, SGP, CAN	HKG, KOR, TWN, KHM, MYS, SGP	LAO, MMR, IND	LAO	MMR, THA, VNM, AUS, NZL	MYS, THA, VNM, AUS, NZL	IDN, MYS, THA, VNM, BRN	MYS, THA, VNM, BRN
	3	PHL, VNM	PHL, VNM, BRN	LAO	IDN, LAO	HKG, KHM, MAC	HKG, KHM, MMR, IND, MAC	LAO	IDN, LAO, MMR	TWN, IND, AUS, CAN	TWN, IND, AUS, CAN
	4	MMR, THA, NZL	THA, NZL	IDN, IND, AUS, NZL	THA, IND, AUS, NZL, CAN	VNM, AUS, NZL, CAN	THA, VNM, AUS, NZL, CAN	MYS, SGP, BRN, CAN	SGP, BRN, CAN	KHM, SGP, NZL	KHM, SGP, NZL
	5	IND, AUS	IND, AUS			CHN, IDN	CHN, IDN	CHN, IDN, PHL, IND, MAC	CHN, PHL, IND, MAC	LAO	IDN, LAO
	6	KOR, TWN, MYS, SGP, BRN, CAN	KOR, TWN, MYS, SGP, CAN								
	7										
		All	INF, INT, EXP, DEB, LAB	All	TRA, BUS, INF, RER, INT, EXP, LAB	All	TRA, BUS, RER, LAB	All	TRA, BUS, INT, EXP, LAB	All	TRA, BUS, INT, EXP, DEB, LAB
Moved			3		3		3		2		2
Post-crisis	1	HKG, MYS, SGP, JPN	HKG, MYS, SGP, BRN, JPN, CAN	CHN, TWN, KHM, VNM	CHN, TWN, KHM, VNM, IND, CAN	HKG, KHM, MYS, SGP, MAC, CAN	HKG, MYS, SGP, CAN	AUS, NZL	MMR, AUS, NZL, CAN	KOR, LAO, MMR, PHL, MAC	KOR, LAO, MMR, MAC
	2	MMR	MMR	AUS, NZL	AUS, NZL	KOR, PHL, BRN	KOR, MMR, PHL, BRN	KOR, KHM, LAO, MAC, JPN	KOR, KHM, LAO, MAC, JPN	TWN, IDN, THA, VNM, IND	TWN, IDN, THA, VNM, IND
	3	AUS, NZL	AUS, NZL	MMR	LAO, MMR	AUS, NZL	AUS, NZL	CHN, TWN, IDN, MYS, PHL, THA, VNM, IND	CHN, TWN, IDN, MYS, PHL, THA, VNM, IND	HKG, KHM, MYS, SGP, BRN, JPN	HKG, KHM, MYS, PHL, SGP, JPN
	4	KOR, TWN, KHM, LAO, PHL, MAC, BRN	CHN, KOR, TWN, KHM, LAO, PHL, MAC	IDN, LAO, IND, CAN	IDN	LAO, MMR	KHM, LAO, MAC	HKG, MMR, SGP, BRN, CAN	HKG, SGP, BRN	AUS, NZL, CAN	BRN, AUS, NZL, CAN
	5	CHN, IDN, THA, VNM, IND, CAN	IDN, THA, VNM, IND	HKG, SGP	HKG, SGP	CHN, TWN, IDN, THA, VNM, IND	CHN, TWN, IDN, THA, VNM, IND				
	6			MYS, THA, BRN	MYS, THA, BRN						
	7			KOR, PHL, MAC	KOR, PHL, MAC						
All Periods	Yes		INF, INT, EXP		INF, RER		-		-		BUS, INT, EXP
	Np		TRA, RER		-		-		INF		-

Table 6.63 MBC clusters by all and by subsets of criteria

		Dollar		Currency Basket		Yen		Euro		Yuan	
		1	2	1	2	1	2	1	2	1	2
		All	TRA, BUS, INF, RER, INT	All	INF, INT, DEB	All	TRA, BUS, RER, INT, DEB	All	INF, RER	All	TRA, INF, RER, INT
Moved			3		2		3		3		3
Pre-crisis	1	HKG, KOR, TWN, MYS, SGP, MAC	HKG, KOR, TWN, MYS, SGP, MAC	CHN, KOR, TWN, MYS, PHL, IND, AUS, NZL	CHN, KOR, MYS, PHL, IND, AUS, NZL, CAN	KOR, MYS, PHL, IND, AUS	KOR, MYS, PHL	HKG, KOR, TWN, KHM, MYS, SGP, THA, MAC, BRN, JPN, CAN	HKG, KOR, TWN, KHM, MYS, SGP, THA, MAC, BRN, JPN, CAN	KOR,TWN, IDN, SGP	KOR, TWN, IDN, SGP, CAN
	2	CHN, IND, AUS, NZL	CHN, AUS, NZL	HKG, KHM, IDN, SGP, THA, MAC, BRN	HKG, TWN, KHM, IDN, SGP, MAC, BRN	HKG, TWN, SGP, MAC	HKG, TWN, SGP, IND, MAC	CHN, IDN, PHL, IND, AUS, NZL	CHN, IDN, LAO, MMR, PHL, VNM, IND, AUS, NZL	MYS, AUS, NZL, CAN	JPN, AUS, NZL
	3	KHM, IDN, THA, JPN	KHM, IDN, THA, JPN	LAO, MMR, VNM	LAO, MMR, VNM	IDN, THA	IDN, THA, VNM, AUS	LAO, MMR, VNM		PHL, THA, IND	PHL, THA, IND
	4	PHL	MMR, PHL	CAN	THA	KHM, NZL	KHM, NZL			HKG, MAC	HKG, MAC
	5	VNM	VNM			CHN	CHN			BRN	MYS, BRN
	6	BRN	BRN			BRN	LAO			JPN	LAO
	7	LAO	LAO, VNM			LAO	MMR			LAO	MMR
	8	MMR	CAN			MMR	BRN			MMR	VNM
	9	CAN				VNM	CAN			VNM	KHM
	10					CAN				KHM	
		All	TRA, BUS, INF, INT, DEB	All	TRA, EXP, DEB	All	All	All	TRA, BUS, INF, RER, INT, DEB	All	TRA, BUS, INT
Moved			2		0		0		0		3
Crisis	1	KOR, MYS, PHL, SGP, THA, VNM, BRN, NZL	KOR, TWN, MYS, PHL, SGP, THA, VNM, BRN, NZL	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, AUS, NZL	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN, AUS, NZL	KOR, MYS, PHL, THA	KOR, MYS, PHL, THA	CHN, HKG, KOR, TWN, KHM, PHL, IND, MAC, JPN	CHN, HKG, KOR, TWN, KHM, PHL, IND, MAC, JPN	TWN, KHM, SGP, IND, AUS, NZL, CAN	TWN, KHM, SGP, IND, AUS, NZL, CAN
	2	TWN, KHM, IND, AUS	KHM, IND, AUS	IDN, MMR	IDN, MMR	VNM, AUS, NZL, CAN	VNM, AUS, NZL, CAN	MYS, SGP, THA, VNM, BRN, CAN	MYS, SGP, THA, VNM, BRN, CAN	HKG, KOR, PHL, MAC, JPN	HKG, KOR, MMR, PHL, MAC, JPN
	3	CHN, HKG, MAC, JPN	CHN, HKG, MAC, JPN	LAO	LAO	TWN, SGP, BRN	TWN, SGP, BRN	AUS, NZL	AUS, NZL	MYS, THA, VNM, BRN	IDN, LAO, MYS, THA, VNM, BRN
	4	IDN	IDN, MMR	CAN	CAN	KHM, MMR, IND	KHM, MMR, IND	IDN	IDN	MMR	
	5	LAO	LAO			HKG, MAC	HKG, MAC	LAO	LAO	IDN	
	6	MMR	CAN			CHN, IDN	CHN, IDN	MMR	MMR	LAO	
	7	CAN				LAO	LAO				
		All	TRA, BUS, INT, EXP, DEB	All	TRA, RER, INT, EXP	All	BUS, INT, DEB	All	All	All	INF, RER, INT, EXP, DEB, LAB
Moved			3		3		3		0		3
Post-crisis	1	CHN, TWN, MYS, THA, VNM, IND	TWN, MYS, THA, VNM	CHN, HKG, KOR, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC, BRN	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	CHN, HKG, TWN, KHM, MYS, PHL, SGP, THA, VNM, IND, MAC	CHN, HKG, TWN, KHM, IDN, MYS, PHL, SGP, THA, VNM, IND, MAC, CAN	CHN, TWN, VNM, IND	CHN, TWN, VNM, IND	HKG, SGP, JPN	SGP, JPN
	2	HKG, SGP, JPN	CHN, HKG, SGP, JPN	IDN, AUS, NZL	IDN, AUS, NZL	KOR, IDN, LAO, MMR, AUS, NZL, CAN	KOR, MMR, BRN, AUS, NZL	HKG, MYS, SGP, THA	HKG, MYS, SGP, THA	TWN, KHM	KHM, PHL, MAC
	3	KHM, PHL, MAC	KHM, PHL, MAC	LAO	KOR, LAO, MMR	BRN	LAO	KOR, KHM, MAC, JPN	KOR, KHM, MAC, JPN	MYS, THA	HKG, MYS, THA
	4	AUS, NZL	MMR, AUS	MMR	BRN, CAN			AUS, NZL	AUS, NZL	VNM, IND	VNM, IND
	5	KOR	IDN, IND	CAN				IDN	IDN	AUS, NZL	AUS, NZL
	6	IDN	KOR					BRN	BRN	CAN	KOR
	7	BRN	BRN					PHL	PHL	PHL	IDN
	8	LAO	LAO					LAO	LAO	MAC	LAO
	9	MMR	NZL					MMR	MMR	KOR	MMR
	10	CAN	CAN					CAN	CAN	IDN	BRN
	11									BRN	CAN
	12									LAO	TWN
	13									MMR	
All Periods	Yes		TRA, BUS, INT		-		BUS, INT, DEB		INF, RER		INT
	Np		-		BUS		-		-		-

Table 6.64 Cross-method dominant OCA criteria

	Dollar				Currency Basket				Yen				Euro				Yuan			
	HCM	FCM	MBC	All	HCM	FCM	MBC	All	HCM	FCM	MBC	All	HCM	FCM	MBC	All	HCM	FCM	MBC	All
Pre-crisis	TRA, INF, INT	BUS, INF, INT, EXP	TRA, BUS, INF, RER, INT	INF, INT	INF, INT, EXP	INF, RER, INT	INF, INT, DEB	INF, INT	BUS, INF, RER, INT, EXP	TRA, BUS, INF, INT, DEB	TRA, BUS, RER, DEB	BUS, INT	TRA, BUS, RER, INT, EXP, DEB	RER, EXP, DEB	INF, RER	RER	TRA, INT, EXP, DEB	BUS, INT, EXP, DEB	TRA, INF, RER, INT	INT
Crisis	BUS, INT, DEB	BUS, INF, INT, EXP, DEB	TRA, BUS, INF, INT, DEB	BUS, INT, DEB	BUS, EXP, DEB	BUS, INF, RER, EXP	TRA, EXP, DEB	EXP	BUS, RER, EXP	INF, RER, INT, EXP	All	RER, EXP	TRA, BUS, RER, INT, DEB	TRA, BUS, INT, DEB	TRA, BUS, INF, RER, INT, DEB	TRA, BUS. INT, DEB	TRA, BUS, INT, EXP, DEB	TRA, BUS, INF, RER, INT, EXP	TRA, BUS, INT	TRA, BUS, INT
Post-crisis	BUS, EXP, DEB, LAB	INF, INT, EXP, DEB, LAB	TRA, BUS, INT, EXP, DEB	EXP, DEB	BUS, RER, INT, EXP, DEB, LAB	TRA, BUS, INF, RER, INT, EXP, LAB	TRA, RER, INT, EXP	RER, INT, EXP	BUS, RER, INT, EXP, LAB	TRA, BUS, RER, LAB	BUS, INT, DEB	BUS	TRA, BUS, INT, LAB	TRA, BUS, INT, EXP, LAB	All	TRA, BUS, INT, LAB	TRA, BUS, INF, RER, EXP, LAB	TRA, BUS, INT, EXP, DEB, LAB	INF, RER, INT, EXP, DEB, LAB	EXP, LAB
In	-	INF, INT, EXP	TRA, BUS, INT	-	EXP	INF, RER	-	-	BUS, RER, EXP	-	BUS, INT, DEB	-	TRA, BUS, INT	-	INF, RER	-	TRA, EXP	BUS, INT, EXP	INT	-
Out	RER	TRA, RER	-	n.a.	TRA	-	BUS	n.a.	TRA, DEB	-	-	n.a.	INF	INF	-	n.a.	-	-	-	n.a.

Note: 'n.a.' for not applicable.

6.6.2 Variable Selection

Exercises in the main analysis have involved criteria or variables 'prescribed' by the OCA theory. Alternatively, this section seeks to identify subsets of variables which are compatible with the best partitions as suggested by validation indexes associated with the clustering methods. The rest of the discussion sequentially presents the findings from HCM, FCM, and MBC before ending with a comparison over the methods.

Hierarchical Cluster Analysis

For HCM, combinations of variables are sequentially entered into analysis and the ones which produce the highest cophenetic correlation coefficients are selected. Remember that cophenetic correlation is a measure indicating how well the hierarchical configurations represent the inherent dissimilarities between objects in the data. Coefficients closer to 1 represent better partitioning.

Results are put together in Table 6.65. *p* represents the number of variables entered, columns '1' contain the subsets of criteria corresponding to the highest cophenetic correlations, columns '2' display the corresponding coefficients (the highest values are

shaded), and columns ‘3’ show the coefficient means (computed from the coefficients generated by all combinations of variables for each number of variables).

On the whole, since the crisis period, classifications using only INF produce the highest coefficients regardless of anchor. Other than that, one can also find that certain variables do appear more frequently in the subsets of criteria corresponding to the highest cophenetic correlations (columns 1). These criteria should be relatively necessary in producing the best partitions as far as HCM and cophenetic correlation are concerned.

The counts of the variables are gathered in Table 6.66. Since every variable is included in the all-variable solutions, those variables are not counted. Also, recall that the labor criterion is only available for the post-crisis period. Hence, its counts will be much smaller.

As the grand totals show, INF obtains the highest count, followed by DEB, RER, and so forth. Judging by the counts, INF and DEB should be more important.

The next question: which criteria are more important for which anchor? TRA is more important for dollar and basket anchors while RER is more important for basket and yen anchors. For euro and yuan, only INF and DEB are relatively important.

Fuzzy Cluster Analysis

Subsets of variables which are consistent with best partitions by FCM are explored here. Combinations of variables are sequentially entered and the ones whose solutions obtain the lowest Xie-Beni’s indexes (XBI) are selected. To recap, XBI measures how well generated fuzzy partitions fit the structure of the data where lower values correspond to better fit.

Results are displayed in Table 6.67. *p* is the number of variables entered, columns ‘1’ show the variables which yield the lowest XBIs, columns ‘2’ the respective XBI values, and columns ‘3’ the XBI means (computed from all combinations of variables

for each number of variables). By and large, the more the variables the lower the XBIs.

The counts of variables compatible with lowest XBIs are collected in Table 6.68. Since all variables are included in the all-variable solutions, those variables are not counted. Also, recall that the labor criterion is only available for the post-crisis period. Hence, its counts will be much smaller.

Looking at the grand totals of counts, EXP records the largest sum, followed by BUS, INT, and so forth. On this evidence, these variables should be relatively important in producing classifications which reflect the intrinsic structure of the data.

Other observations can also be made. The importance of EXP, reflected by its high count is true for all anchors. Meanwhile, TRA is more important for basket and euro anchors while BUS is more important for basket and yen anchors.

Model-based Cluster Analysis

For MBC, combinations of variables are sequentially entered and the ones which produce the highest BICs are selected. Higher BIC indicates better fit between the model and the data structure, signifying better classification.

Results are placed in Table 6.69. *p* is the number of variables entered; columns '1' show the variables consistent with the highest BICs; columns '2' display the respective BIC values; columns '3' provide the corresponding model; columns '4' present the BIC means computed from all combinations of variables by each number of variables; and columns '5' contain the mod of the model, that is, the model which is indicated the most.

By and large, as signified by the means, the more the variables, the lower the BICs. Besides that, for most of the time, models 1 and 3 correspond to highest BICs. As signified by the mod, models 1 and 3 are also compatible with appropriate BICs most of the time.

The number of times the variables are indicated is given in Table 6.70. Since all variables are included in the all-variable solutions, their counts are not considered.

Recall that the labor criterion is only available for the post-crisis period. Hence, its counts are much smaller.

The grand totals show that higher counts are attained by INF, RER, and DEB. Hence, these variables ought to be relatively crucial in generating best partitions. Indeed, INF and RER are important for all anchors. Meantime, TRA is somewhat important for dollar, basket, and yuan anchors and INT is more important for dollar and yen anchors.

Comparisons across Methods

Table 6.71 collects the variables that are compatible with best partitioning as signified by the validation statistics for the respective clustering methods. The cross-method variables are also shown and their counts are placed in Table 6.72. Variables with more counts can be regarded as more important. Recall that LAB is only available for the post-crisis period.

For dollar anchor, the totals show that the highest count is attained by RER; for basket anchor, TRA; for yen anchor, DEB; for euro anchor, EXP; and for yuan anchor, INF and RER. Notice that for yen and euro, the variables with the highest counts are not reference-dependent; the variables are not measures against a reference. In this respect, the measures in relation to each of these reference countries may not be as important in generating well-partitioned configurations.

The grand totals reveal that INF, RER, and DEB record the top three counts. Hence, inflation convergence, real exchange rate volatility, and external indebtedness on the whole ought to be more important in producing the most appropriate partitions.

Table 6.65 HCM selection of variables

		Dollar			Currency Basket			Yen			Euro			Yuan		
	p	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Pre-crisis	1	INT	.97	.86	RER	.92	.87	RER	.99	.88	INF	.90	.84	TRA	.95	.87
	2	INF, DEB	.96	.86	INF, DEB	.96	.86	INF, RER	.96	.87	INF, DEB	.96	.82	TRA, DEB	.95	.87
	3	TRA, INF, DEB	.95	.85	TRA, INF, DEB	.94	.85	INF, RER, DEB	.96	.87	INF, RER, DEB	.92	.81	TRA, INF, DEB	.96	.88
	4	TRA, INF, INT, DEB	.93	.85	TRA, INF, RER, DEB	.95	.85	BUS, INF, RER, DEB	.93	.87	BUS, INF, EXP, DEB	.91	.80	TRA, INF, RER, DEB	.96	.89
	5	TRA, INF, RER, INT, DEB	.89	.84	TRA, BUS, INF, RER, DEB	.93	.84	TRA, INF, RER, EXP, DEB	.92	.87	BUS, INF, INT, EXP, DEB	.88	.79	TRA, INF, RER, INT, DEB	.95	.90
	6	TRA, BUS, INF, RER, INT, DEB	.87	.83	TRA, BUS, INF, RER, EXP, DEB	.90	.84	TRA, BUS, RER, INF, EXP, DEB	.88	.86	BUS, INF, RER, INT, EXP, DEB	.85	.80	TRA, BUS, INF, RER, EXP, DEB	.93	.91
	7	All	.80	.80	All	.83	.83	All	.85	.85	All	.80	.80	All	.93	.93
Crisis	1	INF	.99	.89	INF	.99	.89	INF	.99	.90	INF	.90	.84	INF	.99	.88
	2	TRA, INF	.98	.89	INF, RER	.98	.89	INF, RER	.98	.89	INT, DEB	.96	.82	INF, DEB	.97	.87
	3	INF, RER, DEB	.97	.89	INF, RER, DEB	.98	.89	INF, RER, DEB	.97	.88	INF, RER, DEB	.92	.81	INF, RER, DEB	.97	.85
	4	TRA, INF, RER, DEB	.97	.90	TRA, INF, RER, DEB	.97	.90	INF, RER, INT, DEB	.96	.88	BUS, INF, EXP, DEB	.91	.80	INF, RER, INT, DEB	.95	.85
	5	TRA, INF, RER, EXP, DEB	.95	.91	TRA, INF, RER, EXP, DEB	.95	.90	BUS, INF, RER, INT, DEB	.94	.88	BUS, INF, INT, EXP, DEB	.88	.80	INF, RER, INT, EXP, DEB	.93	.85
	6	TRA, BUS, INF, RER, EXP, DEB	.93	.90	TRA, INF, RER, INT, EXP, DEB	.95	.91	BUS, INF, RER, INT, EXP, DEB	.92	.89	BUS, INF, RER, INT, EXP, DEB	.85	.80	BUS, INF, RER, INT, EXP, DEB	.91	.85
	7	All	.91	.91	All	.89	.89	All	.89	.89	All	.80	.80	All	.85	.85
Post-crisis	1	INF	.99	.87	INF	.99	.87	INF	.98	.89	INF	.99	.87	INF	.99	.87
	2	INF, DEB	.99	.88	INF, DEB	.98	.87	INF, DEB	.98	.88	INF, DEB	.98	.87	INF, DEB	.99	.87
	3	TRA, INF, DEB	.98	.89	INF, RER, DEB	.97	.87	INF, RER, DEB	.97	.88	INF, RER, INT	.97	.87	INF, INT, DEB	.97	.86
	4	INF, RER, INT, DEB	.97	.89	TRA, INF, RER, DEB	.97	.88	INF, RER, INT, DEB	.97	.89	INF, RER, INT, DEB	.97	.88	INF, RER, INT, DEB	.97	.86
	5	TRA, INF, RER, INT, DEB	.95	.90	TRA, INF, RER, INT, DEB	.95	.89	INF, RER, INT, EXP, DEB	.96	.90	BUS, INF, RER, INT, DEB	.96	.89	BUS, INF, RER, INT, DEB	.96	.86
	6	TRA, INF, RER, INT, EXP, DEB	.94	.91	TRA, INF, RER, INT, EXP, DEB	.93	.89	BUS, INF, RER, INT, EXP, DEB	.95	.91	TRA, BUS, INF, RER, INT, DEB	.94	.89	BUS, INF, RER, INT, DEB, LAB	.93	.86
	7	TRA, BUS, INF, RER, INT, DEB, LAB	.93	.92	TRA, BUS, INF, RER, EXP, DEB, LAB	.92	.90	TRA, BUS, INF, RER, INT, DEB, LAB	.93	.91	TRA, BUS, INF, RER, INT, EXP, DEB	.93	.90	TRA, BUS, INF, RER, INT, DEB, LAB	.90	.86
	8	All	.92	.92	All	.91	.91	All	.92	.92	All	.91	.91	All	.86	.86

Table 6.66 HCM variable count

		TRA	BUS	INF	RER	INT	EXP	DEB	LAB	Total
Dollar	Pre-crisis	4	1	5	2	4	0	5	-	21
	Crisis	4	1	6	4	0	2	4	-	21
	Post-crisis	4	1	7	4	4	1	6	1	28
	Total	12	3	18	10	8	3	15	1	70
Currency Basket	Pre-crisis	4	2	5	4	0	1	5	-	21
	Crisis	3	0	6	5	1	2	4	-	21
	Post-crisis	4	1	7	5	2	2	6	1	28
	Total	11	3	18	14	3	5	15	1	70
Yen	Pre-crisis	2	2	5	6	0	2	4	-	21
	Crisis	0	2	6	5	3	1	4	-	21
	Post-crisis	1	2	7	5	4	2	6	1	28
	Total	3	6	18	16	7	5	14	1	70
Euro	Pre-crisis	0	3	6	2	2	3	5	-	21
	Crisis	0	3	5	2	3	3	5	-	21
	Post-crisis	2	3	7	5	5	1	5	0	28
	Total	2	9	18	9	10	7	15	0	70
Yuan	Pre-crisis	6	1	4	3	1	1	5	-	21
	Crisis	0	1	6	4	3	2	5	-	21
	Post-crisis	1	3	7	4	5	0	6	2	28
	Total	7	5	17	11	9	3	16	2	70
	Grand Total	35	26	89	60	37	23	75	5	350

Table 6.67 FCM selection of variables

	p	Dollar			Currency Basket			Yen			Euro			Yuan		
		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Pre-crisis	1	DEB	1.63	2.45	DEB	1.64	2.24	RER	.02	1.72	EXP	1.60	1.91	INF	1.50	2.12
	2	RER, DEB	1.11	1.51	TRA, BUS	1.23	1.42	TRA, BUS	.79	1.43	BUS, RER	1.06	1.35	RER, EXP	.95	1.42
	3	BUS, RER, DEB	1.03	1.25	TRA, EXP, DEB	.88	1.21	RER, INT, EXP	1.01	1.28	TRA, INF, INT	.90	1.19	BUS, INT, EXP	1.04	1.27
	4	BUS, INF, INT, EXP	.91	1.14	BUS, RER, INT, DEB	.89	1.12	BUS, RER, EXP, DEB	.91	1.16	INF, RER, INT, EXP	.85	1.05	INF, RER, INT, EXP	.94	1.15
	5	BUS, INF, RER, EXP, DEB	.90	1.03	TRA, BUS, RER, EXP, DEB	.84	.97	BUS, RER, INT, EXP, DEB	.80	1.05	BUS, INF, RER, INT, EXP	.75	.96	BUS, INF, RER, INT, EXP	.87	1.10
	6	TRA, BUS, INF, INT, EXP, DEB	.78	.95	TRA, BUS, RER, INT, EXP, DEB	.79	.86	BUS, INF, RER, INT, EXP, DEB	.81	.91	BUS, INF, RER, INT, EXP, DEB	.76	.83	BUS, INF, RER INT, EXP, DEB	.91	1.04
	7	All	.93	.93	All	.82	.82	All	.79	.79	All	.77	.77	All	.95	.95
Crisis	1	INT	2.11	2.94	RER	1.75	7.66	TRA	1.42	2.00	DEB	1.56	3.60	INT	1.62	2.31
	2	TRA, RER	1.10	1.45	BUS, DEB	1.13	1.54	INT, DEB	1.13	1.46	EXP, DEB	1.24	1.42	TRA, EXP	1.15	1.44
	3	BUS, INT, EXP	.88	1.19	TRA, RER, INT	.98	1.25	INF, INT, EXP	1.01	1.28	TRA, EXP, DEB	.99	1.32	TRA, RER, INT	.87	1.23
	4	BUS, RER, INT, DEB	.88	1.09	TRA, BUS, INT, EXP	.87	1.14	BUS, INF, EXP, DEB	.91	1.16	TRA, BUS, INT, EXP	.88	1.19	TRA, INF, RER, INT	.97	1.13
	5	BUS, RER, INT, EXP, DEB	.81	1.01	TRA, BUS, RER, INT, EXP	.77	.99	BUS, INF, INT, EXP, DEB	.80	1.05	TRA, BUS, RER, INT, EXP	.74	1.07	TRA, BUS, RER, INT, EXP	.88	1.08
	6	TRA, INF, RER, INT, EXP, DEB	.85	.92	TRA, BUS, INF, RER, INT, EXP	.79	.91	BUS, INF, RER, INT, EXP, DEB	.81	.91	TRA, BUS, INF, RER, INT, EXP	.70	.93	TRA, BUS, INF, INT, EXP, DEB	.87	.95
	7	All	.89	.89	All	.85	.85	All	.79	.79	All	.76	.76	All	.93	.93
Post-crisis	1	EXP	1.96	2.52	EXP	1.67	2.27	BUS	1.37	3.34	RER	1.34	3.55	EXP	1.25	2.36
	2	BUS, EXP	.69	1.47	INF, RER	1.20	1.57	TRA, LAB	1.06	1.52	RER, LAB	1.19	1.51	BUS, EXP	1.16	1.54
	3	RER, EXP, LAB	1.01	1.26	TRA, BUS, LAB	.94	1.30	TRA, BUS, LAB	.91	1.30	TRA, EXP, LAB	1.00	1.28	EXP, DEB, LAB	.88	1.29
	4	BUS, RER, EXP, LAB	.80	1.14	BUS, INT, EXP, LAB	.66	1.18	TRA, BUS, EXP, LAB	.85	1.21	TRA, BUS, INT, EXP	.86	1.14	TRA, BUS, INF, EXP	.88	1.15
	5	BUS, RER, INT, EXP, LAB	.77	1.03	BUS, INF, INT, EXP, LAB	.61	1.07	TRA, BUS, EXP, DEB, LAB	.74	1.10	TRA, RER, EXP, DEB, LAB	.77	1.02	TRA, BUS, INF, RER, EXP	.78	1.04
	6	BUS, INF, RER, INT, EXP, LAB	.74	.93	TRA, BUS, INT, EXP, DEB, LAB	.53	.93	TRA, BUS, INT, EXP, DEB, LAB	.74	1.01	TRA, BUS, INT, EXP, DEB, LAB	.69	.94	TRA, BUS, INF, RER, INT, EXP	.72	.92
	7	TRA, BUS, INF, RER, EXP, DEB, LAB	.71	.85	TRA, BUS, INF, INT, EXP, DEB, LAB	.54	.79	TRA, BUS, INF, INT, EXP, DEB, LAB	.77	.87	TRA, BUS, INF, INT, EXP, DEB, LAB	.66	.83	BUS, INF, RER, INT, EXP, DEB, LAB	.72	.81
	8	All	.69	.69	All	2.08	2.08	All	.78	.78	All	.77	.77	All	.74	.74

Table 6.68 FCM variable count

		TRA	BUS	INF	RER	INT	EXP	DEB	LAB	Total
Dollar	Pre-crisis	1	4	3	3	2	3	5	-	21
	Crisis	2	3	1	4	5	3	3	-	21
	Post-crisis	1	5	2	5	2	7	1	5	28
	Total	4	12	6	12	9	13	9	5	70
Currency Basket	Pre-crisis	4	4	0	3	2	3	5	-	21
	Crisis	4	4	1	4	4	3	1	-	21
	Post-crisis	3	5	3	1	4	5	2	5	28
	Total	11	13	4	8	10	11	8	5	70
Yen	Pre-crisis	1	4	1	5	3	4	3	-	21
	Crisis	1	3	4	1	4	4	4	-	21
	Post-crisis	6	6	1	0	2	4	3	6	28
	Total	8	13	6	6	9	12	10	6	70
Euro	Pre-crisis	1	3	4	4	4	4	1	-	21
	Crisis	4	3	1	2	3	5	3	-	21
	Post-crisis	5	3	1	3	3	5	3	5	28
	Total	10	9	6	9	10	14	7	5	70
Yuan	Pre-crisis	0	3	4	4	4	5	1	-	21
	Crisis	5	2	2	3	5	3	1	-	21
	Post-crisis	3	5	4	3	2	7	2	2	28
	Total	8	10	10	10	11	15	4	2	70
	Grand Total	41	57	32	45	49	65	38	23	350

Table 6.69 MBC selection of variables

		Dollar					Currency Basket					Yen					Euro					Yuan				
	p	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Pre-crisis	1	TRA	31	2	-68	2	DEB	-50	1	-76	1	EXP	15	2	-50	2	RER	-47	1	-68	2	RER	-20	1	-44	1
	2	TRA, INT	-62	4	-100	1	RER, DEB	-88	2	-104	1	EXP,DEB	39	5	-77	1	BUS, INT	-4	5	-124	1	EXP, DEB	11	5	-93	1
	3	TRA, INT, DEB	-122	3	-159	3	TRA, BUS, RER	-110	3	-153	1	BUS,RER, INT	-68	3	-136	3	INF, RER, DEB	-152	1	-172	1	RER, INT, EXP	2	1	-133	1
	4	BUS, INF, RER, INT	-184	3	-209	3	TRA, INF, RER, DEB	-169	1	-207	1	TRA, INF, RER,DEB	67	2	-181	3	BUS, INF, EXP,DEB	-216	1	-235	1	TRA, INF, RER, DEB	-156	3	-205	1
	5	TRA, INF, RER, INT, DEB	-207	4	-262	3	INF, RER, INT, EXP, DEB	-238	4	-274	1	TRA, INF, RER, INT, DEB	-159	3	-239	1	BUS, INF, RER,INT, DEB	-268	1	-287	1	TRA, INF, RER, INT, DEB	-200	1	-251	1
	6	TRA,BUS, INF, RER, INT, EXP	-298	3	-320	3	TRA, INF, RER, INT, EXP, DEB	-285	4	-319	1	TRA,BUS, RER, INT, EXP, DEB	-299	3	-313	3	TRA,BUS, RER,INT, EXP,DEB	-340	5	-349	1	TRA, BUS, INF, RER, EXP, DEB	-265	1	-305	1
	7	All	-372	3	-372	3	All	-371	4	-371	4	All	-370	3	-370	4	All	-409	1	-409	1	All	-340	3	-340	3
Crisis	1	BUS	-4	2	-65	2	INF	-7	2	-62	2	BUS	-9	2	-57	2	INT	0	2	-55	2	INF	-17	5	-57	1
	2	TRA, EXP	28	5	-93	3	EXP, DEB	19	2	-96	1	TRA,DEB	13	5	-85	3	BUS, INF	56	5	-81	1	INF, EXP	34	2	-96	1
	3	TRA, INF, DEB	-80	3	-143	3	INF, RER, DEB	-59	3	-136	1	BUS, INF, DEB	-100	3	-149	3	INF, RER, DEB	-70	1	-148	3	BUS, RER, EXP	0	3	-142	3
	4	TRA, INF, RER, INT	-139	3	-193	3	TRA, INF, RER, DEB	-113	3	-189	3	INF, RER, INT, DEB	-87	3	-180	3	INF, RER, EXP, DEB	-142	1	-199	3	TRA, RER, INT, EXP	1	1	-182	3
	5	TRA, INF, RER,EXP, DEB	-204	3	-246	3	TRA, INF, RER, EXP, DEB	-185	3	-246	3	BUS, INF, RER,EXP, DEB	-188	3	-238	3	BUS, INF, RER, EXP, DEB	-218	3	-253	3	BUS, INF, RER, INT, DEB	-210	3	-242	3
	6	TRA, BUS, INF, RER, INT, DEB	-270	3	-295	3	TRA, INF, RER, INT, EXP, DEB	-250	3	-285	3	TRA, INF, RER, INT, EXP, DEB	-246	3	-298	4	TRA,BUS, INF,RER, EXP, DEB	-280	3	-305	3	TRA, INF, RER, INT, EXP, DEB	0	3	-252	3
	7	All	-351	3	-351	3	All	-332	3	-332	4	All	-341	4	-341	4	All	-343	3	-343	3	All	0	3	0	3
Post-crisis	1	EXP	-27	2	-84	1	EXP	-16	2	-75	1	INT	31	2	-54	1	INT	-48	2	-91	2	INT	13	5	-64	1
	2	EXP, LAB	-3	2	-110	1	TRA,LAB	28	5	-110	1	INF, INT	-39	3	-88	1	RER, EXP	-58	3	-101	1	TRA, INF	53	5	-72	1
	3	INF, INT, DEB	-104	1	-156	1	TRA, BUS, INF	-80	1	-143	1	INF, INT, DEB	-39	1	-138	3	INF, RER, DEB	-101	1	-156	1	TRA, INF, RER	62	5	-122	1
	4	RER, INT, EXP, DEB	-129	3	-210	1	BUS, INF, RER, LAB	100	2	-189	3	BUS, INF, RER, INT	-117	3	-185	3	INF, RER, INT, DEB	-154	1	-212	3	TRA, INF, RER, EXP	66	5	-174	3
	5	BUS, INF, RER, INT, DEB	-211	1	-265	3	TRA, INF, RER,DEB, LAB	-193	1	-250	3	TRA, INF, INT, DEB, LAB	-159	3	-234	3	INF, RER, INT, DEB, LAB	-224	1	-268	3	TRA, BUS, INF, INT, LAB	-136	3	-230	1
	6	BUS, INF, RER, INT, DEB, LAB	-290	1	-323	3	TRA,BUS, INF, RER, DEB,LAB	-254	1	-305	3	TRA,BUS, INF, RER, INT, LAB	-258	4	-270	4	TRA, INF, RER, INT, EXP, DEB	-287	5	-329	1	TRA, BUS, INF, RER, INT, DEB	-230	1	-284	4
	7	TRA, BUS, INF, RER, INT, DEB, LAB	-355	1	-375	3	TRA, BUS, INF, RER, INT, EXP, DEB	-336	5	-356	3	TRA,BUS, INF, RER, INT, DEB, LAB	-328	5	-345	4	TRA,INF, RER, INT, EXP,DEB, LAB	-369	4	-388	1	TRA, BUS, INF, RER, INT, DEB, LAB	-277	4	-346	5
	8	All	-421	1	-421	1	All	-402	3	-402	3	All	144	2	144	2	All	-454	1	-454	1	All	-424	1	-424	1

Notes:
1 Variables which yield highest BICs; 2 Highest BICs; 3 Models corresponding to highest BICs; 4 BIC mean; 5 BIC mode.

Table 6.70 MBC variable count

		TRA	BUS	INF	RER	INT	EXP	DEB	LAB	Total
Dollar	Pre-crisis	5	2	3	3	5	1	2	-	21
	Crisis	5	2	4	3	2	2	3	-	21
	Post-crisis	1	3	4	4	5	3	5	3	28
	Total	11	7	11	10	12	6	10	3	70
Currency Basket	Pre-crisis	3	1	3	5	2	2	5	-	21
	Crisis	3	0	5	4	1	3	5	-	21
	Post-crisis	5	4	5	4	1	2	3	4	28
	Total	11	5	13	13	4	7	13	4	70
Yen	Pre-crisis	3	2	2	4	3	3	4	-	21
	Crisis	2	3	4	3	2	2	5	-	21
	Post-crisis	3	3	6	3	7	0	3	3	28
	Total	8	8	12	10	12	5	12	3	70
Euro	Pre-crisis	1	4	3	4	3	2	4	-	21
	Crisis	1	3	5	4	1	3	4	-	21
	Post-crisis	2	0	5	6	5	3	5	2	28
	Total	4	7	13	14	9	8	13	2	70
Yuan	Pre-crisis	3	1	3	5	2	3	4	-	21
	Crisis	2	2	4	4	3	4	2	-	21
	Post-crisis	6	3	6	4	4	1	2	2	28
	Total	11	6	13	13	9	8	8	2	70
	Grand Total	45	33	62	60	46	34	56	14	350

Table 6.71 Cross-method selection of variables

		Dollar				Currency Basket				Yen				Euro				Yuan			
		HCM	FCM	MBC	All	HCM	FCM	MBC	All	HCM	FCM	MBC	All	HCM	FCM	MBC	All	HCM	FCM	MBC	All
Pre-crisis	1	INT	DEB	TRA	-	RER	DEB	DEB		RER	RER	EXP	-	INF	EXP	RER	-	TRA	INF	RER	-
	2	INF, DEB	RER, DEB	TRA, INT	-	INF, DEB	TRA, BUS	RER, DEB	-	INF, RER	TRA, BUS	EXP, DEB	-	INF, DEB	BUS, RER	BUS, INT	-	TRA, DEB	RER, EXP	EXP, DEB	-
	3	TRA, INF, DEB	BUS, RER, DEB	TRA, INT, DEB	DEB	TRA, INF, DEB	TRA, EXP, DEB	TRA, BUS, RER	TRA,	INF, RER, DEB	RER, INT, EXP	BUS, RER, INT	RER	INF, RER, DEB	TRA, INF, INT	INF, RER, DEB	INF	TRA, INF, DEB	BUS, INT, EXP	RER, INT, EXP	-
	4	TRA, INF, INT, DEB	BUS, INF, RER, EXP	BUS, INF, RER, INT	INF, INT	TRA, INF, RER, DEB	BUS, RER, INT, DEB	TRA, INF, RER, DEB	RER, DEB	BUS, INF, RER, DEB	BUS, RER, EXP, DEB	TRA, INF, RER, DEB	RER, DEB	BUS, INF, EXP, DEB	INF, RER, EXP, DEB	BUS, INF, EXP, DEB	INF, EXP	TRA, INF, RER, DEB	INF, RER, INT, DEB	TRA, INF, RER, DEB	INF, RER
	5	TRA, INF, RER, DEB	BUS, INF, RER, EXP	TRA, INF, RER, INT	INF, RER, DEB	TRA, BUS, INF, DEB	TRA, BUS, INF, DEB	INF, RER, DEB	RER, DEB	TRA, INF, DEB	BUS, RER, EXP, DEB	TRA, INF, DEB	RER, DEB	BUS, INF, EXP, DEB	BUS, INF, RER, DEB	BUS, INF, EXP, DEB	BUS, INF, DEB	TRA, INF, DEB	BUS, INF, RER, DEB	TRA, INF, RER, DEB	INF, RER, INT
	6	TRA, BUS, INF, RER, INT	TRA, BUS, INF, INT, EXP, DEB	TRA, BUS, INF, RER, INT, DEB	TRA, BUS, INF, INT	TRA, BUS, INF, RER, EXP, DEB	TRA, BUS, INF, RER, EXP, DEB	TRA, BUS, INF, RER, EXP, DEB	TRA, RER, EXP, DEB	TRA, BUS, INF, RER, EXP, DEB	BUS, INF, RER, EXP, DEB	TRA, BUS, INF, RER, EXP, DEB	BUS, RER, EXP, DEB	BUS, INF, RER, INT, EXP, DEB	BUS, INF, RER, INT, EXP, DEB	TRA, BUS, INF, RER, EXP, DEB	BUS, RER, EXP, DEB	TRA, BUS, INF, RER, EXP, DEB	BUS, INF, RER, INT, EXP, DEB	TRA, BUS, INF, RER, EXP, DEB	BUS, INF, RER, EXP, DEB
Crisis	1	INF	INT	BUS	-	INF	RER	INF	-	INF	TRA	BUS	-	INF	DEB	INT	-	INF	INT	INF	-
	2	TRA, INF	TRA, RER	TRA, EXP	TRA	INF, RER	BUS, DEB	EXP, DEB	-	INF, RER	INT, DEB	TRA, DEB	-	INT, DEB	EXP, DEB	BUS, INF	-	INF, DEB	TRA, EXP	INF, EXP	-
	3	INF, RER, DEB	BUS, INT, EXP	TRA, INF, DEB	-	INF, RER, DEB	TRA, RER, INT	INF, RER, DEB	RER	INF, RER, DEB	INF, INT, EXP	BUS, INF, DEB	INF	INF, RER, DEB	TRA, EXP, DEB	INF, RER, DEB	DEB	INF, DEB	TRA, RER, INT	BUS, RER, EXP	RER
	4	TRA, INF, RER, DEB	BUS, RER, INT, DEB	TRA, INF, RER, INT	RER	TRA, INF, RER, DEB	TRA, BUS, INT, DEB	TRA, INF, RER, DEB	TRA	INF, RER, DEB	BUS, INF, EXP, DEB	INF, RER, INT, DEB	INF, DEB	BUS, INF, EXP, DEB	TRA, BUS, INT, DEB	INF, BUS, RER, DEB	EXP	INF, RER, DEB	TRA, INF, INT, DEB	TRA, RER, INT, DEB	RER, INT
	5	TRA, INF, RER, EXP, DEB	BUS, RER, INT, EXP, DEB	TRA, INF, RER, INT, DEB	RER, EXP, DEB	TRA, INF, BUS, DEB	TRA, BUS, INF, EXP, DEB	TRA, INF, RER, EXP, DEB	TRA, RER, EXP, DEB	BUS, INF, RER, INT, DEB	BUS, INF, INT, EXP, DEB	BUS, INF, RER, INT, DEB	BUS, INF, INT, DEB	BUS, INF, EXP, DEB	TRA, BUS, INF, EXP, DEB	BUS, INF, RER, INT, DEB	BUS, EXP, DEB	INF, RER, INT, DEB	TRA, BUS, INF, EXP, DEB	BUS, INF, RER, INT, DEB	RER, INF, INT
	6	TRA, BUS, INF, RER, INT, DEB	TRA, INF, RER, INT, EXP, DEB	TRA, BUS, INF, RER, INT, DEB	TRA, INF, RER, DEB	TRA, INF, BUS, RER, INT, DEB	TRA, BUS, INF, RER, INT, EXP	TRA, INF, RER, INT, EXP, DEB	TRA, RER, INT, DEB	BUS, INF, RER, INT, DEB	BUS, INF, RER, INT, EXP, DEB	TRA, INF, INT, EXP, DEB	INF, RER, INT	BUS, INF, RER, INT, DEB	TRA, BUS, INF, RER, EXP, DEB	TRA, BUS, INF, RER, EXP, DEB	BUS, INF, RER, EXP	BUS, INF, RER, INT, DEB	TRA, BUS, INF, RER, EXP, DEB	TRA, INF, INT, EXP, DEB	INF, INT, EXP, DEB
Post-crisis	1	INF	EXP	EXP	-	INF	EXP	EXP	-	INF	BUS	INT	-	INF	RER	INT	-	INF	EXP	INT	-
	2	INF, DEB	BUS, EXP	EXP, LAB	-	INF, DEB	INF, RER	TRA, LAB	-	INF, DEB	TRA, LAB	INF, INT	-	INF, DEB	RER, LAB	RER, EXP	-	INF, DEB	BUS, EXP	TRA, INF	-
	3	TRA, INF, DEB	RER, EXP, LAB	INF, INT, DEB	-	INF, RER, DEB	TRA, BUS, LAB	TRA, BUS, INF	-	INF, DEB	TRA, LAB	INF, DEB	-	INF, INT	TRA, RER, LAB	INF, EXP, RER	-	INF, INT, DEB	EXP, DEB, LAB	TRA, INF, RER	-
	4	INF, RER, INT, DEB	BUS, RER, EXP, LAB	RER, INT, EXP, DEB	RER	TRA, INF, RER, DEB	BUS, INT, EXP, LAB	BUS, INF, RER, LAB	-	INF, RER, INT, DEB	TRA, BUS, BUS, LAB	BUS, INF, RER, INT	-	INF, RER, INT, DEB	TRA, BUS, EXP, LAB	INF, RER, INT, DEB	INT	INF, RER, INT, DEB	TRA, BUS, INF, LAB	TRA, INF, RER, EXP	INF
	5	TRA, INF, RER, INT, EXP, DEB	BUS, RER, INF, EXP, DEB, LAB	BUS, INF, RER, INT, DEB, LAB	RER, INT	TRA, INF, RER, EXP, DEB	BUS, INF, RER, EXP, DEB, LAB	TRA, INF, RER, EXP, DEB, LAB	INF	INF, RER, INT, EXP, DEB	TRA, BUS, INF, EXP, DEB, LAB	TRA, INF, RER, EXP, DEB, LAB	DEB	BUS, INF, RER, INT, DEB	TRA, RER, EXP, DEB, LAB	INF, RER, EXP, DEB, LAB	RER, DEB	BUS, INF, RER, INT, DEB	TRA, BUS, BUS, LAB	TRA, BUS, INF, LAB	BUS, INF
	6	TRA, INF, RER, INT, EXP, DEB	BUS, INF, RER, EXP, DEB, LAB	BUS, INF, RER, INT, DEB, LAB	INF, RER, INT	TRA, INF, BUS, RER, INT, DEB	TRA, BUS, BUS, EXP, DEB, LAB	TRA, BUS, INF, RER, EXP, DEB	TRA, DEB	BUS, INF, RER, INT, EXP, DEB	TRA, BUS, INF, EXP, DEB, LAB	TRA, BUS, INT, DEB, LAB	BUS, INT	TRA, BUS, INF, RER, EXP, DEB	TRA, BUS, INF, EXP, DEB, LAB	TRA, BUS, INF, EXP, DEB, LAB	INT, DEB	BUS, INF, RER, INT, DEB	TRA, BUS, BUS, EXP, DEB, LAB	TRA, BUS, BUS, INT, DEB, LAB	BUS, INF, RER, INT
	7	TRA, BUS, INF, INT, EXP, DEB, LAB	TRA, BUS, INF, RER, INT, EXP, DEB, LAB	TRA, BUS, INF, RER, INT, EXP, DEB, LAB	TRA, BUS, INF, RER, INT, DEB, LAB	TRA, BUS, INF, RER, INT, EXP, DEB, LAB	TRA, BUS, INF, RER, INT, EXP, DEB, LAB	TRA, BUS, INF, RER, INT, EXP, DEB, LAB	TRA, BUS, INF, RER, EXP, DEB	TRA, BUS, INF, RER, INT, EXP, DEB, LAB	TRA, BUS, INF, RER, INT, EXP, DEB, LAB	TRA, BUS, INF, RER, INT, EXP, DEB, LAB	TRA, BUS, INF, RER, INT, DEB, LAB	TRA, BUS, INF, RER, INT, EXP, DEB, LAB	TRA, BUS, INF, RER, INT, EXP, DEB, LAB	TRA, INF, INT, EXP, DEB, LAB	TRA, BUS, INF, RER, EXP, DEB, LAB	TRA, BUS, INF, RER, INT, EXP, DEB, LAB	TRA, BUS, INF, RER, INT, EXP, DEB, LAB	TRA, BUS, INF, RER, INT, EXP, DEB, LAB	BUS, INF, RER, INT, DEB, LAB

Note: ‘n.a.’ for not applicable.

Table 6.72 Cross-method variable count

		TRA	BUS	INF	RER	INT	EXP	DEB	LAB
Dollar	Pre-crisis	1	1	3	1	2	0	2	-
	Crisis	2	0	1	3	0	1	2	-
	Post-crisis	1	1	2	4	2	0	1	1
	Total	4	2	6	8	4	1	5	1
Currency Basket	Pre-crisis	2	0	0	3	0	1	3	-
	Crisis	3	0	1	3	1	2	0	-
	Post-crisis	2	1	2	0	0	1	2	0
	Total	7	1	3	6	1	4	5	0
Yen	Pre-crisis	0	1	0	4	0	1	3	-
	Crisis	0	1	4	1	1	1	3	-
	Post-crisis	1	2	1	0	2	0	2	1
	Total	1	4	5	5	3	2	8	1
Euro	Pre-crisis	0	2	3	1	2	2	1	-
	Crisis	0	2	1	1	0	3	1	-
	Post-crisis	2	0	1	1	3	1	3	0
	Total	2	4	5	3	5	6	5	0
Yuan	Pre-crisis	0	1	3	3	1	1	1	-
	Crisis	0	0	1	3	3	1	1	-
	Post-crisis	0	3	4	2	2	0	1	1
	Total	0	4	8	8	6	2	3	1
	Grand Total	14	15	27	30	19	15	26	3

6.7 Chapter Conclusion

The chapter has presented and discussed the findings using OCA criteria. The findings are expected to answer the corresponding research questions. The discussion on how the results address the research questions is provided in Chapter 8 Discussion and Conclusion. The key findings from this chapter will also be revisited in that final chapter.

In brief, the chapter has explored the OCA features of the countries under review and delivered the findings by each clustering method, including the classifications using the original unweighted criteria and those using weighted criteria; and assessment of preparedness using unweighted and weighted criteria. Results from criterion dominance and variable selection were also discussed. Comparisons of findings across periods, monetary anchors, and clustering methods were also made.

The next chapter, Chapter 7 Results using Maastricht Treaty Criteria presents the findings by Maastricht criteria.