

Business cycle symmetry - the Caribbean as an OCA?



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Motivation – Two Important Issues



1. Increasing rate of globalization

1. Implications for current and future market access
2. Need to be competitive

2. Loss of preferential treatment with EU

1. Old markets disappearing
2. Need to be competitive

Motivation – Why particularly concerned?



1. Caribbean countries - SIDS

1. Narrow range of resources
2. Excessive dependence on international trade
3. Vulnerability to global developments
4. Overuse of resources and premature depletion
5. Vulnerability to climate change and natural disasters

2. Inability to achieve economies of scale

1. Implications for our ability to be competitive

Motivation – What do we do?



- 1. Caribbean regional integration (CSME)**
 1. Single Market and Monetary Union
 2. Substantial work done on single market phase
 3. Monetary union phase has not yet begun
 4. Plans by CARICOM to push ahead

Intuition – Monetary Union (OCA)



1. Main potential benefits of forming OCA

- Increased bargaining power of region on the world stage
- Reduction of transaction costs
- Increased trade
- Pooling scarce resources

2. What does it entail?

- Forming a central bank and adopting common currency
- Surrendering ability to set monetary policy independently (cost)

3. Question of whether to form OCA hinges on how costly is this loss of monetary independence to candidate countries

Intuition – costly?



1. Perfectly symmetric business cycles – 2 countries

- Response of common central bank would be same as independent central banks
- No welfare loss from losing independence

2. Asymmetric business cycles – 2 countries

- Country 1 experiencing a boom, country 2 a recession
- Country 1 would like high interest rates to control inflation, country 2 would like low interest rates to stimulate investment
- A common central bank setting interest rates between these extremes means that neither achieves objectives
- Loss in independence now represents loss in welfare
- Size of loss in welfare is greater the more asymmetric the two countries business cycles

3. Takeaway – for OCA to be viable

- Need for business cycle symmetry

Main question



1. Timely and important that we ask

1. From a positive economic viewpoint, can the Caribbean form a viable Monetary Union (OCA)?

2. Empirical investigation

1. Assess degree of business cycle symmetry of CSME members

Related Literature



1. **Mundell (1961) – OCA criteria**

2. **Long list of Caribbean Economists**
 1. Mixed views

3. **Ghartey (2008); Augustine (2008); Pentecost and Turner (2010)**
 1. Investigate Caribbean business cycle symmetry
 2. Use correlation of business cycles, and correlation of demand and supply shocks over the last 20 years or so to assess symmetry
 3. Conclude not symmetric

What's new in this paper?



1. Compares CSME members to EU

1. No existing OCA members satisfy OCA criteria perfectly
 - × Need compare to relevant benchmark
2. Candidates who do not satisfy OCA criteria ex-ante may do so ex-post forming a union
 - × Need to compare across relevant time periods

2. Examines the composition of symmetry

1. Are Caribbean business cycles symmetric due to global or regional factors
2. Significant regional influence important to effectiveness of regional central bank

3. Examines progress

1. Compares experience across two different time periods

4. Compares to other proposed OCAs

1. Keep track of developments in other markets

Empirical Methodology - Model



Bayesian Dynamic factor model – unobserved latent factors

- Three shocks (latent factors) affecting output growth in each country: global, regional, country-specific

$$y_{i,t} = \lambda_i^g f_t^g + \lambda_i^r f_{j,t}^r + \varepsilon_{i,t}$$

- Latent factors are orthogonal to each other and follow AR processes

$$f_t^g = \rho_1^g f_{t-1}^g + \rho_2^g f_{t-2}^g + \eta_t^g$$

$$f_{j,t}^r = \rho_{1,j}^r f_{j,t-1}^r + \rho_{2,j}^r f_{j,t-2}^r + \eta_{j,t}^r$$

$$\varepsilon_{i,t} = \rho_{1,i} \varepsilon_{i,t-1} + \rho_{2,i} \varepsilon_{i,t-2} + \eta_{i,t}$$

- Assume: $\eta_{i,t}$ $\eta_{j,t}^r$ η_t^g follow $N(0, \sigma_i^2)$ $N(0, \sigma_{r,j}^2)$ $N(0, \sigma_g^2)$

- Latent factors are uncorrelated at all leads and lags

$$E(\eta_t^g \eta_{t-s}^g) = E(\eta_{j,t}^r \eta_{j,t-s}^r) = E(\eta_{i,t} \eta_{i,t-s}) = 0$$

Empirical Methodology – Degree Symmetry



1. Estimate factors and parameters
2. Decompose output growth into portions attributable to each factor

$$\theta_i^g = \frac{(\lambda_i^g)^2 \text{var}(f_t^g)}{\text{var}(y_{i,t})}$$

○ where $\text{var}(y_{i,t}) = (\lambda_i^g)^2 \text{var}(f_t^g) + (\lambda_i^r)^2 \text{var}(f_{j,t}^r) + \text{var}(\varepsilon_{i,t})$

1. **Intuition**
 - The greater the amount of output growth attributable to common factors, the greater business cycle symmetry among candidates

Empirical Methodology - Data



1. Include 6 regions in model

- NAFTA, EU, CSME, UNASUR, GCC, ASEAN+3
- 60 countries over 1986-2009
- Dependent variable: RGDP growth
- Data taken from WEO, WDI, IFS (annual)

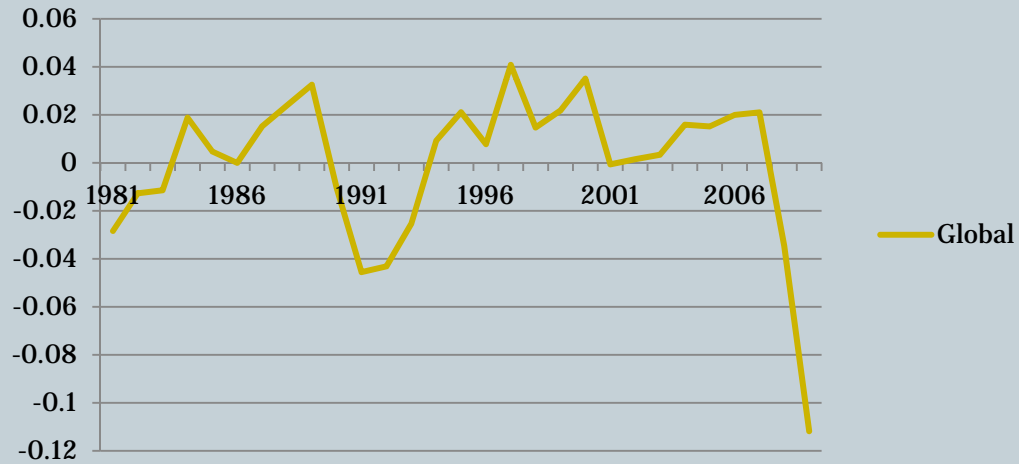
2. Two periods

- Pre-EU: 1986-1998
- Post-EU: 1999-2009

Results 1 – Estimated Factors

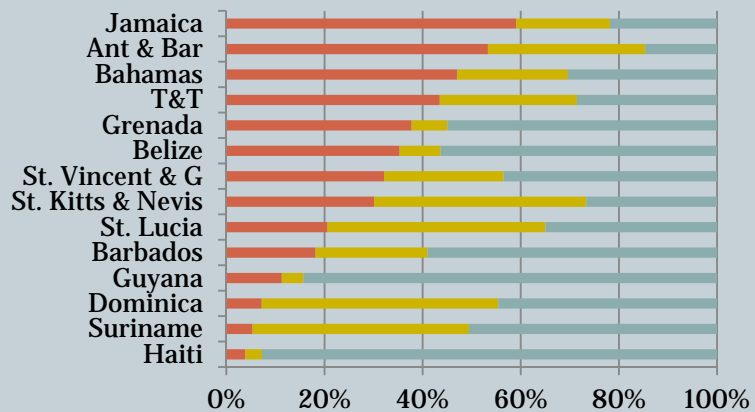


World

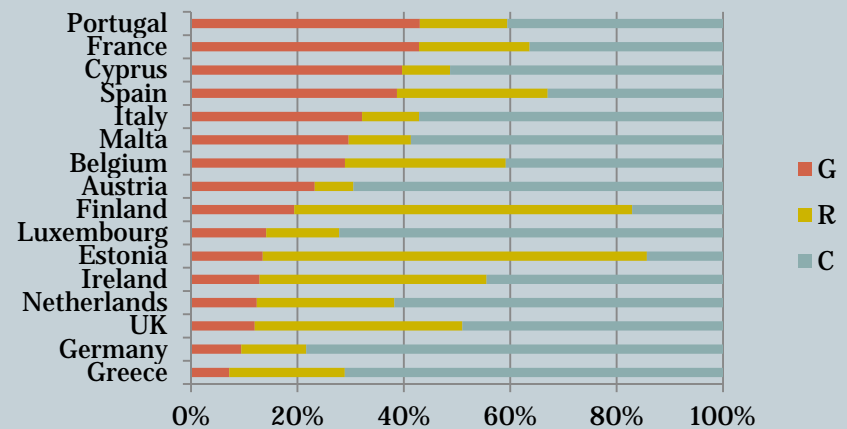


Results 2– Output Decomposition: Caribbean vs EU

CSME (1999-2009)



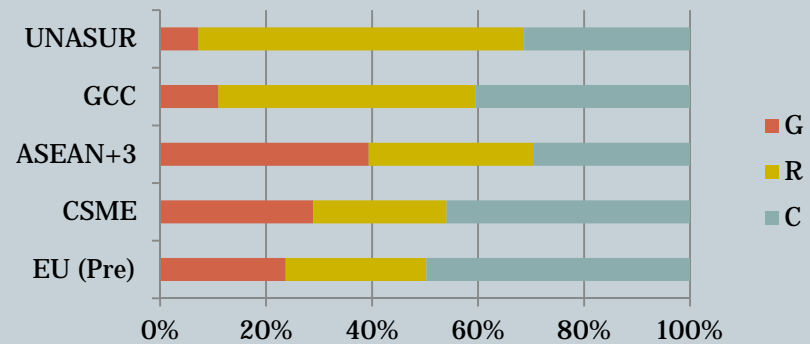
EU (1986-1998)



Results 3– Decompositions: average for all OCAs



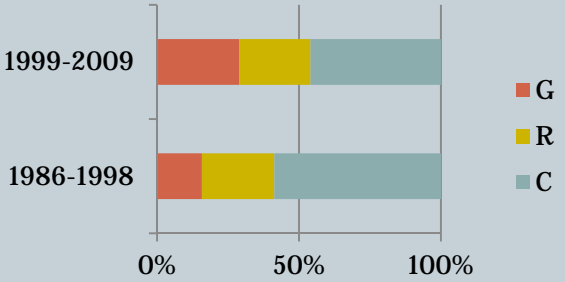
Output Decomposition 1999-2009



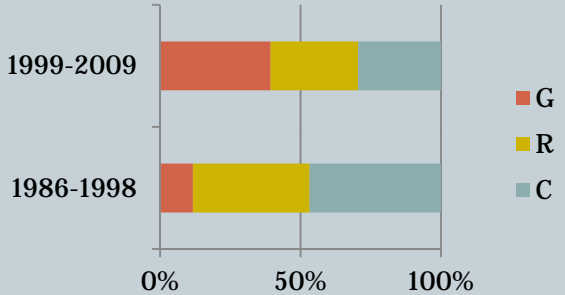
Results 4– Comparing proposed OCAs across periods



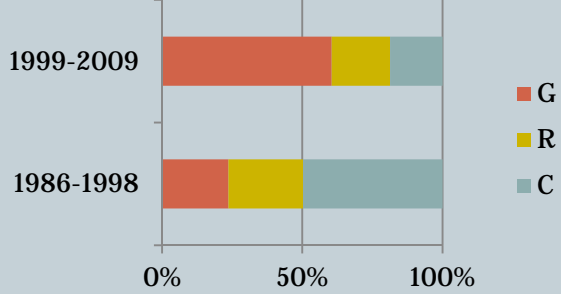
CSME



ASEAN+3



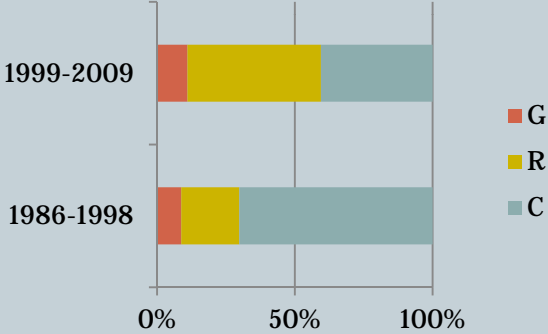
EU



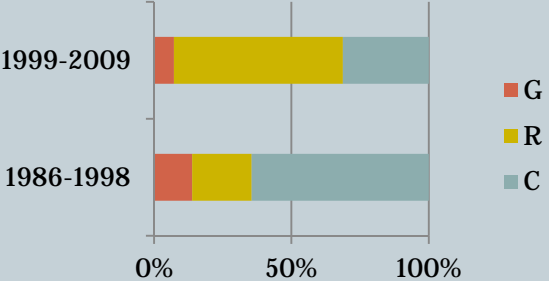
Results 5– Comparing proposed OCAs across periods



GCC



UNASUR



Takeaways



1. CSME shows comparable symmetry in post period as EU in pre period
2. There is some economic basis to calls for Caribbean monetary union – further work needed
3. Caribbean experience resembles that of ASEAN+3 and EU
4. GCC and UNASUR experience was very different – regional factor more prominent