

Macroeconomic Costs and Benefits of Joining the East Asia Exchange Rate Club

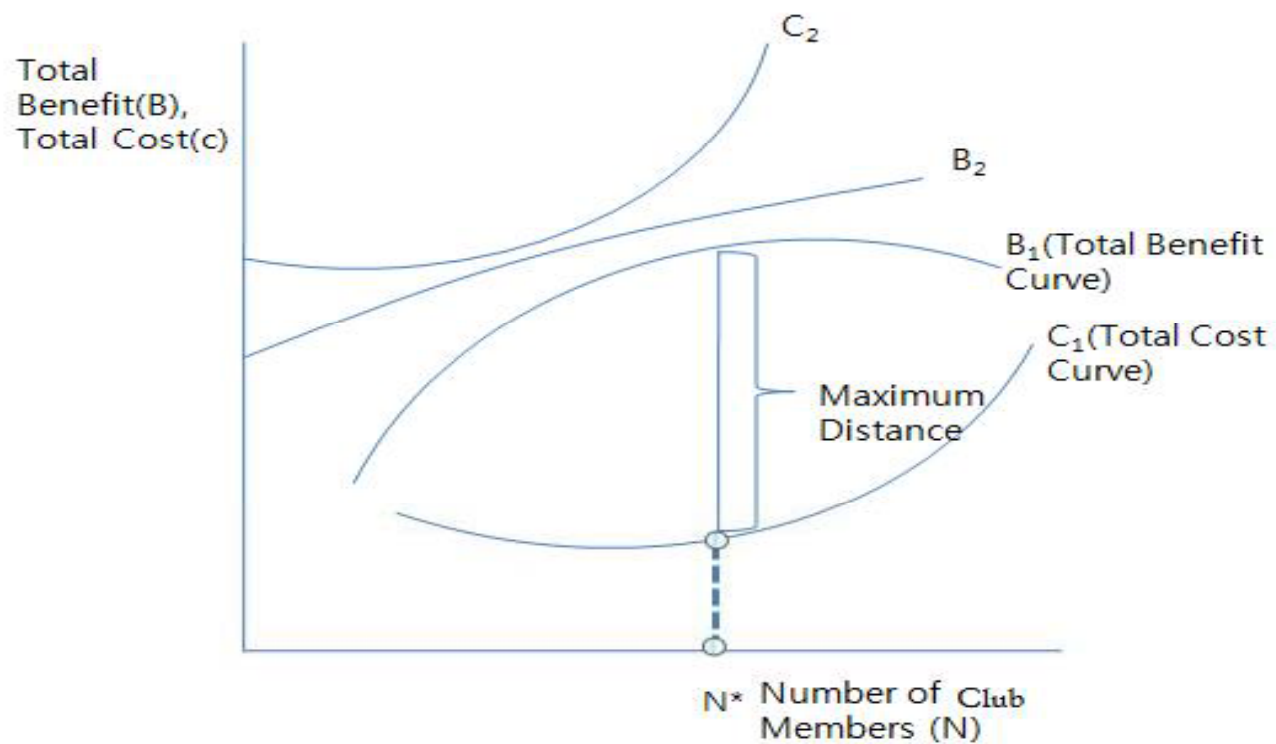
By
Prof. Inchul Kim
School of Economics
Sung Kyun Kwan University
Seoul, Korea
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I . Introduction

- This paper formulates a theoretical model for joining a regional exchange rate stability club for 13 countries in East Asia.
- The paper demonstrates the order in which the member countries of the regional exchange rate stability club form their association.
- A theory originally developed by James Buchanan (1965) is employed to calculate the macroeconomic benefits and costs of club membership.
- The macroeconomic cost is inflation or unemployment or a combination of both.
- To conduct an empirical estimation of the net benefit of joining the exchange rate club, the paper adopts the trade gravity equation developed by Tinbergen(1952).

II. Review of Buchanan's Club Theory.

<Figure 1> Determination of Optimum Number of Club Members





III. Benefits and Cost of Joining the Club.

- The major benefits of joining the exchange rate club include trade expansion, prevention of currency crisis, and saving in foreign exchange reserves.
- The major cost of joining the cooperation club, however, is a loss of policy autonomy. Once a member country joins the club, it cannot resort to an arbitrary currency manipulation in order to promote trade expansion and GDP growth.

III. Benefits and Cost of Joining the Club

<Table 1> Rankings of East Asian Countries by Economic Size

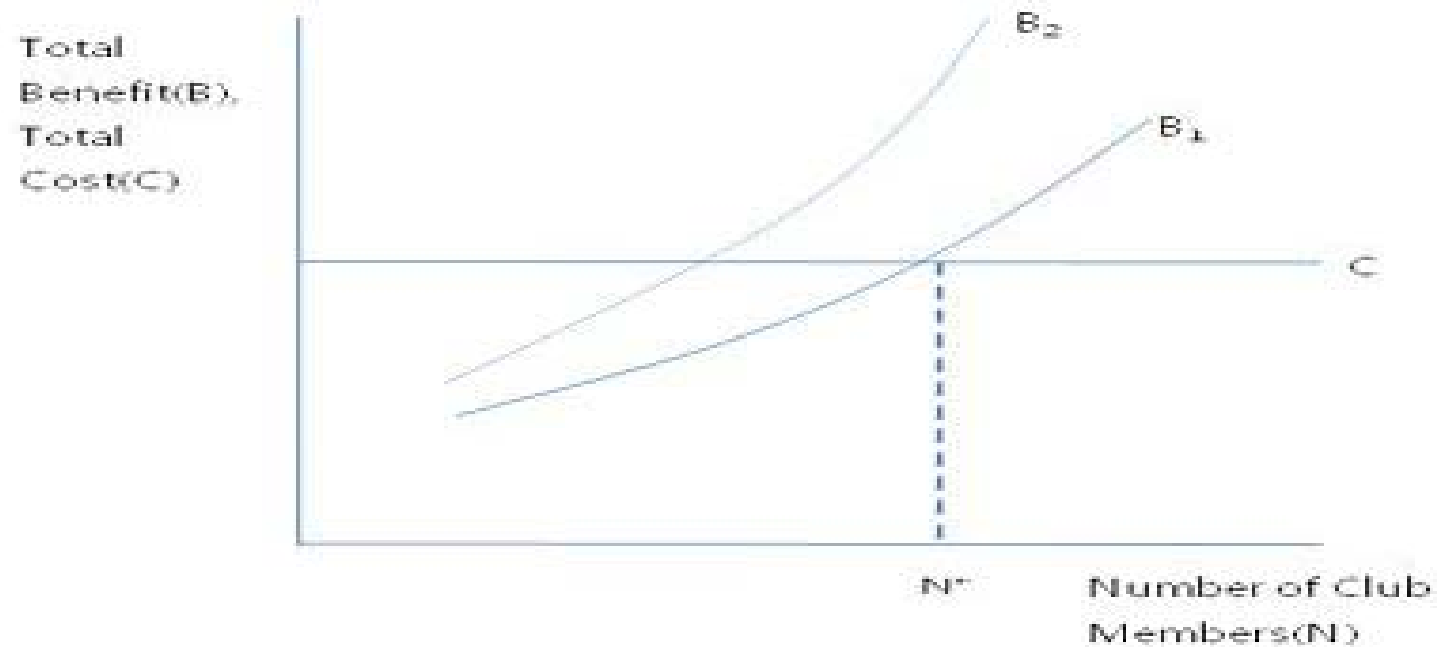
Unit= 100 million U.S. dollars

Power Measures Rank	GDP	PPP GDP ¹⁾	Per Capita GDP ²⁾	Trade Volume ³⁾
1	Japan (49,110)	China (100,000)	Japan (33,100)	China (21,738)
2	China (25,120)	Japan (42,200)	Singapore (30,900)	Japan (12,493)
3	S.Korea (7,685)	S.Korea (11,800)	S.Korea (24,200)	Singapore (8,016)
4	Indonesia (2,644)	Indonesia (9,350)	Brunei (23,600)	S.Korea (7,282)
5	Thailand (1,966)	Thailand (5,859)	Malaysia (12,700)	Malaysia (3,269)
6	Malaysia (1,318)	Philippines (4,431)	Thailand (9,100)	Thailand (2,760)
7	Singapore (1,215)	Malaysia (3,088)	China (7,600)	Indonesia (2,029)
8	Philippines (984)	Vietnam (2,586)	Philippines (5,000)	Philippines (1,068)
9	Vietnam (482)	Singapore (1,386)	Indonesia (3,800)	Vietnam (1,002)
10	Myanmar (78.4)	Myanmar (838)	Vietnam (3,100)	Cambodia (94.8)
11	Brunei (54.8)	Cambodia (367)	Cambodia (2,600)	Brunei (87.6)
12	Cambodia (51.2)	Laos (134)	Laos (2,100)	Myanmar (63.7)
13	Laos (27.6)	Brunei (68.4)	Myanmar (1,800)	Laos (23.4)

IV. The Model for Joining the Exchange Rate Club

<Figure 2> Formation of the East Asia Exchange Rate Club

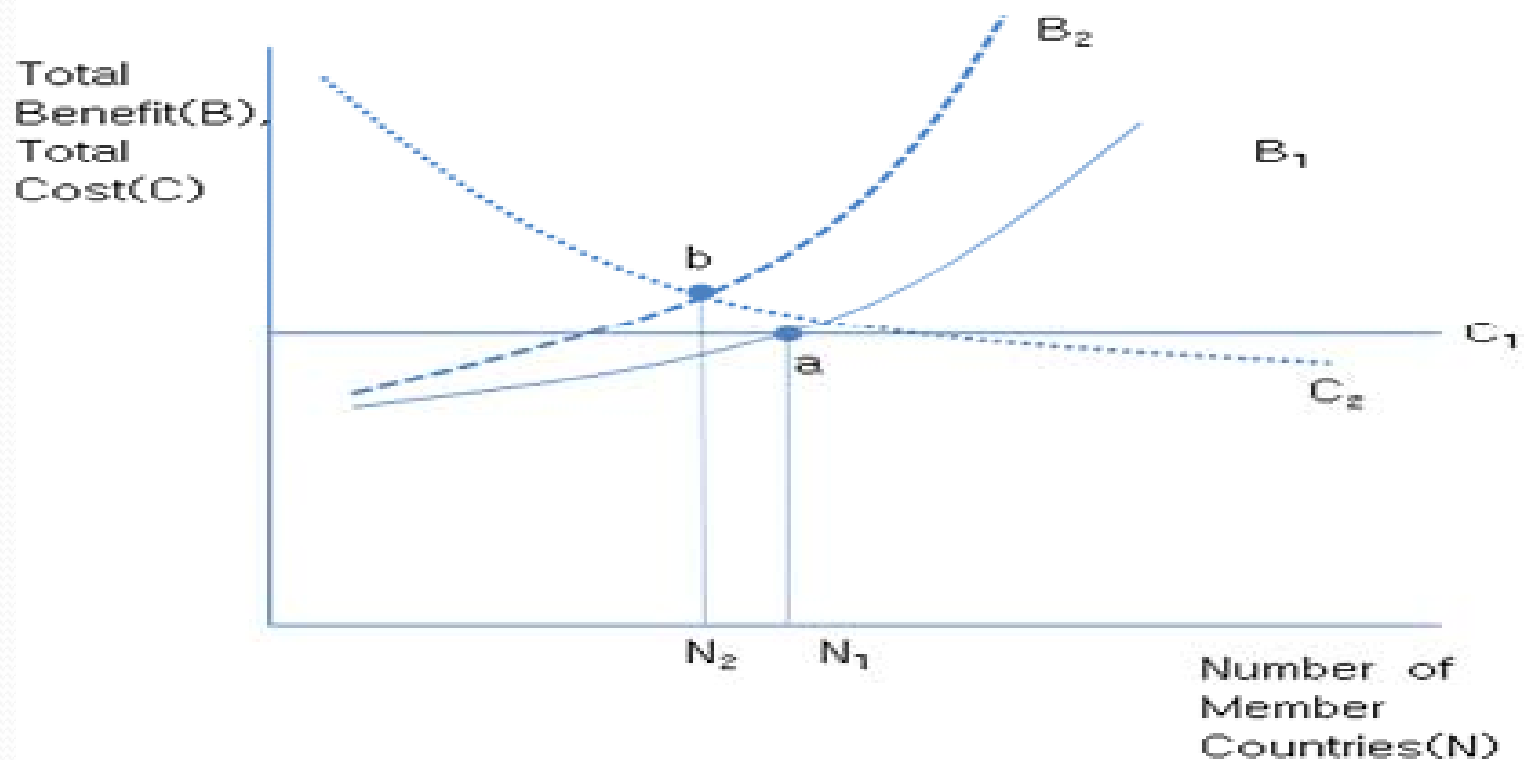
When Economies Are Identical.



IV. The Model for Joining the Exchange Rate Club

<Figure 3> Macroeconomic Cost and Benefit When the Biggest Economy

Joins the Club First



V. Calculation of Macroeconomic Benefits and Costs

- $$F = \alpha \frac{M_1 \cdot M_2}{d^2} \quad \text{----- (1)}$$

- $$\text{Trade} = \beta \frac{GDP_1 \cdot GDP_2}{d^n} \quad \text{----- (2)}$$

- $$\text{Net Benefit} = \gamma \left(\frac{r - \tau}{\mu^2} \right) \quad \text{----- (3)}$$

V. Calculation of Macroeconomic Benefits and Costs

<Table 2> Rankings of East Asian Countries in Net Gains from the Club

Unit= 100million U.S. dollars

Rank	Country	π ¹⁾	$G_1 = TV/GDP$ ²⁾	$G_2 = FR/GDP$	$G_1 \times G_2 / \pi^2$ ³⁾
1	Singapore	0.97	4.78	1.03	5.2327
2	Brunei	0.2	0.96	0.04	0.96
3	Japan	0.3	0.34	0.2	0.7556
4	China	1.47	0.73	0.4	0.1351
5	Malaysia	3.59	2.26	0.55	0.0964
6	S.Korea	2.24	0.85	0.27	0.0457
7	Thailand	4.64	1.54	0.32	0.0279
8	Cambodia	4.71	1.47	0.16	0.0106
9	Vietnam	7.5	1.58	0.22	0.0062
10	Philippines	6.23	0.97	0.17	0.0042
11	Laos	6.8	0.68	0.09	0.0013
12	Indonesia	13.1	0.57	0.11	0.0004
13	Myanmar	25.7	0.61	0.09	0.0001

Notes: 1) π denotes inflation in terms of consumer price index.

2) TV denotes the sum of exports and imports.

3) FR denotes foreign reserves.

VI. Conclusion

- We formulated a model for the East Asia exchange rate club by adopting Buchanan's club theory.
- Buchanan demonstrated the determination of an optimal number of club members with the assumption that all members are identical in income and taste.
- In the case of Buchanan's swimming pool, negative externalities, namely, congestion costs, had a significant impact on the model.
- The major benefits include trade expansion, saving in foreign reserve holdings, and the prevention of currency crises. As to the costs, policy autonomy is compromised.

VI. Conclusion

- We devised an index of net benefit for every country based on Tinbergen's trade gravity equation. We used the inflation rate as the cost variable.
- The trade ratio and foreign reserve ratio acted as the two benefit variables. In terms of measured index for net benefit.
- The country rankings are:
Singapore>Brunei>Japan>China>Malaysia>Korea>Thailand>Cambodia>Vietnam>Philippines>Laos>Indonesia>Myanmar.