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Is ASEAN an Affinity Group? What Exchange Rates Tell Us (Expanded Version)

by David Jay Green, Ph.D.

I. Introduction

This year will hopefully bring relief from the economic pressures of the COVID-19 epidemic. As we collectively stumble out of the global pandemic, we need to examine what this time has done to the economic challenges facing us. For East Asia, continued uncertainties over the virus may result in long-lasting, higher costs for travel, and the well-publicized disruptions to supply chains may not be transitory. Residual impacts of the global pandemic could exacerbate pre-existing conditions that were already putting pressure on existing supply chains in East Asia, including rising wage rates in China and growing political tensions between China and the United States. Over time, the East Asian development model of providing distributed hubs for manufacturing export goods to the West may be less reliable.

These developments suggest a need to review economic policy to improve the potential for growth. This paper looks at the shortcomings of exchange rate policy in Southeast Asia from this perspective. It is an expanded version of a shorter piece published as a blog post, providing background and full reference citations.[1]

II. ASEAN and the Lack of Regional Exchange Rate Policy

The Association of Southeast Asian Nations (ASEAN) includes Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Viet Nam. (ASEAN Secretariat, 2022) An intergovernmental organization, it grew from five nations in 1967 to its current membership in 1999. From an initial focus on regional politics, it has become an important forum for encouraging economic growth and development. To these ends, following the establishment of the ASEAN Free Trade Area (AFTA) in 1992, the commitment to create the ASEAN Economic Community (AEC) in 2015 was a singular expression of the importance of regional cooperation. The AEC "envisions ASEAN as a single market and production base, a highly competitive region, with equitable economic development, and fully integrated into the global economy." (ASEAN Investment, 2022)

These goals are challenging, comparable to those that guided the creation of the European Union (EU), which was purposely focused on being a common market with a common currency. In Europe, it was understood that this would require some convergence in economic policy and outcomes. This was spelled out in the Maastricht Treaty, which emphasized the need to have relative stability of exchange rates. (European Parliament, 2022)

[1] The blog is available, http://acaes.us/blog/asean-exchange-rates . I am grateful to Calla Wiemer for comments and encouragement and to Dahlia Benaroya for tech support (https://dahliawebdesigns.com/).

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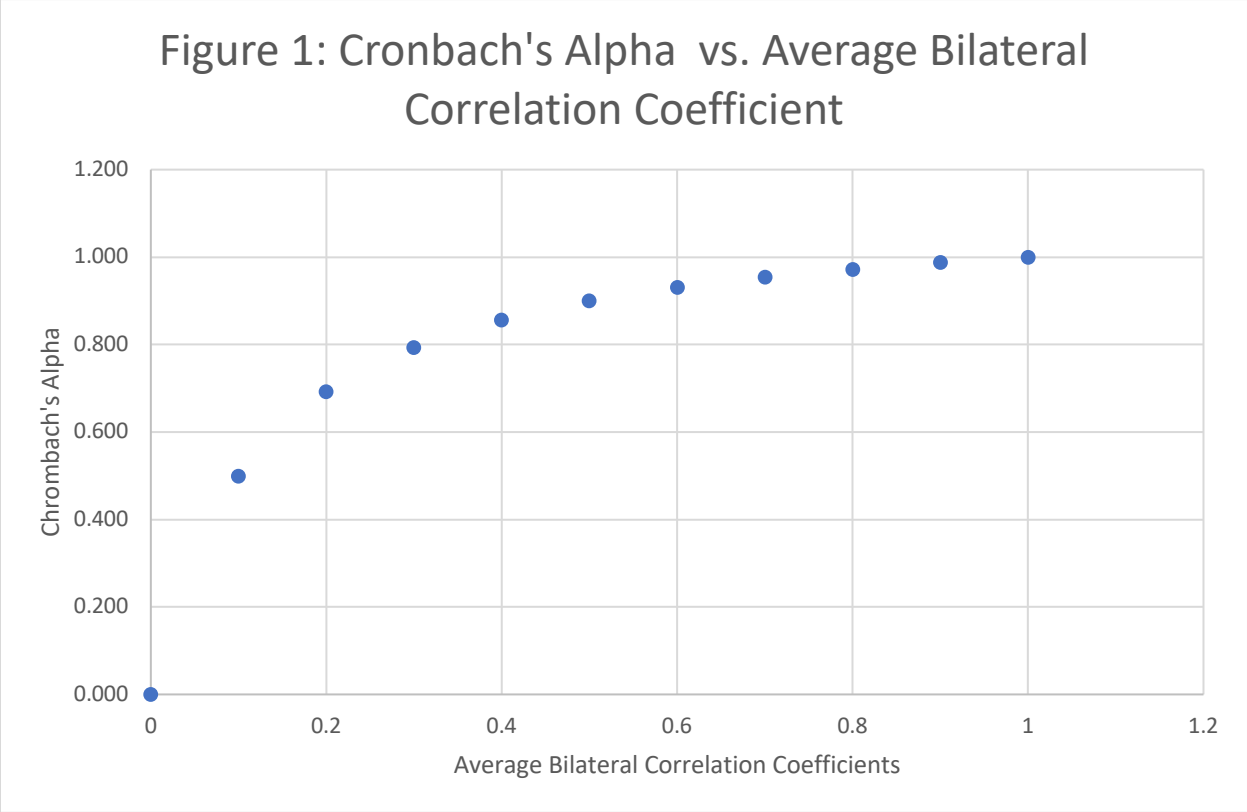
I look at the regional exchange rate configurations using *Cronbach's alpha* (α, Eq. 1), a measure used to check the internal consistency of tests in education or psychology. It is designed to measure the "extent to which all the items in a test measure the same concept…." (Tavakol and Dennick, 2011) In this paper, the *concept* is a hypothetical regional currency, and the *items* are the individual countries—I look to see if regional exchange rates move in a common fashion.

$$\alpha = \frac{k\bar{c}}{\bar{v}+(k-1)\bar{c}} \qquad \text{eq. 1}$$

In Equation 1, $\bar{c}$ is the average value of the covariance coefficients between the exchange rates of the *k* different countries, and $\bar{v}$ is the average of the country variances. I look at the U.S. dollar exchange rate because it is typically the *headline* exchange rate, affecting household and business plans. There is no standard scale for foreign exchange rates, so the series were normalized to have mean zero and standard deviation of 1. Thus $\bar{v}$ is a constant, and α is a nonlinear function of $\bar{c}$, the average covariance, or equivalently the correlation coefficient (Figure 1). By construction, α is bounded from above by one and is not well defined for some negative values of $\bar{c}$. Typically, values above .9 are considered to show a consistent test. (Green, 1995)

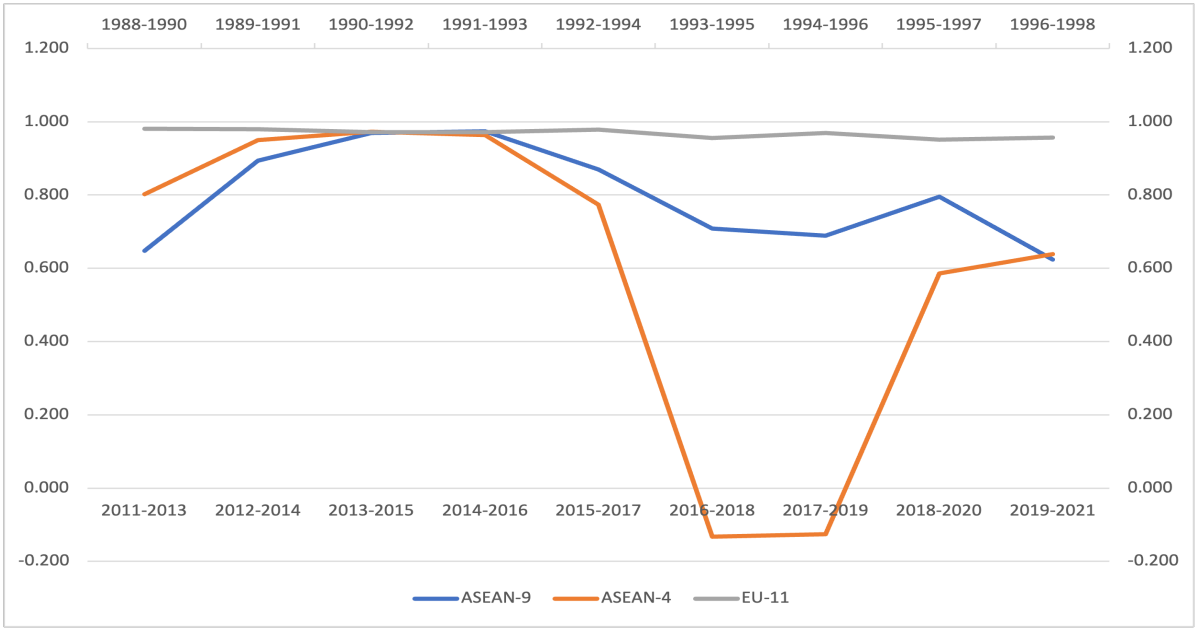


As a function of the underlying correlation coefficients between the different currencies, α may offer a simple measure of regional common movements. This could complement other

indicators, such as the Asian Monetary Unit that have been suggested. (Ogawa and Shimizu, 2011 and Ogawa and Shimizu, 2006)

Figure 2 shows the values of α for different country groups. For Europe, I look at the eleven signatories of the Maastricht Treaty with independent exchange rate policies over the decade before the introduction of the Euro in January 1999, forming rolling three-year values of α.

Figure 2: Cronbach's Alpha for ASEAN-9, ASEAN-4, and EU-11



Notes: Data are monthly averages of the local currency against the United States dollar. EU data are from Federal Reserve Economic Data (FRED). ASEAN data are from the Asian Development Bank, Asia Regional Integration Center (ARIC).

EU-11 refers to those signatories of the Maastricht Treaty that had independent monetary policies: Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Portugal, Spain, the Netherlands, and the United Kingdom. Luxembourg's currency was tied to that of Belgium.

ASEAN-9 includes all members except Brunei Darussalam, which fixes its currency to Singapore.

ASEAN-4 is Indonesia, Malaysia, the Philippines, and Thailand.

The European example shows how policy commitments can bring about similar economic outcomes. Cronbach's α is consistently above .9, suggesting that the individual exchange rates moved in similar fashions, collectively foreshadowing the expected regional currency.

Of course, one number can only convey so much concerning the dynamics of the movements of 11 exchange rates. The stability of the Euro-11 α masks offsetting changes. The United Kingdom's currency showed significant declines in bilateral correlation with its European counterparts, turning uniformly negative over the period. In the aggregate measure, this was offset by Greece, which saw a substantial increase in correlation with its partners. In the end, the U.K. did not join the common currency union; Greece did.

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The current situation in Southeast Asia is quite different from pre-common currency Europe. ASEAN members have different institutional arrangements for managing foreign currency exchange rates.[2] Some employ floating exchange rates (Indonesia, Malaysia, Philippines, and Thailand) others a *crawl-like arrangement* where changes are damped (Cambodia, Lao PDR, and Singapore). There has been no formal call to standardize these diverse systems.

Although there is no centrally directed exchange rate policy, stable interrelationships could occur in some circumstances, for instance, reflecting common international trade patterns, regional capital flows, or similar central bank goals and strategies. Wiemer (2021) describes the last: "The essence of the East Asian model is to steer the exchange rate along a steady long-run course, erring toward undervaluation in the face of uncertainties about the future."

ASEAN currencies are also susceptible to common shocks, which may cause the exchange rates to move together. McAleer and Nam (2005) examine how shocks to one currency in a subset of ASEAN economies (ASEAN-5, covering Indonesia, Malaysia, the Philippines, Singapore, and Thailand) affect other currencies—experiencing contagion. Looking at daily exchange rates (to the U.S. dollar) over the period January 3, 1994, to September 18, 2002, they find substantial evidence that shocks, for instance, to Singapore currency, have a roll-over impact on others. This was the experience of the Asian Financial Crisis in 1997 when currency weaknesses spread throughout the region and encouraged regional efforts such as the Chiang Mai Initiative.[3] But contagion and shocks are not signs that long-term stable relationships between regional currencies might promote the development of a common market.[4] Klyuev and Dao (2016) summarize this:[5,]

> One can notice broad co-movements among various subsets of the ASEAN-5 currencies over certain periods, which is not surprising given that they are neighbors, trading partners and competitors. At the same time, the magnitudes of exchange rate changes and the turning points differ across countries, and the groups of currencies moving together differ across periods. (p. 4)

Table 1 illustrates the diversity of outcomes, showing the bilateral correlation coefficients between the various ASEAN currencies from 2017 through 2019. There is little joint movement, with 14 of the 36 bilateral correlation coefficients being negative.

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[2] The International Monetary Fund, provides an organization of the different exchange rate regimes. (IMF, 2020) Kawal (2010, p. 1) summarizes the situation: "In reality, however, the region [East Asia] remains characterized by diverse, uncoordinated exchange rate arrangements." (p.1)

[3] See ARIC(2022). Not all shocks are international, for instance, Myanmar moved from a fixed to a floating exchange rate regime in early 2012; a shift that resulted in a substantial depreciation of the currency. (IMF, 2013)

[4] This is not always recognized, for instance, McAleer and Nam (2005) presume that a "region is suitable for establishing a common currency area on the grounds of closely correlated shocks."

[5] See also p. 16 where Klyuev and Dao (2016) suggest that common currency movements reflect shocks not stable regional currency relationships.

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Table 1: Bilateral Correlation Coefficients between ASEAN Currencies with respect to the U.S. Dollar, 2017-2019

	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Viet Nam
Cambodia									
Indonesia	0.241								
Lao PDR	0.309	0.652							
Malaysia	0.247	-0.352	-0.218						
Myanmar	0.257	0.827	0.834	-0.036					
Philippines	0.113	0.875	0.397	-0.551	0.560				
Singapore	0.309	-0.071	-0.076	0.912	0.155	-0.315			
Thailand	-0.058	-0.436	-0.799	0.659	-0.478	-0.367	0.601		
Viet Nam	0.257	0.885	0.848	-0.176	0.962	0.662	0.036	-0.548	

Cell entry x: $x \geq 0.85$; $0.7 < x < 0.85$; $0.0 \leq x \leq 0.7$; $x < 0.0$

Cronbach's α = 0.69 average bilateral coefficient= 0.20

Figure 1 also shows the value for α for a subset of ASEAN members, ASEAN-4, comprising those countries with larger populations that have generally relied upon market-based economic institutions: Indonesia, Malaysia, the Philippines, and Thailand. This subgrouping is likely key to any substantial movement towards regional exchange rate policies. However, this group shows even less cohesion than the full ASEAN, possibly because these economies have more highly developed capital markets, and thus their exchange rates are subject to domestic market fluctuations.[6,7]

The conclusion is straightforward: ASEAN is not an affinity group with respect to exchange rates.

III. The Implication of Disparate Exchange Rates

While the AEC does not call for a regional currency, in 2006, the ASEAN+3 finance ministers (ASEAN and China, Japan, and South Korea) raised the possibility as a policy goal. (AMRO ASIA. 2022) There is also a considerable academic literature on the relationship between exchange rate regimes and economic growth and development outcomes. This is often from the optimal currency area (OCA) theory, generally suggesting that forging a joint regional production base is easier with some stability of relative currency values.[8]

[6] In Green (1995), I compared ASEAN-4 with four key European economies using annual data. The conclusion, one quarter-century ago, was the cohesion of the ASEAN economies could be favorably compared to the European economies. This seems to have changed. Looking at the ASEAN-4, with annual data, for 2000-2019, Cronbach's α has a value of .66. Moreover, with the development of capital markets, annual data is not likely to be a driver for policy or business decision-making.

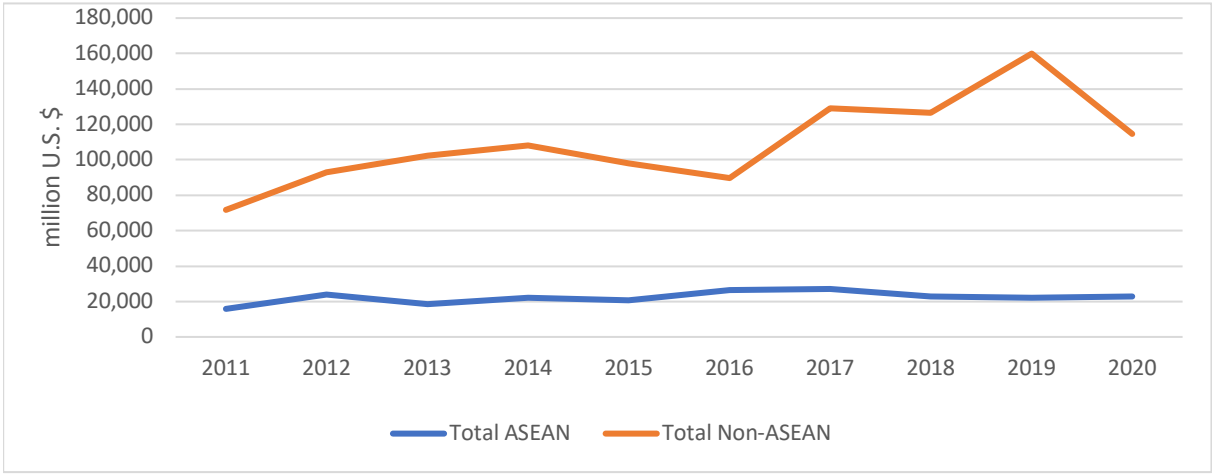
[7] Using alternative measures of exchange rates does not seem to change the conclusion. For instance, using data from the World Bank on real effective exchange rates for six ASEAN countries for which the data was available (Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam), over the period 2011-01 to 2022-01, the value of Cronbach's α was -0.55.

[8] Capannelli and Gochoco-Bautista (2009) provide a summary of the various studies, noting, however, "little in practical terms has been done." (p. 32). See also Kawai (2010), Kusuma et al. (2013), McAleer and Nam (2005), and

Cross-border investment, for instance, requires a multi-year time horizon and would be expected to be sensitive to the uncertainty due to exchange rate volatility. Several studies report that the adoption of the euro had a substantial impact on FDI in the EU. Baldwin et al. (2008, p.110), although cautioning that data problems are severe, concludes that: "Most authors find [that the impact on FDI] is positive, but the estimates range from +15% for in-to-in [intra-EU] flows and +7.5% for out-to-in [FDI originating outside the EU], to +200% and +100%, respectively … ."[9]

It seems hard to argue that uncertainty about relative exchange rates does not discourage cross-border investment. This might be one reason intra-ASEAN cross-border investment has stagnated over the last decade (Figure 3).

Figure 3: Foreign Direct Investment flows into ASEAN



ASEANStatsDataPortal, https://data.aseanstats.org/fdi-by-hosts-and-sources

IV. **Conclusion**

As new challenges emerge for ASEAN, the lack of a coordinated exchange rate policy increases the uncertainty of business decisions. Although ASEAN has never moved to adopt a regional currency or set targets or bounds for existing currencies, increasingly, ASEAN may need to reconsider the issue. Cronbach's alpha provides a useful measure of ASEAN's exchange rate dynamics.

Green(1995). Madhur makes the interesting point that greater coordination of policy would allow ASEAN countries such as Cambodia, Lao PDR, and Vietnam to have more of a presence "in regional and international forums." (in Capannelli and Menon, 2009, p. xi) Ogawa and Shimizu (2011, p.4) summarize the general presumption that "large fluctuation among intra-regional exchange rates is undesirable for the Asian economy where the private sector has established production networks."

[9] See also Petroulas (2006). For a contrary conclusion see Flam and Nordström (2007) who distinguish between the adoption of the Euro and creation of the single market.

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