

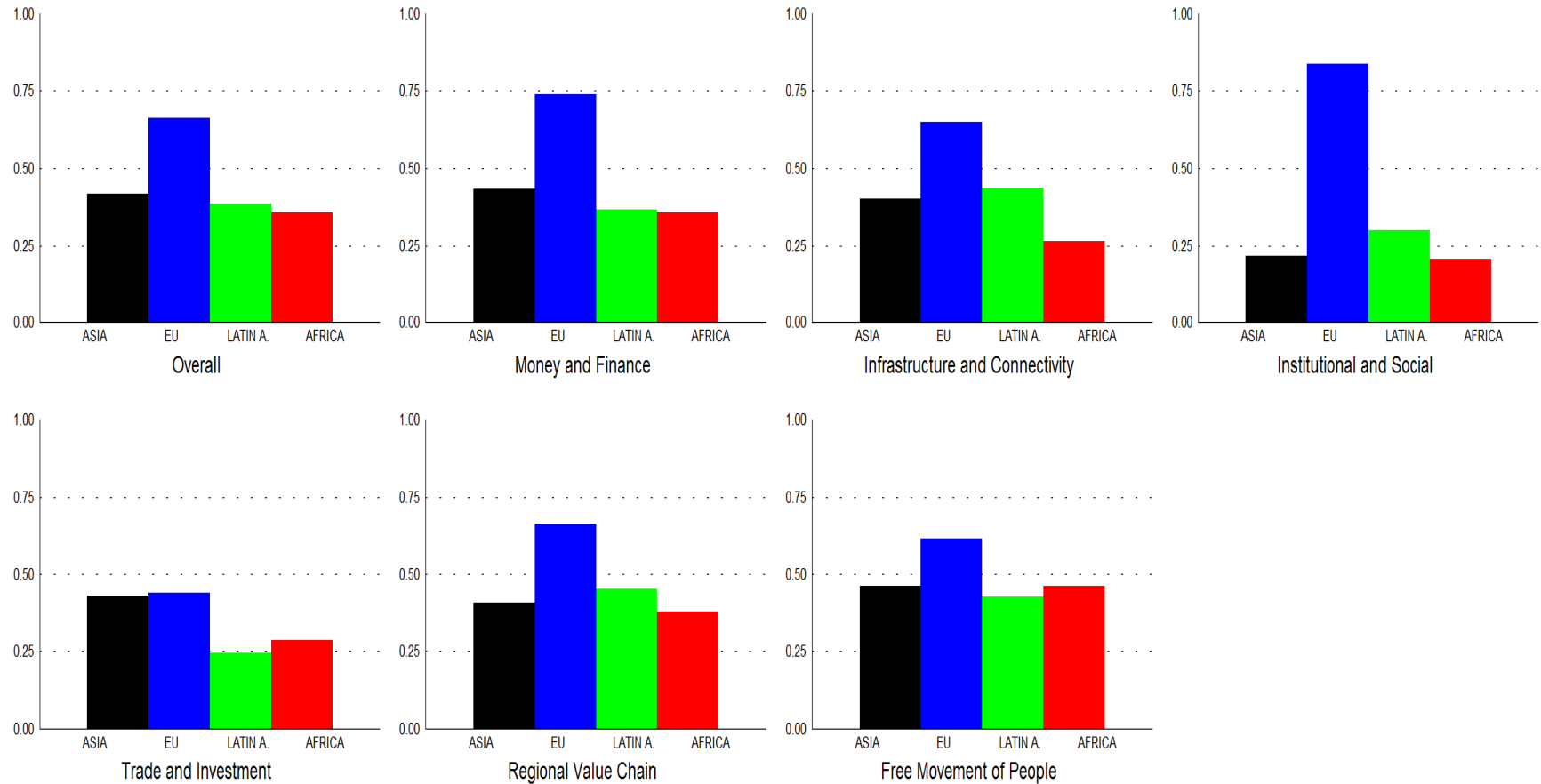
**Discussion on**  
**“CAREC Regional Integration Index:  
Measuring Extent of Regional Cooperation”**

**Hyeon-seung Huh**  
**Yonsei University, Republic of Korea**

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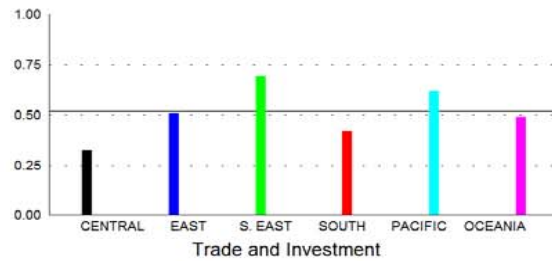
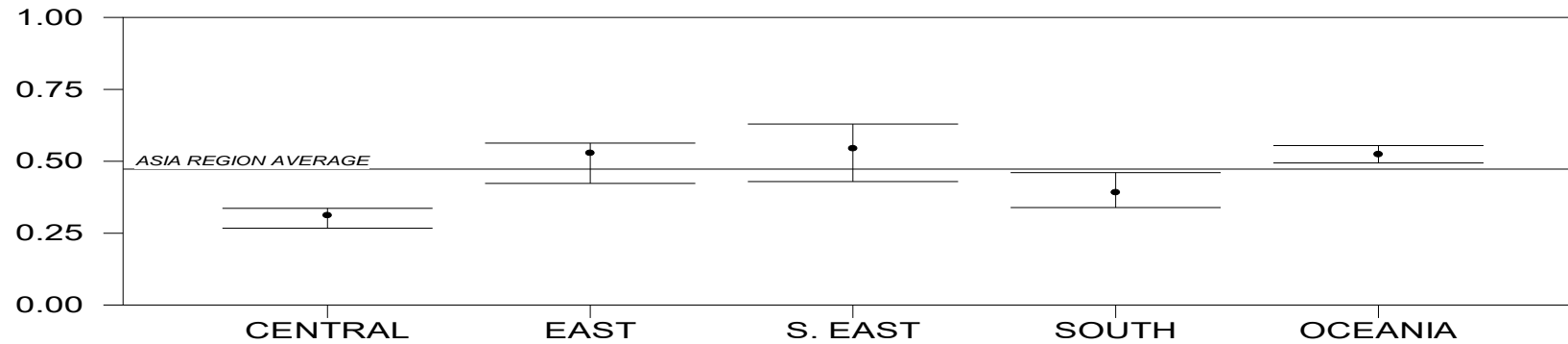
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# (1) Regional integration in Asia (APRII), EU, Latin America, and Africa

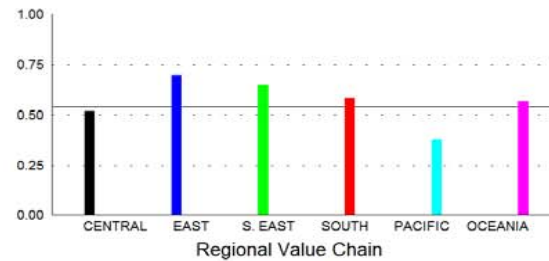


Source: Huh and Park, ADB WP #511, 2017

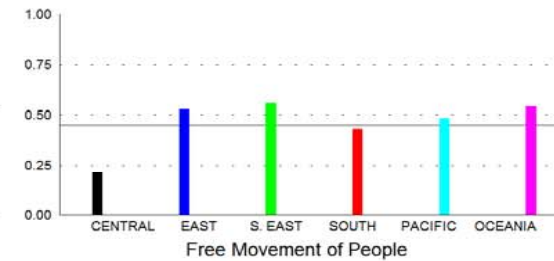
## (2) Where does Central Asia stand?



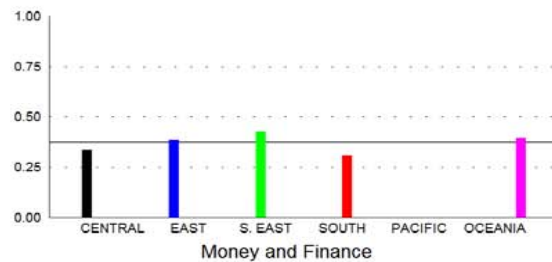
Trade and Investment



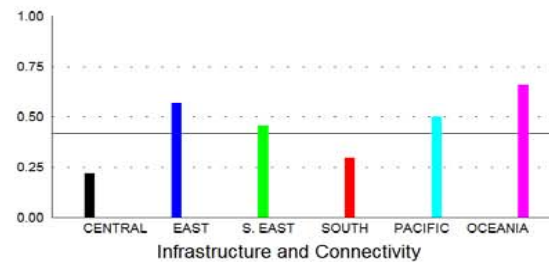
Regional Value Chain



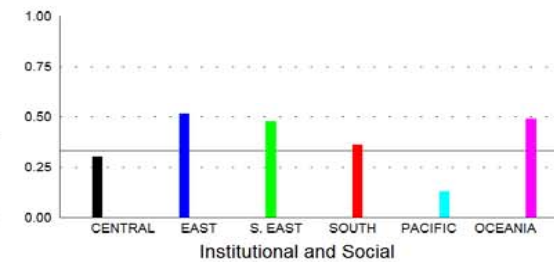
Free Movement of People



Money and Finance



Infrastructure and Connectivity



Institutional and Social

*Central Asia* (8): Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan, Uzbekistan

- Central Asia fares poorly, particularly in trade and investment (FDI) integration and infrastructure and connectivity
- In APRII, the main determinants of infrastructure and connectivity are time and costs associated with logistic processes when exporting/importing and setting up a business
- These time and costs are strongly connected to trade and investment (FDI)
- Reducing the time and costs can improve trade competitiveness and help to better integrate with regional/global value chain

### **(3) CAREC Regional Integration Index (CRII)**

- Measures the level of regional integration for 11 member countries of CAREC
- Provides a mechanism to monitor and evaluate progress, judge it against set goals, and identify strengths and weaknesses
- Slightly different from the classification adopted in APRII
  - In APRII, Afghanistan & Pakistan in South Asia, PRC & Mongolia in East Asia
- Shares the same structure of APRII (6 dimensions and 26 indicators)
- Useful to reflect features and characteristics specific to CAREC countries
- Offers a menu of policy coordination and action plans to enhance regional cooperation among CAREC countries

## **(4) Issues of consideration in CRII**

### **Data**

- Only 11 countries (observations) for each indicator at maximum
- Essential to minimize the number of missing data
- In APRII, the CAREC countries, except Turkmenistan, have all required data, if indicators II-c and II-d in money and finance integration are dropped
- Worth considering some modifications of the dimensions and indicators to include the maximum of CAREC countries in the system

## Weighting techniques

- The small number of CAREC countries can also weaken the merits of PCA as a weighting scheme. This is because PCA makes use of cross-country variations
- By construction, differences in economic size may not be a major issue, if there are a reasonably large number of countries (observations)
  - Most indicators are expressed as a ratio of intraregional sum (or average) to world sum (or average), which can control for size effects
  - PCA takes account of common movements through the correlation structure of data, which can prevent variables with large variances from unduly influencing the calculation of weights
- This may not be the case for CRII, as there are only 11 countries at maximum
- Empirically possible for one or two countries (observations) exhibiting large variations to dominate the procedure, producing misleading inferences

- Gap analysis techniques, such as data envelopment analysis or benefit of the doubt approach, can be of some help to mitigate this. Yet, the small number of CAREC countries may still pose a difficulty, particularly when constructing a benchmark point (i.e., the frontier)
- Another possible solution is to include multiple years (i.e., over time, as well as across countries), which would increase variations to use. This also allows one to track the progress in regional integration over time.



## Comparability with other countries in APRII

- Prior to weighting, normalization is required to bring the indicators up to the same standard
- APRII uses a min-max rescaling, which normalizes the indicators using their regional (Asia) minimum and maximum values
- If CRII follows the same procedure, the minimum and maximum values for normalization will be drawn based only on CAREC countries
- CAREC and Asia as a whole can have very different minimum and maximum values
- If so, CRII and APRII are constructed based on different scales, rendering comparisons between CAREC countries and other Asian countries obscure and less appealing
- One way of getting around this issue is to adopt Asian minimum and

maximum values, when normalizing the indicators for CAREC countries. This facilitates a direct comparison among all Asian countries at the same base

Thank you very much