Heterogeneous Patterns of Financial Development:

Implications for Asian Financial Integration

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Abstract

This paper analyzes detailed differences in patterns of financial development across the major Asian economies, including three of the region's largest economies (China, Japan and South Korea), to understand how these differences might affect possibilities for greater regional financial integration. In particular, the paper argues that heterogeneous patterns of financial development, and not just differences in levels of financial development, may present an economic challenge to regional financial integration efforts, aside from possible political challenges. The paper provides background on the case for financial openness, Asian experiences with financial integration, and regional economic responses to external shocks. It also discusses policy options, including regulatory reform and coordination, and possible risk management policies and institutions, in the context of heterogeneous patterns of financial development.

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1. Introduction

The rapid post-war rise of Japan to developed country status, followed by economies such as South Korea, Taiwan, Hong Kong and Singapore, began a process of making East Asia a significant contributor to global economic activity. Even as Japanese growth slowed, the regional process has been accelerated by the growth of China, and the creation of regional production networks that include many smaller economies such as Malaysia and Vietnam in essential ways. These production networks have been an important aspect of openness to trade that characterized much of the region and contributed to economic growth.

Strong real growth has not been immune to normal business cycle fluctuations, as well as to the negative impacts of international financial crises. The Asian financial crisis of 1997-98 called attention to the differences between openness to trade and openness to capital, and produced a particular set of policy responses in the region, including "self-insurance" through international reserve accumulation. The global financial crisis of 2007-09 had an unavoidable negative impact on East Asia as well, but it is arguable that the lessons of 1997-98 permitted the region to be better prepared for this second, larger shock.

One of the issues brought to the fore by the global crisis was the benefits and costs of financial openness and financial integration. Openness and integration can cover several different aspects of economic interaction. The obvious example of openness is liberalization of capital flows between countries. Integration has several connotations beyond openness, including harmonization of institutions such as financial market trading rules, and policy coordination for managing risks and instabilities potentially associated with financial openness. The theoretical justification for financial openness has been questioned much more than in the case of openness to trade, but it remains a reality that has to be analyzed and managed. The last decade, before and after the global financial crisis, has seen continued academic and policy engagement with these questions.

A key complement to financial integration is the nature of domestic financial development. It has been argued that financial openness and integration are more likely to have positive outcomes in cases where the economies involved have adequate levels of financial development. However,

financial development is itself a multi-dimensional concept. For example it can include various kinds of financial market institutions such as banks and stock markets, but also broader legal and regulatory frameworks that create the environment for financial decision-making by firms and households. This paper is motivated by debates about financial integration and policy coordination in East Asia, but focuses on financial development as a precondition for financial integration. In particular, it analyzes differences in patterns of financial development across the major East Asian economies, including three of the largest economies of the region (China, Japan and South Korea). In addition to differences in levels of financial development, differences in patterns of financial development may present an economic challenge to regional financial integration efforts.

The next section briefly reviews arguments for and against financial openness, the East Asian experience with financial crises and with financial integration, and how economies in the region have responded to external shocks. It also considers the possible connection between financial integration and financial development. Section 3 discusses data and measurement of patterns of financial development, as well as overall levels. A key idea here is that differences in various dimensions of financial development can be relevant for financial integration, as well as differences in overall levels of financial development. Section 4 presents the results of the paper, analyzing levels and patterns for 14 economies in the region. Section 5 concludes the paper, offering some possible implications of the analysis for future thinking about financial integration in the region.

2. Financial Integration and Financial Development

The core aspect of financial integration is openness on the capital account, so that international capital flows are unrestricted. In practice, a completely open capital account does not lead to perfect financial integration, in the sense of unified financial markets. An important reason for this imperfection is home bias in investment, reflected in a positive correlation between domestic savings and investment (Feldstein and Horioka, 1980). Investors do not view foreign and domestic assets as perfect substitutes, even though they may have the same objective characteristics. This can be due to regulatory differences, tax treatment, asymmetries of

information, and other kinds of market or institutional imperfections. Nevertheless, despite these perceptual and institutional barriers to complete financial integration, the main defining feature of modern-day globalization has been liberalization of restrictions on capital flows, allowing large amounts of capital to move swiftly between different countries. Furthermore, these capital flows now mainly consist of private capital, rather than official government flows. Large flows of capital, whether inward or outward, create challenges for the conduct of domestic macroeconomic policies, [1] and these are compounded by the volatility of these flows.

The post-World War II global economy was initially one of fixed exchange rates, capital controls and monetary policy autonomy. This regime broke down in the 1970s, and since then, theory and practice have swung back and forth between different policy combinations. At one stage, the orthodoxy had coalesced on the desirability of flexible exchange rates and openness of the capital account, the idea being that markets would equilibrate to allocate resources efficiently around the globe. Few countries adopted this policy mix, however, instead pursuing various combinations of partial capital controls, partial exchange rate flexibility and partial monetary autonomy. The latest financial crisis finally pushed the weight of expert opinion away from full capital account openness.[2] One of the most striking examples of this change was the near reversal of the International Monetary Fund's position on capital account liberalization, after the global financial crisis.

Even before the global financial crisis of 2007-09, there was evidence that full capital account openness did not have identifiable positive effects on economic performance. While the earlier 1997-98 financial crisis was still unfolding, Dani Rodrik (1998) argues against full capital account convertibility, pointing out that financial markets are far from the textbook model of

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[1] The main challenge for macroeconomic policy is encapsulated in the idea of the policy "trilemma," or "impossible trinity," based on the Mundell-Fleming model of an open economy macroeconomic framework. In the model, it is impossible for a government to simultaneously have monetary policy autonomy (and hence the ability to control the domestic inflation rate) and a fixed exchange rate when the capital account is completely unrestricted. Attempts to conduct an independent monetary policy will drive a wedge between foreign and domestic interest rates, leading to continued capital inflows or outflows (depending on the direction of the interest differential) in the absence of an equilibrating mechanism such as exchange rate adjustment. Rey (2013) has advanced the proposition that the weight of capital flows in the context of non-conventional monetary policies (essentially, what is known as QE or Quantitative Easing) makes exchange rate flexibility insufficient for domestic inflation control unless there are also controls on international capital flows. The theory and empirics of this view are still being debated.

[2] For an academic statement of the changed thinking, see Ostry et al. (2012). Ghosh et al. (2008) provide an earlier, more policy-focused take with the same perspective, also from the IMF.

perfection, and subject to bubbles, panics and herd behavior in general, so that the theoretical case for capital account openness is difficult to make convincingly.[3] Looking at empirical evidence, Rodrik concluded, "There is no evidence in the data that countries without capital controls have grown faster, invested more, or experienced lower inflation." [4]

More recently, Obstfeld (2009, pp. 104-105) offered a similarly cautious assessment, after an extensive literature review, "Financial openness is not a panacea – and it could be poison. The empirical record suggests that its benefits are most likely to be realized when implemented in a phased manner, when external balances and reserve positions are strong, and when complementing a range of domestic policies and reforms to enhance stability and growth." [5] Addressing the obverse of the issue, Aizenman, Pinto and Radziwill (2007) found evidence that domestic financial development might be more important for higher growth than foreign capital. They constructed a self-financing measure, which was positively correlated with growth, after controlling for the quality of domestic institutions. Eichengreen (2003) has also emphasized the importance of domestic financial development, making that case in the context of criticizing the Chiang Mai Initiative (CMI) – designed in 2000 to provide regional swap lines – as a means of preserving fixed exchange rates among the CMI group.

Despite the cautions emerging from work such as discussed above, financial integration, especially in East Asia as an economically dynamic region of growing importance, has continued to receive considerable attention. Borensztein and Loungani (2011) used cross-border equity and bond holdings, as well as equity returns and interest rates, to argue that Asian (chiefly East Asian) financial integration had increased, but that extra-regional connections remained stronger than intra-regional measures of integration. These results echoed earlier, similar studies (Fung, Tam and Yu, 2008; Garcia-Herrero, Yang and Wooldridge, 2008), with the latter paper providing an explanation of limited Asian financial integration in terms of low liquidity in the

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[3] Other prominent arguments against full capital account liberalization include Bhagwati (1998), Cooper (1999), Stiglitz (2003), and Obstfeld (2009).
[4] Kaur and Singh (2014) provide a detailed review of the empirical evidence on how different East Asian economies reacted to the financial crises of 1997-98 and 2007-09, and the impacts of different policy mixes with respect tot financial openness.
[5] There is also evidence that the specific nature of capital flows matters. For example, equity flows have a positive short-run impact on the host economy (Henry, 2007; Kose, Prasad and Terrones, 2009), as does foreign direct investment (e.g., Kose et al, 2009).

region's financial markets. Another recent study (Lee, Park and Yi, 2013) found no evidence for increased Asian financial integration after the global crisis, but an up-to-date survey (Financial Services Institute of Australasia, 2015) suggested that regional financial integration has increased. This is also the conclusion of a recent IMF study (IMF, 2015), which measures this increase in terms of intraregional financial flows, but nevertheless also concludes that "Home bias…is particularly strong in Asia, limiting cross-border financial transactions within the region." (p. 94)

Aside from measuring trends in financial integration, various studies have also tried to estimate the potential costs and benefits. Hoxha, Kalemli-Ozcan and Vollrath (2008) analyzed international financial integration, measured as foreign capital flows, and estimated that these flows had had significant positive impacts on consumption and welfare. Unfortunately, this analysis was performed before the global financial crisis. From a somewhat different welfare perspective, Pongsaparn and Unteroberdoerster (2011) estimated that greater financial integration in Asia would support global rebalancing, and hence financial stability. Park and Lee (2011) also implicitly assumed benefits from greater financial integration in "emerging Asia," through greater allocative efficiency, but emphasized the need for "more effective financial supervisory and regulatory mechanisms," as well as various dimensions of financial development.

There is a large empirical literature on the impacts of financial development, with the recent focus, post-global-crisis, being on the possibility that "too much finance" is inimical to economic growth. A common approach in this literature is to use a quadratic term for the measure of financial development: Arcand, Berkes and Panizza (2015) provide the most recent example of this specification. On the other hand, Law and Singh (2014) used an endogenous threshold model to allow for negative effects of financial development on growth.[6] The typical conceptualization of financial development is in terms of financial depth, measured as a credit-to-GDP ratio, and the presumed channel of negative impacts of financial depth on growth is volatility or financial

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[6] Arcand et al. also test a piecewise linear model with exogenous thresholds of financial depth.

crises (Schularick and Taylor, 2012).[7] Arcand et al. used the ratio of total private sector credit to GDP as the measure of financial depth, but their results are robust to using bank credit or household credit instead. Law and Singh used private sector credit, liquid liabilities and domestic credit as three possible measures of financial depth, with similar results.

Law, Azman-Saini and Ibrahim (2013) examined the possibility that the finance-growth nexus depends on institutional quality, and find that this is the case, using a threshold model. The institutional quality measures are generic – capturing control of corruption, rule of law and government effectiveness – and not specific to the financial sector. Earlier, Demetriades and Law (2006) had explored a similar connection between financial depth and institutional quality, using a specification with interactions, and a similar exercise is carried out by Arcand et al. (2015).

Most relevant to the current context, Herwartz and Walle (2014) examined the impacts of trade openness and financial openness on the finance-growth linkage. They found that greater trade openness strengthened this linkage, whereas greater financial openness eroded it. Their result is interpreted as providing a caution to the Rajan and Zingales (2003) analysis that openness would promote financial development by overcoming the resistance of domestic interest groups, since the financial development achieved would come at the cost of a weaker finance-growth relationship. As in most other studies, Herwartz and Walle measure financial development as financial depth, specifically, the private-sector credit-to-GDP ratio.

Outside this large literature on financial integration and financial development, and their economic impacts, there has been some attention paid to the issue that financial development is broader than just financial depth. From 2009-12, the World Economic Forum (WEF) produced a Financial Development Index with seven components, as the basis for its annual Financial Development Reports (FDRs), and the approach in that exercise will be the starting point for the analysis of the current paper. Since 2013, the World Bank has published annual Financial Development Reports, which are quite different from the WEF's documents, being focused on specific themes such as the role of the State in finance (World Bank, 2013) and financial

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[7] Law and Singh (2014) survey other possible explanations for the negative impact of financial depth on growth. Cline (2015) argues that all these results are merely a statistical artifact, and claims that the results are explained by slower growth at higher per capita income levels.

inclusion (World Bank, 2014). These FDRs do not have an index of financial development, but they identify and provide data for four components of financial development: depth, access, efficiency and stability.

Adnan (2011), building on the work of Saci and Holden (2008), constructed an index of financial development based on data for the banking and insurance sectors, as well as stock and bond markets. Thirteen variables were used, capturing depth and efficiency, with more in the former category. However, the index itself was derived using principal components analysis. No further analysis was performed, beyond the construction of the index.

More recently, Sahay et al. (2015) constructed an index of financial development that captured financial markets as well as financial institutions, and access and efficiency as well as depth. The authors used six indicators, with weights derived from principal components analysis, to construct the index. They confirmed the non-linear, sign-changing relationship between finance and growth, earlier found just for financial depth, but now extended to this broader measure of financial development. However, their results suggested that the "too much finance" result is driven by financial deepening rather than greater efficiency or access, which is a plausible result.

Another significant recent paper is by Aizenman, Jinjarak and Park (2015). They distinguished between quantity and quality of financial intermediation, measuring the former by financial depth (private bank credit to GDP ratio) and the latter by the lending-deposit interest rate spread. They examined sectoral growth impacts, and found that quantity and quality each had positive, negative or non-linear impacts, depending on the sector and region considered. Their results, unlike Sahay et al., suggested that even "quality" might have a non-linear impact.

The approach taken in the current paper also tries to decompose financial development into its different aspects, but in a different manner than the Sahay et al. and Aizenman et al. papers. In particular, it tries to isolate differences in patterns of financial development. The methodology and results are described in the next two sections.

3. Measuring Financial Development: Levels and Patterns

The motivation for the analysis in this section and the next is the idea that possibilities for successful financial integration are a function of similarities in financial development among the countries that are integrating. This is not the only way to think about preconditions for successful financial integration. For example, dissimilarities in financial development may also be positive in some circumstances: if one country in a region has strong stock markets, they may serve the whole region better as financial integration progresses. Nevertheless, proceeding with the idea of comparing financial development across countries in a region such as East Asia, that is contemplating or pursuing greater financial integration, it is straightforward to use a single measure or an index of financial development as a basis for comparison.

As first suggested in Kaur and Singh (2014), however, comparing levels of financial development via a single index misses possible differences across countries in the various components of the index. One can compare levels of different components as well, but this just generates additional information on level differences. Kaur and Singh (2014) suggested a summary measure of differences in patterns of financial development. The idea in this case is that financial development is inherently multidimensional, and comparing a vector of indicators of financial development across countries can tell one something about how similar or different the patterns of financial development are.

To illustrate, we use some of the calculations in Kaur and Singh (2014). They used indices constructed from the WEF FDR of 2012. In the WEF methodology, the Financial Development Index (FDIndex) was constructed from seven underlying indicators, each of which was itself built up from numerous base measures. The seven dimensions of financial development in this framework were institutional environment, business environment, banking financial services, non-banking financial services, financial stability, financial markets and financial access. Each dimension was scaled from 1 to 7, and the overall index was an average of these seven numbers. Thus, the FDIndex was 5.10 for Singapore, 5.01 for Australia, 4.90 for Japan and 4.42 for South Korea, providing a numerical scaling as well as a ranking of levels of overall financial development.

Kaur and Singh proposed to complement this comparison of levels with a comparison of patterns of financial development, as follows. Each country could be thought of as characterized by a 7-vector of different aspects of financial development. Calculating a correlation coefficient between these vectors for two countries could then be a measure of how similar the two vectors were, and therefore a measure of similarity in patterns of financial development.[8] The correlation coefficient uses deviations from the mean (the overall FDIndex for that country), so it would not be affected by the similarity or difference of overall levels. For example, Singapore and Japan had a correlation coefficient of 0.64, while Australia and Japan, slightly closer in level terms than Singapore and Japan, had a correlation of 0.54. Korea had a correlation coefficient of 0.13 with Japan, but a higher correlation of 0.22 with Australia, which was slightly further away than Japan in level terms. In fact, Korea and China stood out among the 11 countries considered, for having patterns of financial development relatively different from other countries in the group. This idea of comparing patterns as well as levels is taken further in the analysis of this paper. The data is described next, followed by a mathematical statement of the concepts used.

Data

The WEF did not publish a FDR after 2012. Instead, we use data from the WEF Global Competitiveness Report, which calculates a Global Competitiveness Index. This index includes a FDIndex as one of its components,[9] but it is quite different than the one used in the FDR. There are eight components, listed in Table 1. As in the FDR, each component is scaled from 1 to 7. Besides being narrower than the index constructed in the FDR (something we address in our calculations), the indicators in Table 1 rely heavily on survey evaluations, rather than being constructed primarily from quantitative measures (e.g., the percentage of households with bank accounts for measuring availability of financial services). Reported numbers are averages across a range of respondents. In terms of the Aizenman et al. dichotomy between "quality" and "quantity" of financial services, all the components in Table 1 are primarily quality indicators, although factors such as availability could be viewed as being driven by

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[8] The interpretation of this calculation is discussed in more detail later in this section.
[9] More specifically, the term used is Financial Market Development, and it is one of 12 "pillars" of the GCI.

Table 1: Components of FDIndex, WEF Global Competitiveness Report

Category	Indicator
Efficiency	Affordability of financial services
	Availability of financial services
	Financing through local equity market
	Ease of access to loans
	Venture capital availability
Trustworthiness and confidence	Soundness of banks
	Regulation of securities exchanges
	Legal rights of investors

The GCI data is available from 2006-07 to 2014-15, but the earliest year with all eight of the components listed in Table 1 is 2010-11. Henceforth, we refer to years by their first year. Hence, 2010-11 is termed 2010. Since there is no discernible trend in the data over the period 2010 to 2014, we report calculations only for the first and last years for which there is complete comparable data, 2010 and 2014.

While the index constructed from the eight components listed in Table 1 has a much narrower scope than the FDR index, the GCI database includes several variables that are the same as, or close to, those used in the FDR index. We therefore constructed two additional potential components for the FDIndex, capturing institutional environment and business environment. The underlying variables for these two additional components are provided in the Appendix. The GCI data did not provide variables to capture financial stability, or enable distinguishing of banking and non-banking financial services, so even with the additional two variables, substantial differences remain from the FDR index, leading to somewhat different results. These differences do not affect the validity of the methodology – they merely highlight the sensitivity of comparisons among countries to how financial development is conceived of and measured. We also constructed four other indices, measuring openness, technological sophistication, business sophistication and other aspects of institutional environment. Results involving these four indices or components of financial development are reported in the Appendix.

Table 2: Economies in the Analysis

Australia	New Zealand
Cambodia	Philippines
China	Singapore
Hong Kong	South Korea
Indonesia	Taiwan
Japan	Thailand
Malaysia	Vietnam

Finally, with respect to the data, we focus on 14 economies from the Asia Pacific, or East Asia region, and compare financial development across these economies. They are listed in Table 2, and include developed as well as emerging economies. In fact, the variation in per capita GDP among these countries is substantial. The set includes all eight economies that were analyzed in the "East Asian Miracle" analysis of the World Bank (1993), as well as all 11 economies considered in Kaur and Singh (2014).

Methodology

We will denote the value of an indicator *n* for country *i* by x_{in}. An indicator here refers to a potential component of a financial development index (FDIndex), and we assume that all indicators have already been converted to a common scale (1-7 in the case of our data). For example, a weighted average of the components will yield an index defined by

$$\overline{x}_i(w) = \sum_1^N w_n x_{in} \tag{1.1}$$

where the weights are assumed to sum to one. The left hand side of this equation measures the level of financial development for country *i*, based on the index formula chosen.

In this case, the *Level Distance* between country *i* and country *j* is simply $\overline{x}_i(w) - \overline{x}_j(w)$. This number may be positive or negative, of course. When considering regional financial integration we may be interested in how close a single economy in the region is to the other economies in the region, in terms of financial development. Note that we are not measuring integration, but

rather financial development as a precursor for integration. With 14 economies in our set of analysis, we would have 13 bilateral *Level Distances*. It is reasonable to summarize this information with an average over the 13 distance measures. Simply adding up the individual distances and averaging will cancel out positives and negatives. In order to avoid this, one can use absolute values or squares, prior to summing up. We choose the latter, giving the general formula as below, with I=14 for the calculations performed here.

$$\overline{LD_i} = \frac{1}{I-1}\sqrt{\sum_{j\neq i}[\overline{x}_i(w) - \overline{x}_j(w)]^2} \qquad (1.2)$$

Hence, economies in the region with higher values of this measure are on average further in levels of financial development from their regional counterparts.

In constructing this measure of average Level Distance, differences in patterns are irrelevant, since they disappear into the aggregation. Instead, consider the entire vector of indicators for economy i, before any aggregation. Denote this by $x_i = (x_{i1},...,x_{iN})$. Differences in these vectors across countries can be thought of as capturing differences in patterns of financial development. Therefore, we define the *Pattern Distance* between two economies by

$$PD_{ij} = 1 - corr(x_i, x_j) \qquad (1.3)$$

In terms of the concept of distance, a higher correlation denotes a lower pattern distance. Hence, if two economies have a correlation of 1 in their vector measures of financial development, their pattern difference would be the lowest possible. This is incorporated into our formula by subtracting the correlation from 1: the pattern distance measure then ranges from 0 to 2. Note that using the correlation coefficient removes the simple mean of the components of the vector. If the level index is constructed with equal weights, the index is the simple average of the components of the vector of financial development measures. If we average across all such correlations for country i, we obtain the average Pattern Distance for country i. Note that the correlation coefficient does not have the interpretation usually associated with random variables – it is simply a convenient summary measure. For this calculation to make sense, all the components should be on the same scale, which is the case with the GCI data. Also, the calculation here can be contrasted with the correlations which are part of principal components analysis, since those are calculated between vectors of individual components, so that each country's value for that component is an element of the I-vector of country values. Therefore,

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differences in patterns of financial development as calculated here are capturing something quite different than anything associated with principal components.

4. Results

We begin by reporting the levels of financial development for the 14 countries in the analysis. The individual country levels are reported in Table 3, for two years (2010 and 2014) and four different specifications of the financial development index. FDIndex8 is a slight modification of the measure of financial market development that is used in the GCI report, with equal weights for all eight components, rather than the two-tier weighting scheme used in that report. FDIndex7 removes Legal Rights of Investors from the index calculation. FDIndex10 adds our measures of business environment and institutional environment to the original eight components, while FDIndex9 adds these two to the seven components, excluding legal rights.[10] All the sub-components or variables included in these two additional components used in FDIndex10 and FDIndex9 are listed in tables in the Appendix. Removing the legal rights component reduces the financial development index levels slightly, on average, but adding the two "environment" components does not affect the overall levels. The range of variation of the index levels across countries is not much affected by the differences in choice of components, across the four indices.

The relative and absolute levels of financial development in Table 3 are not surprising. Overall values of the index are in a tight range, quite far from the extremes of 1 and 7. There are strong associations between levels of financial development and GDP per capita, although Korea stands out as a considerable exception on the low side, while Malaysia has exceptionally high measures of financial development. Japan also has somewhat of a low score, given its high-income status. We will not go into the contribution of different components of the indices to the variations observed in the levels in Table 3. We mainly want to emphasize that the levels are fairly constant over this short span of time, and especially, that they are not much affected by changes in the composition of the index, at least for the four alternatives considered here.

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[10] The legal rights measure is actually included in the institutional environment component.

Table 3: Financial Development Index Levels

	FDIndex8		FDIndex7		FDIndex10		FDIndex9	
	2010	2014	2010	2014	2010	2014	2010	2014
AUS	5.10	4.91	5.00	4.75	5.27	5.20	5.14	5.00
CHN	4.16	4.09	4.13	4.09	4.17	4.21	4.12	4.23
HKG	5.47	5.54	5.36	5.43	5.56	5.74	5.40	5.60
IDN	4.13	4.20	4.23	4.21	4.14	4.35	4.29	4.39
JPN	4.60	4.86	4.56	4.84	4.53	4.94	4.46	4.91
KHM	3.59	3.48	3.42	3.31	3.54	3.55	3.29	3.30
KOR	4.00	3.86	3.91	3.71	3.90	3.83	3.75	3.61
MYS	4.93	5.12	4.77	4.98	5.09	5.39	4.88	5.21
NZL	4.97	5.28	4.86	5.14	5.05	5.58	4.90	5.42
PHL	3.77	4.07	3.85	4.12	3.82	4.24	3.93	4.33
SGP	5.52	5.52	5.40	5.40	5.55	5.68	5.39	5.54
THA	4.23	4.24	4.29	4.26	4.27	4.43	4.37	4.48
TWN	4.75	4.73	4.86	4.79	4.76	4.91	4.92	5.02
VNM	3.95	3.54	3.80	3.36	3.96	3.63	3.75	3.39

Table 4: Regional Summary Statistics

Year	Level Distance				Pattern Distance			
	Average	Range	Min	Max	Mean	Range	Min	Max
FDIndex8								
2010	0.25	0.17	0.18	0.35	0.37	1.35	0.01	1.36
2014	0.29	0.16	0.21	0.37	0.35	1.06	0.00	1.06
FDIndex7								
2010	0.24	0.20	0.18	0.38	0.09	0.34	0.01	0.35
2014	0.30	0.21	0.22	0.43	0.11	0.63	0.01	0.64
FDIndex10								
2010	0.26	0.16	0.19	0.35	0.40	1.24	0.02	1.26
2014	0.29	0.17	0.22	0.39	0.39	1.03	0.02	1.05
FDIndex9								
2010	0.25	0.20	0.18	0.38	0.20	0.73	0.02	0.95
2014	0.29	0.21	0.22	0.43	0.22	0.71	0.02	0.93

Source: The World Economic Forum, Global Competitiveness Index Report, 2015

We next turn to the measurement of distances of levels and patterns of financial development. Each pair of the 14 economies can be compared in terms of each of these measures, which implies 91 numbers for each measure. We report instead the average for each economy, of 13 pairwise distances with the other economies in the region that are in our set of analysis. Prior to examining these country averages, regional averages are reported in Table 4. For the region as a whole, the first index suggests that distances in financial development levels did not vary too much across countries and years. However, distances in patterns of financial development while they were similar on average, showed greater variation in the later year. Removing the legal rights component from the index had small effects on level distances, but large impacts on pattern distances – the latter were much lower on average (as a result of higher average correlations), and especially in the lower tail of the regional distribution.[11] Interestingly, adding in the two components measuring business environment and institutional environment had small impacts on pattern distances in the case where the legal rights index was included (FDIndex10), but large impacts when it was excluded (FDIndex9). However, the pattern distances in the case of FDIndex9 are lower than in the case of FDIndex8, implying that the differences in measured patterns of financial development are driven significantly by the single component of legal rights of investors.

Tables 5 through 8 provide economy-level averages for the level and pattern distances, for each of the four financial development indices. The average level distances depend on where the economy is in the ranking of levels, with high and low levels of financial development tending to have higher average distances. However, the average distance also depends on the overall distribution. Thus, in Table 5, Korea has a higher average level distance than Indonesia, even though its level of financial development is higher. This is because Indonesia is part of a cluster of economies in this regional group with relatively low levels of financial development. If we look at average level distances (again using Table 5 to illustrate), Indonesia was similar to several other economies on this measure (China, Japan, New Zealand, Taiwan, and Thailand), but very much an outlier in its pattern distance, which was much greater than any of the other

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[11] In this context, the observations of the IMF (2015) report are of interest, "Differences in financial regulation between countries are important determinants of financial integration, as investors may be reluctant to carry out financial transactions with entities in countries whose regulations and institutions are very different from their own."

economies in the set. This illustrates a key general point, that economies can be similar in levels of financial development, or in their closeness of levels on average, but quite different in their specific patterns of financial development.

The pattern differences in Table 5 are not as large, on the whole, as those measured in Kaur and Singh (2014), using date from the WEF FDR. This reflects the different composition of the indices, based on different data and a somewhat different conceptualization of financial development. Significantly, when only one of the components, the index of legal rights of investors, is removed, the pattern distances almost disappear, as can be seen in Table 6. Even when broader measures of institutional environment and business environment are included, to bring the index somewhat closer to that calculated in the FDR, the pattern distances are higher than in the case of the original eight components, though higher than the narrowest index of seven components (Tables 7 and 8). In all of these cases, level distances are relatively insensitive to changes in the index construction, just as was the case for the levels themselves (Table 3), although there are exceptions.

Figures 1 through 8 are useful in visualizing and summarizing the data in the tables. Each figure displays the combinations of level distance and pattern distance for the economies in the regional group. Figures 1 and 2 present the results for FDIndex8, corresponding to the data in Table 1. Clearly, Indonesia is an outlier in 2010, but its pattern distance changes dramatically in 2014. Figure 2, in particular, drives home the point that there is no obvious relationship between distances in levels of financial development and distances in patterns of financial development. Thus, while Vietnam is clearly furthest from other countries in the region on average, in both dimensions, Hong Kong and Singapore, while having the highest levels of financial development, and thus the greatest average distances from the other countries, have low levels of average distance in patterns of financial development. Taiwan and the Philippines, on the other hand, have low average level distances, but high average pattern distances.

Figures 3 and 4 provide the scatter plot, for the data from Table 6, where the index of legal rights of investors has been removed from the overall index of financial development. In this case, the pattern distance collapses for most of the countries in the regional set (except for Cambodia and

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Vietnam). However, without these two outliers, there is again no clear relationship between distance in levels and distance in patterns of financial development. The increase in pattern distance from 2010 to 2014 for Cambodia and Vietnam is noteworthy, in the context of increasing financial flows in the region over this time period.

The scatter plots for the data in Tables 7 and 8 are presented in Figures 5 through 8. The results for these measures of financial development, using broader sets of components, are somewhere in between the earlier two cases (Figures 1 and 2 versus Figures 3 and 4), and provide similar visualizations of the central point, that measuring and comparing patterns of financial development provides different information than comparing levels of financial development. Figures 7 and 8, based on FDIndex9, displays increases in pattern distances for Korea as well as Cambodia and Vietnam, and a decrease for Indonesia. These heterogeneous movements in patterns of financial development could have implications for further financial integration in the region.

Table 5: Level and Pattern Differences FDIndex8

Year 2010

Country	Level Distance				Pattern Distance			
	Average	Range	Min	Max	Average	Range	Min	Max
AUS	0.27	1.98	-0.37	1.61	0.24	0.96	0.02	0.98
CHN	0.21	1.98	-1.38	0.59	0.22	0.68	0.08	0.76
HKG	0.35	1.89	0.09	1.98	0.26	1.09	0.04	1.13
IDN	0.20	1.98	-1.38	0.60	0.90	1.18	0.18	1.36
JPN	0.18	1.98	-1.16	0.82	0.23	0.76	0.06	0.82
KHM	0.32	1.85	-1.98	-0.13	0.37	1.31	0.05	1.36
KOR	0.29	1.98	-1.85	0.13	0.26	1.04	0.03	1.07
MYS	0.26	1.98	-0.38	1.59	0.34	1.30	0.03	1.33
NZL	0.21	1.98	-0.69	1.29	0.27	1.04	0.02	1.06
PHL	0.25	1.98	-1.66	0.32	0.42	0.68	0.01	0.69
SGP	0.33	1.98	-0.09	1.89	0.29	1.20	0.03	1.23
THA	0.19	1.98	-1.25	0.72	0.40	0.68	0.01	0.69
TWN	0.19	1.98	-0.87	1.11	0.58	0.81	0.10	0.91
VNM	0.24	1.98	-1.58	0.40	0.33	1.24	0.03	1.27
Year 2014								
AUS	0.25	2.14	-0.59	1.55	0.23	0.53	0.00	0.53
CHN	0.25	2.14	-1.52	0.62	0.39	0.84	0.07	0.91
HKG	0.37	2.04	0.10	2.14	0.22	0.5	0.01	0.51
IDN	0.22	2.14	-1.34	0.80	0.44	0.95	0.04	0.99
JPN	0.21	2.14	-0.91	1.23	0.22	0.38	0.09	0.47
KHM	0.37	2.12	-2.14	-0.02	0.43	0.89	0.08	0.97
KOR	0.37	2.14	-2.12	0.02	0.33	0.78	0.03	0.81
MYS	0.31	2.14	-0.29	1.85	0.37	0.87	0.03	0.9
NZL	0.32	2.14	-0.24	1.90	0.22	0.51	0.00	0.51
PHL	0.24	2.14	-1.44	0.70	0.48	1.02	0.04	1.06
SGP	0.35	2.14	-0.10	2.04	0.23	0.54	0.02	0.56
THA	0.22	2.14	-1.23	0.91	0.35	0.79	0.04	0.83
TWN	0.22	2.14	-0.89	1.25	0.48	0.90	0.07	0.97
VNM	0.37	2.14	-2.12	0.02	0.49	1.01	0.05	1.06

Source: The World Economic Forum, Global Competitiveness Index Report, 2015

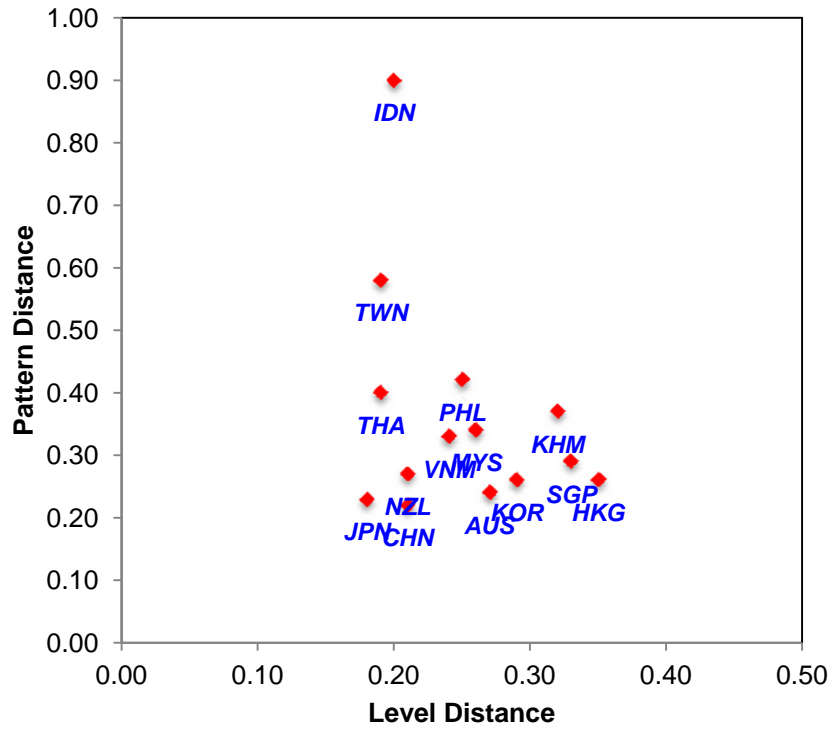## Table 6: Level and Pattern Differences FDIndex7

Year 2010

Country	Level Distance				Pattern Distance			
	Average	Range	Min	Max	Average	Range	Min	Max
AUS	0.25	2.09	-0.33	1.76	0.08	0.20	0.78	0.98
CHN	0.20	2.09	-1.24	0.85	0.07	0.14	0.83	0.97
HKG	0.32	1.99	0.10	2.09	0.07	0.09	0.89	0.98
IDN	0.18	2.09	-0.98	1.11	0.13	0.30	0.65	0.95
JPN	0.18	2.09	-1.07	1.02	0.08	0.19	0.78	0.97
KHM	0.38	1.86	-2.09	-0.23	0.17	0.26	0.65	0.91
KOR	0.32	2.09	-1.86	0.23	0.08	0.24	0.75	0.99
MYS	0.23	2.09	-0.44	1.65	0.06	0.10	0.89	0.99
NZL	0.19	2.09	-0.70	1.39	0.11	0.27	0.71	0.98
PHL	0.21	2.09	-1.30	0.79	0.06	0.11	0.88	0.99
SGP	0.30	2.09	-0.10	1.99	0.08	0.15	0.82	0.97
THA	0.18	2.09	-0.92	1.17	0.06	0.13	0.86	0.99
TWN	0.22	2.09	-0.48	1.61	0.14	0.24	0.71	0.95
VNM	0.27	2.09	-1.63	0.46	0.09	0.24	0.75	0.99

Year 2014

Country	Level Distance				Pattern Distance			
AUS	0.24	2.28	-0.68	1.60	0.07	0.24	0.75	0.99
CHN	0.23	2.28	-1.30	0.97	0.11	0.31	0.66	0.97
HKG	0.36	2.16	0.12	2.28	0.06	0.31	0.68	0.99
IDN	0.22	2.28	-1.10	1.18	0.09	0.22	0.74	0.96
JPN	0.23	2.28	-0.78	1.50	0.08	0.33	0.66	0.99
KHM	0.43	2.26	-2.28	-0.02	0.29	0.53	0.36	0.89
KOR	0.42	2.28	-2.26	0.02	0.09	0.34	0.64	0.98
MYS	0.29	2.28	-0.33	1.94	0.08	0.24	0.74	0.98
NZL	0.30	2.28	-0.28	2.00	0.07	0.27	0.72	0.99
PHL	0.22	2.28	-1.13	1.14	0.06	0.22	0.77	0.99
SGP	0.33	2.28	-0.12	2.16	0.08	0.28	0.70	0.98
THA	0.22	2.28	-0.98	1.29	0.07	0.26	0.73	0.99
TWN	0.25	2.28	-0.59	1.69	0.12	0.44	0.54	0.98
VNM	0.42	2.28	-2.25	0.03	0.25	0.55	0.36	0.91

The World Economic Forum: Global Competitiveness Index

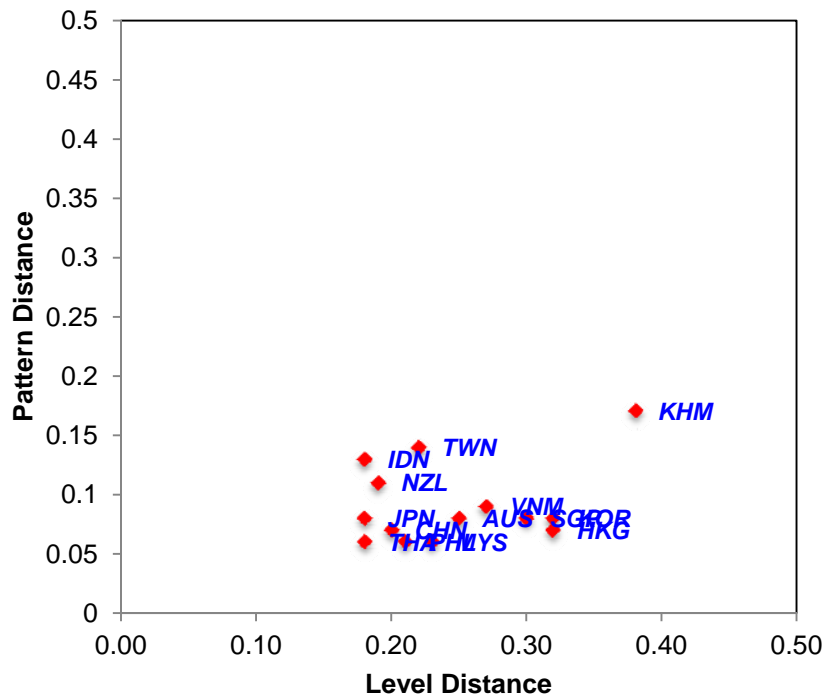*Excludes: Legal Right Index of the* 8th *Pillar*

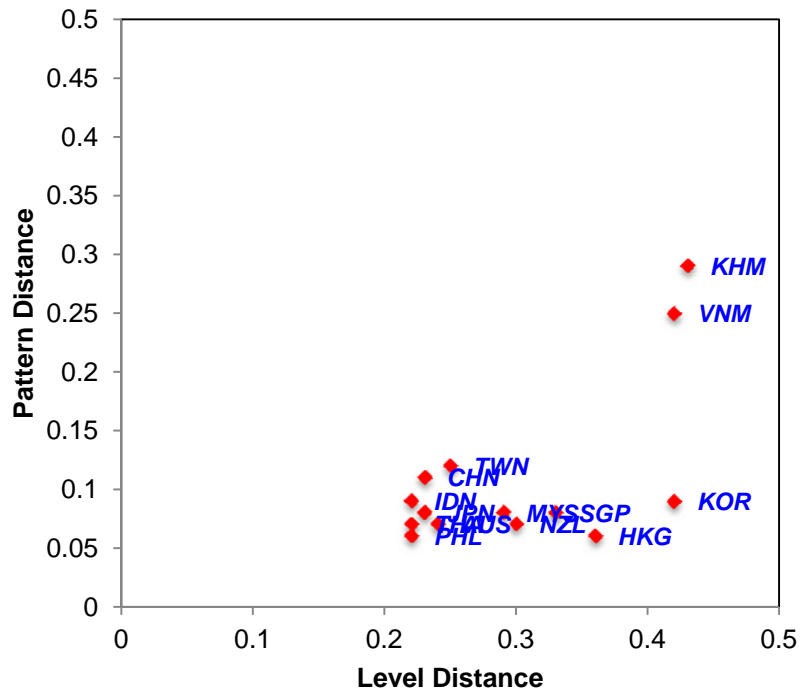**Figure 1: Level and Pattern Distance, FDIndex8
2010**

**Figure 2: Level and Pattern Distance, FDindex8
2014**
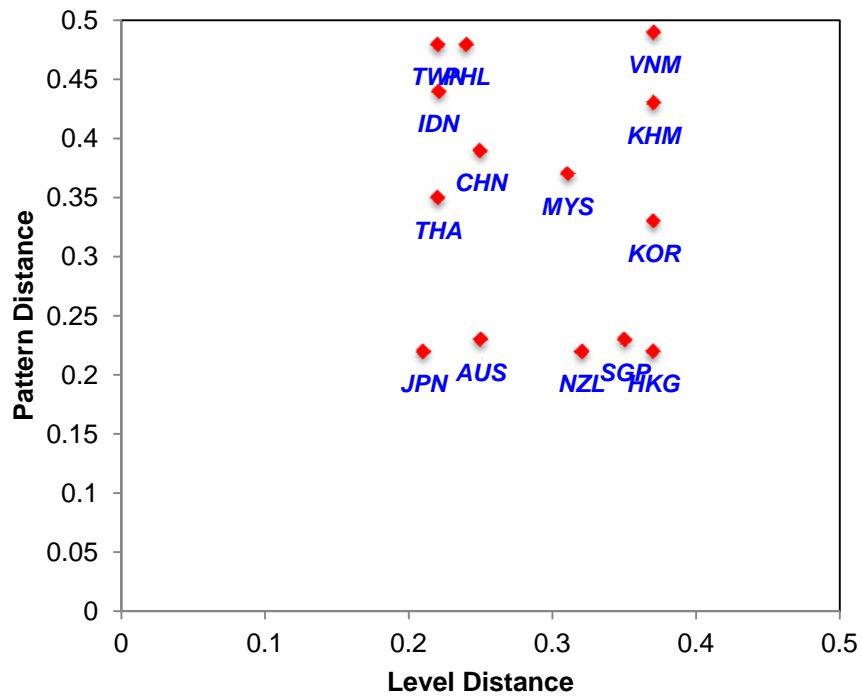
**Figure 3: Level and Pattern Distance, FDIndex7
2010**

**Figure 4: Level and Pattern Distance, FDIndex7
2014**

Table 7: Level and Pattern Differences FDIndex10

Country	Level Distance				Pattern Distance			
	Average	Range	Min	Max	Average	Range	Min	Max
AUS	0.28	2.01	-0.29	1.73	0.27	0.95	0.00	0.95
CHN	0.22	2.01	-1.39	0.62	0.26	0.58	0.31	0.89
HKG	0.35	2.01	0.00	2.01	0.29	1.02	-0.07	0.95
IDN	0.22	2.01	-1.42	0.59	0.89	1.03	-0.26	0.77
JPN	0.19	2.01	-1.02	0.99	0.28	0.79	0.11	0.90
KHM	0.34	1.74	-2.01	-0.27	0.39	1.20	-0.26	0.94
KOR	0.26	2.01	-1.66	0.35	0.38	1.08	-0.18	0.90
MYS	0.24	2.01	-0.47	1.55	0.38	1.12	-0.17	0.95
NZL	0.24	2.01	-0.50	1.51	0.34	1.07	-0.12	0.95
PHL	0.28	2.01	-1.74	0.27	0.44	0.63	0.35	0.98
SGP	0.35	2.01	0.00	2.01	0.32	1.14	-0.21	0.93
THA	0.20	2.01	-1.29	0.72	0.42	0.64	0.34	0.98
TWN	0.20	2.01	-0.79	1.22	0.62	0.79	0.04	0.83
VNM	0.25	2.01	-1.60	0.41	0.35	1.14	-0.19	0.95
Year 2014								
AUS	0.26	2.18	-0.54	1.64	0.26	0.53	0.45	0.98
CHN	0.25	2.18	-1.53	0.65	0.41	0.83	0.10	0.93
HKG	0.37	2.13	0.05	2.18	0.24	0.47	0.50	0.97
IDN	0.23	2.18	-1.38	0.80	0.48	0.93	0.03	0.96
JPN	0.22	2.18	-0.80	1.38	0.28	0.40	0.50	0.90
KHM	0.39	2.11	-2.18	-0.08	0.44	0.90	0.01	0.91
KOR	0.33	2.18	-1.91	0.27	0.47	0.80	0.04	0.84
MYS	0.29	2.18	-0.35	1.83	0.41	0.86	0.05	0.91
NZL	0.33	2.18	-0.16	2.02	0.26	0.53	0.45	0.98
PHL	0.25	2.18	-1.50	0.68	0.49	1.01	-0.05	0.96
SGP	0.35	2.18	-0.05	2.13	0.26	0.57	0.41	0.98
THA	0.22	2.18	-1.31	0.88	0.38	0.78	0.18	0.96
TWN	0.22	2.18	-0.82	1.36	0.52	0.84	0.01	0.85
VNM	0.37	2.18	-2.11	0.08	0.51	0.92	-0.05	0.87

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## Table 8: Level and Pattern Differences FDIndex9
Year 2010

Country	Level Distance				Pattern Distance			
	Average	Range	Min	Max	Average	Range	Min	Max
AUS	0.27	2.10	-0.25	1.85	0.16	0.40	0.54	0.94
CHN	0.21	2.10	-1.28	0.82	0.14	0.27	0.69	0.96
HKG	0.32	2.10	0.00	2.10	0.12	0.27	0.69	0.96
IDN	0.19	2.10	-1.11	0.99	0.40	0.58	0.25	0.83
JPN	0.18	2.10	-0.93	1.17	0.18	0.43	0.48	0.91
KHM	0.38	1.64	-2.10	-0.46	0.22	0.37	0.54	0.91
KOR	0.28	2.10	-1.64	0.46	0.30	0.65	0.25	0.90
MYS	0.22	2.10	-0.52	1.59	0.16	0.41	0.56	0.97
NZL	0.22	2.10	-0.49	1.61	0.24	0.59	0.35	0.94
PHL	0.24	2.10	-1.47	0.64	0.17	0.37	0.61	0.98
SGP	0.32	2.10	0.00	2.10	0.18	0.49	0.44	0.93
THA	0.18	2.10	-1.03	1.07	0.14	0.31	0.67	0.98
TWN	0.22	2.10	-0.48	1.62	0.24	0.33	0.54	0.87
VNM	0.27	2.10	-1.64	0.46	0.14	0.19	0.74	0.93

Year 2014

| Country	Level Distance				Pattern Distance			
AUS	0.24	2.29	-0.60	1.69	0.15	0.25	0.72	0.97
CHN	0.24	2.29	-1.37	0.92	0.22	0.60	0.35	0.95
HKG	0.36	2.23	0.06	2.29	0.12	0.28	0.68	0.96
IDN	0.22	2.29	-1.20	1.09	0.24	0.69	0.27	0.96
JPN	0.23	2.29	-0.69	1.60	0.17	0.35	0.63	0.98
KHM	0.43	2.21	-2.29	-0.08	0.34	0.48	0.34	0.82
KOR	0.36	2.29	-1.99	0.30	0.42	0.52	0.27	0.79
MYS	0.28	2.29	-0.39	1.90	0.22	0.60	0.33	0.93
NZL	0.32	2.29	-0.18	2.11	0.16	0.28	0.70	0.98
PHL	0.23	2.29	-1.27	1.02	0.18	0.58	0.40	0.98
SGP	0.34	2.29	-0.06	2.23	0.15	0.29	0.69	0.98
THA	0.22	2.29	-1.12	1.17	0.17	0.48	0.50	0.98
TWN	0.25	2.29	-0.58	1.71	0.20	0.43	0.51	0.94
VNM	0.41	2.29	-2.21	0.08	0.32	0.56	0.34	0.90

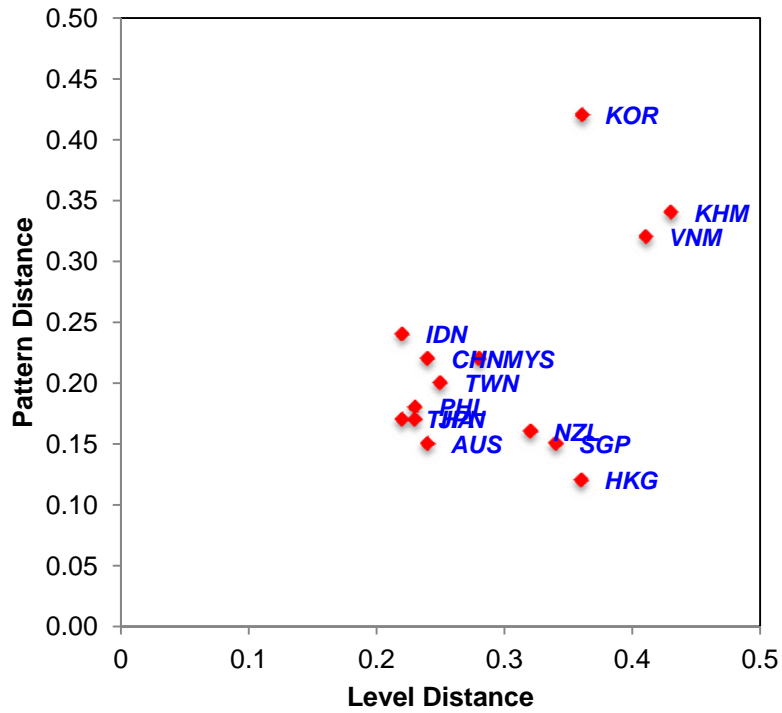**Figure 5: Level and Pattern Distance, FDIndex10
2010**
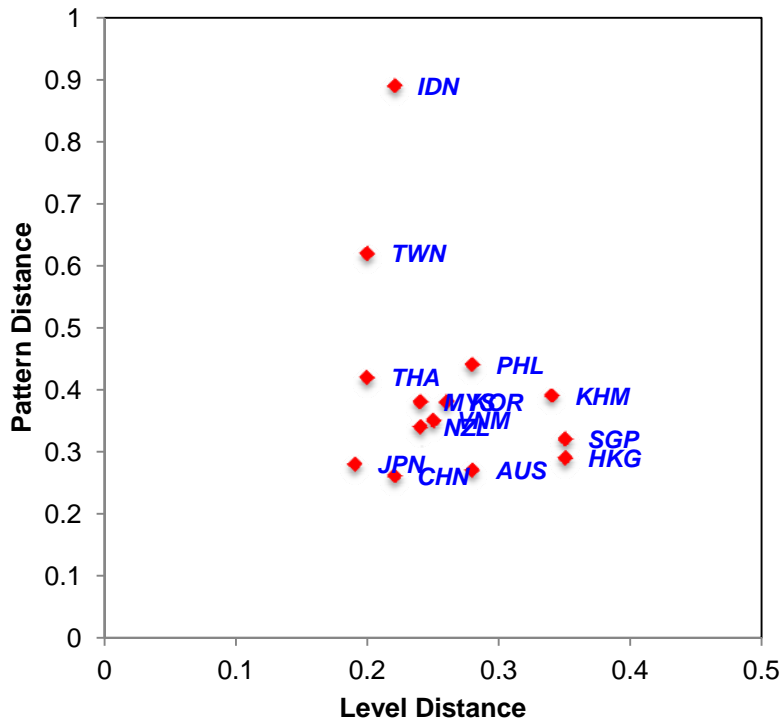
**Figure 6: Level and Pattern Distance, FDIndex10
2014**
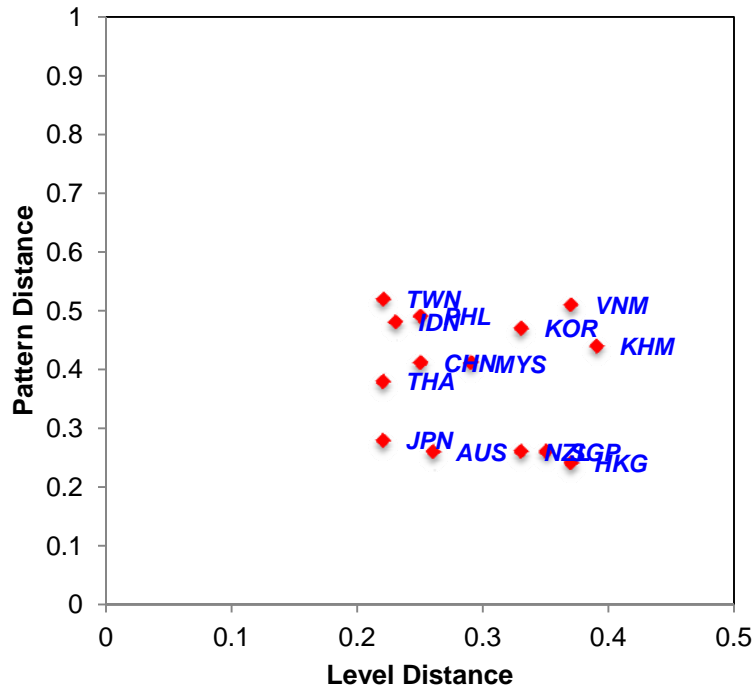
Figure 7: Level and Pattern Distance, FDIndex9 2010
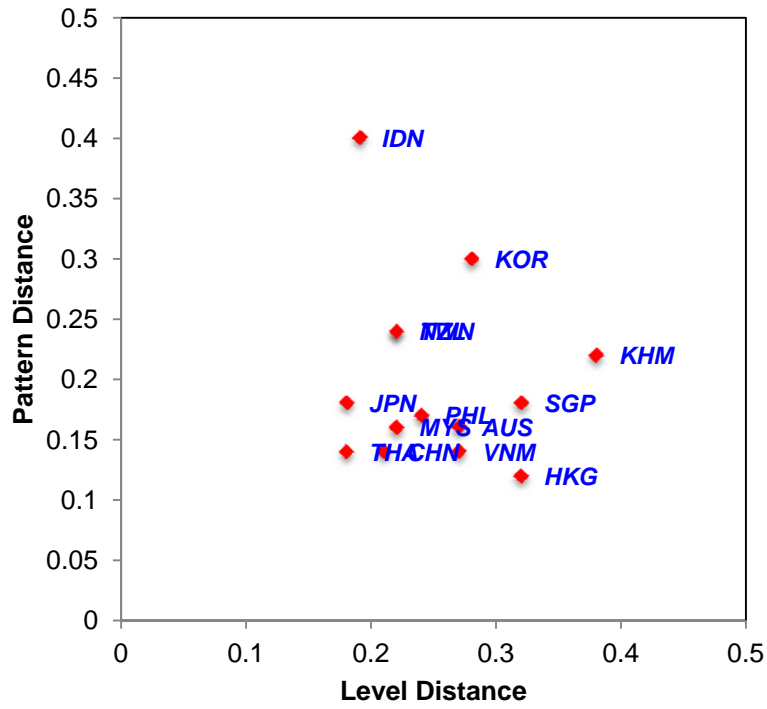
Figure 8: Level and Pattern Distance, FDIndex9 2014

Conclusion

Even after the global financial crisis, there is continued interest in financial integration, especially in East Asia or the Asia Pacific region. Recent empirical work suggests that financial integration within the region has been increasing, but still remains below what might be most beneficial. It is difficult to weigh benefits and risks of financial integration, so assertions of "too much" or "too little" financial integration have to be very tentative.

The literature on financial integration does make references to the need for adequate levels of financial development, especially in the case of financial market regulation, but typically does not go further in empirically associating financial integration and financial development. On the other hand, there is a large literature on financial development and its impacts, especially on economic growth. This literature has tended to measure financial development simply as financial depth, but recently broader-based indices of financial development have begun to be constructed. In some cases, such as Aizenman et al. (2015) and Sahay et al. (2015), there have been attempts to differentiate between different dimensions of financial development, such as quantity versus quality, or depth versus efficiency and access.

In this paper we have argued that even a sophisticated index is limited because it seeks to reduce the complexities of financial development to a single dimension. As an alternative, we have proposed and constructed a measure of differences in patterns of financial development, and compared measured differences in patterns with differences in levels of financial development. Measuring differences in patterns of financial development (as opposed to differences in levels) extends the multidimensional approach to characterizing financial development. One could potentially apply a measure of pattern difference to components of financial development that capture quantity versus those that capture quality. This would refine the idea of measuring patterns of financial development, and remains an avenue of future research.

For 14 economies of the Asia Pacific region, we have calculated differences in levels and patterns of financial development for different years and different vectors of components of overall financial development. We suggest that these kinds of calculations can be a useful preliminary tool for assessing prospects for beneficial financial integration among a given set of

economies. In particular, since the components of financial development include various aspects of financial market institutions, as well as regulatory and governance institutions, focusing on patterns and sub-patterns of financial development provides a more systematic way of assessing potential regulatory reform and coordination, and possible regional risk management policies and institutions, both as precursors to, and aspects of, financial integration. Developing these linkages analytically might contribute to regional policy efforts to develop bond markets in various regional member economies (e.g., Lim and Lim, 2012), and to assess the balance between bank and non-bank financing channels, for example.

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Appendix

Table A1: Institutional Environment

Efficacy of corporate boards
Reliance on professional management
Willingness to delegate authority
Strength of auditing and reporting standards
Ethical behavior of firms
Protection of minority shareholders' interests
Burden of government regulation
Regulation of securities exchanges
Property rights
Intellectual property protection
Diversion of public funds
Public trust in politicians
Legal rights index
Judicial independence
Irregular payments and bribes

Table A2: Business Environment

Quality of management schools
Quality of math and science education
Extent of staff training
Availability of research and training services
Secondary education enrollment, gross %
Tertiary education enrollment, gross %
Quality of the education system
Quality of overall infrastructure
Quality of electricity supply
Individuals using Internet, % *
Fixed broadband Internet subscriptions/100 pop.
Fixed telephone lines/100 pop.
Mobile telephone subscriptions/100 pop.
No. procedures to start a business
No. days to start a business

Table A3: Additional Components and Variables

Business Sophistication
Local supplier quantity
Local supplier quality
State of cluster development
Nature of competitive advantage
Value chain breadth
Control of international distribution
Production process sophistication Extent of marketing
Technology Sophistication
Int'l Internet bandwidth, kb/s per user
Mobile broadband subscriptions/100 pop.*
Openness
Prevalence of trade barriers
Trade tariffs, % duty
Prevalence of foreign ownership
Business impact of rules on FDI
Burden of customs procedures Imports as a percentage of GDP
Institutional Environment2
Favoritism in decisions of government officials
Wastefulness of government spending
Efficiency of legal framework in settling disputes
Efficiency of legal framework in challenging regs
Transparency of government policymaking
Effect of taxation on incentives to invest
Total tax rate, % profits

Table A4: Level and Pattern Differences FDIndex14
Year 2010

Country	Level Distance				Pattern Distance			
	Average	Range	Min	Max	Average	Range	Min	Max
AUS	0.24	1.93	-0.42	1.51	0.28	0.73	0.20	0.93
CHN	0.20	1.93	-1.35	0.58	0.25	0.44	0.42	0.86
HKG	0.33	1.93	-0.04	1.89	0.30	0.86	0.07	0.93
IDN	0.21	1.93	-1.39	0.54	0.72	0.91	-0.10	0.81
JPN	0.18	1.93	-0.91	1.01	0.33	0.52	0.38	0.90
KHM	0.32	1.74	-1.93	-0.18	0.40	1.01	-0.10	0.91
KOR	0.23	1.93	-1.52	0.41	0.36	0.75	0.15	0.90
MYS	0.21	1.93	-0.59	1.34	0.35	0.83	0.09	0.92
NZL	0.22	1.93	-0.54	1.39	0.35	0.91	0.02	0.93
PHL	0.27	1.93	-1.74	0.18	0.39	0.58	0.40	0.98
SGP	0.34	1.89	0.04	1.93	0.33	0.99	-0.06	0.93
THA	0.19	1.93	-1.29	0.64	0.38	0.59	0.39	0.98
TWN	0.19	1.93	-0.76	1.16	0.53	0.72	0.14	0.86
VNM	0.24	1.93	-1.57	0.36	0.32	0.89	0.04	0.93

Year 2014

Country	Level Distance				Pattern Distance			
AUS	0.22	2.06	-0.63	1.43	0.26	0.41	0.55	0.96
CHN	0.23	2.06	-1.46	0.60	0.40	0.77	0.14	0.91
HKG	0.35	2.03	0.03	2.06	0.26	0.38	0.57	0.95
IDN	0.22	2.06	-1.35	0.71	0.41	0.81	0.13	0.94
JPN	0.22	2.06	-0.68	1.38	0.35	0.37	0.40	0.77
KHM	0.36	2.01	-2.06	-0.05	0.47	0.71	0.10	0.81
KOR	0.27	2.06	-1.69	0.37	0.52	0.62	0.12	0.74
MYS	0.26	2.06	-0.42	1.64	0.36	0.48	0.35	0.83
NZL	0.29	2.06	-0.27	1.79	0.30	0.43	0.52	0.95
PHL	0.24	2.06	-1.48	0.58	0.44	0.89	0.07	0.96
SGP	0.34	2.06	-0.03	2.03	0.29	0.51	0.45	0.96
THA	0.21	2.06	-1.30	0.76	0.36	0.69	0.27	0.96
TWN	0.20	2.06	-0.81	1.25	0.45	0.78	0.10	0.88
VNM	0.35	2.06	-2.01	0.05	0.49	0.74	0.07	0.81

The World Economic Forum: Global Competitiveness Index

Includes: All Eight Sub-Index of the 8th *Pillar, Includes: Six Additional Index*

Table A5: Level and Pattern Differences FDIndex13
Year 2010

Country	Level Distance				Pattern Distance			
	Average	Range	Min	Max	Average	Range	Min	Max
AUS	0.23	1.98	-0.41	1.58	0.20	0.26	0.65	0.91
CHN	0.19	1.98	-1.27	0.71	0.17	0.22	0.70	0.92
HKG	0.31	1.98	-0.04	1.94	0.17	0.26	0.66	0.92
IDN	0.18	1.98	-1.17	0.81	0.34	0.49	0.40	0.89
JPN	0.17	1.98	-0.85	1.14	0.26	0.29	0.61	0.90
KHM	0.34	1.60	-1.98	-0.39	0.28	0.38	0.49	0.87
KOR	0.23	1.98	-1.50	0.49	0.30	0.42	0.48	0.90
MYS	0.19	1.98	-0.63	1.35	0.18	0.35	0.60	0.95
NZL	0.20	1.98	-0.54	1.45	0.28	0.52	0.40	0.92
PHL	0.24	1.98	-1.56	0.43	0.17	0.32	0.66	0.98
SGP	0.32	1.94	0.04	1.98	0.22	0.46	0.46	0.92
THA	0.18	1.98	-1.11	0.87	0.16	0.31	0.67	0.98
TWN	0.20	1.98	-0.54	1.44	0.23	0.29	0.57	0.86
VNM	0.25	1.98	-1.60	0.39	0.16	0.16	0.75	0.91

Year 2014

Country	Level Distance				Pattern Distance			
AUS	0.21	2.12	-0.68	1.45	0.21	0.33	0.61	0.94
CHN	0.22	2.12	-1.34	0.79	0.29	0.73	0.20	0.93
HKG	0.34	2.10	0.03	2.12	0.20	0.41	0.51	0.92
IDN	0.21	2.12	-1.22	0.90	0.28	0.72	0.23	0.95
JPN	0.22	2.12	-0.59	1.53	0.28	0.38	0.47	0.85
KHM	0.38	2.07	-2.12	-0.06	0.46	0.33	0.39	0.72
KOR	0.29	2.12	-1.72	0.40	0.55	0.61	0.14	0.75
MYS	0.25	2.12	-0.45	1.67	0.31	0.79	0.14	0.93
NZL	0.28	2.12	-0.29	1.84	0.26	0.53	0.41	0.94
PHL	0.22	2.12	-1.31	0.81	0.21	0.63	0.34	0.97
SGP	0.33	2.12	-0.03	2.10	0.24	0.41	0.53	0.94
THA	0.20	2.12	-1.17	0.95	0.21	0.53	0.44	0.97
TWN	0.22	2.12	-0.64	1.48	0.22	0.44	0.45	0.89
VNM	0.37	2.12	-2.07	0.06	0.39	0.42	0.40	0.82

The World Economic Forum: Global Competitiveness Index

Excludes: Legal Right Index of the 8th Pillar, Includes: Six Additional Index