JCC
Journal of
CENTRUM
Cathedra

CENTRUM
GRADUATE BUSINESS SCHOOL

Subnational Competitiveness and National Performance: Analysis and Simulation for Indonesia

Khee G. Tan *
National University of Singapore, Singapore

Mulya Amri
National University of Singapore, Singapore

Abstract

The stable growth of Indonesia's economy over the past eight years has provided momentum for investment in the country. One of the approaches taken by the central government is to allow healthy competition between its provinces. The Asia Competitiveness Institute (ACI) responds positively to that policy by ranking the competitiveness of Indonesia's 33 provinces and providing simulation studies on how to improve each province's competitiveness. ACI takes a comprehensive approach to the notion of provincial competitiveness, dissecting it from four major environments: macroeconomics, microeconomics, governance, and quality of life. Drawing on 91 indicators from formal sources as well as ACI's own surveys and interviews, the study aggregates the indicators into 12 sub-environments, reaggregates them into four environments, and finally reaggregates them again into an overall competitiveness index. The conclusion highlights the high level of competitiveness in provinces where the country's major urban regions are situated, as well as those closest to Singapore as the regional trading hub. Provinces endowed with natural resources also have the opportunity to be competitive, but not if they are wanting in aspects such as governance and quality of life. The study's findings invite further research on more specific topics such as labor market flexibility and regional cooperation.

Keywords: Subnational competitiveness, Indonesian provinces, competitiveness ranking, simulation studies

Indonesia's rise as one of the world's *middle powers* (Gilley, 2012; Weatherbee, 2011) has been accredited to a number of factors, most prominently, its growing economy and transition to democracy. The world's fourth most populous country has shown excellent recovery of its economy since the 1997/1998 Asian financial crisis. The country's gross domestic product (GDP) growth fell to -13.33% in 1998, but it has been consistently above 4.5% since 2002, with a recent peak of 6.46% in 2011 (Statistics Indonesia, 2012), and it stayed steady at 6.2% in 2012. With a GDP of US$846.8 billion in 2011, Indonesia has the 16th largest GDP in the world (World Economic Forum, 2012) and is a member of the G-20.

Indonesia's transition to democracy, with the adoption of full-scale decentralization since 2001 and the holding of direct elections and by-elections since 2004, highlights the role of democratic governance as a critical aspect of running the country at the national and subnational levels. Despite progress in building a

democratic system, the country still faces a number of institutional and developmental challenges, such as a high level of corruption (Transparency International, 2012), inefficient costs of *doing business* (World Bank, 2013), and a relatively low (albeit termed *medium*) level on the Human Development Index (United Nations Development Programme, 2013).

It was in this context that the Asia Competitiveness Institute (ACI) of the Lee Kuan Yew School of Public Policy at the National University of Singapore met with Indonesian Minister of Trade, Gita Wirjawan, in February 2012. Mr. Wirjawan spoke about China's economic development model where provinces engage in healthy competition with one another and argued that Indonesian provinces could and should do the same. Following this conversation, ACI undertook the ambitious task of analyzing the relative competitiveness of each of the 33 Indonesian provinces, identifying their strengths, weaknesses, threats, and opportunities, as well as simulating development strategies. At the same time, similar work was done for the 34 Greater China Economies, the 35 states and federal territories of India, and the Association of Southeast Asian Nations (Tan, Low, Yam, & Amanda, 2013).

The prototype findings of the Indonesian study were presented to senior government officials from all 33 provinces during the annual ACI conference on 30-31 July 2012. We are encouraged by feedback and comments from those officials whose local knowledge has helped us tremendously in formulating the development strategies for each of the provinces. In May 2013, the complete result of the study was published in book form (Tan, Amri, Low, & Yam, 2013). Any errors or emissions, however, remain our own.

This article provides a summary of the competitiveness analysis and development strategies for the 33 Indonesian provinces. First, we present a review of the notion of place-based competitiveness, as well as a number of competitiveness rankings that have been conducted in the international context.

Second, we give a review of the methodology used in this study. This includes the framework and algorithm that ACI used to construct its competitiveness ranking of Indonesian provinces. Here, we also explain our approach to go beyond constructing a ranking by also conducting a policy simulation on how each province can improve its competitiveness.

Next, we present an overview of our findings. Here the overall competitiveness ranking table and each province's scores are scrutinized to identify common patterns and gaps in scores. The ranking is also plotted on a map of Indonesian provinces to identify some geographic trends and possible regional conclusions. We also zoom in on key environments because of their strategic importance for improving the competitiveness of Indonesian provinces.

Finally, we draw some conclusions and identify further research opportunities to bring our study results to a wider audience and range of sectors. Best practices need to be identified and studied in more detail to generate enthusiasm and optimism across the provinces. In addition, contemporary approaches to regional economic development, such as analysis of clusters of provinces, are suggested to generate more policy insights into the study's findings.

Literature Review

The notion of regional or place-based competitiveness has been explored in various ways. The term was probably first mentioned in the 1980s in the context of the economic crisis in the United States of America and the rise of Japan and Germany (Bristow, 2010). At the time, old established industrialized regions in North America and Western Europe declined as economic activities (primarily in manufacturing) went elsewhere, enabled by the thinning of international borders and the drop in transportation and communication costs. Initially, the phenomenon was considered at the microeconomic level, largely in the business domain, related to the performance of firms (Porter, 1980). The discourse then expanded to the macroeconomic domain, as shown by the establishment of the U.S. Council on Competitiveness and the creation of similar institutions in Europe. Competitiveness, thus, was no longer solely an issue of concern to firms, but also to nations (Porter, 1990; Thurow, 1992).

Many economists have a problem with extending the notion of competitiveness from the firm to the city or national level (Krugman, 1994; Urwin, 2006). They have argued that places do not compete with each other in the way that firms do, because they do not go bankrupt and do not engage in a zero-sum game. Moreover, the term competitiveness itself is elusive and does not exist in proper economics literature. The closest, albeit different, concepts to it would probably be productivity and favorable trade conditions (Krugman, 1994).

However, regions and firms may be more similar to each other than economists claim. First, like nations, firms do not always play a zero-sum game. For example, based on the notion of *clusters*, if one firm is doing well, then other firms in interrelated industry are likely to benefit also (Piore & Sabel, 1984; Porter, 1990). Second, some of the characteristics of firms also apply to nations and regions. In some instances, regions *do* decline or go bankrupt. In the concept of *market-preserving federalism*, subnational governments face *hard budget constraints*, meaning they will not be bailed out if they default (Weingast, 1995). Former centers of the U.S. steel industry are now dubbed the Rust Belt with Detroit as the poster child of a region that *lost*. New York City, on the other hand, is a classic example of a city that almost fell into bankruptcy in the 1970s, but it rebounded from the late 1980s.

Other scholars have tried to synthesize the debate on competitiveness: whether it matters at all, and if so, whether it can be applied at the regional or national level (Bristow, 2005; Camagni, 2002; Kitson, Martin, & Tyler, 2004). They generally acknowledge that it is primarily firms (not nations) who compete, but the performance of those firms depends on various factors that are embedded in the firm's location. These include quality of labor and infrastructure, governance, and costs of doing business, and also the performance of competing and complementary firms in the cluster. The presence of existing and successful clusters or *agglomerations* of firms creates positive externalities and network effects that encourage entrepreneurial activities in relevant sectors (Hnyilicza, 2008). These factors are not directly controlled by the firm, but are partly determined by the policies and institutions of the host city, region, or nation. The following quotes provide a better explanation:

1. More sophisticated company strategies require more highly skilled people, better information, improved infrastructure, better suppliers, more advanced research institutions, and stronger competitive pressures, among other things. (Porter, 2003, p. 3)

2. What really count nowadays are: the specific advantages strategically *created* by the single firms, territorial synergies and cooperation capability *enhanced* by an imaginative and proactive public administration, externalities *provided* by local and national governments and the specificities historically built by a territorial culture. (Camagni, 2002, p. 2405, original emphases)

Regardless of who is right or wrong in the debate or whether a common ground could be (or has been) established, competitiveness has become a *hegemonic discourse* (Schoenberger, 1998), which certainly has *captured the imagination of policy makers* (Lall, 2011). Thus, competitiveness is an effective notion to open the doors of discussion with policy makers in terms of how to improve not only the economic conditions in their territory, but also conditions of governance and quality of life in general.

Two of the most highly cited cross-country competitiveness studies at the moment are the *World Competitiveness Yearbook* or WCY (Institute for Management Development [IMD], 2012a) and the *Global Competitiveness Report* or GCR (World Economic Forum, 2012). The WCY defines competitiveness as composed of four factors: (a) economic performance, (b) government efficiency, (c) business efficiency, and (d) infrastructure. Each factor is further made up of five criteria, so that there are 20 criteria in total. The WCY uses equal weights such that each criterion contributes 5% weight, and each factor contributes 25% weight to the overall competitiveness index (IMD, 2012b). Most of the data used are statistical indicators sourced from international, regional, and national organizations. However, substantial perception data sourced from executive surveys supplement the statistical data.

The GCR breaks down its *Global Competitiveness Index* into three subindices: (a) basic requirements, (b) efficiency enhancers, and (c) innovation and sophistication factors (World Economic Forum, 2012). Each of the three subindices has a different number of pillars. The basic requirements subindex has four pillars: institutions, infrastructure, macroeconomic environment, and health and primary education. The efficiency enhancers subindex is composed of six pillars: higher education and training, goods market efficiency, labor market efficiency, financial market development, technological readiness, and market size. Lastly, the innovation and sophistication factors subindex consists of two pillars: business sophistication and innovation. Most of the data that make up these pillars and subindices come from executive opinion surveys.

The *Global Competitiveness Index* is not aggregated using equal weights from its subindices. Actually, the weights vary depending on a particular country's level of GDP per capita. Thus, the higher the GDP per capita of a country, the more weight is assigned to its innovation and sophistication subindex, and the less weight is assigned to its basic requirements subindex, and vice versa.

The GCR and WCY also differ slightly in how they view the competitiveness index. The GCR views the index as a measure of inputs in an attempt to explain a particular output, which is prosperity (GDP per capita).

As such, the GCR does not include GDP, population, or GDP per capita in its calculation (World Economic Forum, 2012). The WCY, on the other hand, views the index as an aggregated snapshot of various factors that collectively shape competitiveness. The WCY, thus, uses all relevant criteria (331 in the 2011 edition), including those that may be seen as output, such as GDP per capita (IMD, 2012b).

This difference reflects an ongoing theoretical debate about competitiveness: whether it is a determinant of prosperity or revealed through prosperity, whether it determines productivity or vice versa (the input/output conundrum), and whether competitiveness is a means or an end. For a more comprehensive review of this debate, see Bristow (2010), Berger (2011), and Martin (2005).

At the subnational level, competitiveness analyses and rankings have also been conducted to analyze states, provinces, regions, and cities within a country. For example, the Beacon Hill Institute at Suffolk University has been publishing the *U.S. State Competitiveness Report* since 2001 (Haughton, Conte, & Yang, 2013). Similarly, the United Kingdom (U.K.) government has been publishing a series of datasets and reports titled *Regional Competitiveness and State of the Regions* (now *Regional Economic Performance Indicators*), to present statistical information that illustrated the factors that contributed to regional competitiveness in the 12 regions of the U.K. (Department for Business, Innovation & Skills, 2011). In Southeast Asia, similar efforts have been undertaken. Vietnam has been publishing the *Vietnam Provincial Competitiveness Index* annually since 2005 through a joint effort between USAID-VNCI and the Vietnam Chamber of Commerce and Industry (Malesky, 2013). In the Philippines, the Asian Institute of Management has been publishing the *Philippines Cities Competitiveness Index* (Bautista, 2010).

In Indonesia, more specifically, subnational analyses related to competitiveness have also been conducted. At the provincial level, a *Ranking of Investment Climate for 33 Indonesian Provinces* was conducted by Regional Autonomy Watch (KPPOD for *Komite Pemantauan Pelaksanaan Otonomi Daerah*) and the National Investment Coordination Board (BKPM) in 2008 (KPPOD, 2008a). This ranking used six subindices: investment services, investment promotion, commitment of provincial government to the private sector, infrastructure, access to land, and labor. At the city and district level, the KPPOD (2008b, 2011) conducted rankings on *Local Economic Governance* based on surveys to business operators in more than 240 cities and districts. Similarly, Padjadjaran University and the Indonesian Central Bank published a report *Competitiveness Profile of Cities and Regencies in Indonesia* (Bank Indonesia, 2008). The index used in this report is made up of five *input* indicators covering: (a) regional economy; (b) human resources and labor; (c) productive business environment; (d) infrastructure, natural resources, and environment; and (e) banking and finance, which is compared to an *output* indicator that covers: (a) labor productivity, (b) regional GDP per capita, and (c) employment.

Methodology

ACI's approach to competitiveness is a comprehensive one, along the line of that used by the IMD in its *World Competitiveness Yearbook*, taking into account different factors that collectively shape the ability of a nation or region to achieve substantial and inclusive economic development over a sustained period of time.

ACI's Competitiveness Framework

In line with the comprehensive approach, ACI defines competitiveness through four different *environments*: (a) macroeconomic stability; (b) government and institutional setting; (c) financial, business, and manpower condition; and (d) quality of life and infrastructure development. These four environments can be effectively visualized as quadrants, each contributing the same weight (25%) to the overall competitiveness index (see Figure 1).

ACI's competitiveness framework also uses a nested approach, wherein each of the four environments is further divided into three *sub-environments* (alternatively, we can say that each sub-environment is nested within a specific environment). Therefore, there are 12 sub-environments altogether. Each sub-environment contributes the same weight (33.3%) towards its respective environment's index.

In aggregating sub-environments into environments, and environments into an overall ranking, ACI uses a simple averaging mechanism with equal weights (see *Computation of Rankings: The Algorithm* section). While assigning weights for different levels of importance seems more appropriate, the practical difficulties are as controversial. Thus, a balanced view towards the different factors that make up an overall notion of competitiveness means equal weights.
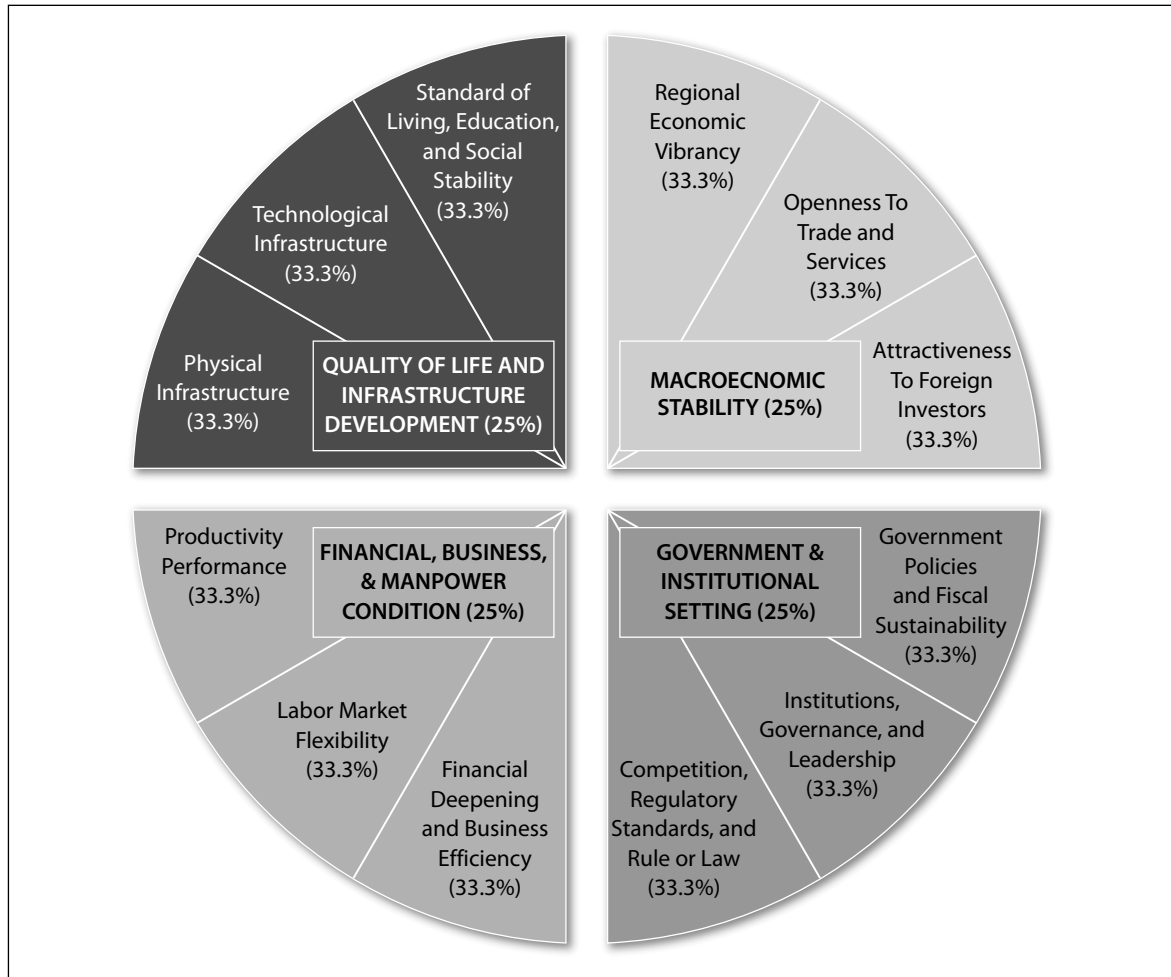
Figure 1. ACI's competitiveness framework.

The four quadrants of ACI's competitiveness framework represent an attempt to provide a holistic view of competitiveness. Two environments are specifically related to the economy. *Macroeconomic stability,* encompassing aggregated economic conditions, includes three sub-environments: (a) economic vibrancy, (b) openness to trade and services, and (c) attractiveness to foreign investors. *Finance, business, and manpower conditions,* on the other hand, represent conditions related to the microeconomy. They include an analysis of the performance of firms as well as challenges that managers face in running their companies. The sub-environments are: (a) financial deepening and business efficiency, (b) labor market flexibility, and (c) productivity performance.

The other two environments in ACI's four quadrants are more political, institutional, and social in character. *Government and institutional setting* covers efficacy of government institutions but also includes analyses on expectations of progress. The three sub-environments are: (a) government policies and fiscal sustainability; (b) institutions, governance, and leadership; and (c) competition, regulatory standards, and rule of law. Lastly, *quality of life and infrastructure development* combines an analysis of infrastructure as well as basic services and an overall sense of quality of life. The three sub-environments are: (a) physical infrastructure; (b) technological infrastructure; and (c) standard of living, education, and social stability.

Indicators and Data Sources

For the study on *Competitiveness Ranking and Policy Recommendations for 33 Indonesian Provinces*, ACI used 91 unique *indicators*. Depending on availability of data, some environments and sub-environments have more indicators than others. See Appendix for a complete list of indicators.

To a certain extent, having more indicators ensures more robust interpretation of the aggregated sub-environment score. That there is an uneven distribution of indicators across sub-environments due to data

availability is acknowledged, but this is not an issue. Regardless of the number of indicators in a sub-environment, they will simply average out. This also allows a certain amount of flexibility in adding or removing indicators when updating the index in the future, as long as the overall structure of the 12 sub-environments in four environments does not change.

The data for the 91 different indicators used in this study came from various sources. The bulk of the data were from official sources, such as the Central Statistics Agency (*Badan Pusat Statistik*), Investment Coordination Board (*Badan Koordinasi Penanaman Modal*), Central Bank (*Bank Indonesia*), and Ministry of Health. These are secondary, quantitative data, such as gross regional domestic product (GRDP), consumer price index, as well as export and import figures.

Another portion of the data was sourced directly through ACI surveys and interviews conducted in each province. These are primary and mostly qualitative data. Surveys of business owners were conducted using a purposive sampling method. They were done in collaboration with the Indonesian Employers' Association (APINDO for *Asosiasi Pengusaha Indonesia*) which distributed the survey forms to its board members in each province. The survey provided perception-based data about performance, strategy, and capacity of firms, but also regarding governance and public services, as well as labor market issues.

The decision to use purposive sampling was based on the assumption that APINDO provincial board members tend to be more senior and, thus, likely to be more knowledgeable on the issues involved. It was also a pragmatic choice because otherwise ACI would have had to hire commercial survey companies who would need to make trips to each of the 33 provinces and, thus, make the survey prohibitively costly. A total of 1300 survey forms were sent to 33 provinces, with each province receiving between 30 to 50 forms. A total of 677 completed forms were returned to ACI, which means that the survey generated about 20 responses per province and that the overall survey response rate was 52.1%. ACI's source in Indonesia informed us that if a survey was not administered by a surveyor and no incentive was given to the respondents, the typical survey response rate was about 10%.

Surveys of academicians were conducted by email and regular airmail to economics and business professors (lecturers) in each province. These, in turn, also provided perceptions of governance and public services, as well as quality of life in the province. ACI sent a total of 1257 survey forms to these academicians, out of which 51 failed to reach the respondents. In return, ACI received 491 completed survey forms, for a response rate of 40.7%. ACI also received 83 essays by the academics, which enabled us to understand the local contexts better.

The final data were generated from interviews conducted with at least four government agencies in each province: the Governor's Office (*Sekretariat Daerah*), the Provincial Development Planning Agency (*Bappeda Provinsi*), the Provincial Investment Coordination Board (*BKPM Provinsi*), and the Provincial Trade and Industry Agency (*Dinas Perindustriandan Perdagangan*). These agencies were selected purposefully because of their relevance to the issue of provincial competitiveness. For the arrangement of interviews, ACI collaborated with the Regional Autonomy Watch (KPPOD) and also received helpful support from the central government, especially the Coordinating Ministry of Economic Affairs.

During the face-to-face interviews, each of the government agencies was represented by three to four senior civil servants. The interview transcripts and other documents provided by the provincial government were analyzed by a panel of experts to provide evaluative scores for indicators such as local government effectiveness, effort, and commitment. ACI's panel is composed of three scholars in the field of economics, management, and public policy, each with more than 10 years of experience working in the Indonesian context.

Computation of Rankings: *Algorithm 1*

Once data have been obtained, the next question is how to aggregate the different types of data into one coherent system of analysis. The 91 indicators in this research have different values or quantity terms, such as GRDP in millions of rupiahs or length of paved roads in kilometers.

To resolve these different units of measurement, ACI uses the statistical technique of a standardized score. The standardized score is a relative comparison to see how good the performance of a certain province is in comparison to the average province. Therefore, the unit of measurement is no longer relevant. The standardized score has no unit of measurement because it simply measures relative performance among provinces, whatever the indicator is. In statistical terms, it measures how many standard deviations away each province is from the average province.

If a province has a standardized score of zero, it is basically an average performer in terms of that particular indicator. Having a negative score means the province performs below average. Having a positive score, on the other hand, means above-average performance. The further away the score is from zero, the further away is the performance of the province from the national average. If a province has a high positive score, it means the province performs much above the average.

The standardized scores for each indicator are aggregated at the sub-environment level, and then reaggregated at the environment level, and finally aggregated again at the overall level. This allows comparison of performance of 33 provinces at different levels, from overall competitiveness to specific indicators.

A step-by-step description of the ranking process (Algorithm 1) is described below for N provinces, M practical indicators, and C environments, with each environment comprising S sub-environments. For the case of this study, $N = 33$, $M = 91$, $C = 4$, and $S = 3$.

Step 1: Compute the mean value of practical indicator $j (j = 1, ..., M)$:

$$\bar{X}_j = \frac{1}{N} \sum_{i=1}^{N} X_{ij},$$

where X_{ij} represents the value that province $i (i = 1, ..., N)$ takes for practical indicator j.

Step 2: For each practical indicator $j (j = 1, ..., M)$, calculate its standard deviation (SD):

$$SD_j = \sqrt{\frac{1}{N} \sum_{i=1}^{N} (X_{ij} - \bar{X}_j)^2}.$$

Step 3: Compute the standardized value of indicator (SVI) that each province $i (i = 1, ..., N)$ takes under each of the practical indicators $j (j = 1, ..., M)$:

$$SVI_{ij} = \frac{X_{ij} - \bar{X}_j}{SD_j}.$$

Step 4: Compute the *ranked* standardized value of indicator (RSVI) that each province $i (i = 1, ..., N)$ takes under each of the practical indicators $j (j = 1, ..., M)$:

$$RSVI_{ij} = \begin{cases} -SVI_{ij}, & \textit{if a lower value is better}; \\ SVI_{ij}, & \textit{if a higher value is better}. \end{cases}$$

Step 5: For each of the practical indicators $j (j = 1, ..., M)$, a ranking can be obtained for provinces: Provinces with a lower value of *RSVI* for indicator j are ranked ahead of those with a higher value.

Step 6a: For each province $i (i = 1, ..., N)$, calculate the *RSVI* for each sub-environment $k (k = 1, ..., S)$ belonging to environment $l (l = 1, ..., C)$:

$$RSVI_{i,lk} = \frac{1}{y_{lk}} \sum_{p=1}^{y_{lk}} RSVI_{i,j_{lk},p},$$

where y_{lk} is the total number of practical indicators under sub-environment k of environment l and $(RSVI_{i,j_{lk,1}}, ..., RSVI_{i,j_{lk,y_{lk}}})$ are the *RSVIs* for province i that make up sub-environment k of environment l.

Step 6b: Repeat the principles used in Steps 1 to 3 to restandardize the value of $RSVI_{i,lk}$ for each sub-environment $k (k = 1, ..., S)$ belonging to environment $l (l = 1, ..., C)$.

Step 7a: For each province $i (i = 1, ..., N)$, calculate the *RSVI* for each environment $l (l = 1, ..., C)$:

$$RSVI_{i,l} = \frac{1}{S} \sum_{k=1}^{S} RSVI_{i,lk},$$

where $(RSVI_{i,l1}, ..., RSVI_{i,lS})$ are the *RSVIs* for the S sub-environments under each environment l.

Step 7b: Repeat the principles used in Steps 1 to 3 to restandardize the value of $RSVI_{i,l}$ for environment $l(l = 1,...,C)$.

Step 8a: Overall rank score of province $i(i = 1,...,N)$:

$$R_i = \frac{1}{C}\sum_{l=1}^{C} RSVI_{i,l}.$$

Step 8b: Repeat the principles used in Steps 1 to 3 to restandardize the value of R_i.

Provinces with a lower R_i are ranked ahead of those with higher value of R_i, and the province with the lowest R_i is the most competitive province.

Step 5 of Algorithm 1 provides the ranking of each province for each individual practical indicator. To achieve this ranking, Step 4 of Algorithm 1 adjusts the value of the $SVIs$ so that a lower value will lead to a better ranking in terms of competitiveness. Depending on the nature of the indicator in question, a higher or lower value may reflect a more *competitive* province. Take, for instance, the practical indicators GRDP and unemployment rate. A higher GRDP but a lower unemployment rate suggests better economic performance which makes a province more competitive. In most cases where a higher value is better (e.g., GRDP), the negative $SVIs$ of provinces are considered, and those with a lower negative SVI will have a better ranking. However, for indicators where the inverse is true (e.g., unemployment rate), the SVI itself is compared between provinces and a lower SVI value will lead to a better ranking. Step 4 of Algorithm 1, thus, seeks to make all standardized values of all practical indicators consistent for ranking purposes.

Step 6 of Algorithm 1 determines the sub-environment rankings of each province. The average $RSVI$ of all the indicators in the sub-environment is calculated and compared to other provinces. Provinces with a lower average $RSVI$ rank better in the sub-environment.

To arrive at the province ranking for each environment, the *RSVIs* of the sub-environments are aggregated as detailed by Step 7 of Algorithm 1. Finally, Step 8 of Algorithm 1 requires the $RSVI$ values of each environment to be totaled to determine the overall ranking of the province. Provinces with a lower $RSVI$ are ranked ahead of those with a lower *RSVI*.

Although the number of indicators varies for each sub-environment, the aggregate score for each sub-environment is given an equivalent weighting: 33.3% of the score for the environment. The aggregate score for each environment, in turn, is given an equivalent weighting of 25% of the overall Indonesian Provincial Competitiveness Index. Identical weights are assigned to each environment as they represent equivalent significance to the computation of the Index. This method is repeated and applied consistently across all the provinces to ensure precision of the rankings. Mathematically, this can be illustrated as follows:

$$\text{Indonesian Provincial Competitiveness Index} = \begin{cases} 25\%(macroeconomic\ stability) \\ + \\ 25\%(government\ and\ institutional\ setting) \\ + \\ 25\%(financial,\ business,\ and\ manpower\ condition) \\ + \\ 25\%(quality\ of\ life\ and\ infrastructure\ development) \end{cases}$$

What-if Competitiveness Simulation: *Algorithm 2*

A competitiveness ranking in itself is like a beauty contest; it merely identifies who is doing well and who is facing challenges, but it stops short of giving more constructive advice on improving the rankings.

ACI goes one step further by tackling the *so what* question. What is the policy implication of a competitiveness ranking for a particular province? The data available to ACI allow us to do an in-depth analysis of the performance of each province according to different indicators, sub-environments, and environments.

By analyzing these data, we are able to identify not just the overall competitiveness ranking, but also specific indicators for which the province is doing well or struggling. This allows us to come up with specific, province-by-province policy recommendations.

ACI's *What-if* Competitiveness Simulation is based on an improvement of each province's 20% weakest indicators, and a recalculation of the standardized score based on such improvement. The simulation is done one province (i) at a time, starting with Province i_1 until Province i_{33}. Algorithm 2 below shows how the simulation is done:

1. Sort the 91 indicators (j) for Province i_1 from the highest to the lowest (from $RSVI_{i_1 j_{max}}$ to $RSVI_{i_1 j_{min}}$). This allows us to identify the bottom 20% of indicators j (18 weakest indicators out of 91 indicators used) for province i_1. Let us call these indicators $j_{i_1 min18}$.

2. Identify which of Province i_1's 18 weakest indicators ($j_{i_1 min18}$) have a negative *RSVI* (*RSVI* is below zero). This means that for these specific indicators, Province i_1 is performing *below average*. Let us call these indicators $j_{i_1 min18 neg}$ and their respective *RSVIs* as $RSVI_{i_1 j_{min18 neg}}$.

3. If Province i_1 has no $j_{i_1 min18 neg}$, then skip Step 3 below and go directly to Step 4. The logic is that some provinces may already be very competitive such that all of its indicators are performing above average.

4. Raise $RSVI_{i_1 j_{min18 neg}}$ to 0 (zero). This assumes a policy simulation where Province i_1 has improved the performance of its $j_{i_1 min18 neg}$ indicators from below average (*RSVI* below zero) to *average* ($RSVI_{i_1 j_{min18 neg}}$ is now zero).

5. Repeat Steps 5 to 8 of Algorithm 1 described in the previous subsection. Thus, with the recalculation, we get the updated competitiveness ranking and score for Province i_1.

6. The simulation for Province i_1 is done. Repeat Steps 1 to 4 of Algorithm 2 for the next 32 provinces, from Province i_2 to Province i_{33}. Each time Algorithm 2 is repeated for a new province, $RSVI_{i_1 j_{min18 neg}}$ for previously simulated provinces are returned to their original (i.e., negative) scores.
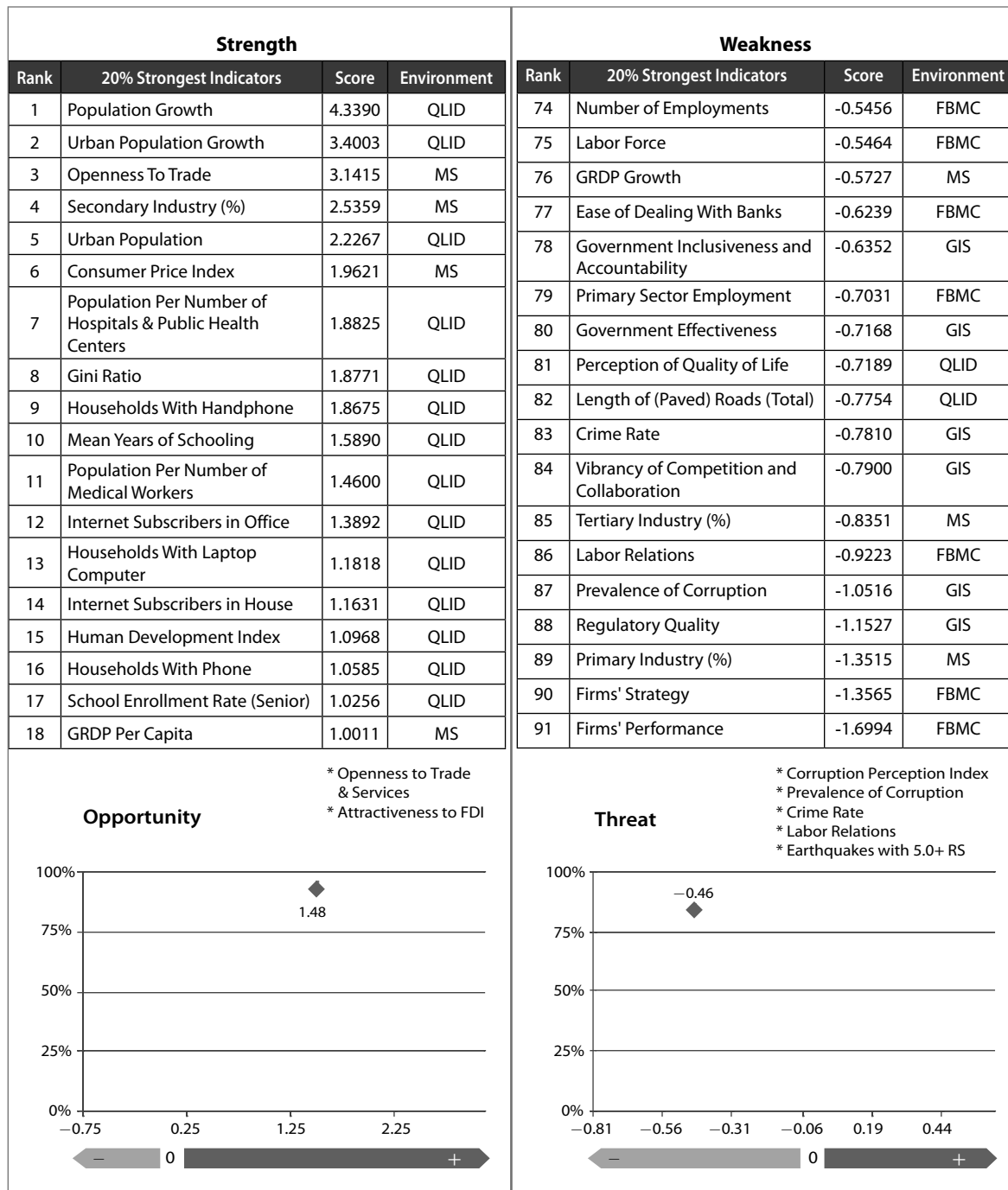
In the *What-if* Competitiveness Simulation, the scores of simulated provinces are raised (except for already competitive provinces), while the scores of other provinces remain constant or static (assuming others did not improve on their 18 weakest indicators). Therefore, we cannot compare a simulated province with other provinces vertically across the ranking table. The simulation is meant to identify the possibilities for a particular province to improve its competitiveness, assuming a static condition among the remaining provinces.

Quantifying the SWOT Analysis

The strength, weakness, opportunity, and threat (SWOT) analysis is commonly used in qualitative terms. However, having access to a database of 91 quantified indicators for each province allows ACI to conduct the SWOT analysis in a quantitative manner. By sorting the 91 indicators based on their scores, the top as well as the bottom 20% indicators are able to be easily identified. The top 18 (20% of 91) indicators are considered as the province's strengths, while the bottom 18 the province's weaknesses.

The score for opportunity is composed by aggregating the scores for two indicators that signify external potential for the province, namely: (a) openness to trade and services and (b) attractiveness to foreign direct investment (FDI). The score for threat is aggregated from five indicators that signify external challenges, namely: (a) corruption prevention index, (b) prevalence of corruption, (c) crime rate, (d) labor relations, and (e) incidence of earthquakes with 5.0+ on the Richter scale.

Figure 2 shows a sample SWOT analysis for the province of Riau Archipelago. By listing the 20% strongest and weakest indicators, readers could easily review a quantified list of the province's strengths and weaknesses. By plotting the aggregated scores for opportunities and threats on a scale, readers could identify the extent to which the province is exposed to positive and negative factors from outside its own control. The opportunity and threat scores are not included in the calculation of the competitiveness rankings, but contribute to the process of policy analysis and recommendation for each province.

Strength					Weakness			
Rank	**20% Strongest Indicators**	**Score**	**Environment**		**Rank**	**20% Strongest Indicators**	**Score**	**Environment**
1	Population Growth	4.3390	QLID		74	Number of Employments	-0.5456	FBMC
2	Urban Population Growth	3.4003	QLID		75	Labor Force	-0.5464	FBMC
3	Openness To Trade	3.1415	MS		76	GRDP Growth	-0.5727	MS
4	Secondary Industry (%)	2.5359	MS		77	Ease of Dealing With Banks	-0.6239	FBMC
5	Urban Population	2.2267	QLID		78	Government Inclusiveness and Accountability	-0.6352	GIS
6	Consumer Price Index	1.9621	MS		79	Primary Sector Employment	-0.7031	FBMC
7	Population Per Number of Hospitals & Public Health Centers	1.8825	QLID		80	Government Effectiveness	-0.7168	GIS
8	Gini Ratio	1.8771	QLID		81	Perception of Quality of Life	-0.7189	QLID
9	Households With Handphone	1.8675	QLID		82	Length of (Paved) Roads (Total)	-0.7754	QLID
10	Mean Years of Schooling	1.5890	QLID		83	Crime Rate	-0.7810	GIS
11	Population Per Number of Medical Workers	1.4600	QLID		84	Vibrancy of Competition and Collaboration	-0.7900	GIS
12	Internet Subscribers in Office	1.3892	QLID		85	Tertiary Industry (%)	-0.8351	MS
13	Households With Laptop Computer	1.1818	QLID		86	Labor Relations	-0.9223	FBMC
14	Internet Subscribers in House	1.1631	QLID		87	Prevalence of Corruption	-1.0516	GIS
15	Human Development Index	1.0968	QLID		88	Regulatory Quality	-1.1527	GIS
16	Households With Phone	1.0585	QLID		89	Primary Industry (%)	-1.3515	MS
17	School Enrollment Rate (Senior)	1.0256	QLID		90	Firms' Strategy	-1.3565	FBMC
18	GRDP Per Capita	1.0011	MS		91	Firms' Performance	-1.6994	FBMC

Opportunity

* Openness to Trade & Services
* Attractiveness to FDI

Threat

* Corruption Perception Index
* Prevalence of Corruption
* Crime Rate
* Labor Relations
* Earthquakes with 5.0+ RS

Note. Quality of life and infrastructure development (QLID); macroeconomic stability (MS); government and institutional setting (GIS); financial, business, and manpower condition (FBMC).

Figure 2. ACI 33 Indonesia Provinces Competitiveness Index 2010: SWOT analysis of Riau Archipelago.

Findings

Having explained the methodology for constructing the competitiveness index, we now turn to the results of the competitiveness ranking of Indonesian provinces for 2010. The ranking is derived by sorting the standardized score for each province. Thus, an analysis of the ranking results should be done in conjunction with a review of the standardized scores (see Table 1).

Table 1
Overall Competitiveness Ranking, Indonesian Provinces, 2010

Rank	Province	Score
1	DKI Jakarta	3.6977
2	East Java	1.8484
3	Central Java	1.3414
4	West Java	1.1964
5	East Kalimantan	1.0473
6	DI Yogyakarta	0.7847
7	Banten	0.5658
8	South Sulawesi	0.3858
9	Bali	0.3564
10	Riau Archipelago	0.3433
11	South Sumatera	0.3145
12	Riau	0.1575
13	South Kalimantan	0.0985
14	North Sulawesi	0.0130
15	Gorontalo	-0.1872
16	Aceh	-0.2734
17	West Sumatera	-0.3158
18	Southeast Sulawesi	-0.3490
19	North Sumatera	-0.4032
20	West Sulawesi	-0.4049
21	Lampung	-0.4158
22	Central Sulawesi	-0.4818
23	West Kalimantan	-0.5059
24	Jambi	-0.6207
25	West Nusa Tenggara	-0.6294
26	Central Kalimantan	-0.6466
27	Maluku	-0.6585
28	Bengkulu	-0.6681
29	Papua	-0.7616
30	West Papua	-0.8849
31	Bangka Belitung Archipelago	-1.0046
32	North Maluku	-1.3483
33	East Nusa Tenggara	-1.5910

As explained in the methodology section, this overall competitiveness ranking is an aggregate of the scores of four specific competitiveness environments. Therefore, aside from analyzing the overall competitiveness ranking, we can also review rankings according to each of the four environments, the 12 sub-environments, and so on. These will be reviewed later. For now, we shall focus on the overall competitiveness ranking.

Review of the Ranking: Quantitative Spread

Looking at Table 1 for overall competitiveness, there are several items to note in terms of standardized scores: the spread (maximum and minimum scores), the average score, and the median.

From the spread, we see that scores range from a maximum of 3.6977 to a minimum of -1.5910. The province with the *maximum score* is DKI Jakarta, the nation's capital, which is top in ranking. The one with the *minimum score*, as 33rd, is East Nusa Tenggara, a sparse, semiarid archipelago in the southeastern part

of Indonesia, just north of Australia. A closer look at the range, however, finds that 32 of the 33 provinces fall under the range of positive 1.8 to negative 1.5. DKI Jakarta in first place can be considered an outlier as its score (3.6977) is significantly different (much more competitive) from the other provinces. We can also say that Jakarta's score plays an important role in influencing the average score. Excluding DKI Jakarta, the spread of scores then becomes more symmetrical, from 1.8484 (East Java) to -1.5910 (East Nusa Tenggara).

With DKI Jakarta in the picture, the *average* performing province (with a score of zero) is approximately that occupying the 14th position (North Sulawesi, score: 0.0130). The *median* is always the middle position, which is the province holding the 17th position out of 33 provinces. In this case, the median is West Sumatera with a score of -0.3158. We can see that the average score (0, at position 14) is higher than the median score (-0.3158, at position 17), meaning that the average score is skewed upwards towards DKI Jakarta's high score.

With closer scrutiny of the spread, we also find several *jumps* in the ranking of standardized scores. For example, there is a wide gap between the province occupying the fifth position (East Kalimantan, score: 1.0473) and that occupying the sixth position (DI Yogyakarta, score: 0.7847). Similarly, there are also major gaps between the province occupying the 31st position (Bangka Belitung Archipelago, score: -1.0046) and that occupying the 32nd position (North Maluku, score: -1.3483). These gaps in the standardized scores are important to note because these provinces are only separated from each other by one rank/position, but actually their competitiveness as indicated by the scores is quite far apart.

Review of the Ranking: *Geographic Spread*

The overall competitiveness ranking can also be viewed on a map of the Indonesian provinces. In Figure 3, the provinces are shaded based on three groups: the top 10 positions (dark grey), the bottom 10 positions (light grey), and the middle 13 positions (medium grey).
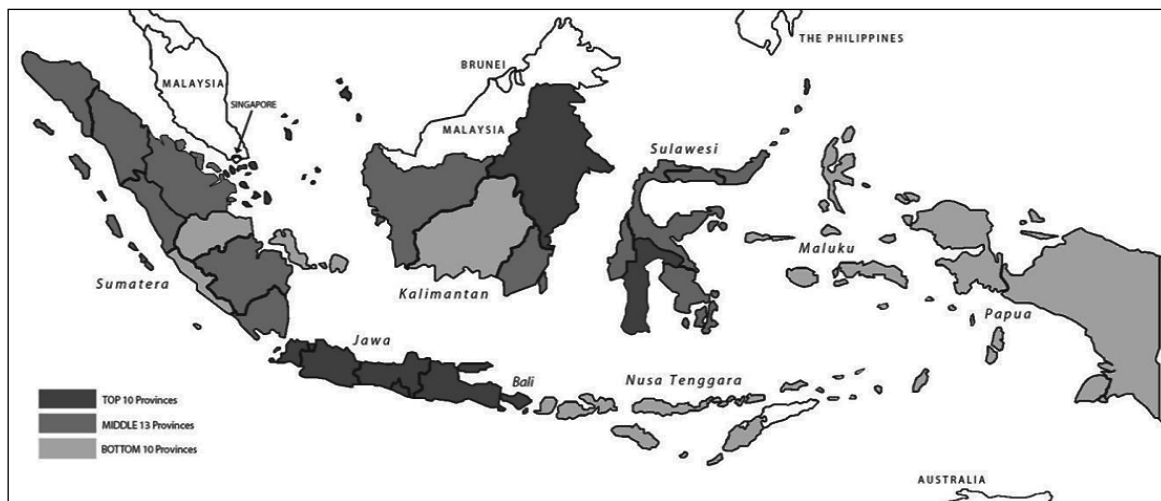

Figure 3. Map of overall competitiveness ranking.

By putting the competitiveness ranking on a map, several points come to the forefront of discussion. First, we can see that there is a noticeable geographic concentration of high-competitiveness and low-competitiveness provinces. Looking at the top 10 provinces, all six provinces of Java belong to this group. The other four most competitive provinces are Bali (9th position, an international tourism destination, located right next to Java), Riau Archipelago (10th position, located very close to Singapore and peninsular Malaysia), South Sulawesi (8th position, home to the city of Makassar, which is the main urban agglomeration and hub of eastern Indonesia), and East Kalimantan (5th position, located around the geographic centre of Indonesia and rich in natural resources).

Looking at the bottom 10 provinces, six of these provinces are located in the easternmost parts of Indonesia (namely, Papua, West Papua, Maluku, North Maluku, East Nusa Tenggara, and West Nusa Tenggara). The other three least competitive provinces are located in Sumatera (Bengkulu, Jambi, and Bangka Belitung Archipelago), and one is located in Kalimantan (Central Kalimantan).

Second, a set of general conclusions can be drawn based on the major island groupings in terms of their overall competitiveness ranking. This grouping based on major islands is relevant because it is in line with the *economic corridors* used by the Indonesian government in the *Masterplan for Acceleration and Expansion of Indonesian Economic Development* (MP3EI; Republic of Indonesia, 2011). Our conclusions are as follows: (a) provinces in Java are generally very competitive; (b) provinces in eastern Indonesia (except in Sulawesi) are among the least competitive; (c) provinces in Sumatera and Kalimantan show mixed performance, as each of these island groupings or corridors includes the top, bottom, and middle-performing provinces.

Review of the Ranking: Geographic Spread of the Four Environments

More detailed mappings could be done for the four environments, 12 sub-environments, and so on. Here we present four maps based on the ranking of each environment.
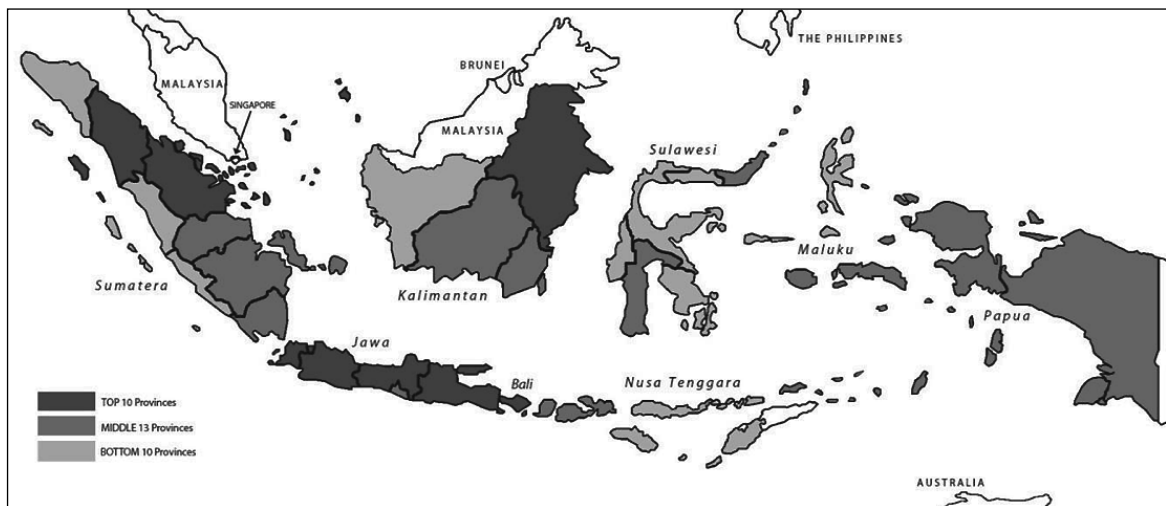

Figure 4. Map of macroeconomic stability ranking.

The map of rankings based on macroeconomic stability (see Figure 4) shows a slightly different pattern, but still consistent with the overall ranking map. The Java provinces and those located closest to Singapore and peninsular Malaysia (namely, Riau Archipelago, Riau, and North Sumatera) are generally more competitive, while the eastern Indonesian provinces are less competitive (six of the bottom 10 provinces are in eastern Indonesia). Sumatera and Kalimantan, again, show mixed performance, while Sulawesi's performance tends to be medium to challenged, alternating between the 10 bottom and 13 middle provinces.
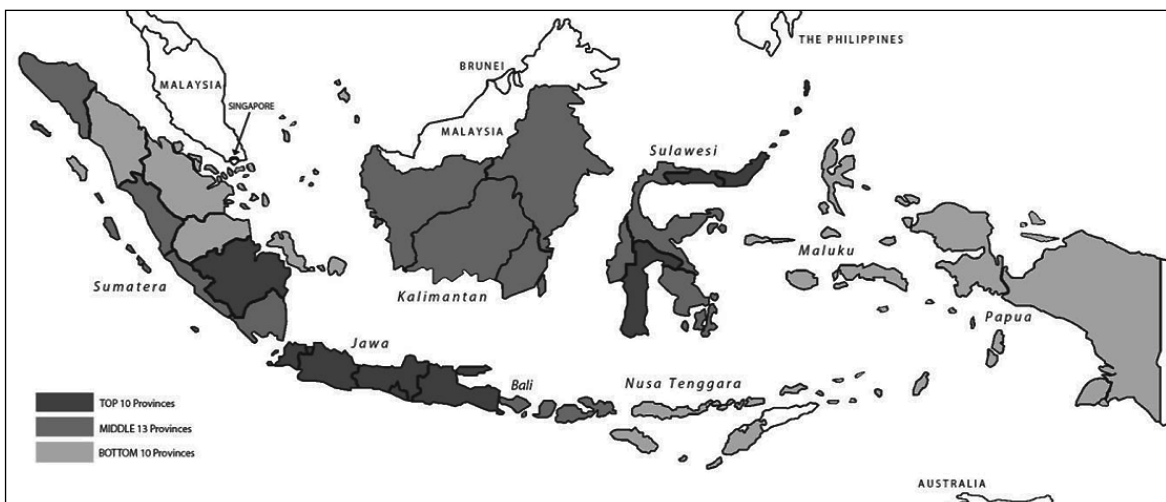

Figure 5. Map of government and institutional setting ranking.

The map of rankings based on government and institutional setting (see Figure 5), portrays a slightly different pattern. This time, the pattern is less consistent with the overall ranking map, except for the contrasting performance between the provinces of Java and eastern Indonesia. Again, Java provinces are among the top 10, while Maluku, Papua, and Nusa Tenggara provinces are generally challenged, and Sumatera provinces show mixed performance. However, the Sulawesi provinces show medium to strong performance, alternating between the top 10 and middle 13 provinces. On the other hand, Kalimantan provinces show medium performance throughout.
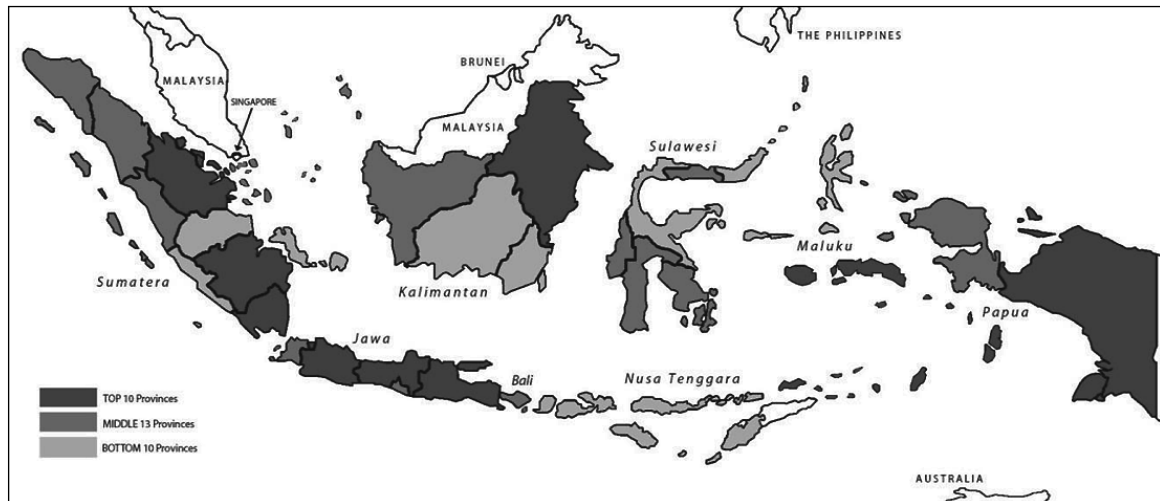

Figure 6. Map of financial, business, and manpower conditions ranking.

The map of rankings based on financial, business, and manpower conditions (see Figure 6) is rather similar to the map of rankings based on macroeconomic stability (see Figure 4). Both of these environments refer to economic performance: Figure 5 in terms of the micro economy and Figure 3 in terms of the macro economy. Again, we see the strong performance of Java provinces as well as Riau and East Kalimantan. It is worthy to note, however, that two of the six Java provinces (Banten and DI Yogyakarta) are not within the top 10 performers for this environment. Other provinces, namely, South Sumatera and Lampung (both located towards the south of Sumatera), and also Maluku and Papua, are doing well. Again we see mixed performance among the Sumatera and Kalimantan provinces and medium to low performance among the Sulawesi provinces.
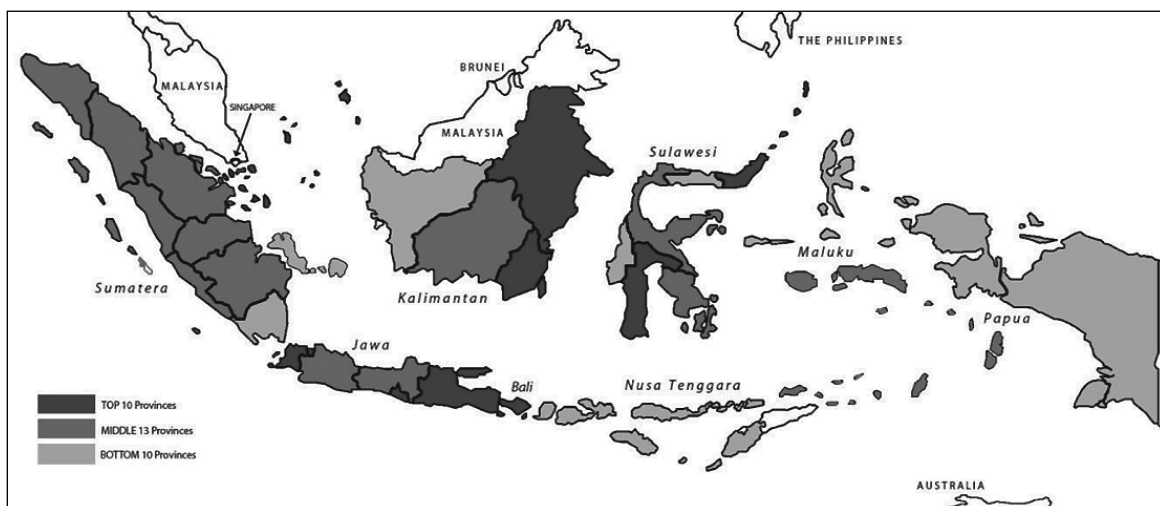

Figure 7. Map of quality of life and infrastructure development ranking.

Finally, the map of rankings based on quality of life and infrastructure development (see Figure 7) shows some new insights. Six of top-performing provinces in this environment are located somewhere towards the geographic centre of the country. These include East Kalimantan and South Kalimantan, South Sulawesi, Bali, East Jawa, and DI Yogyakarta. The top three provinces in this category are DKI Jakarta (consistently number one across the four environments), DI Yogyakarta, and Riau Archipelago. Again, the easternmost provinces show weak performance, and Sumatera provinces show medium to low performance, except for Riau Archipelago which is among the top three.

Review of What-if Competitiveness Simulation Results

Next, we turn to the results of the *What-If* Competitiveness Simulation of Indonesian provinces for 2010. Table 2 shows the ranking for each province along with its standardized scores, both before and after simulation. Note that the results which have been presented previously in the Findings section are *as-is*, or before simulation was conducted.

Table 2
What-if Competitiveness Simulation on Overall Competitiveness Ranking, Year 2010

Province	Rank		Score	
	Before	After	Before	After
Aceh	16	8	-0.2734	0.4452
Bali	9	6	0.3564	0.7829
Banten	7	5	0.5658	1.0897
Bengkulu	28	15	-0.6681	-0.1675
DI Yogyakarta	6	4	0.7847	1.1765
DKI Jakarta	1	1	3.6977	4.1264
Gorontalo	15	11	-0.1872	0.3022
Jambi	24	15	-0.6207	-0.1360
West Jawa	4	3	1.1964	1.6427
Central Jawa	3	3	1.3414	1.7134
East Jawa	2	2	1.8484	2.1169
West Kalimantan	23	15	-0.5059	-0.1440
South Kalimantan	13	8	0.0985	0.4364
Central Kalimantan	26	15	-0.6466	-0.1408
East Kalimantan	5	3	1.0473	1.4679
Bangka Belitung Archipelago	31	19	-1.0046	-0.3849
Riau Archipelago	10	6	0.3433	0.8520
Lampung	21	14	-0.4158	0.0176
Maluku	27	14	-0.6585	0.0857
North Maluku	32	29	-1.3483	-0.7447
West Nusa Tenggara	25	15	-0.6294	-0.1523
East Nusa Tenggara	33	30	-1.5910	-0.8277
Papua	29	12	-0.7616	0.2067
West Papua	30	15	-0.8849	-0.1457
Riau	12	7	0.1575	0.7586
West Sulawesi	20	13	-0.4049	0.0858
South Sulawesi	8	7	0.3858	0.6695
Central Sulawesi	22	15	-0.4818	-0.0607
Southeast Sulawesi	18	13	-0.3490	0.1088
North Sulawesi	14	8	0.0130	0.4513
West Sumatera	17	14	-0.3158	0.0840
South Sumatera	11	7	0.3145	0.5594
North Sumatera	19	8	-0.4032	0.4433

The simulation results (see Table 2) show that different provinces have different potential to improve their rankings and scores. By improving their weakest 20% indicators (assuming other provinces remain constant), some provinces have shown they are able to jump multiple positions while other provinces could perhaps only jump one or two positions.

Some of the provinces which show potential to jump many positions include North Sumatera (11 positions up), Jambi (9), Central Kalimantan (11), Bengkulu (13), Bangka Belitung Archipelago (12), and Maluku (13). Other provinces could jump only a few positions up, although they were among the middle and low positions previously. These include East Nusa Tenggara (3 positions up), North Maluku (3), and Gorontalo (4).

The potential to jump multiple positions depends on two factors: (a) the spread of scores among the different indicators for each province and (b) the spread of aggregated scores between a particular province and the province at one position higher. If two consecutive provinces (with difference of one rank) have a wide gap between their scores, then the province with lower score will have difficulty in leapfrogging over the province with the higher score.

This is shown in the case of Bangka Belitung Archipelago and North Maluku. Bangka Belitung Archipelago (previously at 31st position) was able to jump 12 places up to the 19th position. On the other hand, North Maluku (previously at 32nd position) was only able to jump three places up to the 29th position. On a closer look, it is clear that North Maluku's standardized score before the simulation (-1.3483) was much lower than Bangka Belitung Archipelago's (-1.0046).

Conclusions and Future Research

The *Competitiveness Analysis and Development Strategies for 33 Indonesian Provinces* as presented by ACI provides detailed analysis of multiple factors that explain regional competitiveness within the country. The multidisciplinary nature of the framework is expected to generate interest from a wide range of national and international stakeholders. While the general findings will be of interest to many parties, economists might be particularly interested in the macroeconomic aspects, business owners in the microeconomic aspects, government agencies in the governance aspects, and NGOs in the quality of life aspects.

Conclusions

Results of the competitiveness ranking may be intuitive for those who know Indonesia, but it offers valuable insights into why and in what ways certain provinces are more competitive than others. DKI Jakarta's first position is not surprising, but with a standardized score of 1.7576 (while scores of the other 32 provinces fall between the range of 0.6644 to -0.6014), it is definitely an outlier in the national competitiveness spectrum.

Most of the top 10 provinces are characterized by a strong urban condition, as shown in a large percentage of manufacturing and service sectors in their GRDP. East Kalimantan and Riau are noted for their rich natural resources and Bali for its economic openness. A phenomenon of clustering among competitive provinces is also observed. The Java provinces can be considered a cluster. Riau and Riau Archipelago can also be considered as part of an (international) cluster of Malacca Strait economies, together with Singapore and Malaysia.

All provinces in the top 10 managed to achieve their position by relying not only on one, but multiple, competitiveness environments. Therefore, while it is tempting to claim that East Kalimantan and Riau are competitive because of natural resources, in fact, they also scored favorably on local business environment and quality of life. On the contrary, not all of the *rich* provinces managed to reach the top 10 because they lack other dimensions of competitiveness, such as good governance.

Having 91 different indicators to work with, ACI went beyond conducting a ranking; we also presented policy simulations to identify how each province could increase its competitiveness. A simulated improvement in each province's weakest indicators shows that some provinces could move up multiple positions. Maluku, for example, could jump 16 positions in the ranking table!

The simulation shows possible improvements that each province could attain, given that competitiveness is not a static condition. An inclusive economic development, based on a vibrant microeconomic condition, good governance, and high quality of life for the population is what each province should strive for. These, in the end, would help to ensure a more sustainable inflow of investments, be it from domestic or foreign sources.

Best Practice Analysis

Further review of specific indicators and sub-environments of competitiveness holds more promise to explain the competitiveness of the Indonesian provinces.

Labor market flexibility:

At the international level, when compared to other ASEAN countries, Indonesia's competitiveness is challenged by relative weakness in the sub-environment of labor market flexibility (International Labour Organization, 2010). There are national factors that create this condition, for example, the presence of rigid labor laws (Franken, 2011). However, the performance of provinces also matters, especially considering that minimum wage is set at the province level. ACI's competitiveness analysis confirms that labor market flexibility is weak across the 33 provinces (median -0.1354). Even in major provinces like DKI Jakarta (score -0.2478, lower than median), labor market is considered a challenge.

Labor market flexibility is an important sub-environment to consider as it contributes to the growth of the private sector as an important provider of employment. The SWOT analysis conducted for each province shows that indicators such as labor relations, minimum wage per month, employment participation rate, and unemployment rate usually go hand-in-hand, either as strengths or as weaknesses.

Despite the general trend of weak labor market flexibility across the provinces, some provinces are actually very competitive in this matter. They are East Java (score +2.2940), Central Java (score +1.8532), and West Java (score +1.5471). This means a detailed analysis of the situation in these three provinces could yield new insights into their labor market practices. If they provide best practices to popularize nationally, it would make a major contribution to national competitiveness. It is generally easier and more acceptable for provinces to learn from each other than from other countries.

Physical infrastructure:

Infrastructure (both physical and technological) has been identified as causing bottlenecks for Indonesia's economic development (Standard Chartered Bank, 2011; World Economic Forum, 2011). A closer look at both types of infrastructure is worthwhile to understand how such issues could be resolved.

East Java had the top score for physical infrastructure, instead of DKI Jakarta. South Kalimantan also holds a high rank (4th out of 33 provinces), despite its location. These provinces potentially provide insights into how to develop physical infrastructure. What has provincial leadership done that resulted in such achievements? Can they be replicated in other provinces? These are some of the questions that can be explored in further research.

Banten's position at number two also deserves attention. Its competitiveness in terms of physical infrastructure might be explained partially through its position next to DKI Jakarta; however, it also highlights the importance of agglomeration effects. This could lead to further research on the relationship between neighboring provinces or a cluster of provinces.

Technological infrastructure:

Indonesia faces major challenges in penetration of information and communication technology (ICT). It has the slowest average internet loading speed on desktop computers (Kharif, 2012), with only 16.1% internet penetration rate in 2011 (Wismadi & Townsend, 2010; Telkom Indonesia, 2012).

Despite these challenges, the sub-environment on technological infrastructure shows two major positive outliers: DKI Jakarta (score +2.8596) and DI Yogyakarta (score +2.1624). Another province that is less of an outlier but still has a high score in this sub-environment is East Kalimantan (score +1.4796). While it is understandable for DKI Jakarta as the nation's capital and economic centre to have good technological infrastructure, it is interesting to learn about the performance of DI Yogyakarta and East Kalimantan in this field.

Perhaps DI Yogyakarta is a special case due to its size and unique special province status. However, detailed studies could possibly reveal useful lessons for other provinces in the areas where they are weak.

In-depth topical research:

The multidimensional nature of ACI's competitiveness framework allows further analysis on specific and strategic indicators which could be analyzed by sector. The different sub-environments and indicators could also be further scrutinized by conducting correlation analysis, for example, to find out which indicators are more closely correlated to the performance of specific sub-environments.

This opens up a whole range of possibilities for further research. Specific analyses could be done for certain sectors, such as health or tourism, resulting in analyses of healthcare competitiveness or tourism competitiveness. Further study on governance, for example, on the topic of multiple layers of governance (decentralization), is also timely and appropriate for Indonesia, considering the country's comprehensive adoption of decentralization since 2001.

In comparison to other ASEAN countries, the two key competitive strengths of Indonesia are attractiveness to foreign investors and government policy and fiscal sustainability. These should be seriously guarded and preserved as key strengths. Research focusing on how to maintain and further improve Indonesia's competitiveness in these areas is beneficial to further strengthen the country's position internationally.

Analysis of Clusters of Provinces

Indonesia can also learn from other countries. A key successful experience in regional development in China over the past 20 years is the success of regional clusters. The 11th five-year plan of the People's Republic of China places importance on regional development strategy. A region such as the Pearl River Delta (Enright, Scott, & Chang, 2005) covers a range of cities in the province of Guangdong (including Guangzhou, Shenzhen, and Zhuhai) but also the Special Administrative Regions of Hong Kong and Macau. The Yangtze River Delta also covers multiple cities in several provinces, including Shanghai, Jiangsu Province, Zhejiang Province, and Anhui Province (Invest in China, 2013).

In Northern America, regional clusters have also risen to the forefront of analyses on regional development, with the identification of clusters of city-regions such as the *Northeast* (also known as Bos-Wash, covering the range of cities in multiple states from Boston to Washington DC) and Cascadia, covering Seattle, Washington; Portland, Oregon; and Vancouver, British Columbia (Lang & Dhavale, 2005).

This seemingly new found interest in the regional and geographic aspects of economic growth (World Bank, 2009) is not without precedent. The notion of regional cooperation among neighboring countries has been acknowledged and implemented in Southeast Asia, as shown in the concept of *growth triangles* (Toh & Low, 1993).

For Indonesia, several provinces with different strengths complement each other to sustain regional competitiveness and clusters of industries. There could be significant cross-provincial cluster development opportunities in Indonesia, for example, coastal and inland provinces complementing each other in their development. In the MP3EI, Indonesia has identified six major economic corridors, based on the main island groupings (Republic of Indonesia, 2011). This analysis of clusters of provinces is welcome, and it is hoped it will be further developed and analyzed based on possible industrial and urban/regional complementarities.

References

Bank Indonesia. (2008). *Profil dan pemetaan daya saing ekonomi daerah kabupaten/kota di Indonesia* [Competitiveness profile of cities and regencies in Indonesia]. Jakarta, Indonesia: Rajawali Pers.

Bautista, R. S. (2010). *Cities and enterprises, competitiveness and growth: Philippine cities competitiveness ranking project 2009*. Makati City, Philippines: Asian Institute of Management.

Berger, T. (2011). An overview and analysis on indices of regional competitiveness. *Review of Economics & Finance, 2011* (2), 17-33. Retrieved from http://www.bapress.ca/journal-2.html

Bristow, G. (2005). Everyone's a 'winner': Problematising the discourse of regional competitiveness. *Journal of Economic Geography*, *5*(3), 285-304. dx.doi.org/10.1093/jeg/lbh063

Bristow, G. (2010). *Critical reflections on regional competitiveness: Theory, policy, practice*. New York, NY: Routledge.

Camagni, R. (2002). On the concept of territorial competitiveness: Sound or misleading? *Urban Studies*, *39*(13), 2395-2411. dx.doi.org/10.1080/0042098022000027022

Department for Business, Innovation & Skills. (2011). *Regional economic performance indicators*. London, UK: Department for Business Innovation, & Skills. Retrieved from http://aalookup.bis.gov.uk/sd/repi/Definitions_and_background.pdf

Enright, M. J., Scott, E., & Chang, K-M. (2005). *Regional powerhouse*: *The Greater Pearl River Delta and the rise of China*. Singapore: John Wiley & Sons.

Franken, J. (2011, March 21). Analysis: Indonesian labor: Regulations in need of review. *The Jakarta Post*. Jakarta, Indonesia. Retrieved from http://www.thejakartapost.com

Gilley, B. (2012, September 10). The rise of the middle powers. *The New York Times*. New York, NY. Retrieved from http://www.nytimes.com

Haughton, J., Conte, F., & Yang, Z. (2013). *12th Annual State Competitiveness Report*. Boston, MA: The Beacon Hill Institute. Retrieved from http://www.beaconhill.org/CompetitivenessHomePage.html

Hnyilicza, E. (2008). Competitiveness and entrepreneurship in Latin America. *Journal of CENTRUM Cathedra*, *1*(1), 34-46. dx.doi.org/10.7835/jcc-berj-2008-0002

Institute for Management Development. (2012a). *World competitiveness online*. Data source. Retrieved from http://www.imd.org/research/publications/wcy/wcy_online.cfm

Institute for Management Development. (2012b). *Factors and criteria*: *Structure of the WCY*. Retrieved from http://www.imd.org/research/publications/wcy/Factors_and_criteria.cfm

International Labour Organization. (2010). *Labour and social trends in ASEAN 2010*: *Sustaining recovery and development through decent work*. Bangkok, Thailand: International Labour Organization.

Invest in China. (2013). *Yangtze River Delta economic zone*. Retrieved from http://www.fdi.gov.cn/pub/FDI_EN/News/Focus/Subject/Yangtze%20River%20Delta/default.htm

Kharif, O. (2012, April 19). Who's fastest? Google measures web speeds around the world. *Bloomberg Tech Blog*. Retrieved from http://go.bloomberg.com/tech-blog/2012-04-19-whos-fastest-google-measures-web-speeds-around-the-world/

Kitson, M., Martin, R., & Tyler, P. (2004). Regional competitiveness: An elusive yet key concept? *Regional Studies*, *38*(9), 991-999. dx.doi.org/10.1080/0034340042000320816

Komite Pemantauan Pelaksanaan Otonomi Daerah. (2008a). *Pemeringkatan iklim investasi 33 provinsi di Indonesia tahun 2008* [Ranking of investment climate for 33 Indonesian provinces in 2008]. Jakarta, Indonesia: Komite Pemantauan Pelaksanaan Otonomi Daerah. Retrieved from http://www.kppod.org/datapdf/laporan/rating33prov2008.pdf

Komite Pemantauan Pelaksanaan Otonomi Daerah. (2008b). *Local economic governance in Indonesia*: *A survey of businesses in 243 regencies/cities in Indonesia, 2007*. Jakarta, Indonesia: Komite Pemantauan Pelaksanaan Otonomi Daerah. Retrieved from http://www.kppod.org/datapdf/laporan/rating2007_eng.pdf

Komite Pemantauan Pelaksanaan Otonomi Daerah. (2011). *Local economic governance*: *A survey of business operators in 245 districts/municipalities in Indonesia, 2011*. Jakarta, Indonesia: Komite Pemantauan Pelaksanaan Otonomi Daerah. Retrieved from http://www.kppod.org/datapdf/laporan/rating2011_eng.pdf

Krugman, P. (1994). Competitiveness: A dangerous obsession. *Foreign Affairs*, *73*(2), 28-44. dx.doi.org/10.2307/20045917

Lall, A. (2011). In search of competitiveness policies. In A. Lall (Ed.), *Facets of competitiveness*: *Narratives from ASEAN* (pp. 1-28). Singapore: World Scientific Publishing.

Lang, R. E., & Dhavale, D. (2005). *Beyond Megalopolis*: *Exploring America's New "Megapolitan" Geography*. Alexandria, VA: Metropolitan Institute at Virginia Tech. Retrieved from http://america2050.org/pdf/beyondmegalopolislang.pdf

Malesky, E. (2013). *The Vietnam provincial competitiveness index 2012*: *Measuring economic governance for business development* (Vietnam Competitiveness Initiative Policy Paper No. 17). Hanoi, Vietnam: Vietnam Chamber of Commerce and Industry and United States Agency for International Development's Vietnam Competitiveness Initiative. Retrieved from http://www.pcivietnam.org/index.php?lang=en

Martin, R. (2005). *Thinking about regional competitiveness*: *Critical issues*. London, UK: East Midlands Development Agency. Retrieved from http://didattica.unibocconi.it/mypage/upload/48731_20100601_124105_RONMARTINPAPER1.PDF

Piore, M. J., & Sabel, C. F. (1984). *The second industrial divide*: *Possibilities for prosperity*. New York, NY: Basic Books.

Porter, M. E. (1980). *Competitive strategy*: *Techniques for analyzing industries and competitors*. New York, NY: Free Press.

Porter, M. E. (1990). *The competitive advantage of nations*. New York, NY: Free Press.

Porter, M. E. (2003). Building the microeconomic foundations of prosperity: Findings from the microeconomic competitiveness index. In P. Cornelius (Ed.), *The global competitiveness report 2002-2003* (pp. 23-46). New York, NY: Oxford University Press.

Republic of Indonesia. (2011). *Masterplan for acceleration and expansion of Indonesia economic development*. Jakarta, Indonesia: Coordinating Ministry for Economic Affairs.

Schoenberger, E. (1998). Discourse and practice in human geography. *Progress in Human Geography*, *22*(1), 1-14. dx.doi.org/10.1191/030913298675930041

Standard Chartered Bank. (2011). *Indonesia – Infrastructure Bottlenecks*. London, UK: Standard Chartered Bank. Retrieved from https://research.standardchartered.com/configuration/ROW%20Documents/Indonesia%20%E2%80%93%20Infrastructure%20bottlenecks_14_02_11_06_16.pdf

Statistics Indonesia. (2012). *Statistik Indonesia*: *Statistical yearbook of Indonesia 2012*. Jakarta, Indonesia: Badan Pusat Statistik.

Tan, K. G., Amri, M., Low, L., & Yam, T. K. (2013). *Competitiveness analysis and development strategies for 33 Indonesian provinces*. Singapore: World Scientific.

Tan, K. G., Low, L., Yam, T. K., & Amanda, A. (2013). *Annual analysis of competitiveness, development strategies and public policies on ASEAN-10*: *2000-2010.* Singapore: Pearson Education South Asia Pte Ltd.

Telkom Indonesia. (2012). *Developing Internet service in Indonesia*: *Opportunities and challenges*. ITU regional seminar on costs and tariffs and meeting of the Study Group 3 regional group for Asia and Oceania (SG3RG - AO). Retrieved from   http://www.itu.int/ITU-D/finance/work-cost-tariffs/events/tariff-seminars/Indonesia-12/pdf/Session6_VPCRS_IIC_Indonesia.pdf

Thurow, L. (1992). *Head to head*: *The coming economic battle among Japan, Europe, and America*. New York, NY: Warner Books.

Toh, M. H., & Low, L. (1993). *Regional cooperation and growth triangles in ASEAN*. Singapore: Times Academic Press.

Transparency International. (2012). Corruption perceptions index 2012. Retrieved from http://www.transparency.org/cpi2012/results

United Nations Development Programme. (2013). Human development index (HDI). Retrieved from http://hdr.undp.org/en/statistics/hdi/

Urwin, C. (2006). Urban myth. Why cities don't compete. Retrieved from http://www.rudi.net/node/8777

Weatherbee, D. E. (2011). Perspective: Indonesia's image and reality. *Current History*, *110*(737), 249-250.

Weingast, B. R. (1995). The economic role of political institutions: Market-preserving federalism and economic development. *Journal of Law, Economics, & Organization*, *11*(1), 1-31.

Wismadi, A., & Townsend, D. N. (2010). Project on rural ICT policy advocacy, knowledge sharing, and capacity building: Country case study Indonesia. Retrieved from http://www.itu.int/ITU-D/asp/CMS/Events/2011/ITU-ADB/Indonesia/ITU-ADB_Interrim_Indonesia_Country_Report.pdf

World Bank. (2009). *World Development Report 2009*: *Reshaping Economic Geography*. Washington, DC: World Bank. Retrieved from http://econ.worldbank.org/external/default/main?pagePK=64165259&theSitePK=469372&piPK=64165421&menuPK=64166322&entityID=000333038_20081203234958

World Bank. (2013). Ease of doing business in Indonesia. Retrieved from http://www.doingbusiness.org/data/exploreeconomies/indonesia/

World Economic Forum. (2011). *The Indonesia Competitiveness Report 2011. Sustaining the Growth Momentum*. Geneva, Switzerland: World Economic Forum. Retrieved from http://www3.weforum.org/docs/WEF_GCR_Indonesia_Report_2011.pdf

World Economic Forum. (2012). *The Global Competitiveness Report 2012-2013*. Geneva, Switzerland: World Economic Forum.

Authors Note

Khee G. Tan and Mulya Amri, Asia Competitiveness Institute, Lee Kuan Yew School of Public Policy, National University of Singapore, 469C Bukit Timah Road, Singapore 259772, Singapore.

Correspondence concerning this article should be addressed to Khee G. Tan, Email: spptkg@nus.edu.sg

Editors of the Special Issue

Vincent Charles, *Ph.D., CENTRUM Católica Graduate Business School, PUCP, Peru*

Christian H. M. Ketels, *Ph.D., Harvard Business School, Boston, MA, USA*