

Kajian Daya Saing oleh Asia
Competitiveness Institute (ACI), Lee Kuan
Yew School of Public Policy (LKYSPP),
National University of Singapore (NUS)

Lampung, 3 Mei 2018

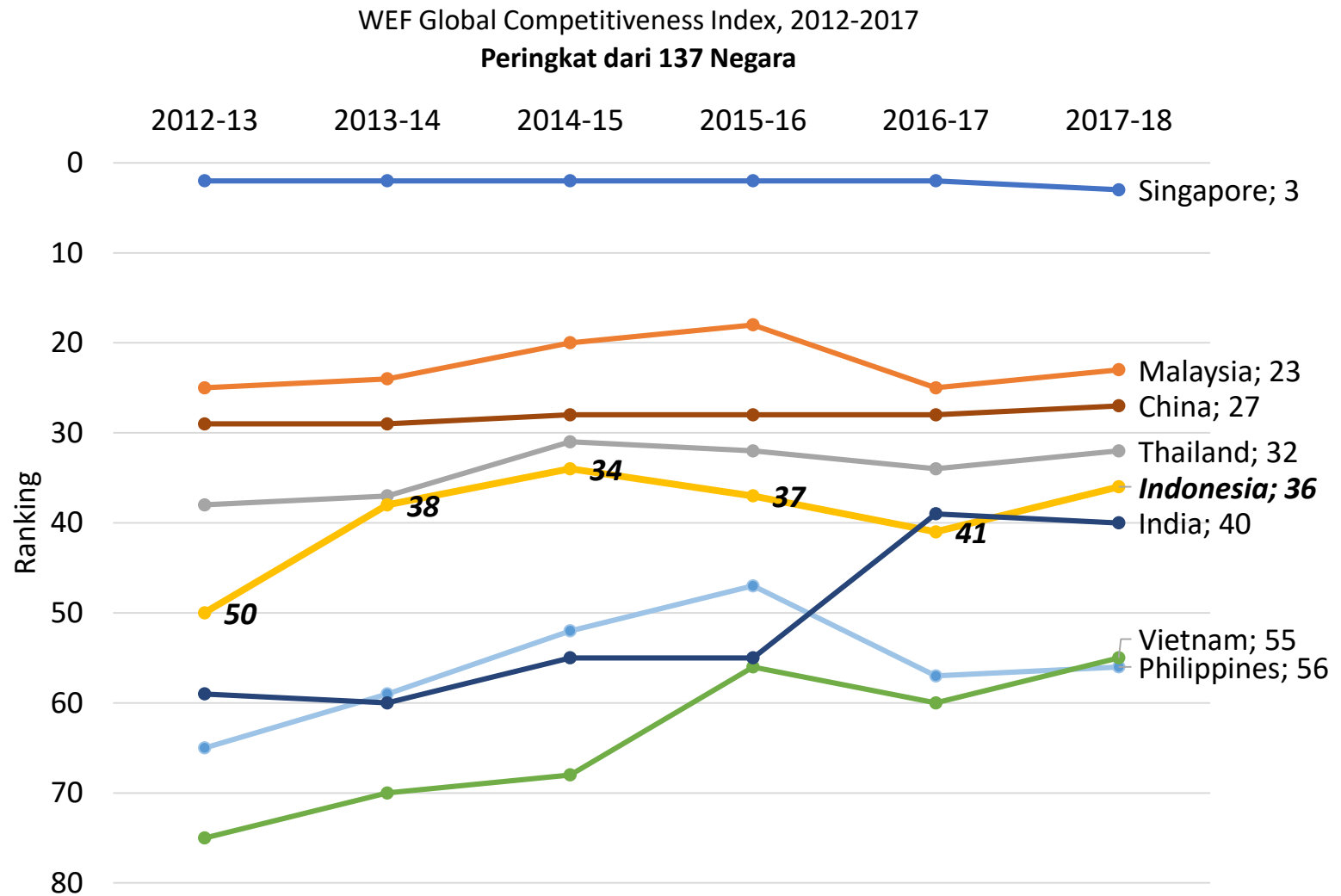
Mulya Amri, Ph.D

Research Fellow & Deputy Director, ACI-LKYSPP-NUS
(2011-2018)

1. Peringkat Daya Saing Indonesia di Dunia Internasional

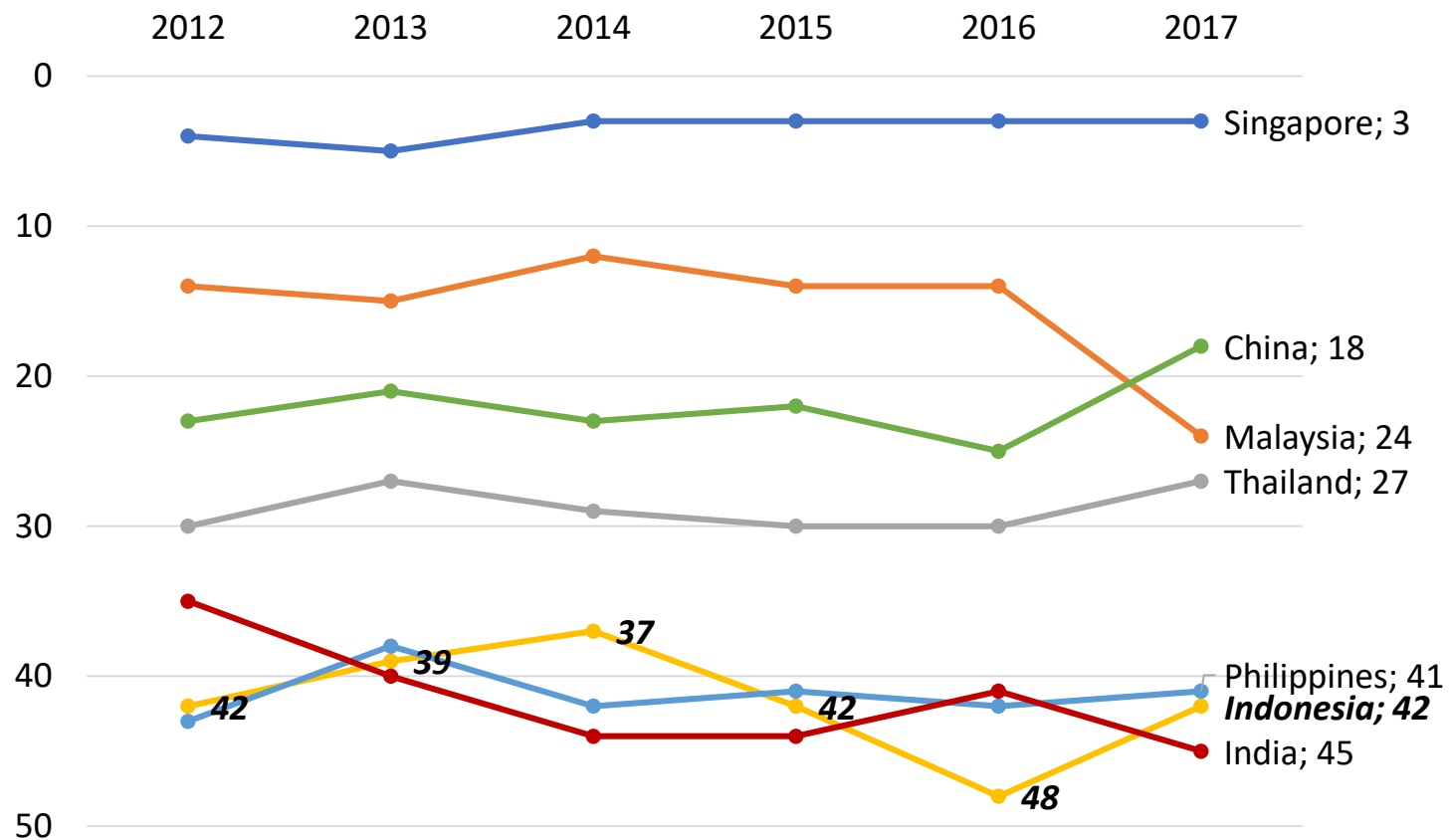
Pemeringkatan sebagai cara untuk menggalakkan semangat persaingan sehat; membandingkan capaian sendiri dengan capaian rekan (*benchmarking*)

Peringkat Daya Saing Indonesia Menurut *World Economic Forum (WEF)*



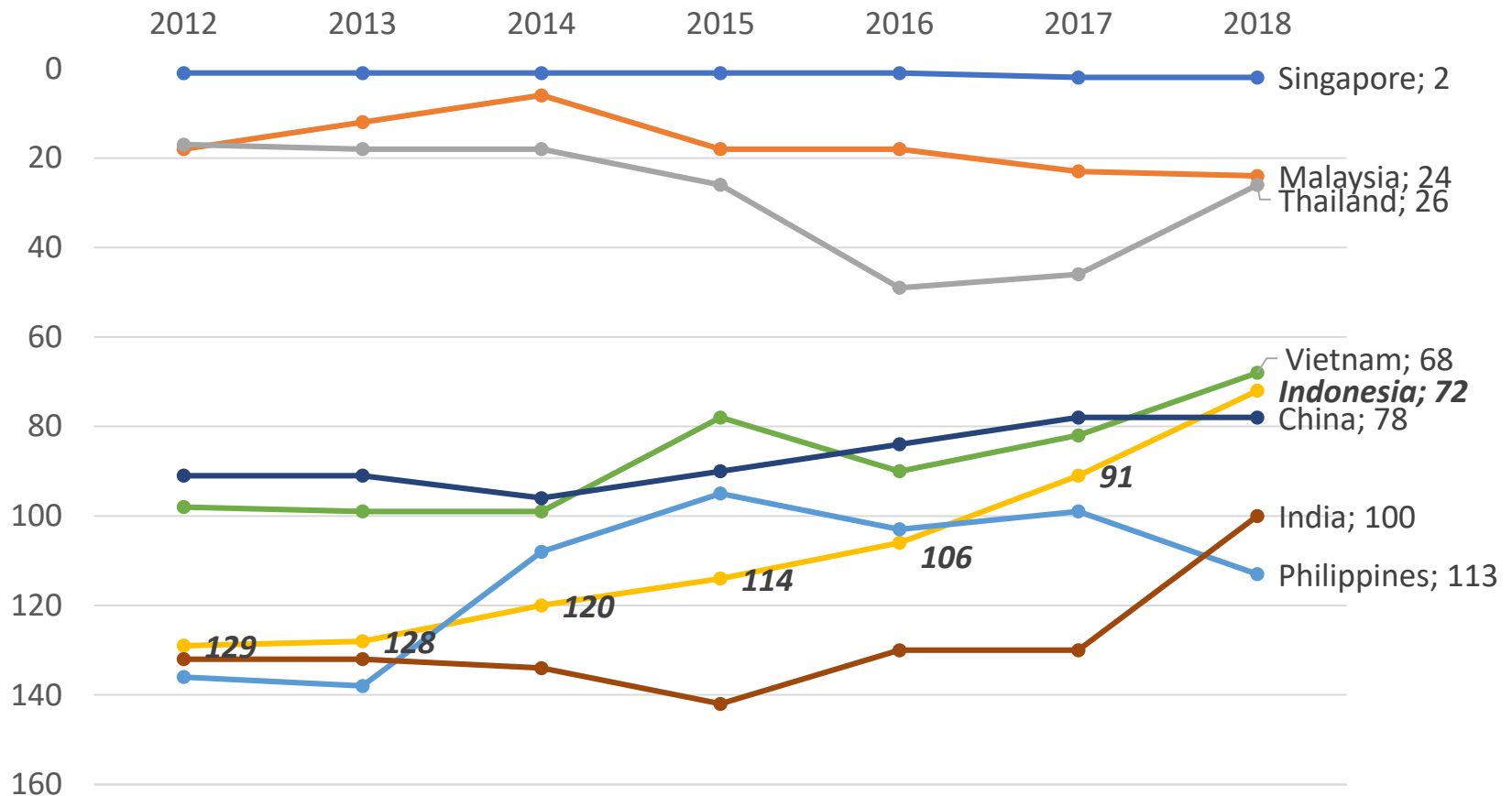
Peringkat Daya Saing Indonesia Menurut *Institute of Management and Development (IMD)*

IMD World Competitiveness Rankings, 2012-2017
Peringkat dari 63 Negara

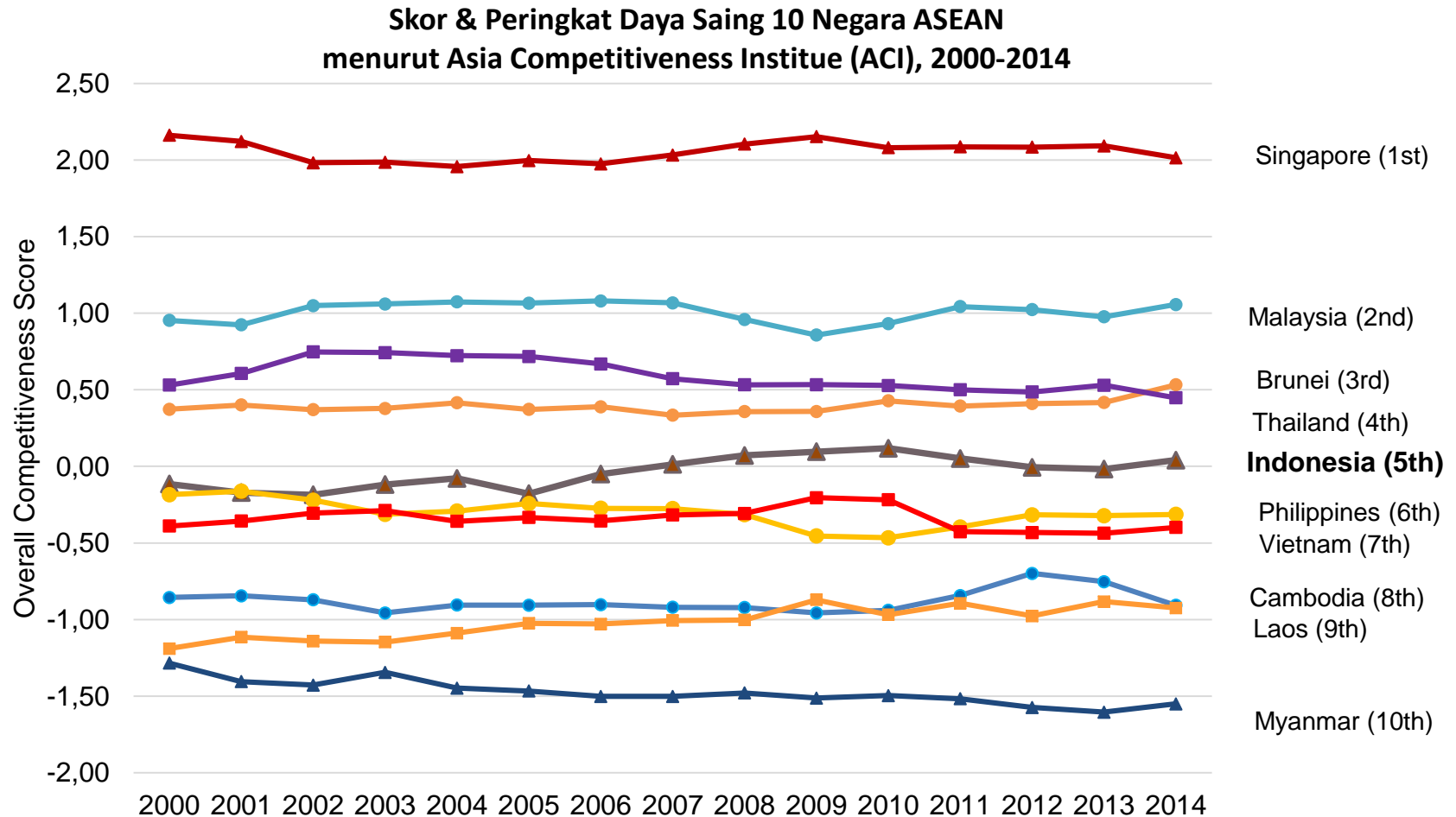


Peringkat Kemudahan Berusaha (*Ease of Doing Business*) Indonesia Menurut Bank Dunia

World Bank Doing Business Rankings, 2012-2017
Peringkat dari 190 Negara



Peringkat Daya Saing Indonesia Menurut *Asia Competitiveness Institute (ACI), National University of Singapore (NUS)*



Source: Asia Competitiveness Institute

Note: Value in the parenthesis denotes the 2017 competitiveness ranking amongst ASEAN-10.

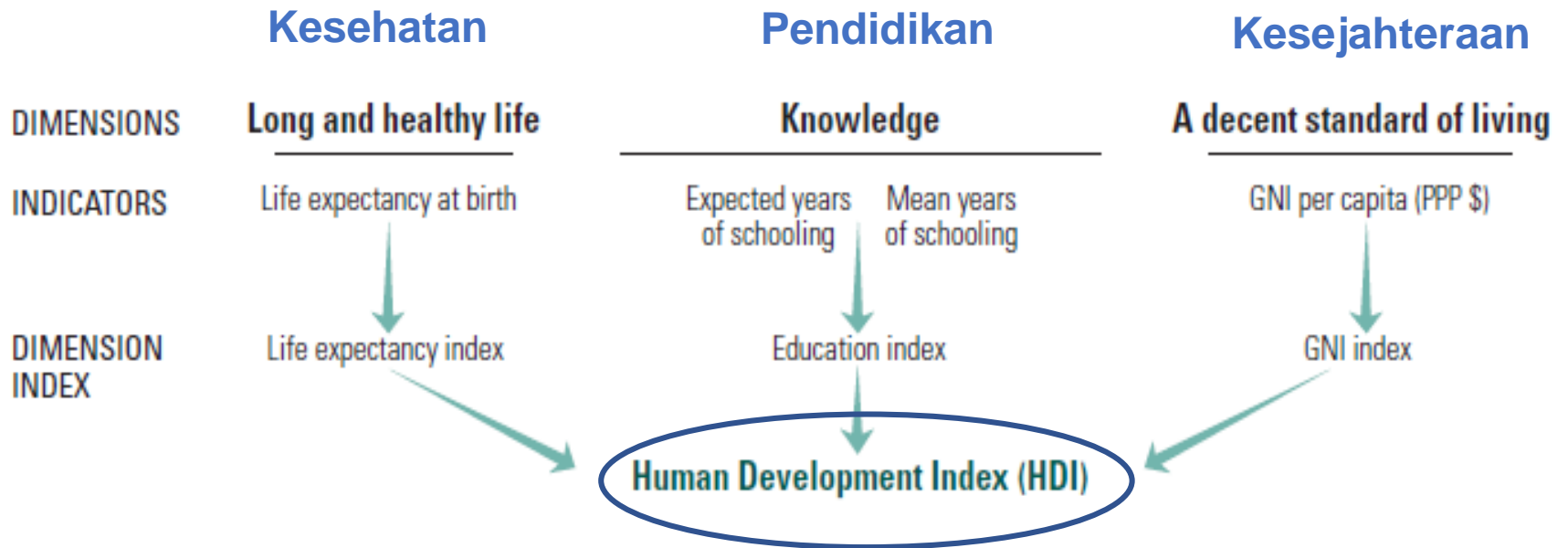
Tapi tidak ada yang meneliti level sub-nasional di China, India, Indonesia – padahal 1 provinsi di Indonesia bisa lebih besar daripada negara di Eropa

2. Memahami Indeks Daya Saing

Indeks sebagai alat untuk menguraikan dan menggabungkan sebuah konsep abstrak

Contoh 1: Indeks Pembangunan Manusia

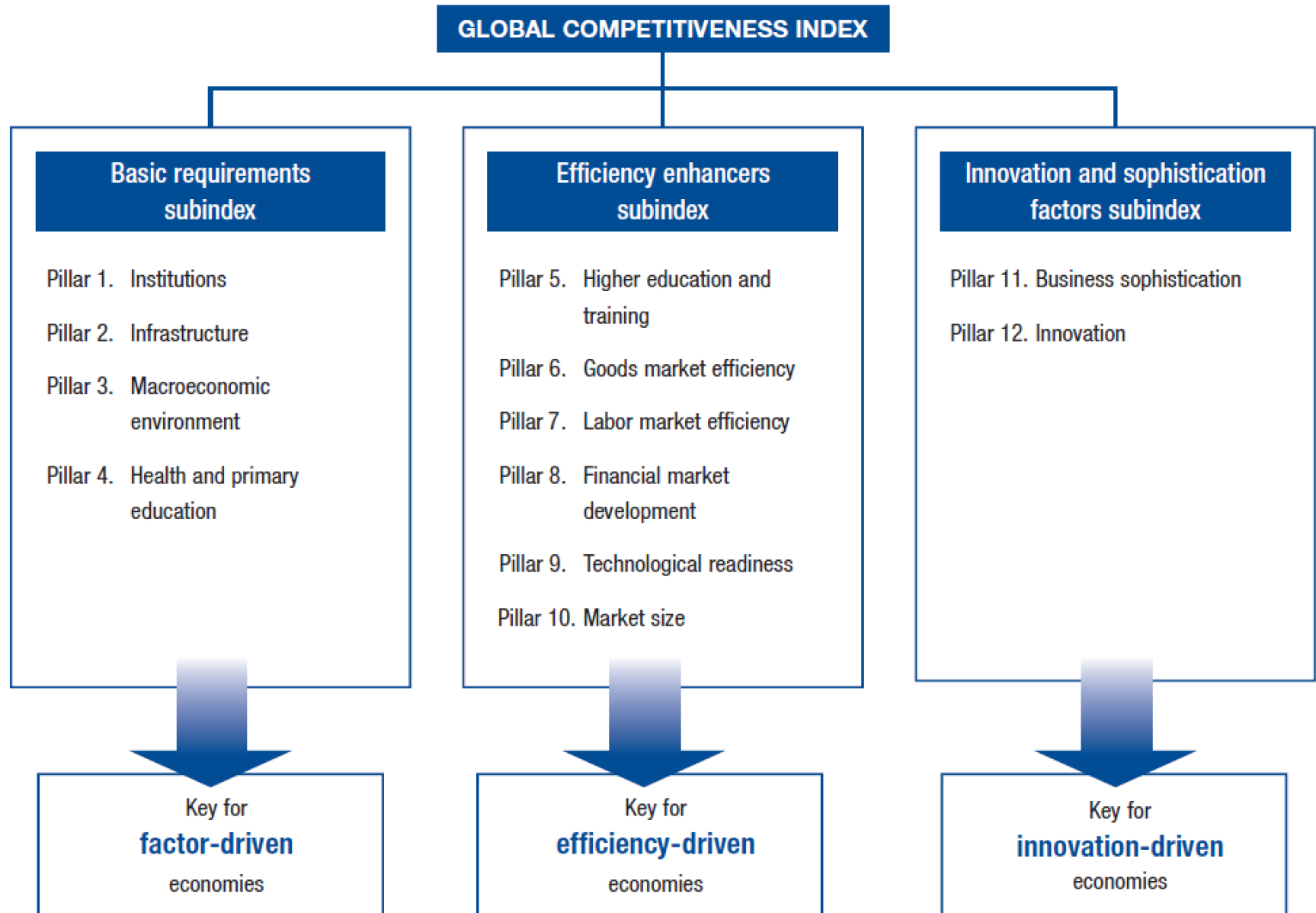
Hanya terdiri dari 3 Sub-Index, 4 Indikator



Prinsip “Parsimoni”:

- Menjelaskan lebih banyak dengan indikator lebih sedikit
- Keuntungan: Mudah dilakukan
- Kelemahan: Tidak membangun basis data yang lengkap

Contoh 2: Global Competitiveness Index oleh WEF



Contoh 3: World Competitiveness Ranking oleh IMD



Economic Performance

- Domestic Economy
- International Trade
- International Investment
- Employment
- Prices



Government Efficiency

- Public Finance
- Fiscal Policy
- Institutional Framework
- Business Legislation
- Societal Framework



Business Efficiency

- Productivity
- Labor Market
- Finance
- Management Practices
- Attitudes and Values



Infrastructure

- Basic Infrastructure
- Technological Infrastructure
- Scientific Infrastructure
- Health and Environment
- Education

Contoh 2: Global Competitiveness Index oleh WEF
Contoh 3: World Competitiveness Ranking oleh IMD

Prinsip “Komprehensif”:

- WEF: Terdiri dari 3 Sub-Index, 12 Pilar, 114 Indikator
- IMD: Terdiri dari 4 Faktor, 20 Sub-Faktor, 332 Kriteria
- Keuntungan: Komprehensif; sekaligus membangun database
- Kelemahan: Sulit dilakukan

Setiap Indeks Memiliki
Subyektivitas, Kekuatan &
Kelemahan-nya Masing-masing

Index selalu mengukur kinerja *relatif* (*bukan absolut*) dibandingkan dengan rekan/competitor

Contoh Metode WEF: Membandingkan dengan selisih angka maximum & minimum dari negara-negara yang diteliti

$$6 \times \left(\frac{\text{country score} - \text{sample minimum}}{\text{sample maximum} - \text{sample minimum}} \right) + 1$$

The *sample minimum* and *sample maximum* are, respectively, the lowest and highest country scores in the sample of economies covered by the GCI. In some instances, adjustments were made to account for extreme outliers. For those indicators for which a higher value indicates a worse outcome (e.g., disease incidence, government debt), the transformation formula takes the following form, thus ensuring that 1 and 7 still corresponds to the worst and best possible outcomes, respectively:

$$-6 \times \left(\frac{\text{country score} - \text{sample minimum}}{\text{sample maximum} - \text{sample minimum}} \right) + 7$$

Beberapa Index memberikan bobot yang berbeda untuk tiap Sub-Index atau tiap Indikator

Contoh: Global Competitiveness Index (WEF) memberikan bobot yang berbeda tergantung pendapatan sebuah negara

Table 1: Subindex weights and income thresholds for stages of development

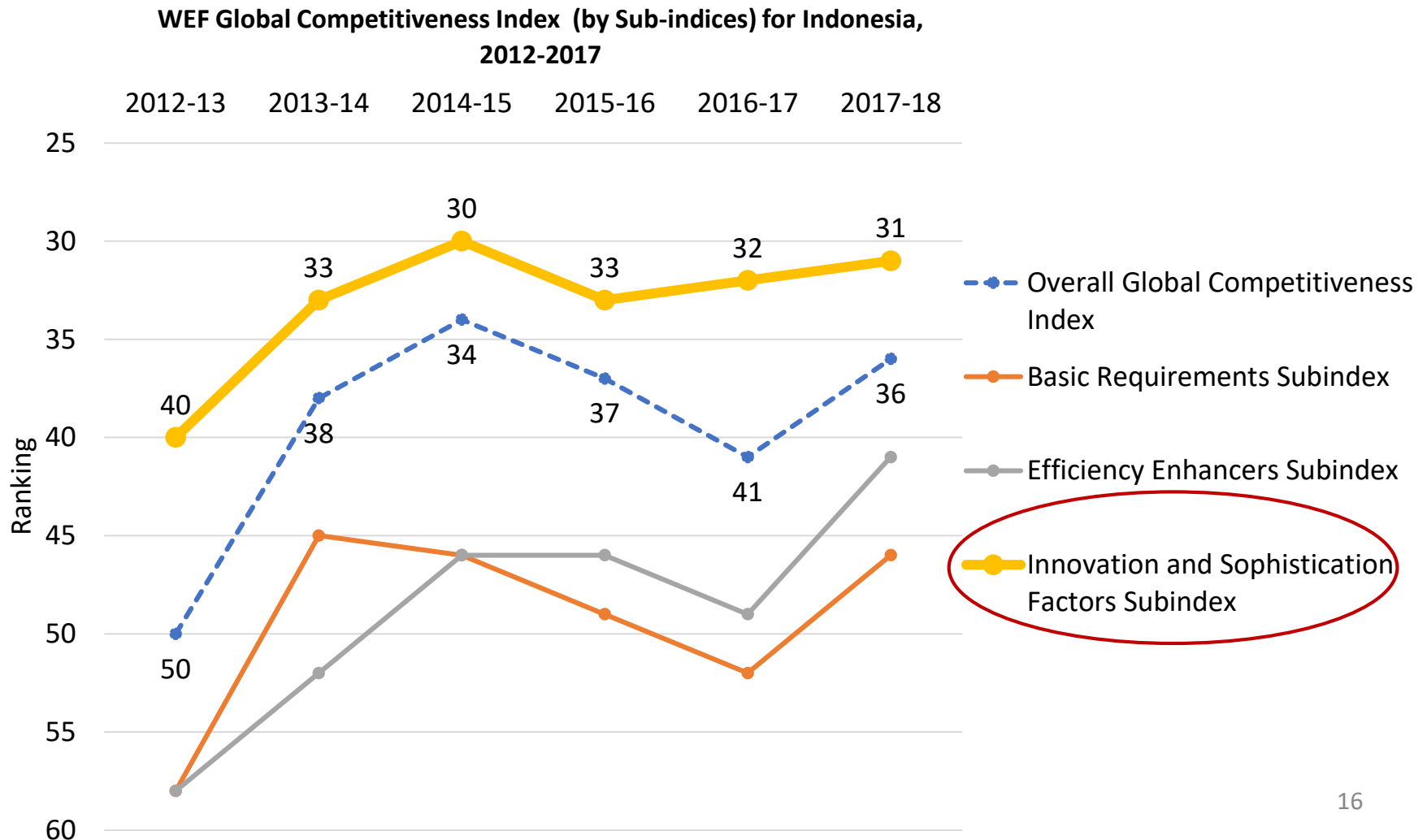
	STAGE OF DEVELOPMENT				
	Stage 1: Factor-driven	Transition from stage 1 to stage 2	Stage 2: Efficiency-driven	Transition from stage 2 to stage 3	Stage 3: Innovation-driven
GDP per capita (US\$) thresholds*	<2,000	2,000–2,999	3,000–8,999	9,000–17,000	>17,000
Weight for basic requirements	60%	40–60%	40%	20–40%	20%
Weight for efficiency enhancers	35%	35–50%	50%	50%	50%
Weight for innovation and sophistication factors	5%	5–10%	10%	10–30%	30%
	Cambodia India Lao PDR Myanmar	Philippines Vietnam	China Indonesia Thailand	Malaysia	Singapore

Note: See individual country/economy profiles for the exact applied weights.

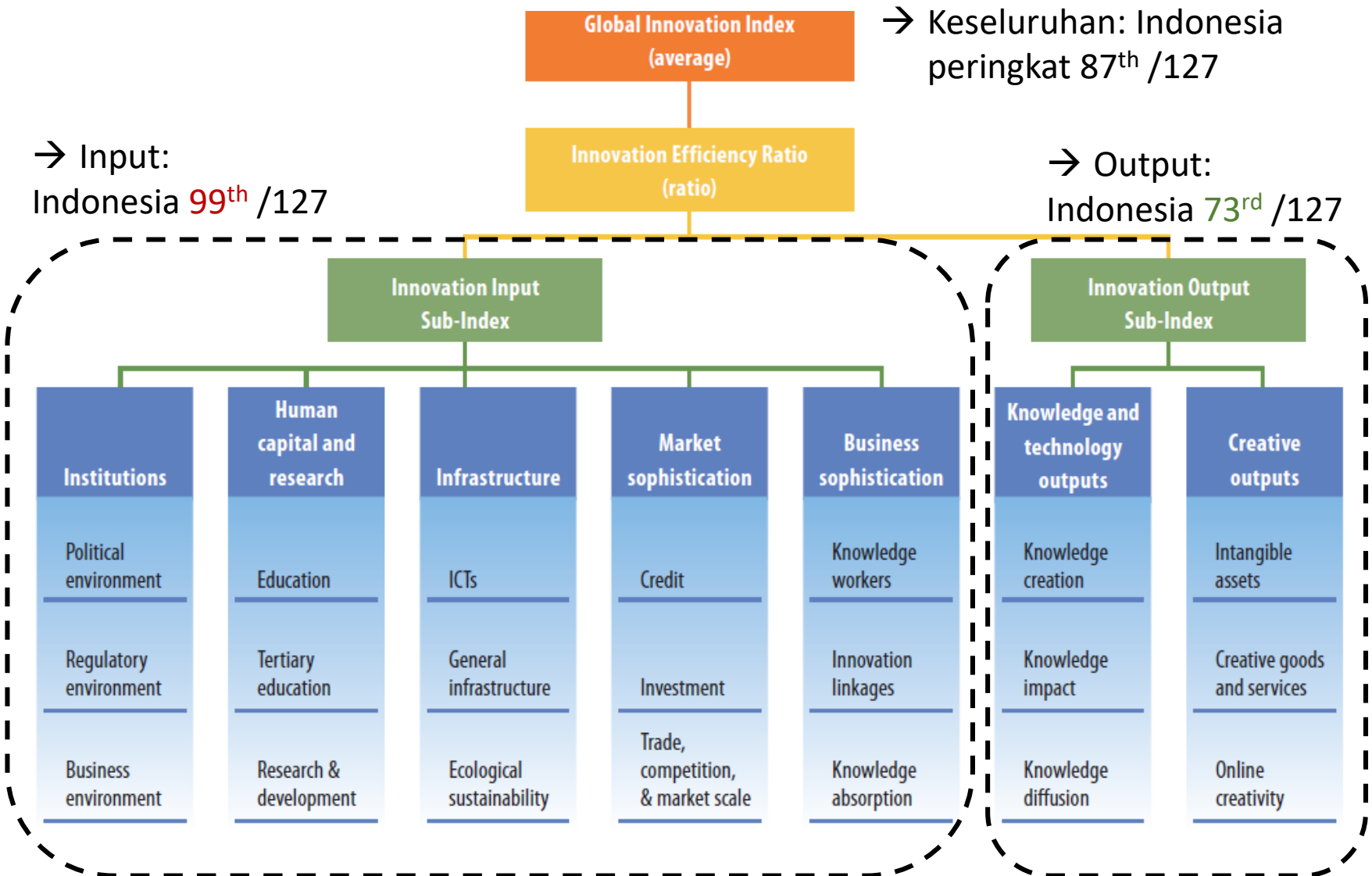
* For economies with a high dependency on mineral resources, GDP per capita is not the sole criterion for the determination of the stage of development. See text for details.

...tapi dengan bobot yang rendah (10%) untuk Inovasi, Indonesia sebenarnya “dirugikan” karena peringkat Inovasi Indonesia ternyata relatif lebih baik!

→ Pembobotan selalu kontroversial/tidak ada “benar” atau “salah”



Example: Indonesia ranks 87th for Global Innovation Index 2017: 99th on “Innovation Input”, but 73rd on “Innovation Output”

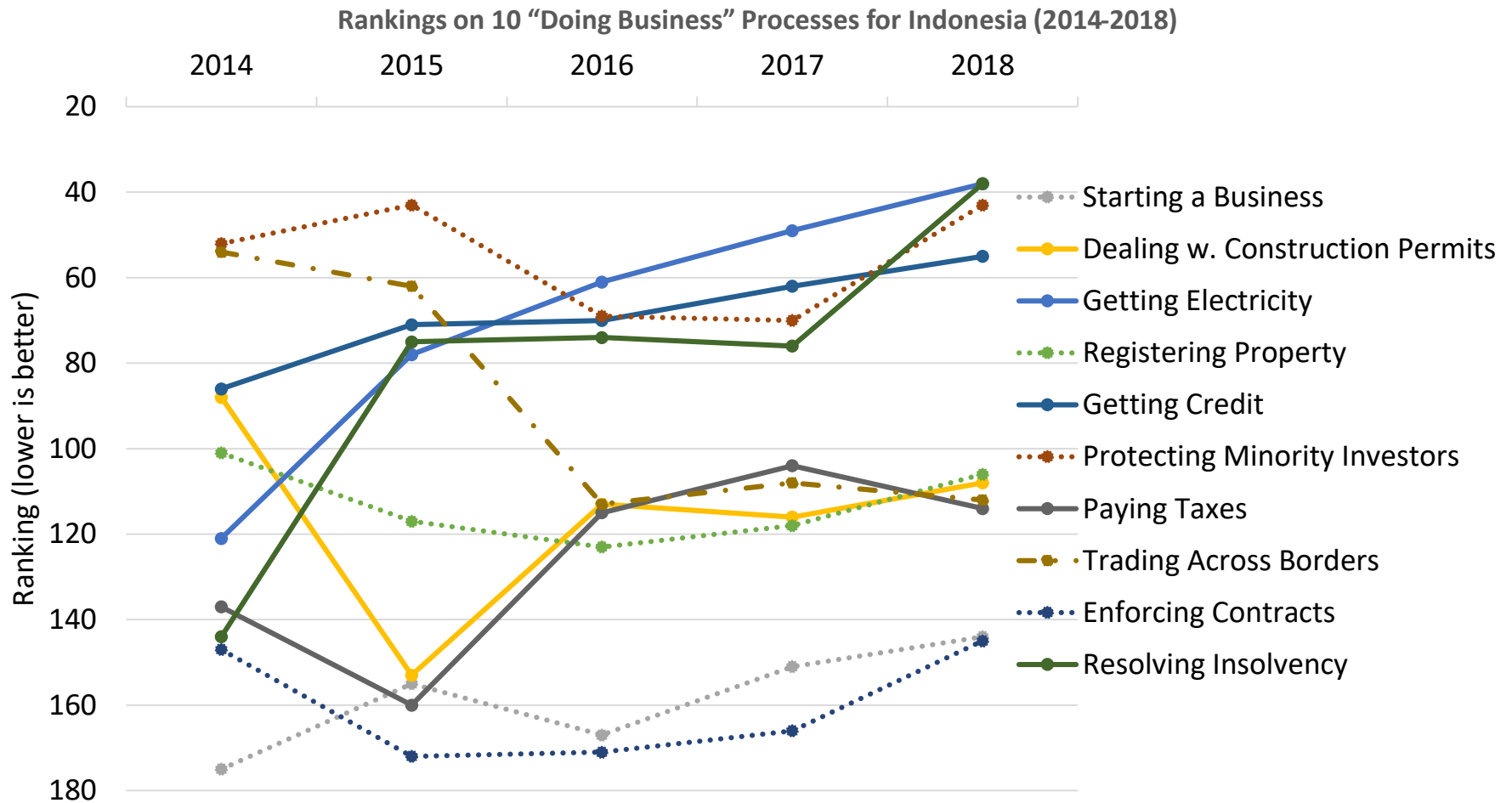


Beberapa Indeks Mengukur Persepsi (*subjektif*) dan Regulasi (*de jure*), bukan kenyataan di lapangan (*de facto*)

TABLE 2.1 What *Doing Business* measures—11 areas of business regulation

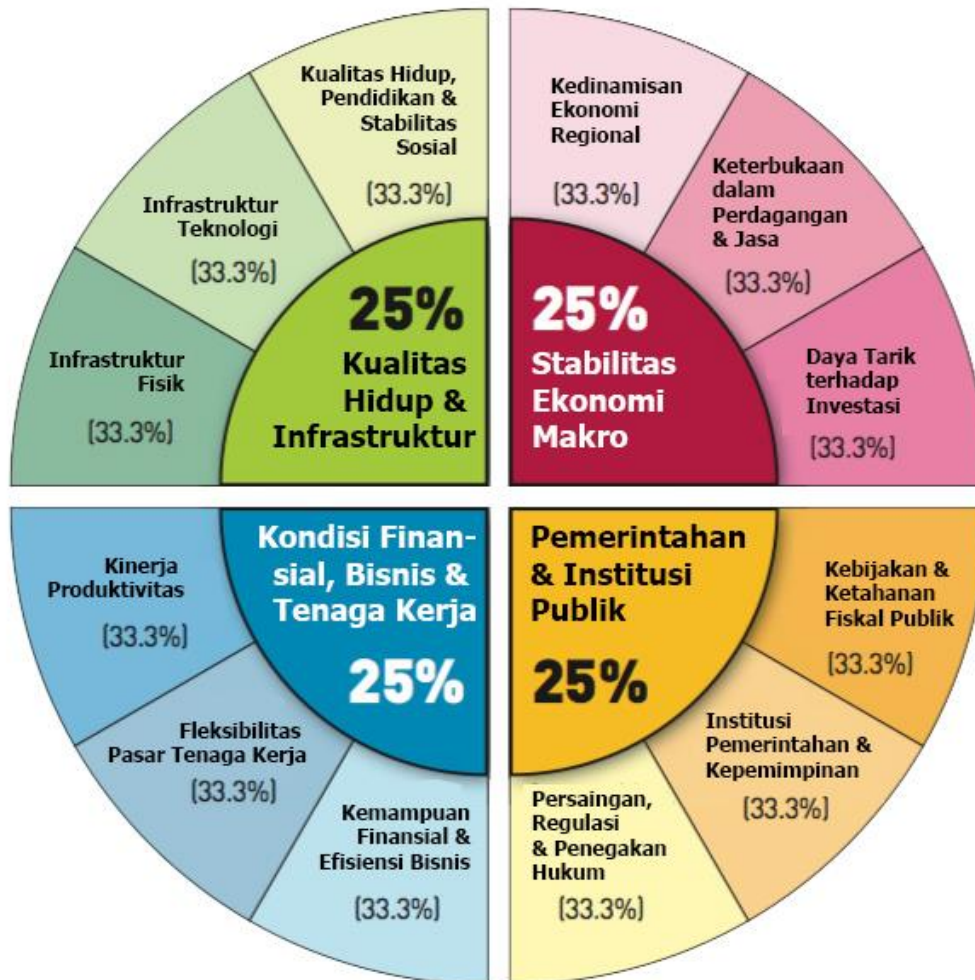
Indicator set	What is measured
Starting a business	Procedures, time, cost and paid-in minimum capital to start a limited liability company
Dealing with construction permits	Procedures, time and cost to complete all formalities to build a warehouse and the quality control and safety mechanisms in the construction permitting system
Getting electricity	Procedures, time and cost to get connected to the electrical grid, the reliability of the electricity supply and the cost of electricity consumption
Registering property	Procedures, time and cost to transfer a property and the quality of the land administration system
Getting credit	Movable collateral laws and credit information systems
Protecting minority investors	Minority shareholders' rights in related-party transactions and in corporate governance
Paying taxes	Payments, time and total tax rate for a firm to comply with all tax regulations
Trading across borders	Time and cost to export the product of comparative advantage and import auto parts
Enforcing contracts	Time and cost to resolve a commercial dispute and the quality of judicial processes
Resolving insolvency	Time, cost, outcome and recovery rate for a commercial insolvency and the strength of the legal framework for insolvency
Labor market regulation	Flexibility in employment regulation and aspects of job quality

Some indices measure the quality of regulations, not necessarily the actual condition/implementation



Kerangka Indeks Daya Saing ACI

4 Lingkup, 12 Sub-Lingkup, 100-105 Indikator



Definisi:

ACI mengadopsi pemahaman tentang “daya saing” ekonomi yang **komprensif**, mempertimbangkan berbagai faktor yang mempengaruhi kemampuan suatu daerah untuk mencapai **pembangunan ekonomi yang tinggi dan inklusif**, dalam kurun waktu yang cukup panjang.

Metode Penghitungan Skor Standar:

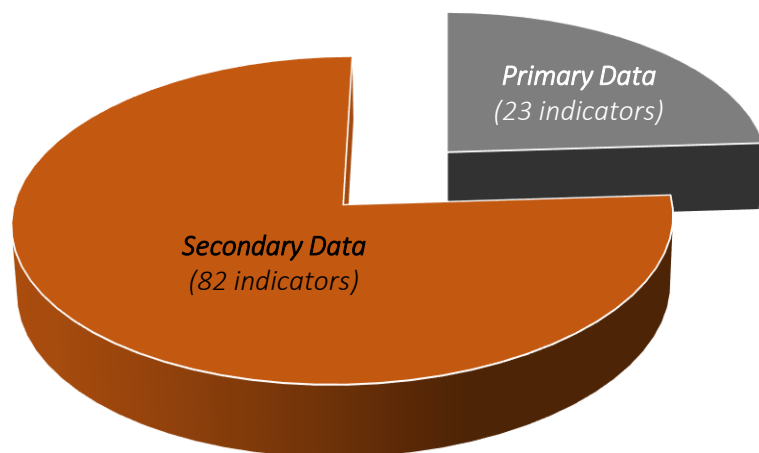
$$\text{Nilai Standar} = \frac{\text{Nilai Asli} - \text{Nilai Rerata}}{\text{Deviasi Standar}}$$

- 0 (nol) = sama dengan rerata nasional
- - (negatif) = di bawah rerata nasional
- + (positif) = di atas rerata nasional

Semakin jauh dari nol, semakin jauh pula dari rerata nasional.

(Daya saing relatif, bukan absolut)

Data Sources



Respondents	Number
APINDO members	925
Provincial academics	846
Provincial government	824
Total	2595
<i>Average per province</i>	<i>76</i>

Secondary Data (78%) in 2015:

- ❑ Central Statistical Bureau (BPS)
- ❑ Bank Indonesia
- ❑ Ministry of Health
- ❑ Etc.

Primary Data (22%) in 2017:

- ❑ ACI's perception survey in 34 provinces (in collaboration with *Indonesian Employers' Association* (APINDO), provincial government agencies, and local universities).
- ❑ Sampling methodology: Purposive Sampling.
- ❑ Measurement: Likert Scale of 1 – 9, where 9 is the most favourable response and 1 is the least.
- ❑ The surveys were conducted using an electronic response system, where questions were presented on a computer projector and participants entered their answers using keypads or “clickers”.

Methodology

What-if Competitiveness Simulation

1.

Sort the indicators for each province

No	Indicator	Score
1	Indicator A	Highest for province
2	Indicator B	<i>Higher score</i>
3	Indicator C	
4	Indicator D	
5	Indicator E	
...		
55	Indicator	
...	
101	Indicator V	
102	Indicator W	
103	Indicator X	
104	Indicator Y	<i>Lower score</i>
105	Indicator Z	Lowest for province

- Obsession with ranking is wrong and dangerous! Scores matter more than ranking as the latter may stay unchanged but scores could deteriorate.
- “Victory will always prevail if you understand your competitiveness versus competitors” as argued by Sun Tze, an ancient Chinese military strategist, more than 2000 years ago.
- *What-If* competitiveness simulation is a constructive approach seeking to improve weaknesses and consolidate strengths.

2. Identify the top 20% or 15 weakest indicators

3. Raise the province's performance in these indicators to the average level

4. Recalculate index values and ranking, keeping the performance of the other provinces constant

Robustness Check of ACI Competitiveness Scores by Shapley Weightage (1/3)

Shapley Value Ranking Algorithm

- Shapley value is widely applied in cooperative game theory, which measures the marginal contribution of an agent. In our context, the *agent* could be indicators, sub-environments and environments.
- The formula for Shapley value is:

$$\Phi(v) = \sum_{S \subseteq N \setminus \{i\}} \frac{|S|! (N - |S| - 1)!}{N!} (v(S \cup i) - v(S))$$

- With different marginal contribution to the overall competitiveness ranking, different weights should be assigned to indicators, sub-environments and environments.
- We would like to propose an objective weighting method based on Shapley value – the “Bottom-Up” Approach.

Robustness Check of ACI Competitiveness Scores by Shapley Weightage (2/3)

Shapley Value Theoretical Foundation

- Formally, let v^I be the characteristic function of the indicators, where $v^I: 2^I \rightarrow \mathbb{R}$. Then for each indicator $i \in I$, $v^I(i) : \mathbb{R}^E \rightarrow \mathbb{R}$, which reflects that the value of indicator i is derived from X_{ei} for all $e \in E$. As we involve large number of indicators in our case studies, for the ease of numerical computation, we simply define that

$$v^I(i) = \sum_{e=1}^E |SV_{ei}|.$$

- We further assume the Additivity of the characteristic function v^I , i.e.

$$v^I(i \cup j) = v^I(i) + v^I(j) \quad \text{for any indicator } i, j \in I.$$

- With all these defined, we are able to proceed with the computation of the Shapley value Φ_i^I of indicator $i \in I$.

$$\begin{aligned} \Phi_i^I &= \sum_{\mathbb{I} \subseteq I \setminus \{i\}} \frac{|\mathbb{I}|!(I-|\mathbb{I}|-1)!}{I!} (v^I(\mathbb{I} \cup i) - v^I(\mathbb{I})) \quad \text{for all } i \in I \\ &= \sum_{\mathbb{I} \subseteq I \setminus \{i\}} \frac{|\mathbb{I}|!(I-|\mathbb{I}|-1)!}{I!} (v^I(\mathbb{I} \cup i) - v^I(\mathbb{I})) = \sum_{\mathbb{I} \subseteq I \setminus \{i\}} \frac{|\mathbb{I}|!(I-|\mathbb{I}|-1)!}{I!} v^I(i) = v^I(i) \end{aligned}$$

- Then the indicator weight w_i^I based on Shapley value is simply

$$w_i^I = \frac{\Phi_i^I}{\sum_{j=1}^I \Phi_j^I} = \frac{v^I(i)}{\sum_{j=1}^I v^I(j)}.$$

Robustness Check of ACI Competitiveness Scores by Shapley Weightage (3/3)

Shapley Value Simplified: “Bottom-Up” Approach

1

We start from the lowest level of analysis (indicators) and identify the **inequality of the units** being measured (economies and sub-national economies). This is called the “Shapley Value”, which is computed from the standardised score of each indicator.

2

Subsequently, the Shapley Value is used to calculate Shapley Weight, where more weights are assigned to those indicators with higher Shapley value.

3

The weights of Sub-environments are computed in “bottom-up” manner according to both **standardised scores** and **Shapley Weights** of indicators under that particular sub-environment.

4

Finally, the weights of Environments and Overall Index are computed in a similar way.

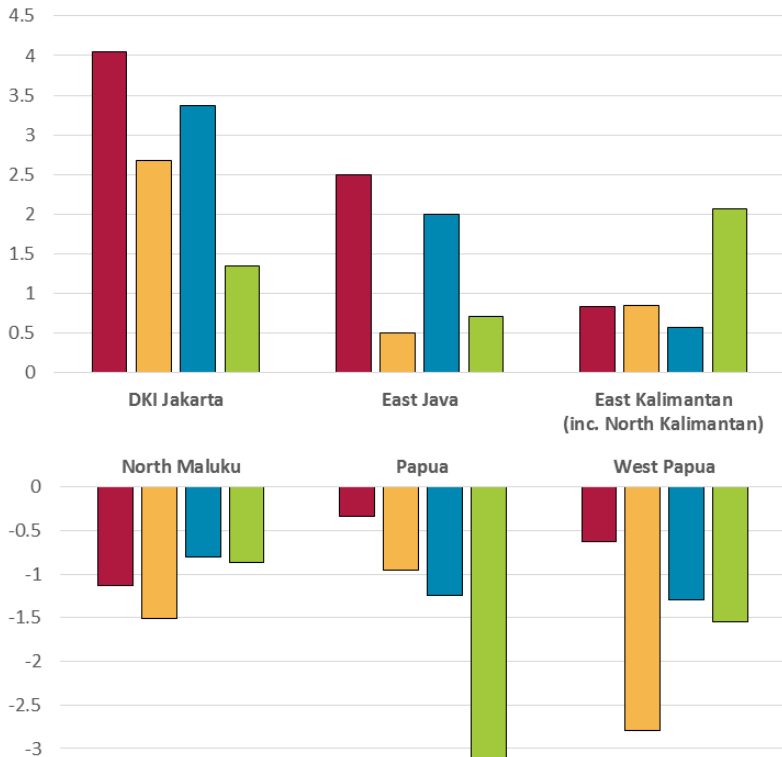
Indonesia Provincial Competitiveness Ranking & Score *Overall Competitiveness*

Rank				Province	Score 2017	Rank				Province	Score 2017
2014	2015	2016	2017			2014	2015	2016	2017		
1	1	1	1	DKI Jakarta	3.459	14	27	28	18	Jambi	-0.296
2	2	2	2	East Java	1.723	28	27	21	19	Gorontalo	-0.298
3	3	5	3	East Kalimantan (inc. North Kalimantan)	1.303	19	15	24	20	North Sumatra	-0.304
4	5	3	4	Central Java	1.035	18	19	17	21	West Kalimantan	-0.308
5	4	4	5	West Java	0.946	20	30	20	22	Bangka Belitung Islands	-0.403
12	9	11	6	Banten	0.741	29	21	16	23	Southeast Sulawesi	-0.412
14	12	7	7	Bali	0.687	16	17	22	24	South Sumatra	-0.460
7	10	6	8	South Sulawesi	0.557	13	24	26	25	Aceh	-0.526
6	6	10	9	DI Yogyakarta	0.423	22	26	19	26	West Nusa Tenggara	-0.582
11	7	12	10	Riau Islands	0.399	30	23	25	27	Bengkulu	-0.595
8	8	8	11	South Kalimantan	0.318	25	18	30	28	West Sulawesi	-0.597
21	20	14	12	Central Sulawesi	0.270	23	29	29	29	Maluku	-0.712
15	13	13	13	Central Kalimantan	0.090	32	32	32	30	East Nusa Tenggara	-1.238
24	25	18	14	Lampung	0.061	33	31	31	31	North Maluku	-1.304
17	22	23	15	West Sumatra	-0.018	31	33	33	32	Papua	-1.706
9	16	15	16	Riau	-0.093	26	28	27	33	West Papua	-1.891
10	11	9	17	North Sulawesi	-0.270						

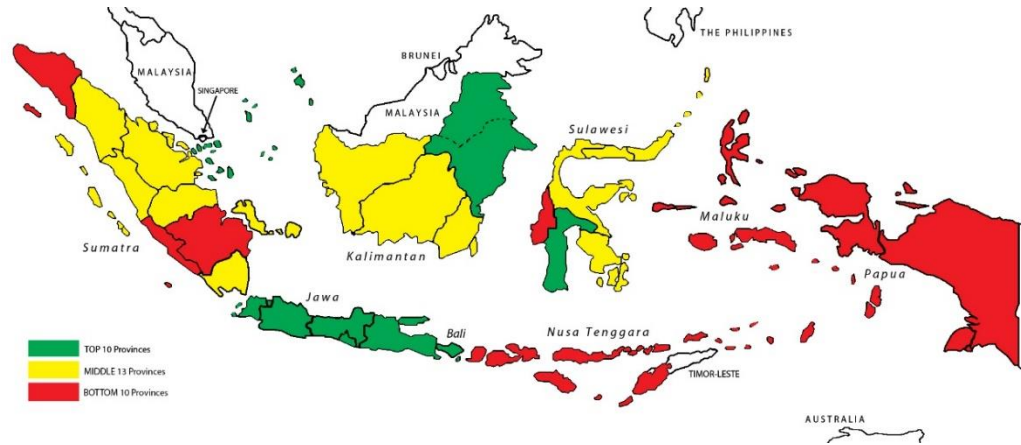
Overall Competitiveness

Top-3 and Bottom-3 Provinces

- Macroeconomic Stability
- Government and Institutional Setting
- Financial, Businesses and Manpower Conditions
- Quality of Life and Infrastructure Development



Geographical Spread

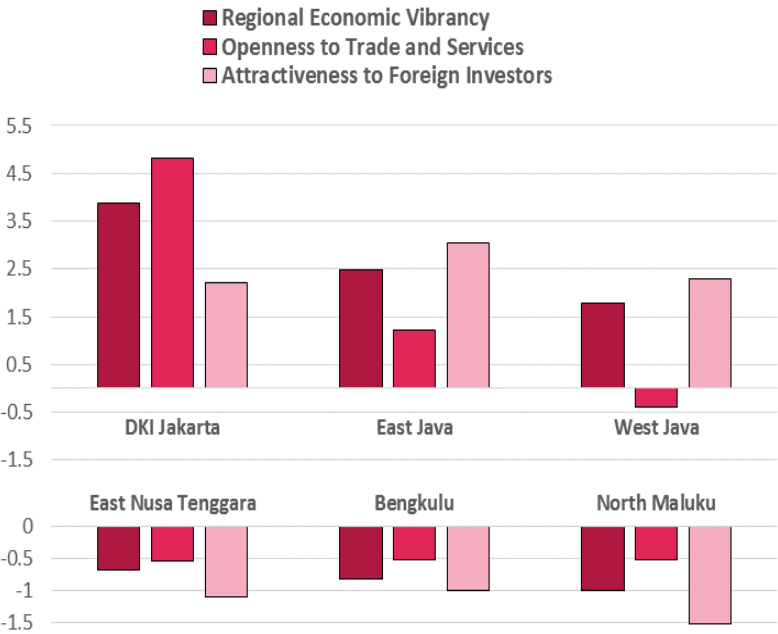


Indonesia Provincial Competitiveness Ranking & Score Sub-environment 1: Macroeconomic Stability

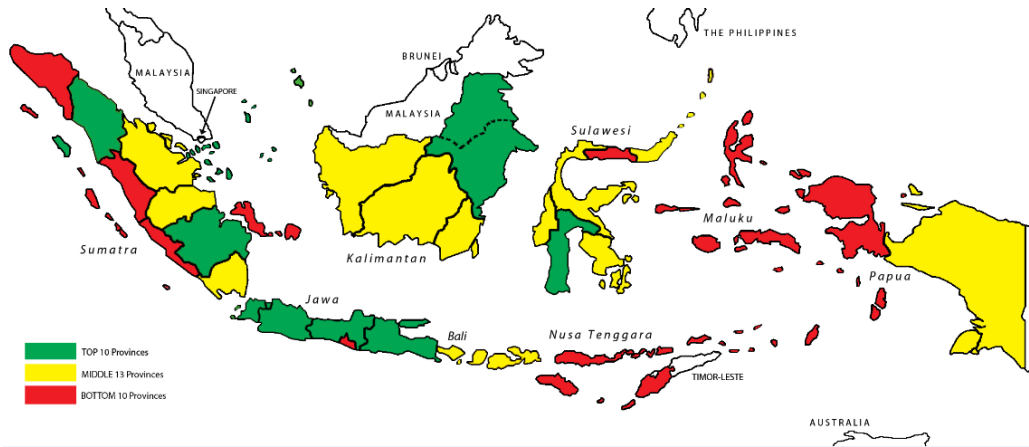
Rank				Province	Score	Rank				Province	Score
2014	2015	2016	2017		2017	2014	2015	2016	2017		2017
1	1	1	1	DKI Jakarta	4.055	16	16	11	18	Central Sulawesi	-0.348
2	2	2	2	East Java	2.496	15	14	16	19	Central Kalimantan	-0.349
3	3	3	3	West Java	1.370	23	15	20	20	Southeast Sulawesi	-0.358
4	4	4	4	East Kalimantan (inc. North Kalimantan)	0.830	20	21	25	21	Jambi	-0.429
6	7	5	5	Central Java	0.678	21	23	18	22	West Kalimantan	-0.431
5	5	6	6	Riau Islands	0.596	27	27	24	23	West Nusa Tenggara	-0.443
7	6	7	7	Banten	0.456	22	20	19	24	DI Yogyakarta	-0.461
11	8	9	8	South Sulawesi	0.128	25	30	21	25	Gorontalo	-0.523
9	10	12	9	North Sumatra	0.090	26	24	30	26	West Sumatra	-0.547
12	12	13	10	South Sumatra	0.067	14	19	23	27	West Papua	-0.628
8	9	10	11	Riau	0.019	19	31	31	28	Bangka Belitung Islands	-0.649
10	11	8	12	South Kalimantan	-0.012	30	28	27	29	Maluku	-0.673
13	13	14	13	North Sulawesi	-0.189	28	26	28	30	Aceh	-0.754
18	18	17	14	Bali	-0.243	33	33	32	31	East Nusa Tenggara	-0.865
17	17	26	15	West Sulawesi	-0.263	31	32	33	32	Bengkulu	-0.874
29	25	22	16	Lampung	-0.274	32	29	29	33	North Maluku	-1.132
24	22	15	17	Papua	-0.341						

Macroeconomic Stability

Top-3 and Bottom-3 Provinces



Geographical Spread



Data for Year 2017 is based on 2014 secondary data from official sources and 2016 primary data based on ACI's perception surveys in 33 provinces.
 Source: Asia Competitiveness Institute

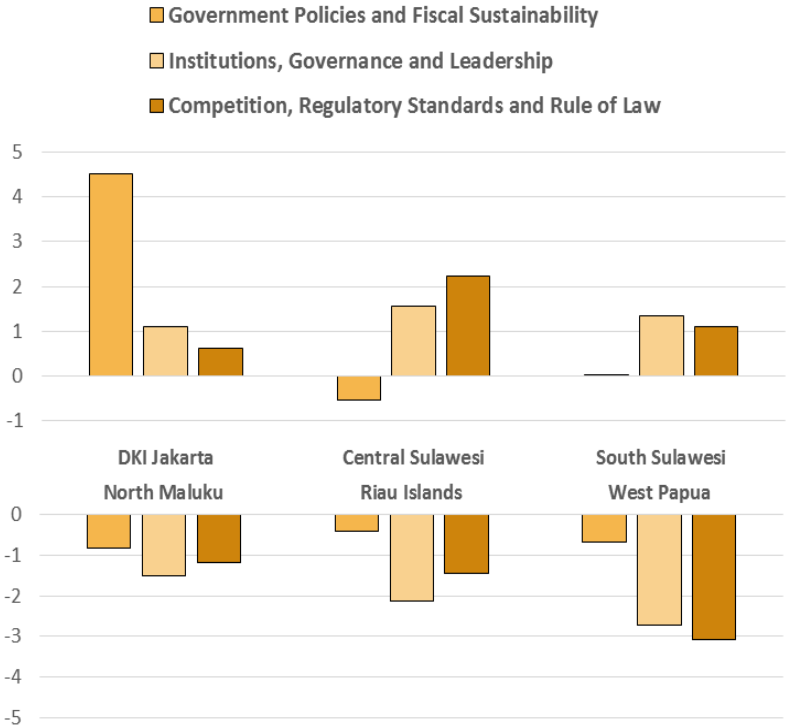
Indonesia Provincial Competitiveness Ranking & Score

Sub-environment 2: Government and Institutional Setting

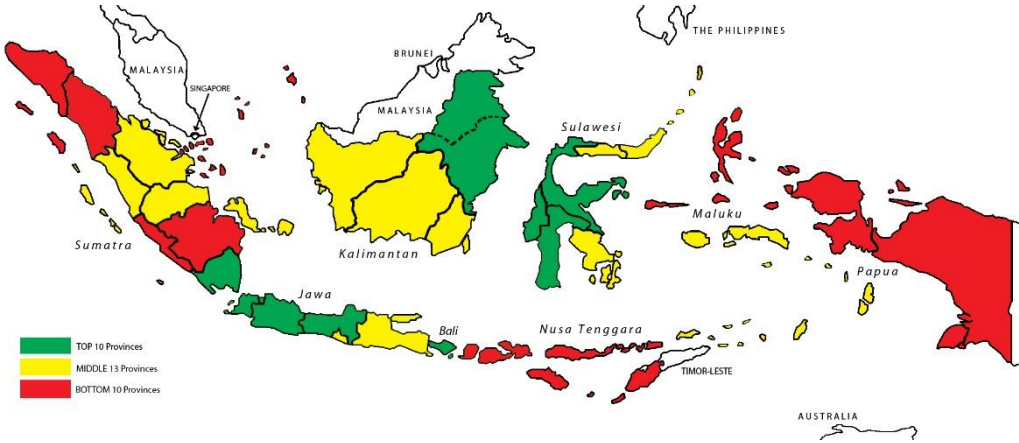
Rank				Province	Score 2017	Rank				Province	Score 2017
2014	2015	2016	2017			2014	2015	2016	2017		
1	1	1	1	DKI Jakarta	2.680	25	24	26	18	West Sumatra	0.129
12	15	9	2	Central Sulawesi	1.395	22	10	17	19	Southeast Sulawesi	-0.062
3	13	2	3	South Sulawesi	1.066	26	11	24	20	Jambi	-0.153
24	19	8	4	Bali	0.885	20	26	14	21	Maluku	-0.167
4	2	18	5	East Kalimantan (inc. North Kalimantan)	0.844	14	30	22	22	Riau	-0.174
23	16	15	6	Banten	0.745	16	32	20	23	Bangka Belitung Islands	-0.426
6	12	6	7	West Java	0.730	9	29	23	24	Aceh	-0.541
2	4	3	8	Central Java	0.700	30	23	25	25	Bengkulu	-0.672
10	9	21	9	West Sulawesi	0.649	15	20	13	26	West Nusa Tenggara	-0.676
21	28	19	10	Lampung	0.606	17	17	27	27	South Sumatra	-0.849
5	5	5	11	East Java	0.506	32	21	29	28	East Nusa Tenggara	-0.941
8	6	4	12	North Sulawesi	0.431	28	25	28	29	Papua	-0.956
18	22	11	13	Gorontalo	0.404	27	27	33	30	North Sumatra	-1.019
11	7	7	14	South Kalimantan	0.298	33	33	31	31	North Maluku	-1.510
7	3	10	15	DI Yogyakarta	0.246	31	18	32	32	Riau Islands	-1.722
13	14	12	16	West Kalimantan	0.178	29	31	30	33	West Papua	-2.788
19	8	16	17	Central Kalimantan	0.164						

Government and Institutional Setting

Top-3 and Bottom-3 Provinces



Geographical Spread



Data for Year 2017 is based on 2014 secondary data from official sources and 2016 primary data based on ACI's perception surveys in 33 provinces.
 Source: Asia Competitiveness Institute

Indonesia Provincial Competitiveness Ranking & Score

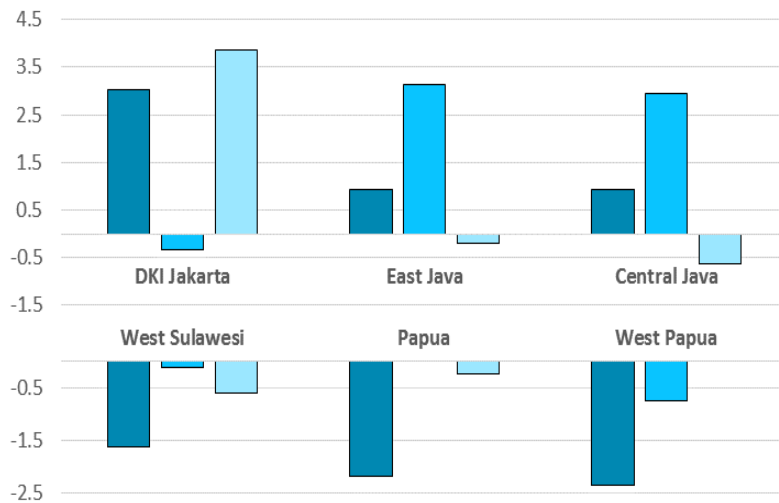
Sub-environment 3: Financial, Businesses, and Manpower Conditions

Rank				Province	Score 2017	Rank				Province	Score 2017
2014	2015	2016	2017			2014	2015	2016	2017		
1	1	1	1	DKI Jakarta	3.375	28	20	27	18	Jambi	-0.161
3	2	2	2	East Java	1.998	15	15	10	19	South Kalimantan	-0.310
2	3	3	3	Central Java	1.665	18	25	17	20	South Sumatra	-0.315
6	6	9	4	Riau Islands	1.463	24	19	22	21	Bengkulu	-0.346
5	5	4	5	West Java	0.887	7	10	23	22	Riau	-0.364
17	8	7	6	Bali	0.635	29	31	31	23	East Nusa Tenggara	-0.522
4	4	5	7	East Kalimantan (inc. North Kalimantan)	0.575	32	30	19	24	Southeast Sulawesi	-0.706
9	11	12	8	Central Kalimantan	0.560	20	32	24	25	West Nusa Tenggara	-0.720
8	12	11	9	West Kalimantan	0.332	25	26	30	26	Aceh	-0.731
13	9	14	10	DI Yogyakarta	0.270	33	27	26	27	Gorontalo	-0.755
26	21	16	11	Lampung	0.100	31	23	33	28	North Maluku	-0.807
22	17	18	12	Banten	0.057	23	23	32	29	Maluku	-1.083
10	14	8	13	South Sulawesi	0.014	16	18	20	30	North Sulawesi	-1.134
14	28	13	14	Bangka Belitung Islands	-0.032	30	16	29	31	West Sulawesi	-1.209
21	13	15	15	North Sumatra	-0.039	11	29	28	32	Papua	-1.241
19	24	21	16	West Sumatra	-0.068	12	7	6	33	West Papua	-1.295
27	22	25	17	Central Sulawesi	-0.091						

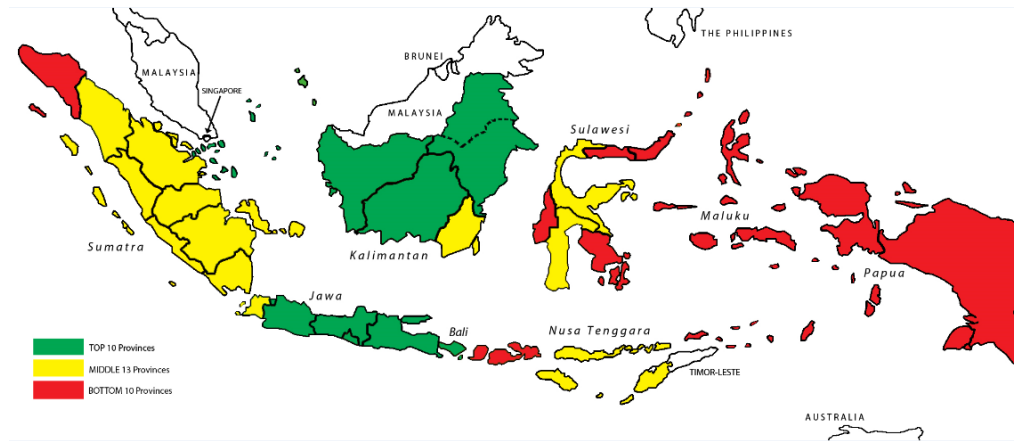
Financial, Businesses and Manpower Conditions

Top-3 and Bottom-3 Provinces

- Financial Deepening and Business Efficiency
- Labour Market Flexibility
- Productivity Performance



Geographical Spread



Indonesia Provincial Competitiveness Ranking & Score

Sub-environment 4: Quality of Life and Infrastructure Development

Rank				Province	Score 2017	Rank				Province	Score 2017
2014	2015	2016	2017			2014	2015	2016	2017		
2	1	1	1	East Kalimantan (inc. North Kalimantan)	2.068	17	18	14	18	Central Kalimantan	-0.076
1	2	4	2	DI Yogyakarta	1.347	21	19	21	19	Bengkulu	-0.079
3	3	3	3	DKI Jakarta	1.347	26	22	19	20	West Nusa Tenggara	-0.089
7	6	10	4	Banten	1.197	27	26	26	21	Gorontalo	-0.111
6	8	6	5	South Kalimantan	1.076	22	24	23	22	Lampung	-0.228
8	7	5	6	Bali	0.999	25	25	22	23	Bangka Belitung Islands	-0.229
4	5	8	7	Riau Islands	0.986	19	17	25	24	Jambi	-0.239
4	5	2	8	East Java	0.706	24	23	17	25	Southeast Sulawesi	-0.240
9	11	7	9	South Sulawesi	0.637	18	20	24	26	South Sumatra	-0.427
11	12	13	10	West Sumatra	0.427	23	27	29	27	Maluku	-0.435
13	14	9	11	Central Java	0.383	31	28	28	28	North Maluku	-0.870
10	15	15	12	Aceh	0.284	30	29	27	29	West Kalimantan	-1.100
16	16	16	13	Riau	0.213	29	30	30	30	West Sulawesi	-1.155
15	9	12	14	West Java	0.146	28	32	32	31	West Papua	-1.550
12	13	11	15	North Sulawesi	-0.001	32	31	31	32	East Nusa Tenggara	-1.773
14	10	20	16	North Sumatra	-0.040	33	33	33	33	Papua	-3.111
20	21	18	17	Central Sulawesi	-0.061						

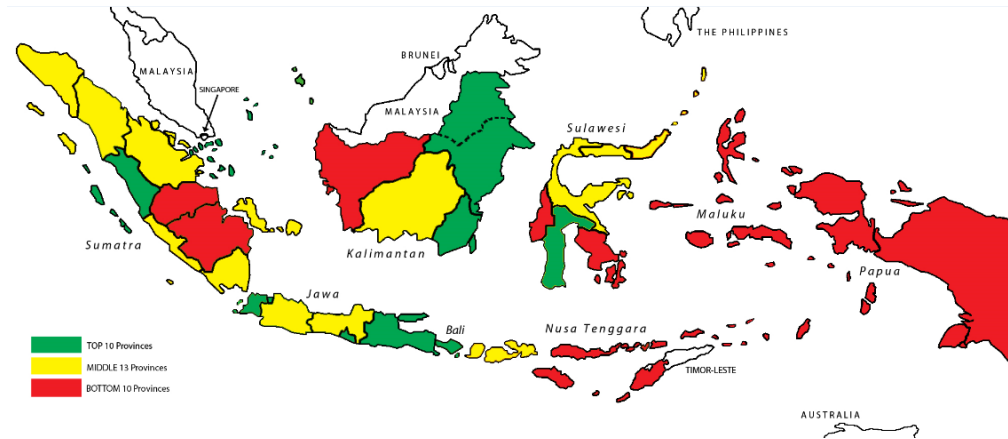
Quality of Life and Infrastructure Development

Top-3 and Bottom-3 Provinces

- Physical Infrastructure
- Technological Infrastructure
- Standard of Living, Education and Social Stability



Geographical Spread

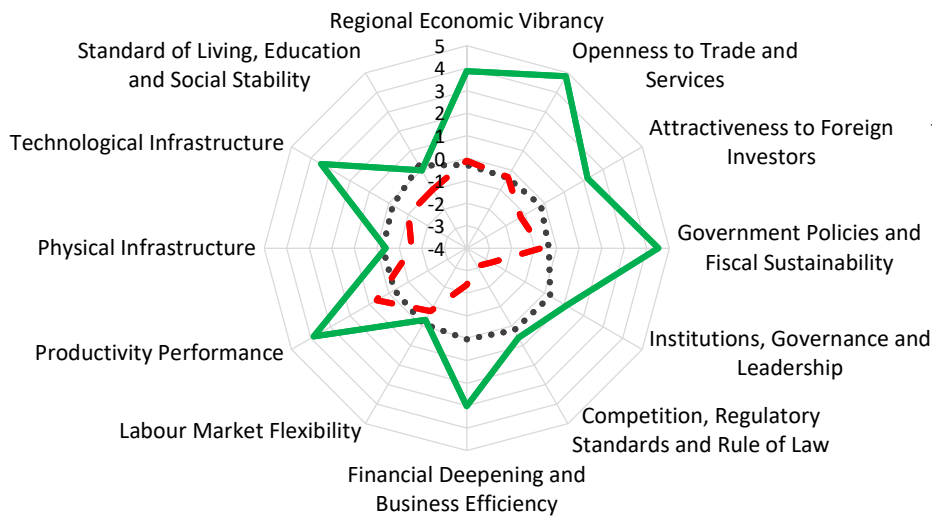


- TOP 10 Provinces
- MIDDLE 13 Provinces
- BOTTOM 10 Provinces

Findings: Median and Maximum Competitiveness Web Analysis

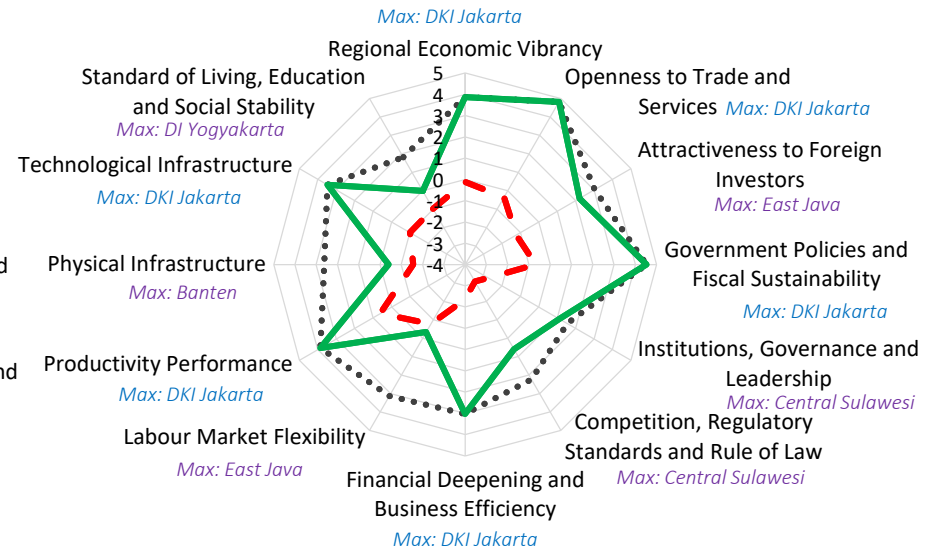
DKI Jakarta (#1) and West Papua (#33), 2017

Median Competitiveness Web



..... Median ——— DKI Jakarta - - - West Papua

Maximum Competitiveness Web



..... Max ——— DKI Jakarta - - - West Papua

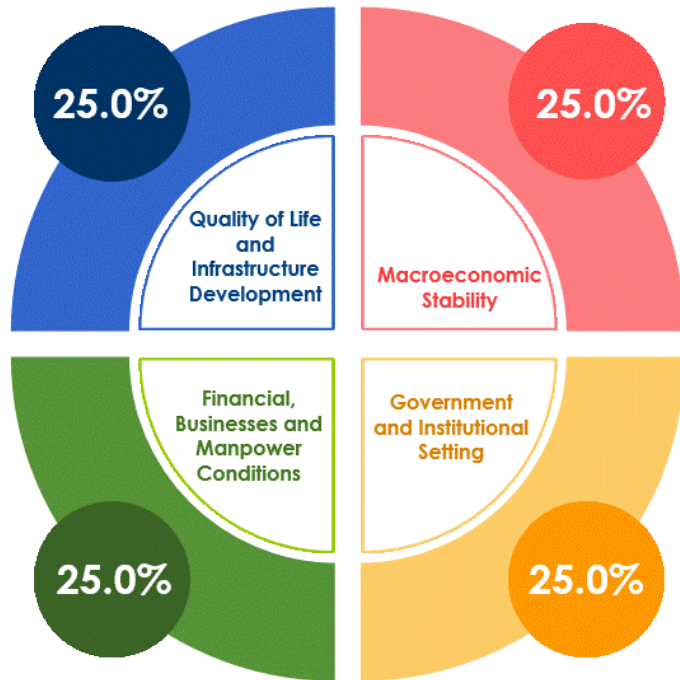
What-If Competitiveness Simulation Result, 2017

Overall Competitiveness

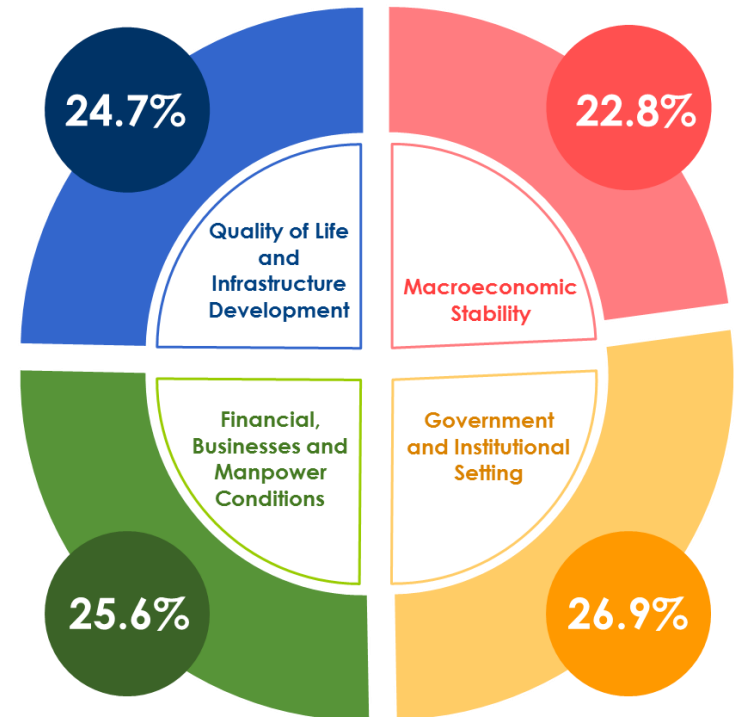
Economy	Rank		Score	
	Before	After	Before	After
Aceh	25	16	-0.526	-0.051
Bali	7	5	0.687	0.969
Bangka Belitung Islands	22	13	-0.403	0.117
Banten	6	4	0.741	1.115
Bengkulu	27	17	-0.595	-0.159
Central Java	4	3	1.035	1.409
Central Kalimantan	13	11	0.090	0.347
Central Sulawesi	12	8	0.270	0.569
DI Yogyakarta	9	6	0.423	0.769
DKI Jakarta	1	1	3.459	3.900
East Java	2	2	1.723	2.099
East Kalimantan (inc. North Kalimantan)	3	3	1.303	1.640
East Nusa Tenggara	30	26	-1.238	-0.586
Gorontalo	19	14	-0.298	0.077
Jambi	18	15	-0.296	-0.018
Lampung	14	9	0.061	0.457
Maluku	29	17	-0.712	-0.235

Economy	Rank		Score	
	Before	After	Before	After
North Maluku	31	25	-1.304	-0.492
North Sulawesi	17	13	-0.270	0.210
North Sumatra	20	13	-0.304	0.260
Papua	32	28	-1.706	-0.725
Riau	16	11	-0.093	0.368
Riau Islands	10	4	0.399	1.042
South Kalimantan	11	9	0.318	0.532
South Sulawesi	8	6	0.557	0.786
South Sumatra	24	16	-0.460	-0.082
Southeast Sulawesi	23	15	-0.412	0.027
West Java	5	3	0.946	1.440
West Kalimantan	21	15	-0.308	0.019
West Nusa Tenggara	26	17	-0.582	-0.193
West Papua	33	25	-1.891	-0.592
West Sulawesi	28	16	-0.597	-0.104
West Sumatra	15	12	-0.018	0.281

Robustness Check Result: Comparison of Weights for Each Competitiveness Environment, 2017



Equal Weight Methodology



Shapley Weight Methodology

Robustness Check of ACI Provincial Competitiveness Index: Comparing Results based on Equal Weight and Shapley Weight Methods

- Overall Competitiveness, 2017

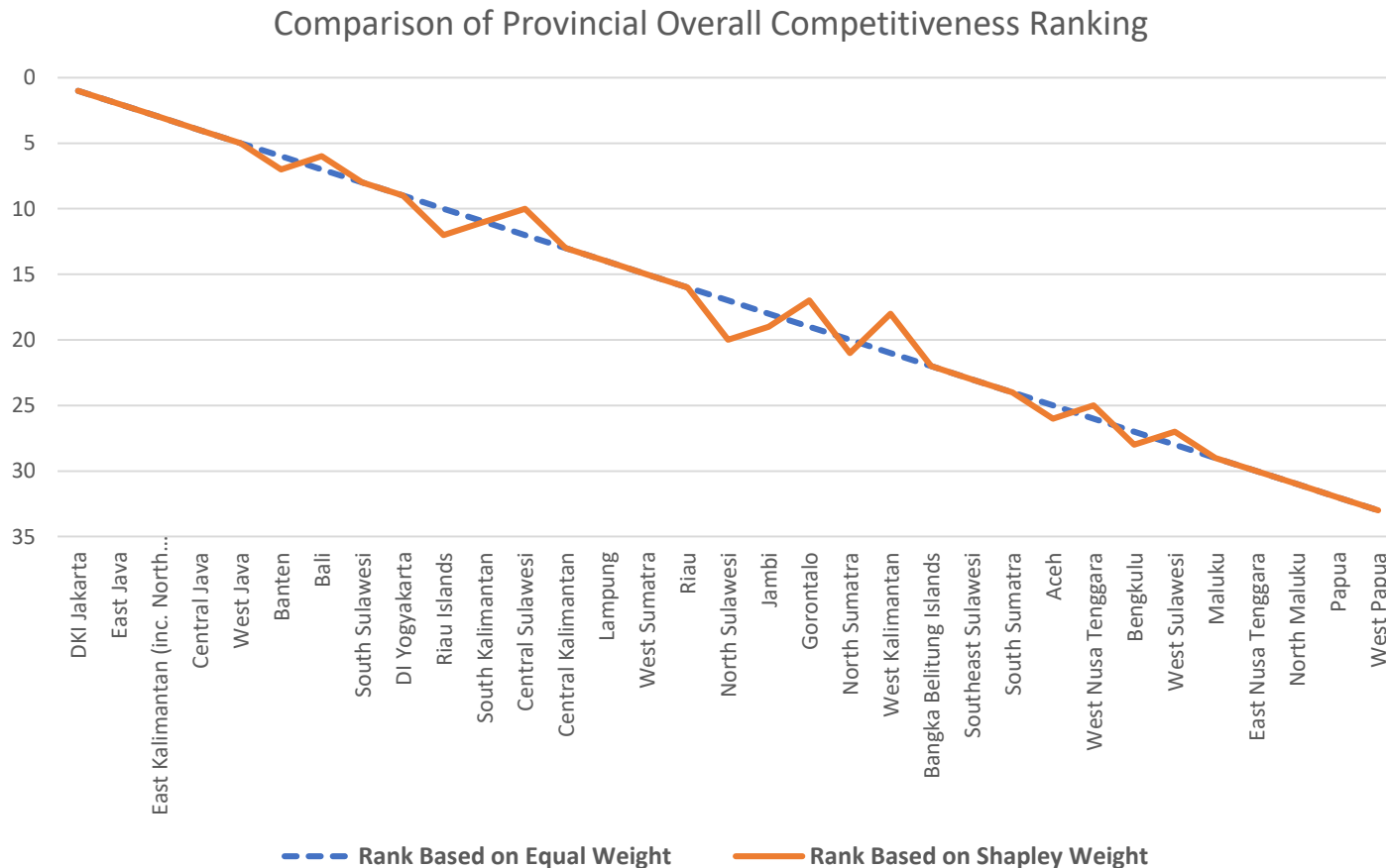
Province	Rank		Std. Score	
	Equal Weight	Shapley Weight	Equal Weight	Shapley Weight
DKI Jakarta	1	1	3.459	3.253
East Java	2	2	1.723	1.667
East Kalimantan (inc. North Kalimantan)	3	3	1.303	1.268
Central Java	4	4	1.035	1.123
West Java	5	5	0.946	0.893
Banten	6	7	0.741	0.704
Bali	7	6	0.687	0.788
South Sulawesi	8	8	0.557	0.664
DI Yogyakarta	9	9	0.423	0.521
Riau Islands	10	12	0.399	0.331
South Kalimantan	11	11	0.318	0.335
Central Sulawesi	12	10	0.270	0.407
Central Kalimantan	13	13	0.090	0.181
Lampung	14	14	0.061	0.145
West Sumatra	15	15	-0.018	-0.002
Riau	16	16	-0.093	-0.152
North Sulawesi	17	20	-0.270	-0.275

Province	Rank		Std. Score	
	Equal Weight	Shapley Weight	Equal Weight	Shapley Weight
Jambi	18	19	-0.296	-0.274
Gorontalo	19	17	-0.298	-0.217
North Sumatra	20	21	-0.304	-0.378
West Kalimantan	21	18	-0.308	-0.255
Bangka Belitung Islands	22	22	-0.403	-0.392
Southeast Sulawesi	23	23	-0.412	-0.397
South Sumatra	24	24	-0.460	-0.468
Aceh	25	26	-0.526	-0.562
West Nusa Tenggara	26	25	-0.582	-0.540
Bengkulu	27	28	-0.595	-0.587
West Sulawesi	28	27	-0.597	-0.563
Maluku	29	29	-0.712	-0.733
East Nusa Tenggara	30	30	-1.238	-1.255
North Maluku	31	31	-1.304	-1.387
Papua	32	32	-1.706	-1.753
West Papua	33	33	-1.891	-2.090

*Red and bold font show instances where a province's rank changes by two or more positions, between equal weight method and Shapley weight method

Robustness Check of ACI Provincial Competitiveness Index: Comparing Results based on Equal Weight and Shapley Weight Methods

- Overall Competitiveness, 2017

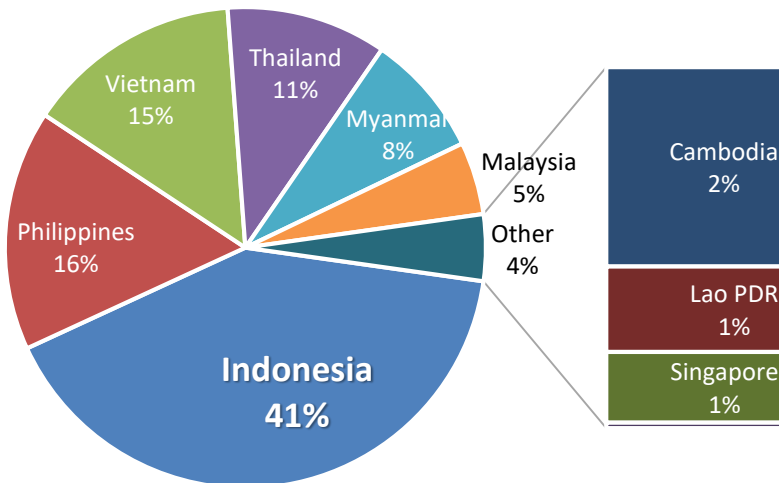


Backup Slides

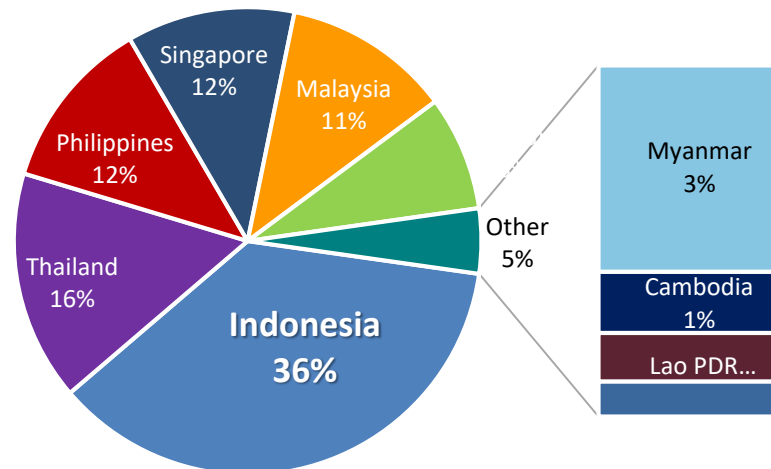
Indonesia among ASEAN-10 Countries

Indonesia holds almost half of Southeast Asia's population, and slightly more than one-third of its economy.

Population (2016) = 260 Million



**GDP (2016) = US\$ 932 billion
Current US\$**

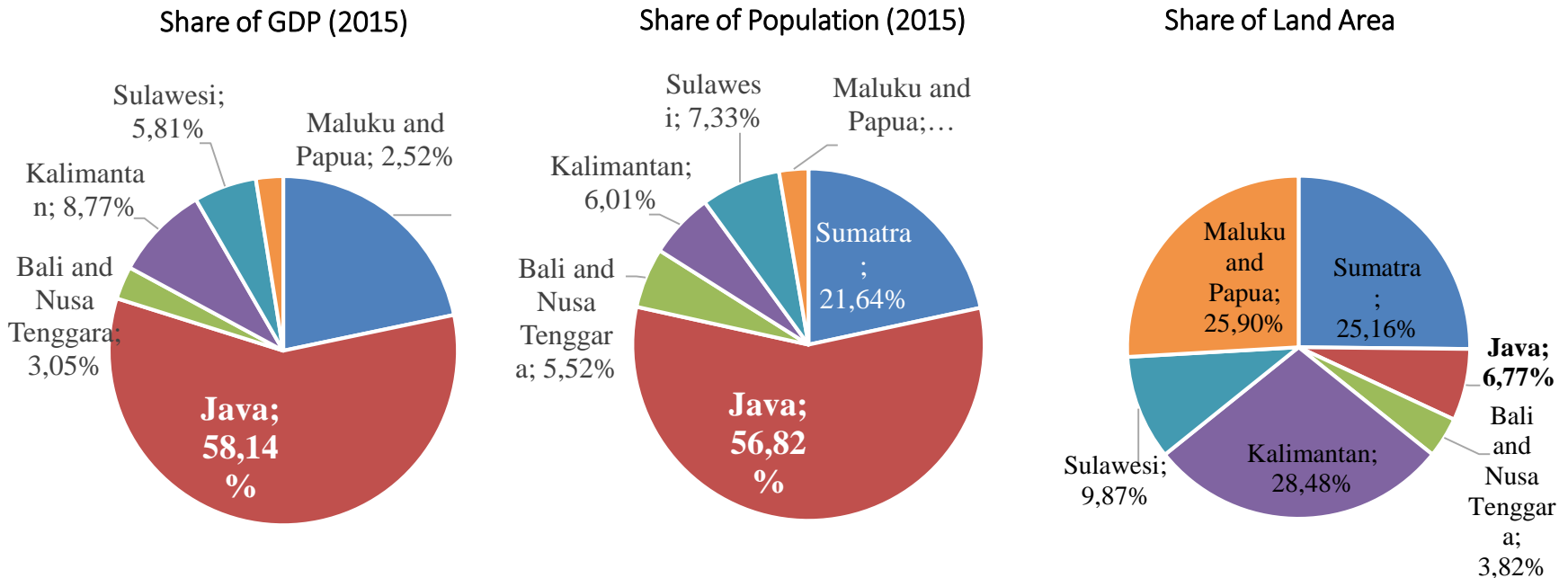


Source: ACI based on World Bank, World Development Indicators

**GDP per Capita (2016) = US\$ 3,600
Current US\$**

Spread of GDP, Population, and Land within Indonesia's Regions

Most of the people and economy are concentrated in Java

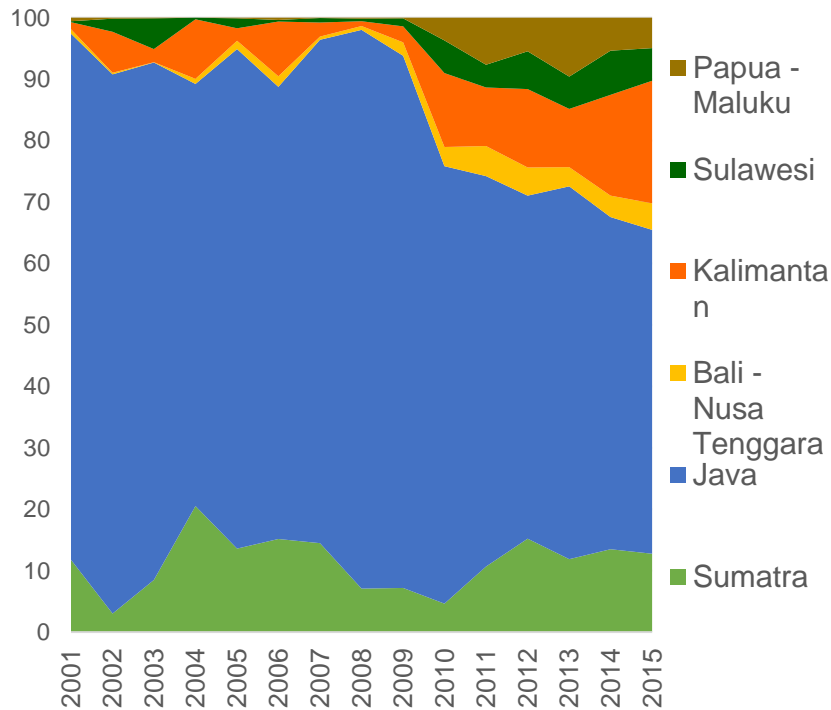


Source: Asia Competitiveness Institute (ACI), based on BPS data

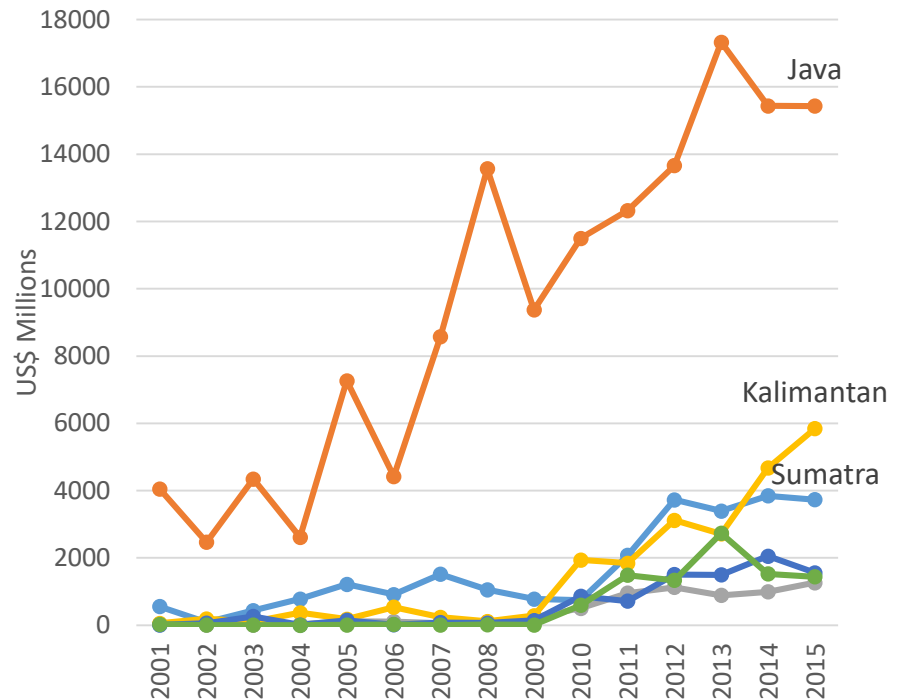
FDI Realization by Region, 2001 - 2015

Other regions in Indonesia (outside of Java) have been receiving more FDI inflow

Share of FDI Inflow by Region (% of Total FDI), 2001-2015



FDI Realisation by Region (US\$ Million), 2001 - 2015

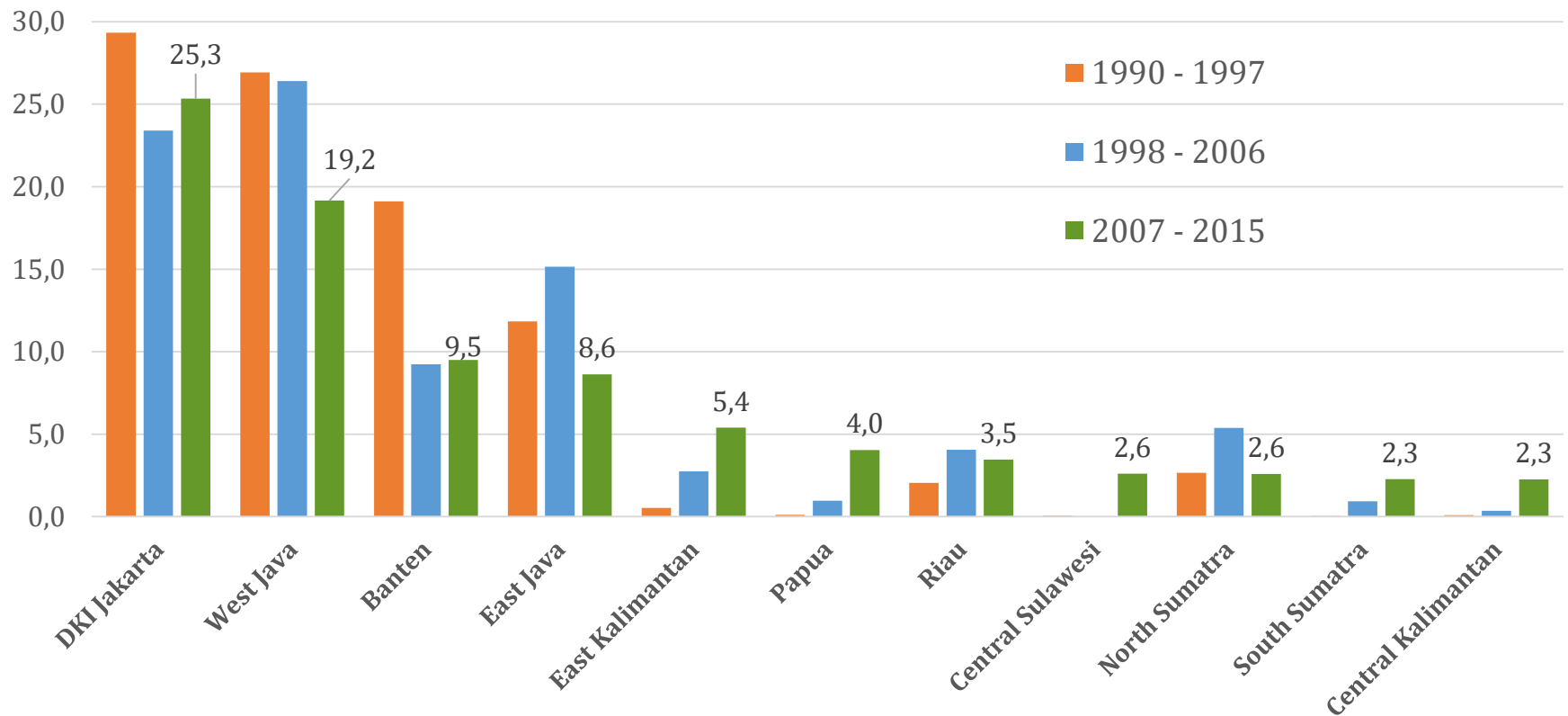


Source: Ministry of Finance, Indonesia

FDI Realization in Top 11 Provinces (%), 1990 - 2005

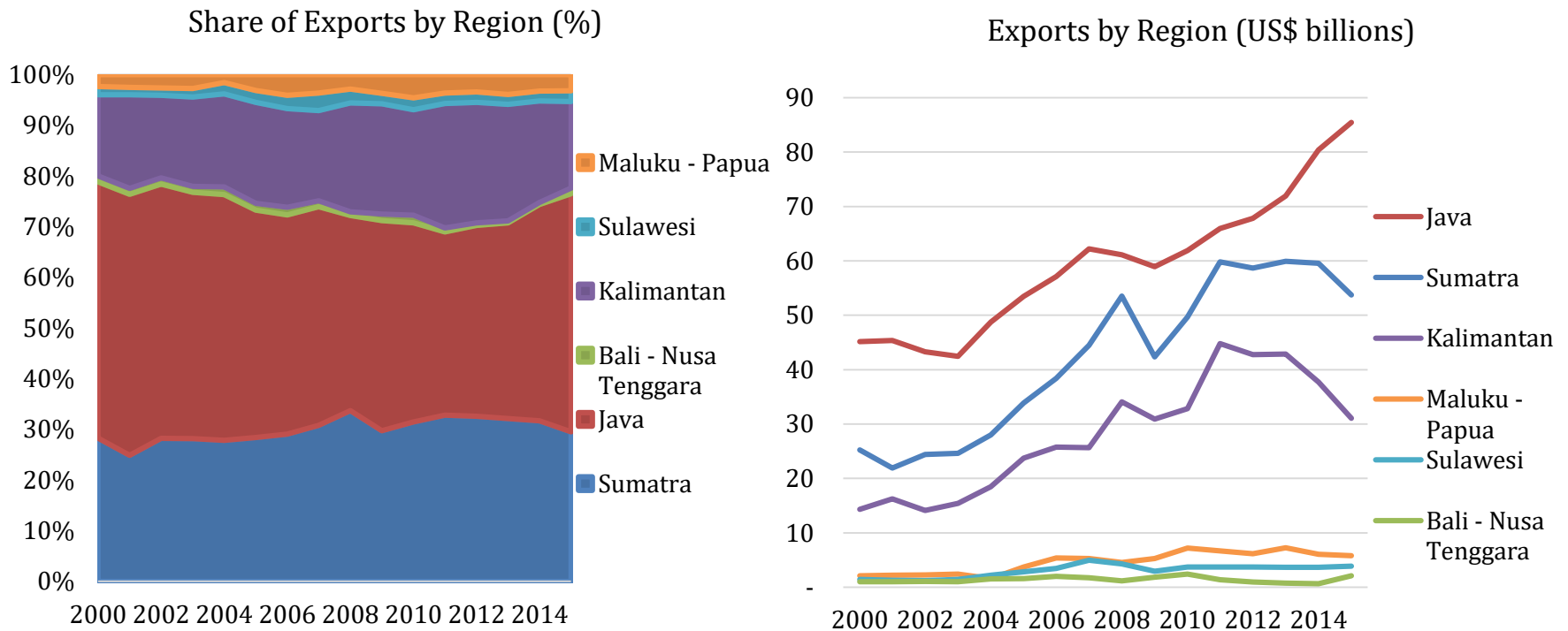
Foreign investment is still confined to a few provinces

The Top-11 investment-generating provinces account for 85% of total FDI in 2007-2015



Exports by Region, 2000 - 2015

Some regions outside of Java started exporting more ...
 ...but those exports were still primarily raw commodities

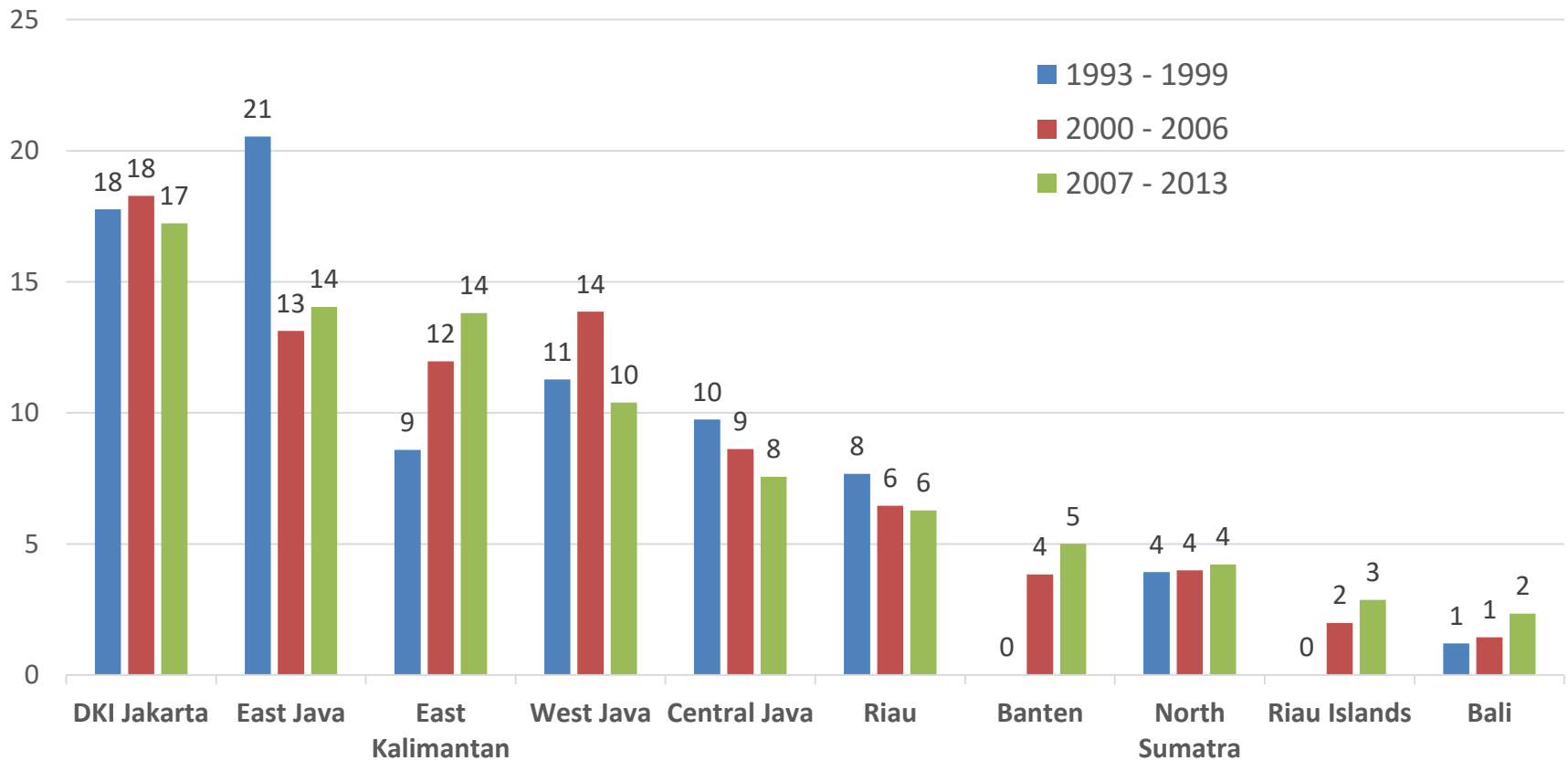


Value of exports are adjusted to 2010 constant prices, using exports deflator
 Source: ACI based on BPS Indonesia, taken from Directorate General of Customs and Excise, Ministry of Finance

Exports from Top 10 Provinces (%), 1993 - 2013

Exporting activity is still confined to a few provinces

The Top-10 exporting provinces account for 85% of total exports in 2007-2013



Source: ACI based on BPS Indonesia, taken from Directorate General of Customs and Excise, Ministry of Finance

Draft Hasil Penelitian 2018

Indonesia Provincial Competitiveness Ranking & Score, 2015 - 2018

Overall Competitiveness Preliminary Results

Rank				Province	Score	Rank				Province	Score
2015	2016	2017	2018		2018	2015	2016	2017	2018		2018
1	1	1	1	DKI Jakarta	3.149	17	22	24	18	South Sumatra	-0.024
2	2	2	2	East Java	2.452	21	16	23	19	Southeast Sulawesi	-0.165
4	4	5	3	West Java	1.548	15	24	20	20	North Sumatra	-0.301
5	3	4	4	Central Java	1.358	-	-	-	21	North Kalimantan*	-0.346
3	5	3	5	East Kalimantan	1.315	24	26	25	22	Aceh	-0.350
6	10	9	6	DI Yogyakarta	0.500	26	19	26	23	West Nusa Tenggara	-0.429
8	8	11	7	South Kalimantan	0.427	14	28	18	24	Jambi	-0.559
12	7	7	8	Bali	0.401	22	23	15	25	West Sumatra	-0.602
7	12	10	9	Riau Islands	0.279	30	20	22	26	Bangka Belitung Islands	-0.736
10	6	8	10	South Sulawesi	0.258	28	27	33	27	West Papua	-0.782
25	18	14	11	Lampung	0.140	19	17	21	28	West Kalimantan	-0.815
9	11	6	12	Banten	0.128	23	25	27	29	Bengkulu	-0.921
16	15	16	13	Riau	0.056	29	29	29	30	Maluku	-0.987
27	21	19	14	Gorontalo	0.033	32	32	30	31	East Nusa Tenggara	-1.105
20	14	12	15	Central Sulawesi	0.024	31	31	31	32	North Maluku	-1.151
13	13	13	16	Central Kalimantan	0.000	18	30	28	33	West Sulawesi	-1.262
11	9	17	17	North Sulawesi	-0.005	33	33	32	34	Papua	-1.526

Result for 2018 is preliminary and based on 2015 secondary data from official sources and 2017 primary data based on ACI's perception surveys in 34 provinces.

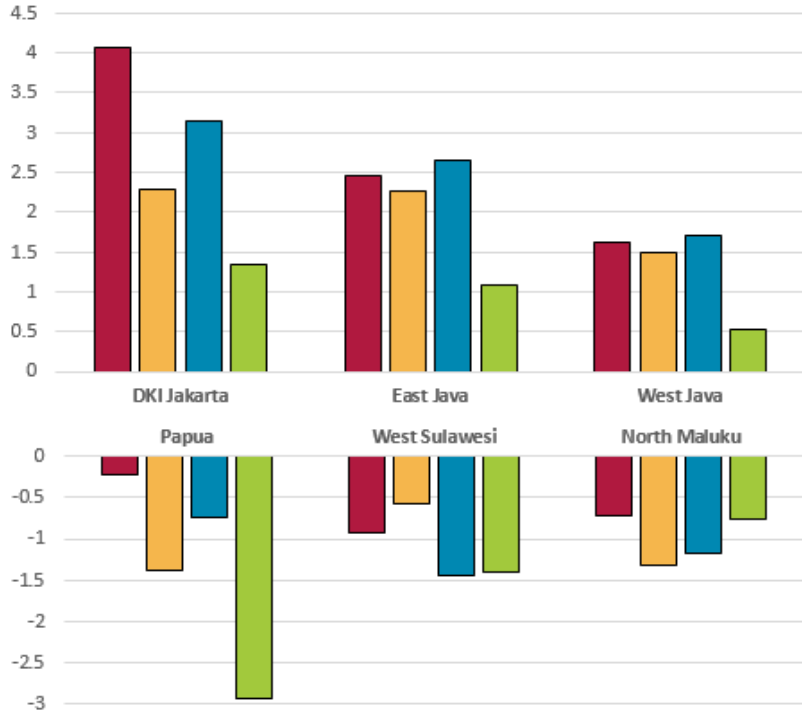
*North Kalimantan was assessed as part of East Kalimantan prior to 2018.

Source: Asia Competitiveness Institute

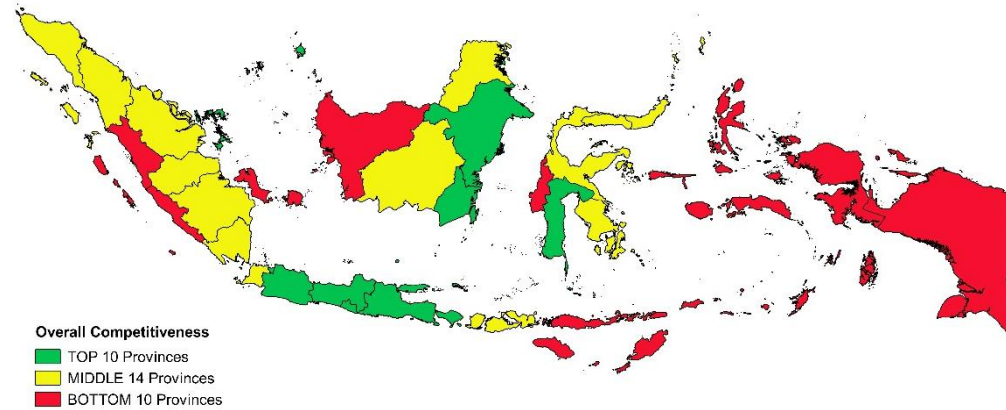
Overall Competitiveness

Top-3 and Bottom-3 Provinces

- Macroeconomic Stability
- Government and Institutional Setting
- Financial, Businesses and Manpower Conditions
- Quality of Life and Infrastructure Development



Geographical Spread



Result for 2018 is preliminary and based on 2015 secondary data from official sources and 2017 primary data based on ACI's perception surveys in 34 provinces.

*North Kalimantan was assessed as part of East Kalimantan prior to 2018.

Source: Asia Competitiveness Institute

Indonesia Provincial Competitiveness Ranking & Score, 2015 – 2018

Environment 1: Macroeconomic Stability

Preliminary Results

Rank				Province	Score 2018	Rank				Province	Score 2018
2015	2016	2017	2018			2015	2016	2017	2018		
1	1	1	1	DKI Jakarta	4.067	-	-	-	18	North Kalimantan*	-0.364
2	2	2	2	East Java	2.454	18	17	14	19	Bali	-0.366
3	3	3	3	West Java	1.622	14	16	19	20	Central Kalimantan	-0.368
7	5	5	4	Central Java	0.910	15	20	20	21	Southeast Sulawesi	-0.393
4	4	4	5	East Kalimantan	0.804	13	14	13	22	North Sulawesi	-0.397
9	10	11	6	Riau	0.531	20	19	24	23	DI Yogyakarta	-0.432
5	6	6	7	Riau Islands	0.420	19	23	27	24	West Papua	-0.442
10	12	9	8	North Sumatra	0.162	30	21	25	25	Gorontalo	-0.449
6	7	7	9	Banten	0.104	23	18	22	26	West Kalimantan	-0.515
12	13	10	10	South Sumatra	0.044	26	28	30	27	Aceh	-0.520
8	9	8	11	South Sulawesi	-0.056	24	30	26	28	West Sumatra	-0.527
11	8	12	12	South Kalimantan	-0.058	31	31	28	29	Bangka Belitung Islands	-0.695
16	11	18	13	Central Sulawesi	-0.124	29	29	33	30	North Maluku	-0.722
27	24	23	14	West Nusa Tenggara	-0.185	33	32	31	31	East Nusa Tenggara	-0.861
22	15	17	15	Papua	-0.217	28	27	29	32	Maluku	-0.873
25	22	16	16	Lampung	-0.252	17	26	15	33	West Sulawesi	-0.931
21	25	21	17	Jambi	-0.331	32	33	32	34	Bengkulu	-1.037

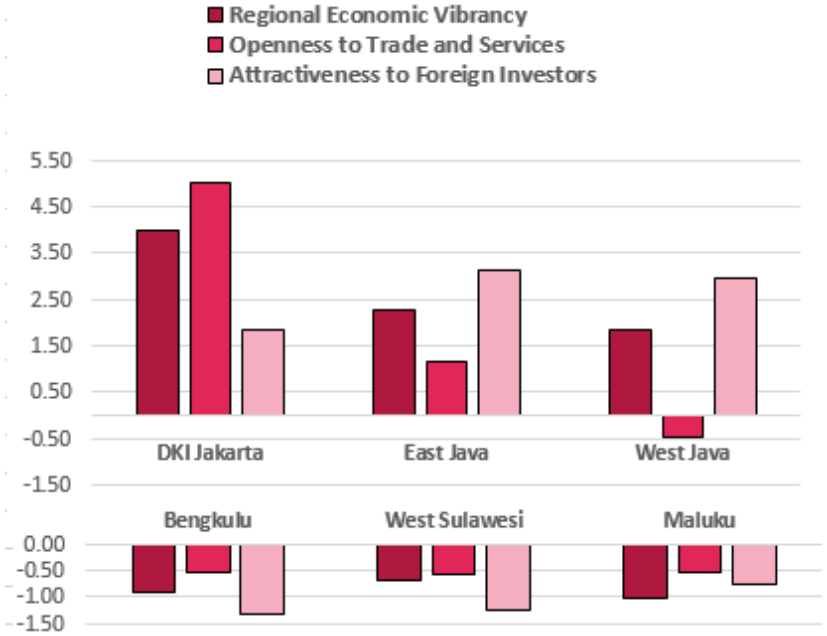
Result for 2018 is preliminary and based on 2015 secondary data from official sources and 2017 primary data based on ACI's perception surveys in 34 provinces.

*North Kalimantan was assessed as part of East Kalimantan prior to 2018.

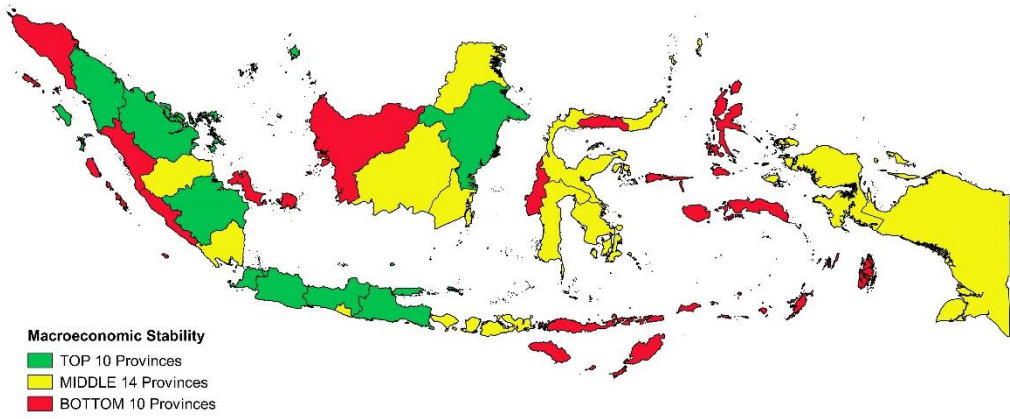
Source: Asia Competitiveness Institute

Macroeconomic Stability

Top-3 and Bottom-3 Provinces



Geographical Spread



Result for 2018 is preliminary and based on 2015 secondary data from official sources and 2017 primary data based on ACI's perception surveys in 34 provinces.
 *North Kalimantan was assessed as part of East Kalimantan prior to 2018.
 Source: Asia Competitiveness Institute

Indonesia Provincial Competitiveness Ranking & Score, 2015 – 2018

Environment 2: Government and Institutional Setting

Preliminary Results

Rank				Province	Score 2018	Rank				Province	Score 2018
2015	2016	2017	2018			2015	2016	2017	2018		
1	1	1	1	DKI Jakarta	2.279	30	22	22	18	Riau	-0.304
5	5	11	2	East Java	2.263	20	13	26	19	West Nusa Tenggara	-0.341
22	11	13	3	Gorontalo	1.600	16	15	6	20	Banten	-0.378
4	3	8	4	Central Java	1.592	11	24	20	21	Jambi	-0.503
12	6	7	5	West Java	1.490	-	-	-	22	North Kalimantan*	-0.525
10	17	19	6	Southeast Sulawesi	0.819	29	23	24	23	Aceh	-0.557
2	18	5	7	East Kalimantan	0.765	9	21	9	24	West Sulawesi	-0.583
28	19	10	8	Lampung	0.749	18	32	32	25	Riau Islands	-0.593
7	7	14	9	South Kalimantan	0.606	26	14	21	26	Maluku	-0.753
13	2	3	10	South Sulawesi	0.584	21	29	28	27	East Nusa Tenggara	-0.783
15	9	2	11	Central Sulawesi	0.547	32	20	23	28	Bangka Belitung Islands	-0.952
8	16	17	12	Central Kalimantan	0.325	27	33	30	29	North Sumatra	-1.040
3	10	15	13	DI Yogyakarta	0.315	24	26	18	30	West Sumatra	-1.069
19	8	4	14	Bali	0.103	31	30	33	31	West Papua	-1.306
17	27	27	15	South Sumatra	0.064	23	25	25	32	Bengkulu	-1.308
6	4	12	16	North Sulawesi	-0.147	33	31	31	33	North Maluku	-1.321
14	12	16	17	West Kalimantan	-0.268	25	28	29	34	Papua	-1.371

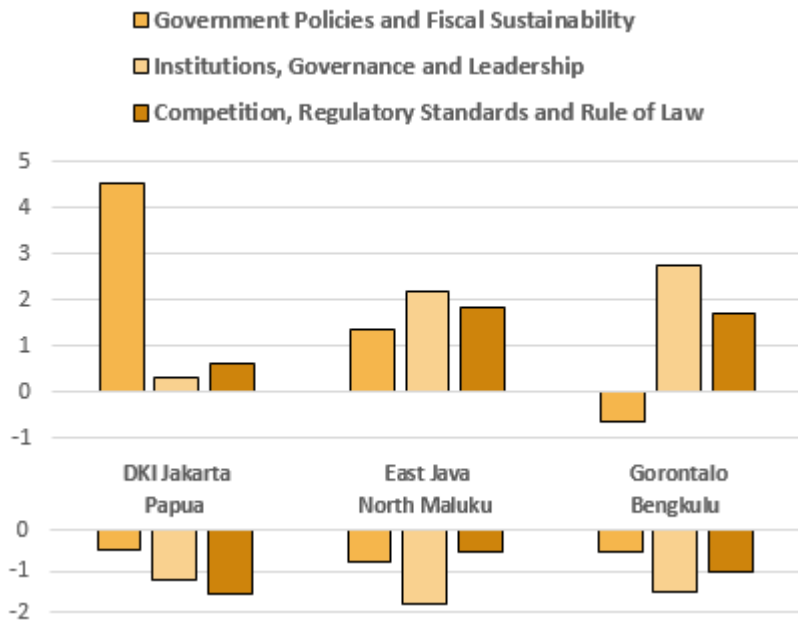
Result for 2018 is preliminary and based on 2015 secondary data from official sources and 2017 primary data based on ACI's perception surveys in 34 provinces.

*North Kalimantan was assessed as part of East Kalimantan prior to 2018.

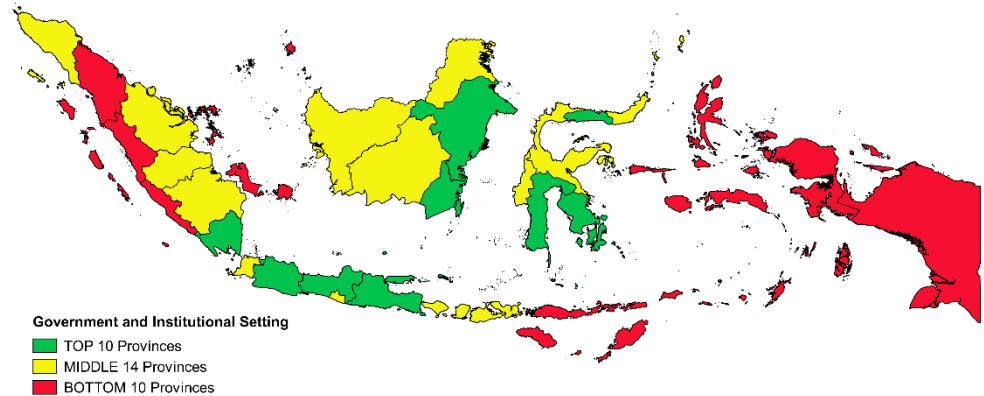
Source: Asia Competitiveness Institute

Government and Institutional Setting

Top-3 and Bottom-3 Provinces



Geographical Spread



Result for 2018 is preliminary and based on 2015 secondary data from official sources and 2017 primary data based on ACI's perception surveys in 34 provinces.

*North Kalimantan was assessed as part of East Kalimantan prior to 2018.

Source: Asia Competitiveness Institute

Indonesia Provincial Competitiveness Ranking & Score, 2015 – 2018

Environment 3: Financial, Businesses and Manpower Conditions

Preliminary Results

Rank				Province	Score 2018
2015	2016	2017	2018		
1	1	1	1	DKI Jakarta	3.154
2	2	2	2	East Java	2.649
5	4	5	3	West Java	1.698
3	3	3	4	Central Java	1.627
4	5	7	5	East Kalimantan	1.074
6	9	4	6	Riau Islands	0.508
8	7	6	7	Bali	0.444
9	14	10	8	DI Yogyakarta	0.356
21	16	11	9	Lampung	0.117
13	15	15	10	North Sumatra	0.107
10	23	22	11	Riau	0.030
7	6	33	12	West Papua	-0.011
25	17	20	13	South Sumatra	-0.016
14	8	13	14	South Sulawesi	-0.041
28	13	14	15	Bangka Belitung Islands	-0.047
22	25	17	16	Central Sulawesi	-0.142
-	-	-	17	North Kalimantan*	-0.165

Rank				Province	Score 2018
2015	2016	2017	2018		
11	12	8	18	Central Kalimantan	-0.180
12	11	9	19	West Kalimantan	-0.200
15	10	19	20	South Kalimantan	-0.236
18	20	30	21	North Sulawesi	-0.261
17	18	12	22	Banten	-0.355
19	22	21	23	Bengkulu	-0.537
24	21	16	24	West Sumatra	-0.630
32	24	25	25	West Nusa Tenggara	-0.655
20	27	18	26	Jambi	-0.690
31	31	23	27	East Nusa Tenggara	-0.702
26	30	26	28	Aceh	-0.723
29	28	32	29	Papua	-0.742
27	26	27	30	Gorontalo	-0.753
30	19	24	31	Southeast Sulawesi	-0.859
23	33	28	32	North Maluku	-1.163
33	32	29	33	Maluku	-1.217
16	29	31	34	West Sulawesi	-1.440

Result for 2018 is preliminary and based on 2015 secondary data from official sources and 2017 primary data based on ACI's perception surveys in 34 provinces.

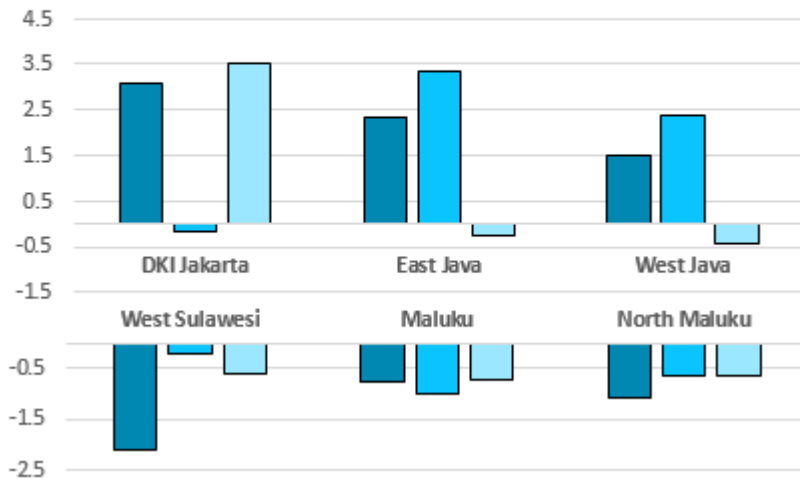
*North Kalimantan was assessed as part of East Kalimantan prior to 2018.

Source: Asia Competitiveness Institute

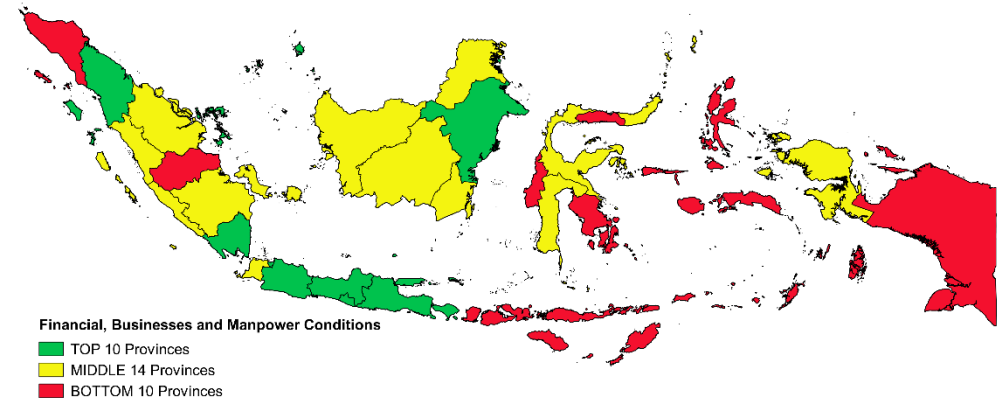
Financial, Businesses and Manpower Conditions

Top-3 and Bottom-3 Provinces

- Financial Deepening and Business Efficiency
- Labour Market Flexibility
- Productivity Performance



Geographical Spread



Result for 2018 is preliminary and based on 2015 secondary data from official sources and 2017 primary data based on ACI's perception surveys in 34 provinces.

*North Kalimantan was assessed as part of East Kalimantan prior to 2018.

Source: Asia Competitiveness Institute

Indonesia Provincial Competitiveness Ranking & Score, 2015 - 2018

Environment 4: Quality of Life and Infrastructure Development

Preliminary Results

Rank				Province	Score 2018	Rank				Province	Score 2018
2015	2016	2017	2018			2015	2016	2017	2018		
1	1	1	1	East Kalimantan	1.891	23	17	25	18	Southeast Sulawesi	-0.134
2	4	2	2	DI Yogyakarta	1.485	-	-	-	19	North Kalimantan*	-0.138
3	3	3	3	DKI Jakarta	1.353	20	24	26	20	South Sumatra	-0.173
7	5	6	4	Bali	1.199	21	18	17	21	Central Sulawesi	-0.199
8	6	5	5	South Kalimantan	1.160	10	20	16	22	North Sumatra	-0.266
5	2	8	6	East Java	1.083	26	26	21	23	Gorontalo	-0.286
6	10	4	7	Banten	1.070	19	21	19	24	Bengkulu	-0.291
13	11	15	8	North Sulawesi	0.788	22	19	20	25	West Nusa Tenggara	-0.298
4	8	7	9	Riau Islands	0.625	17	25	24	26	Jambi	-0.401
15	15	12	10	Aceh	0.595	27	29	27	27	Maluku	-0.558
14	9	11	11	Central Java	0.552	28	28	28	28	North Maluku	-0.761
9	12	14	12	West Java	0.525	25	22	23	29	Bangka Belitung Islands	-0.844
11	7	9	13	South Sulawesi	0.401	32	32	31	30	West Papua	-0.937
18	14	18	14	Central Kalimantan	0.223	30	30	30	31	West Sulawesi	-1.397
12	13	10	15	West Sumatra	0.150	31	31	32	32	East Nusa Tenggara	-1.463
16	16	13	16	Riau	-0.065	29	27	29	33	West Kalimantan	-1.828
24	23	22	17	Lampung	-0.132	33	33	33	34	Papua	-2.928

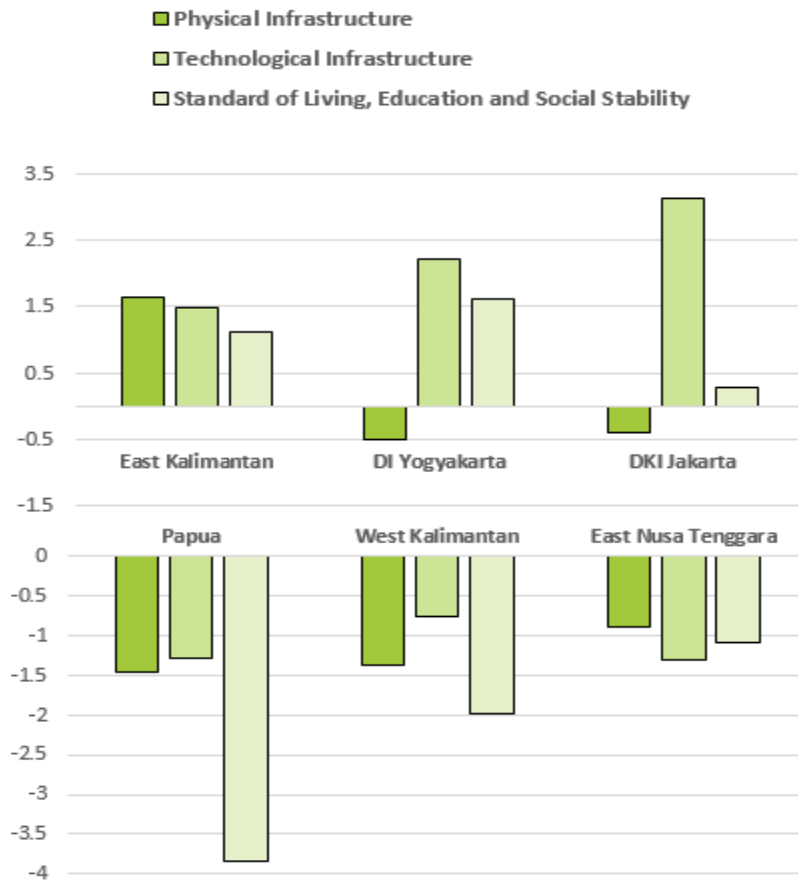
Result for 2018 is preliminary and based on 2015 secondary data from official sources and 2017 primary data based on ACI's perception surveys in 34 provinces.

*North Kalimantan was assessed as part of East Kalimantan prior to 2018.

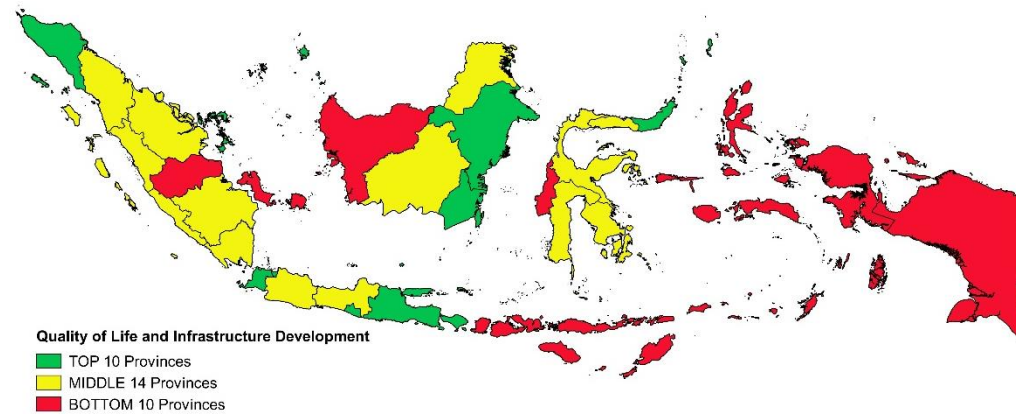
Source: Asia Competitiveness Institute

Quality of Life and Infrastructure Development

Top-3 and Bottom-3 Provinces



Geographical Spread



Result for 2018 is preliminary and based on 2015 secondary data from official sources and 2017 primary data based on ACI's perception surveys in 34 provinces.

*North Kalimantan was assessed as part of East Kalimantan prior to 2018.

Source: Asia Competitiveness Institute

What-If Competitiveness Simulation Result, 2018

Overall Competitiveness

Economy	Rank		Score	
	Before	After	Before	After
Aceh	22	11	-0.350	0.141
Bali	8	6	0.401	0.725
Bangka Belitung Islands	26	16	-0.736	-0.017
Banten	12	6	0.128	0.621
Bengkulu	29	20	-0.921	-0.323
Central Java	4	3	1.358	1.736
Central Kalimantan	16	9	0.000	0.293
Central Sulawesi	15	9	0.024	0.347
DI Yogyakarta	6	6	0.500	0.888
DKI Jakarta	1	1	3.149	3.649
East Java	2	2	2.452	2.685
East Kalimantan	5	3	1.315	1.640
East Nusa Tenggara	31	23	-1.105	-0.393
Gorontalo	14	7	0.033	0.465
Jambi	24	19	-0.559	-0.085
Lampung	11	6	0.140	0.521
Maluku	30	22	-0.987	-0.380

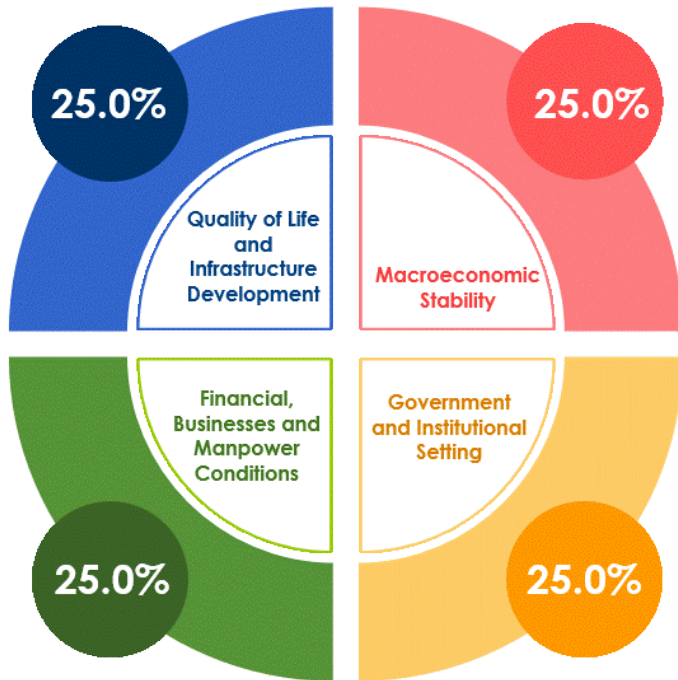
Economy	Rank		Score	
	Before	After	Before	After
North Kalimantan*	21	10	-0.346	0.244
North Maluku	32	24	-1.151	-0.460
North Sulawesi	17	8	-0.005	0.401
North Sumatra	20	9	-0.301	0.376
Papua	34	24	-1.526	-0.564
Riau	13	6	0.056	0.526
Riau Islands	9	6	0.279	0.733
South Kalimantan	7	6	0.427	0.692
South Sulawesi	10	6	0.258	0.522
South Sumatra	18	9	-0.024	0.301
Southeast Sulawesi	19	10	-0.165	0.247
West Java	3	3	1.548	1.985
West Kalimantan	28	20	-0.815	-0.266
West Nusa Tenggara	23	13	-0.429	0.081
West Papua	27	19	-0.782	-0.089
West Sulawesi	33	24	-1.262	-0.485

Result for 2018 is preliminary and based on 2015 secondary data from official sources and 2017 primary data based on ACI's perception surveys in 34 provinces.

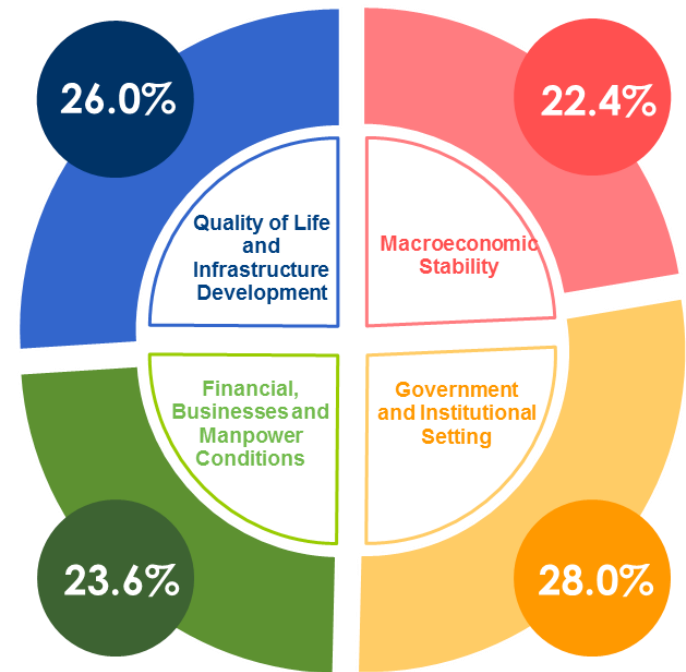
*North Kalimantan was assessed as part of East Kalimantan prior to 2018.

Source: Asia Competitiveness Institute

Robustness Check Result: Comparison of Weights for Each Competitiveness Environment, 2018



Equal Weight Methodology



Shapley Weight Methodology

Robustness Check of ACI Provincial Competitiveness Index: Comparing Results based on Equal Weight and Shapley Weight Methods

- Overall Competitiveness, 2018

Province	Rank		Std. Score		Province	Rank		Std. Score	
	Equal Weight	Shapley Weight	Equal Weight	Shapley Weight		Equal Weight	Shapley Weight	Equal Weight	Shapley Weight
DKI Jakarta	1	1	3.149	2.913	South Sumatra	18	18	-0.024	-0.029
East Java	2	2	2.452	2.460	Southeast Sulawesi	19	19	-0.165	-0.070
West Java	3	3	1.548	1.529	North Sumatra	20	23	-0.301	-0.421
Central Java	4	4	1.358	1.423	North Kalimantan	21	21	-0.346	-0.347
East Kalimantan	5	5	1.315	1.328	Aceh	22	20	-0.350	-0.334
DI Yogyakarta	6	6	0.500	0.605	West Nusa Tenggara	23	22	-0.429	-0.405
South Kalimantan	7	7	0.427	0.507	Jambi	24	24	-0.559	-0.577
Bali	8	8	0.401	0.437	West Sumatra	25	25	-0.602	-0.649
Riau Islands	9	10	0.279	0.287	Bangka Belitung Islands	26	26	-0.736	-0.759
South Sulawesi	10	9	0.258	0.316	West Papua	27	28	-0.782	-0.814
Lampung	11	11	0.140	0.212	West Kalimantan	28	27	-0.815	-0.813
Banten	12	16	0.128	0.027	Bengkulu	29	29	-0.921	-0.961
Riau	13	15	0.056	0.052	Maluku	30	30	-0.987	-1.031
Gorontalo	14	12	0.033	0.171	East Nusa Tenggara	31	31	-1.105	-1.157
Central Sulawesi	15	13	0.024	0.092	North Maluku	32	32	-1.151	-1.190
Central Kalimantan	16	14	0.000	0.083	West Sulawesi	33	33	-1.262	-1.303
North Sulawesi	17	17	-0.005	0.027	Papua	34	34	-1.526	-1.606

*Red and bold font show instances where a province's rank changes by two or more positions, between equal weight method and Shapley weight method

Robustness Check of ACI Provincial Competitiveness Index: Comparing Results based on Equal Weight and Shapley Weight Methods

- Overall Competitiveness, 2018

