



# Analysis of HDI and Good Governance Indices

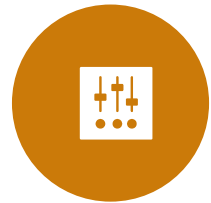
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# Content

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Analysis of relationship between decomposed HDI and GDP Per Capita



Relationship between Good governance indices and HDI



Human Development Index vs Good Governance Indices  
- which is better at classification

# Analysis of relationship between decomposed HDI and GDP Per Capita



HDI is computed as:

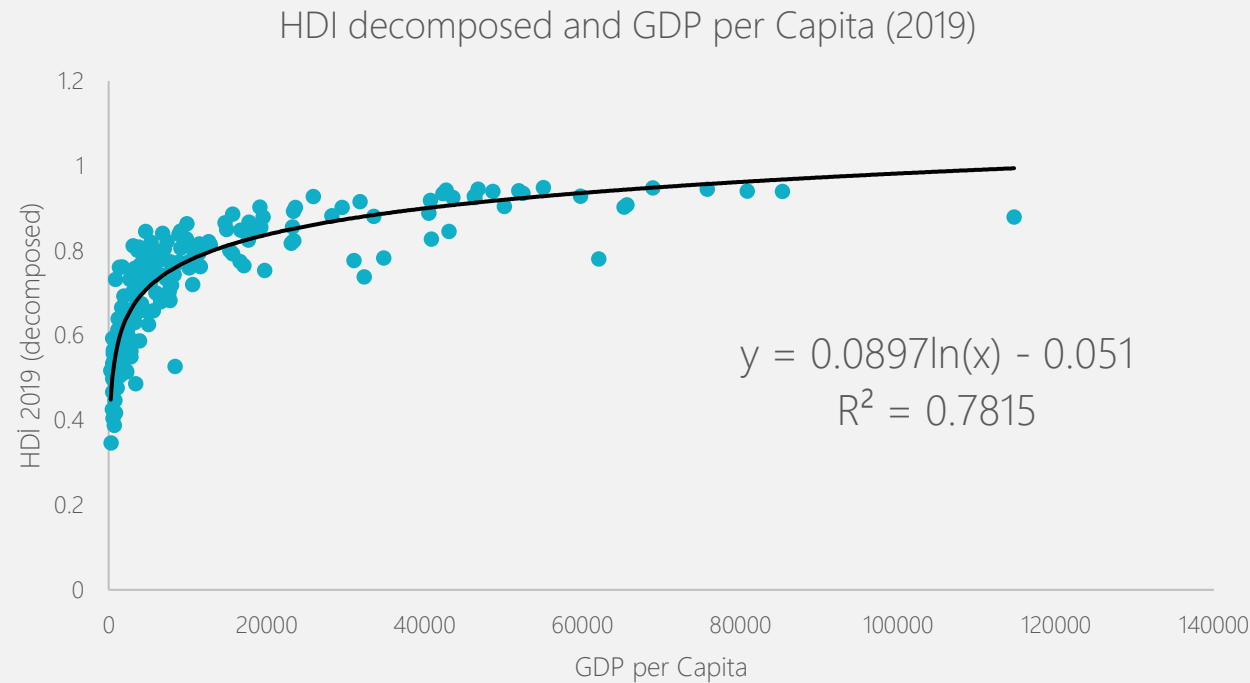
$$\sqrt[3]{\text{health index} * \text{education index} * \text{income index}}$$



To see relationship between HDI and GDP Per Capita, we use decomposed HDI:

$$\sqrt{\text{health index} * \text{education index}}$$

# Analysis of relationship between decomposed HDI and GDP Per Capita

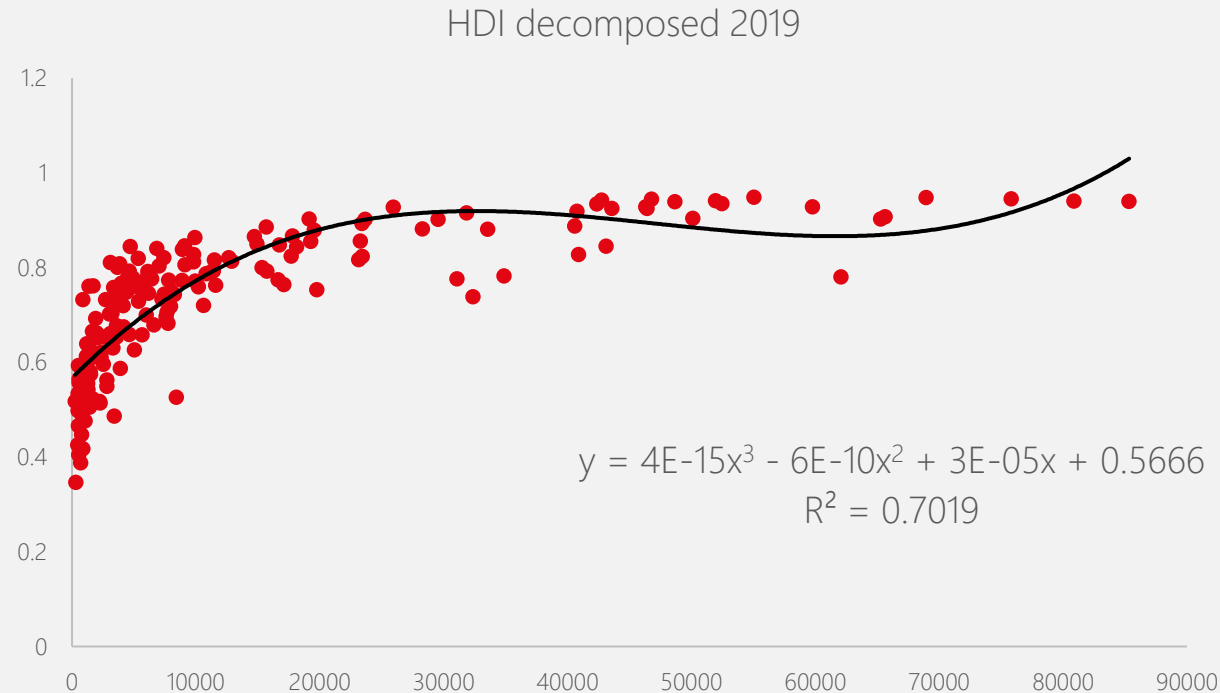


A percentage increase in GDP Per Capita increases HDI by **0.000897** units

Linear relationship is statistically significant

Correlation coefficient: (HDI decomposed and in (GDP per cap))- **0.884 (Strong Positive)**

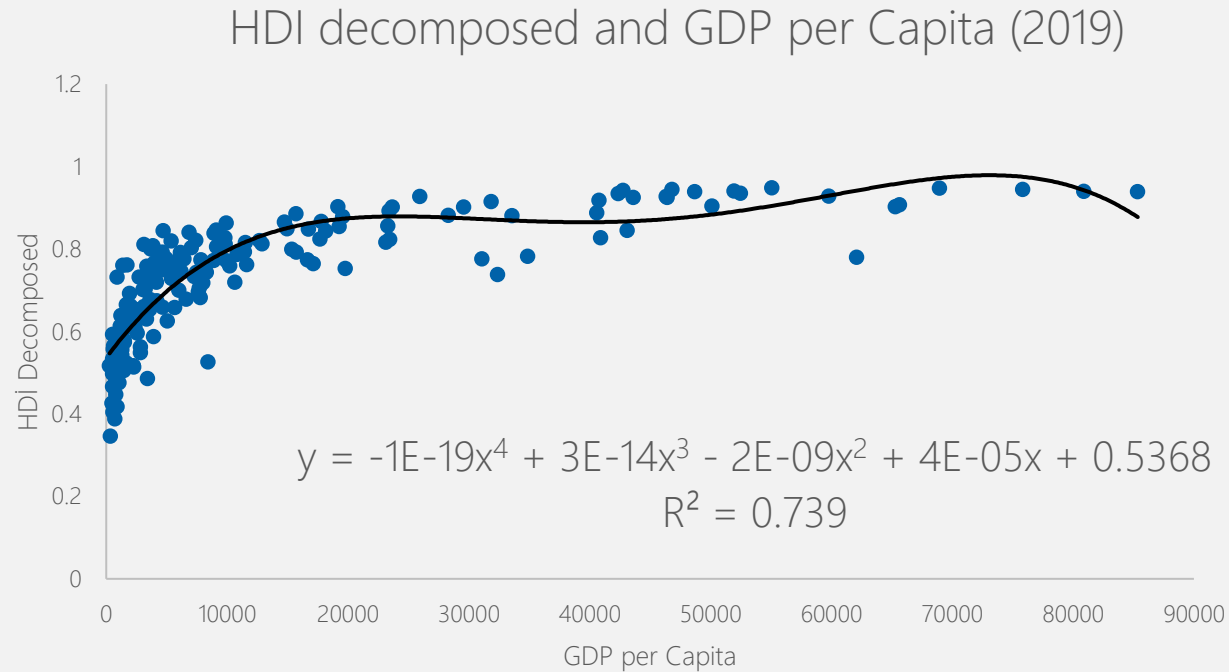
# Analysis of relationship between decomposed HDI and GDP Per Capita



Via polynomial regression at degree 3, we can find that point of diminishing marginal utility is  $x = 50.000$  dollars per capita GDP

\*removed Luxembourg as outlier

# Analysis of relationship between decomposed HDI and GDP Per Capita



With polynomial degree of 4, point(s) will yield:

$X = 27128$  (practically and mathematically)

and

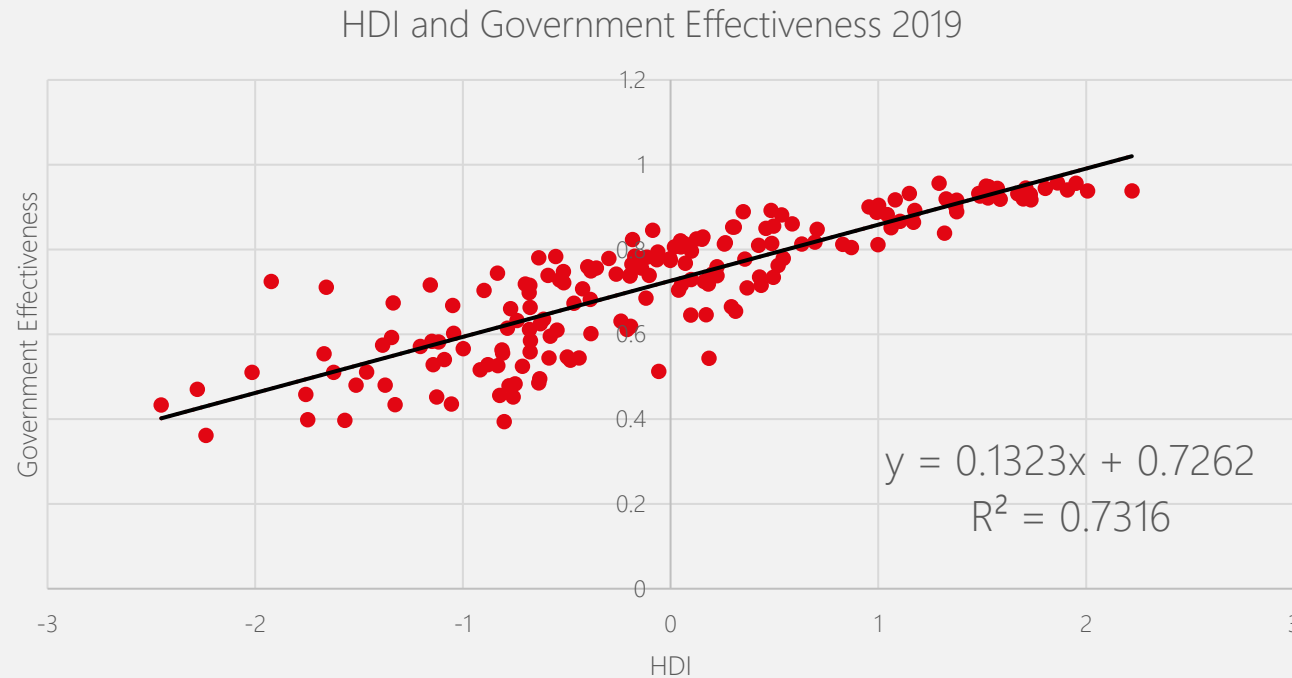
$X = 122871$  dollars (mathematically)

# Relationship between Good governance indices and HDI

Correlation between variables (2019)

	<i>Control of corruption</i>	<i>Gov effectiveness</i>	<i>Political stability</i>	<i>Regulatory quality</i>	<i>Rule of law</i>	<i>Voice and accountability</i>
<i>Control of corruption</i>						
<i>Gov effectiveness</i>	0.92					
<i>Political stability</i>	0.77	0.74				
<i>Regulatory quality</i>	0.87	0.94	0.68			
<i>Rule of law</i>	0.95	0.94	0.78	0.92		
<i>Voice and accountability</i>	0.77	0.71	0.68	0.75	0.78	
<i>HDI</i>	0.73	0.86	0.62	0.80	0.77	0.58

# Relationship between Good governance indices and HDI



A unit increase in government effectiveness increases HDI by **0.1323** points

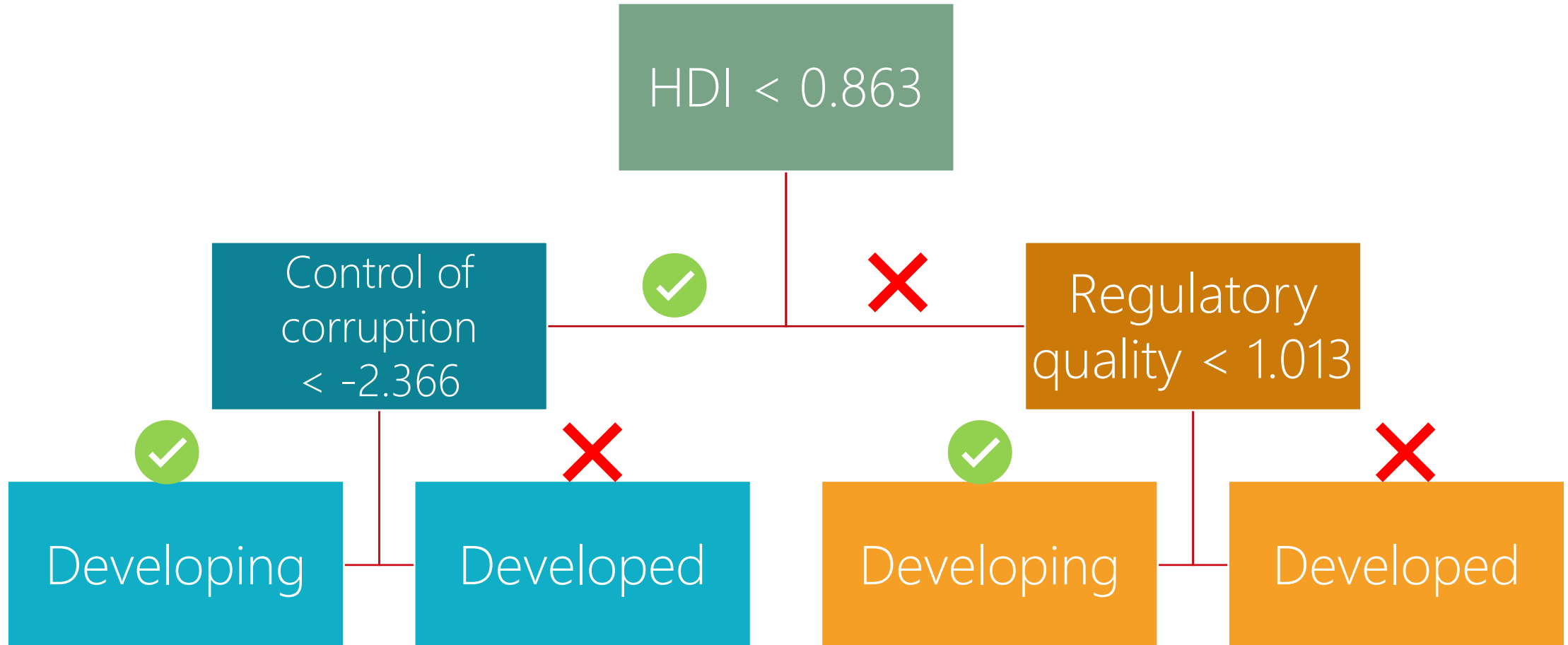
Statistically significant relationship

\* given heteroskedasticity problem



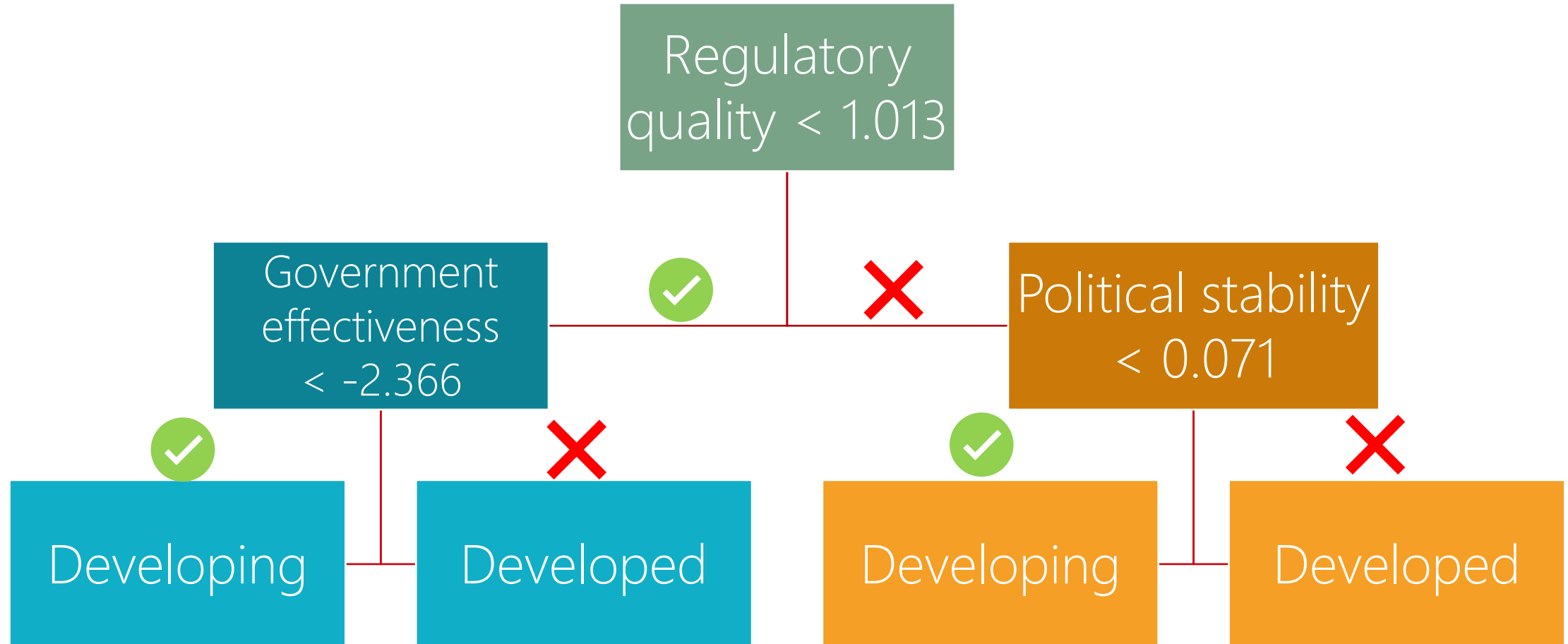
# HDI vs Good Governance Indices which one is better at classification

Decision Tree Classifier result if all variables included



# HDI vs Good Governance Indices which one is better at classification

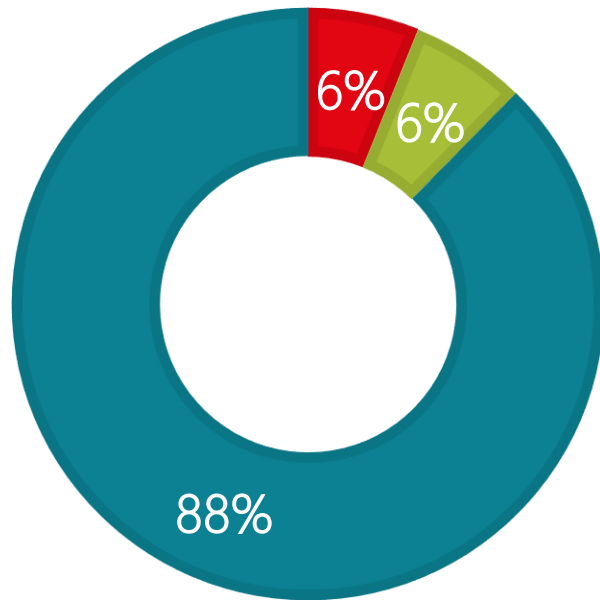
Decision Tree Classifier result among good governance indices



# HDI vs Good Governance Indices which one is better at classification

If all variables included

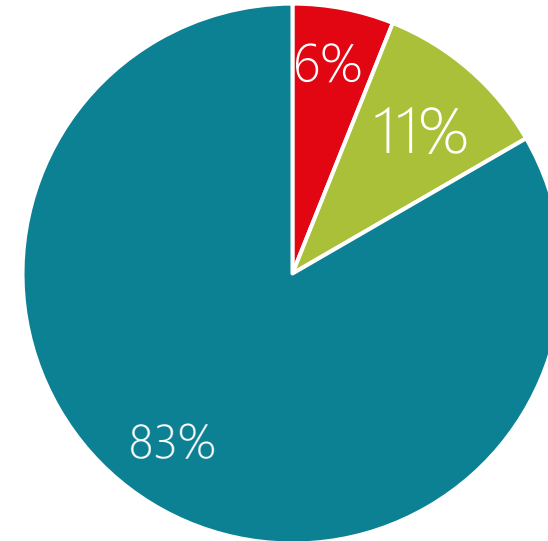
Variable importance for classifying countries



■ Gov effectiveness ■ Regulatory quality ■ HDI

Among good governance indices

Variable importance for classifying countries



■ Gov effectiveness ■ Political Stability  
■ Regulatory quality

# Resources

- [hdr.undp.com](http://hdr.undp.com)
- <https://info.worldbank.org/governance/wgi/>
- <https://corporatefinanceinstitute.com/resources/knowledge/economics/point-of-diminishing-returns/>



**Thank You**