

# BAAM model specification sheet

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## 1 Brief description

BA(A)M model is an attempt to create macroeconomic model, which will interpret the most important macroeconomic and demographic variables that greatly influence economy and life of its internal agents. Their value often greatly differs among countries. Its main approach connected to the issue of inequality is to set various examples of ideal and inferior ratios of such data, compare them with various real-world occurrences and suggest suitable polic.

### 1.1 Form

A spider (radar) chart with normalized axes such that the end point of each axis is perceived to be most feasible by our group. In order to approach world equality, all countries should reach high levels on all axes of this model through an adequate policy-making and/or international politics. Help of humanitarian organisations also applies here. It is however important that at the point of reaching optimal or tolerable levels of all variables, given economy begins to find ways of improving state of other allied countries that may have not yet reached these levels. There is potential possibility of creation an aggregate index based on the relative area formula from mathematics.

### 1.2 Execution

Dynamic database-based computer application allowing point of view customization and over-time observation of data evolution. All results as well as the whole dataset are available at <http://baam.schuzky.eu/>

### 1.3 Tools

- MySQL 5.6.28-76.1
- PHP 5.6
- DIBI database abstraction layer
- Chart.js

### 1.4 Pros and cons

#### 1.4.1 Pros

- Adequate description of quality of life in an economy attempting not to omit important information in a way GDP, HDI and many other indices do.
- Availability of the analyzed data
- Potentially useful in the future.

#### 1.4.2 Deficiencies

- People (the finance and government professionals mainly) are used to single values denoted in US dollars that can be displayed using simple line charts. This means it may be harder to interpret.
- It will also be difficult to use for continuous over-time evolution observation.
- There were slightly similar attempts. <https://www.globalinnovationindex.org/content/page/interactiv radar-chart/>

## 2 Methodology

### 2.1 Data Sources

- World Bank data on Improved water source
- World Bank data on Prevalence of undernourishment
- World Bank data on Access to electricity
- World Bank data on Inflation
- World Bank data on Unemployment

Additional data sources have been used to complete the datasets. Most recent values have been used. Rounding to closest integer has taken place for the purposes of this application. It is recommended to double-check the computations.

### 2.2 Indices

BAAM model uses data from reliable sources, of which the most prevalent is the World Bank online database. All values this model uses are normalized to a scale from 0 to 100, where 100 represents ideal state, while 0 is meant to highlight critical situations, which require immediate attention.

### 2.3 Indicators and adjustments

#### 2.3.1 Water

For representation of availability of water, BAAM model uses World Bank statistics on Improved Water Source. This variable represents percentage of population with access to clean drinkable water and remains unmodified for the purposes of this model. In case of this index, basically all values lower than 100 suggest that immediate action is necessary in a given country.

#### 2.3.2 Food

For the diagnostics of availability of sufficient amount of food in a country, multiple indicators were considered, including the global hunger index and creating its alternative. The main issue, though, was the fact that many of these mostly focus on children

rather than on entire population. There was also an issue of inconsistency of the datasets provided and some cases suggested high level of bias. For this reason, a statistic on Prevalence of undernourishment has been chosen to be represented.

$$BAAM_{food} = 100 - Undernourishment$$

This adjustment had to be made as undernourishment has an adverse effect on the quality of life. Almost as much as water availability, this variable suggests that making a step towards achieving values close to 100 is necessary in order to achieve equality in terms of physiological needs.

### 2.3.3 Electricity

Because housing statistics are mostly inconsistent and the objectives of available publications differ based on the level of development in given economy, Electricity access has been chosen to represent the safety layer of Maslow's hierarchy of needs. One of the assumptions here is that full access to electricity implies access to housing.

This variable is represented unmodified in the model. Very low values of this indicator should attract relevant action, if the previous two variables have reached satisfying levels.

### 2.3.4 Inflation

Inflation is an important indicator when establishing stability level of an economy. Western countries usually target the inflation level of 2%, while 40% has been chosen as a threshold level for extremely high values. Why?!! Because of this, the normalizing equation looks as presented below. Occurrences of negative results have been eliminated by considering 0 a value representing inflation of 40% or higher.

$$BAAM_{inflation} = 100 - \frac{100 \times |\% \Delta CPI - 2|}{38}$$

Reason for keeping an eye on one's inflation TBA.

### 2.3.5 Unemployment

Similarly to the inflation, unemployment rate was used mostly because of its macroeconomic impact. However, relating to the concept of Maslow's hierarchy of needs, employment suggests satisfaction of a safety need, in the modern society. Just like in case of inflation, an adjustment has been made assuming 0% the optimum (for mathematical reasons) and 25% a threshold value.

$$BAAM_{unemployment} = 100 - \frac{100 \times unemploymentrate}{25}$$

## 2.4 Authors

This project has been created by students of the University of Plymouth, module ECN1000PP coursework group 8. Namely M. Adamek, O. Boon, B. Morgan, A. Vizor. Project is hosted on a server willingly provided by Schuzky.eu