Measuring Well-being

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This version: Fall 2018

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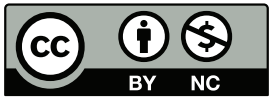


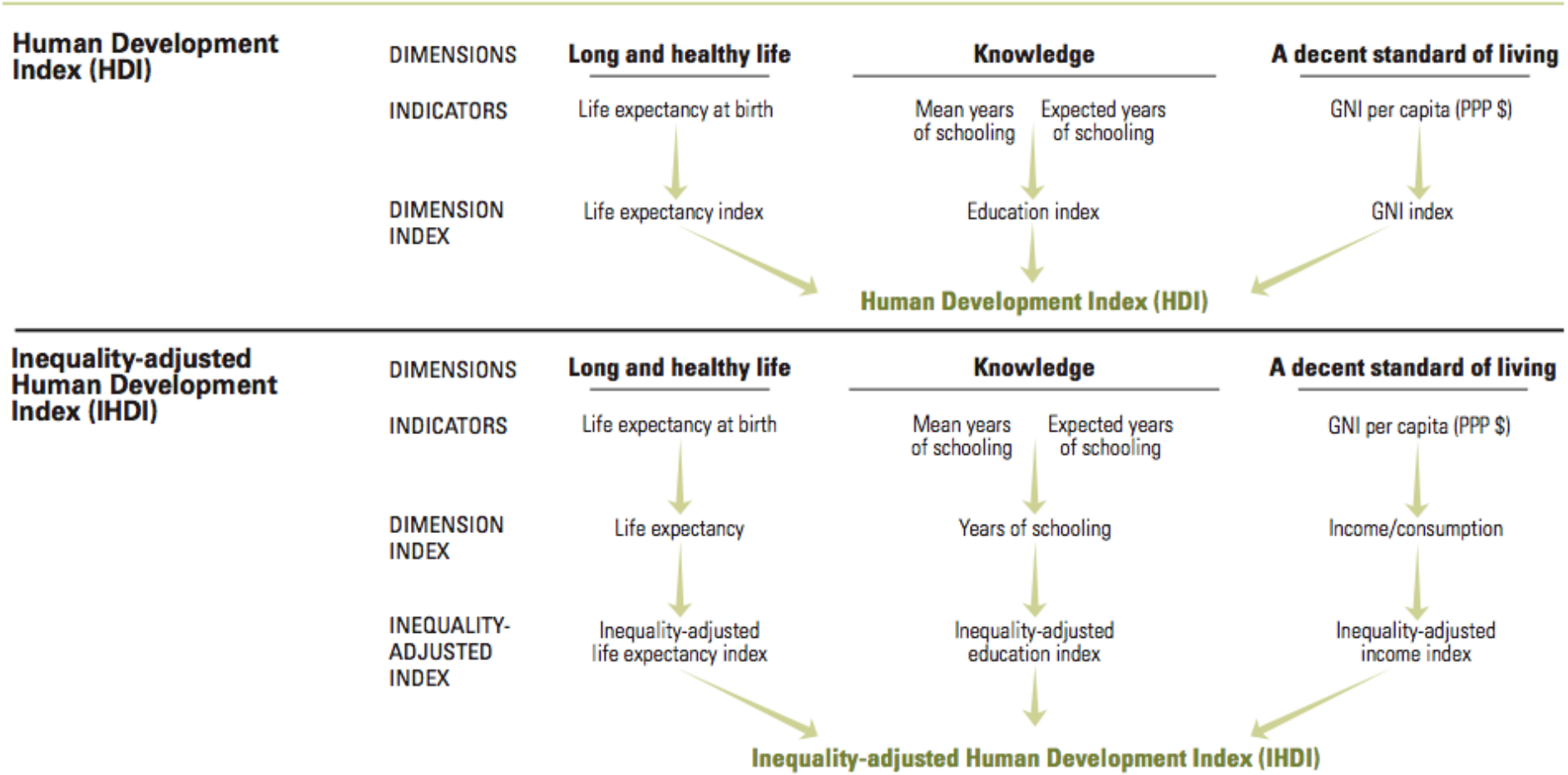
U.S. vs. France

- GDP per capita: French GDP/capita is 67% of U.S.'s (2005)
- Consumption per person: France is 60% of U.S.'s (2005)
- Life expectancy: France – 80; U.S. – 77
- Leisure: France – 535 annual working hours per person; U.S. – 877 hours
- Inequality: France – 0.294; U.S. – 0.394 (2014 Gini coefficient)

Measuring Well-being

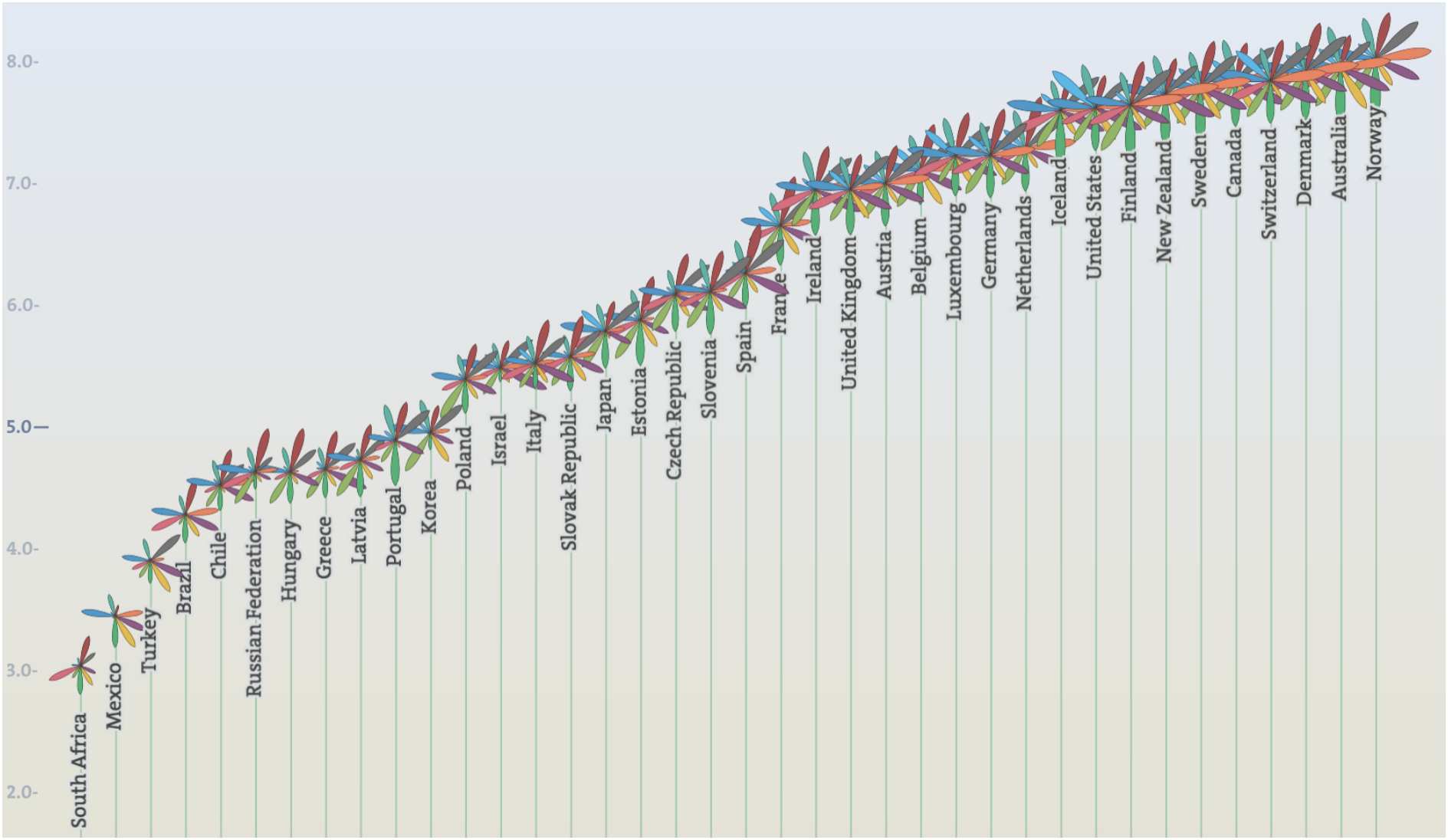
"[GDP] ... does not allow for the health of our children, the quality of their education, or the joy of their play. It does not include the beauty of our poetry or the strength of our marriages, the intelligence of our public debate or the integrity of our public officials. It measures neither our courage, nor our wisdom, nor our devotion to our country. It measures everything, in short, except that which makes life worthwhile, and it can tell us everything about America except why we are proud that we are Americans." – Robert Kennedy, 1968

Human Development Index (HDI)



Human Development Index

Better Life Index



OECD Better Life Index

Better Life Index

Well-being domain	Concept	Indicator	Year[1]	Unit of measurement
Income and wealth	Household income	Household net adjusted disposable income	2013	USD at 2010 PPPs, per capita
	Financial wealth	Net household financial wealth	2013	USD at current PPPs, per capita
Jobs and earnings	Employment	Employment rate	2014	Employed aged 15-64, as a percentage of the population aged 15-64
	Earnings	Average annual gross earnings per full-time employee	2013	USD at 2013 PPPs
	Job security	Probability of becoming unemployed	2014	The annual inflow into unemployment (percentage points)
	Long-term unemployment	Long-term unemployment rate	2014	Percentage of the labour force unemployed for one year or more
Work-life balance	Working hours	Employees working very long hours	2013	Percentage of employees routinely working 50 hours or more per week
	Time off	Time devoted to leisure and personal care	Various	Hours per day, persons in full-time employment only
Housing	Rooms per person	Rooms per person	2013	Average number of rooms per person (excluding bathroom, toilet, kitchenette, scullery/utility rooms and garages)
	Housing affordability	Housing expenditure	2012	Percentage of household gross adjusted disposable income spent on housing and house maintenance
	Basic sanitation	Dwellings without basic sanitary facilities	2013	Percentage of people without an indoor flushing toilet for the sole use of their household

Indicators

Better Life Index

Environmental quality	Water quality	Satisfaction with water quality	2014	Percentage of satisfied people in the overall population
	Air quality ($PM_{2.5}$)	Annual exposure to fine particulate matter ($PM_{2.5}$) air pollution	2010-2012 average	Population-weighted exposure to $PM_{2.5}$ concentrations, micrograms per cubic metre
Health status	Life expectancy	Life expectancy at birth	2013	Number of years a newborn can expect to live
	Perceived health	Perceived health status	2013	Percentage of adults reporting that their health is "good" or better than good
Education and skills	Educational attainment	Educational attainment of the adult population	2013	Percentage of people aged 25-64 with at least an upper secondary education
	Cognitive skills	Cognitive skills of 15 year old students	2012	The OECD Programme on International Students Assessment (PISA) mean score for reading, mathematics and science
	Adult skills	Competencies of the adult population aged 16-65	2012	The OECD Programme for the International Assessment of Adult Competencies (PIAAC) mean proficiency scores on literacy and numeracy
Social connections	Social support	Perceived social network support	2014	Percentage of people who have friends or relatives that they can count on in times of trouble
Civic engagement and governance	Voter turnout	Voter turnout	2014	Percentage of votes cast among the population registered to vote
Personal security	Deaths due to assault	Deaths due to assault	2012	Age-standardised rate, per 100 000 population
	Self-reported victimisation	Self-reported assault	2010	Percentage of people declaring that they have been assaulted in the previous 12 months
Subjective well-being	Life evaluation	Life satisfaction	2014	Mean values reported using the "Cantril ladder" 0-10 scale, ranging from best possible to worst possible life.

Indicators

Better Life Index

	US States		Country average	OECD average
	Top 20%	Bottom 20%		
Community				
Perceived social support network (%), average 2006-14	95.7	88.5	92.1	88.9
Jobs				
Employment rate (%), 2014	74.9	64.5	69.6	66.3
Unemployment rate (%), 2014	4.5	7.4	6.2	8.6
Health				
Life Expectancy at birth (years), 2013	80.3	76.5	78.6	79.7
Age-adjusted mortality rate (per 1 000 people), 2013	7.3	9.8	8.5	8.4
Civic engagement				
Voters in last national election (%), 2015	70.9	54.7	68.0	68.1
Access to services				
Households with broadband access (%), 2014	83.0	72.2	78.1	69.8
Environment				
Level of air pollution in PM 2.5 ($\mu g/m^3$), 2013	4.5	9.8	7.5	10.4
Life satisfaction				
Self-evaluation of life satisfaction (scale from 0 to 10), average 2006-14	7.6	6.9	7.2	6.7
Housing				
Rooms per person, 2013	2.7	2.0	2.4	1.8
Education				
Labour force with at least upper secondary education (%), 2014	92.3	85.2	89.4	74.3
Safety				
Homicide Rate (per 100 000 people), 2013	2.0	6.7	4.5	3.4
Income				
Disposable income per capita (in USD PPP), 2013	43 888	31 642	37 263	17 916

Constructing a Welfare Index

- A welfare index may include leisure, health, equality, etc. *in addition to* income.
- Problem: how to weight and combine items of very different nature.
  - Can we turn everything into equivalent monetary values?
  - "How much" do we value leisure, health, etc.?

Jones and Klenow (2016)

- Imagine a soul named Rawls who is waiting to be born. Rawls has the opportunity to choose which country he would like to be born into.
- If Rawls chooses to be born into country A, he will then have an income and consumption level that is randomly selected from the income and consumption distributions of country A. His annual working hours will be randomly selected from the distribution of working hours in country A. His life expectancy and probability of death at each age will equal the average of country A.
  - i.e., when Rawls is choosing a country, he does *not* know whether he will be rich or poor, hardworking or living a life of leisure, or how long he will be able to live. But he knows the distribution. This is the concept of the original position behind a veil of ignorance proposed by John Rawls.

Jones and Klenow (2016)

- Rawls then needs to solve the following problem – choose the country j that maximizes his expected lifetime utility[1]:

$$U^j = E^j \left[\sum_{a=1}^{100} u\left(C_a, \ell_a\right) p^j\left(a\right) \right] \tag{1}$$

, where E^j denotes expectation based on country j's consumption (C) and leisure (ℓ) distributions, a denotes age, $u\left(C_a, \ell_a\right)$ is the utility of enjoying C_a consumption and ℓ_a leisure at age a, $p^j\left(a\right)$ is the probability of living to age a in country j. C_a is drawn from the distribution of $\mathcal{F}^j\left(C\right)$ and ℓ_a is drawn from the distribution of $\mathcal{F}^j\left(\ell\right)$.

  - Note: (1) includes consideration of inequality too: how C and ℓ are distributed affect U^j.
  - Once $\mathcal{F}^j\left(C\right), \mathcal{F}^j\left(\ell\right)$ and $p^j\left(a\right)$ are known, Rawls will be able to calculate the expected utility for each country and choose the best one.

[1] For simplicity, we assume Rawls do not discount future utility.

Jones and Klenow (2016)

- We can use (1) to compare countries. Define:

$$U^j(\lambda) = E\left[\sum_{a=1}^{100} u(\lambda C_a, \ell_a)\, p^j(a)\right]$$

If we compare all countries to the U.S., then we find out the λ^j for each country j such that

$$U^j(1) = U^{U.S.}\left(\lambda^j\right)$$

, i.e. λ^j measures how much the U.S. consumption level needs to change in order for the expected utility of living in the U.S. to be equal to the expected utility of living in country j.

Jones and Klenow (2016)

- How do we find out the utility of leisure (ℓ)?
- Solution: look at labor supply elasticity.
  1. The more people value leisure, the more likely they are going to stay home instead of working.
  2. The less people value leisure, the more they are going to respond to rising wages by increasing the number of hours they work.

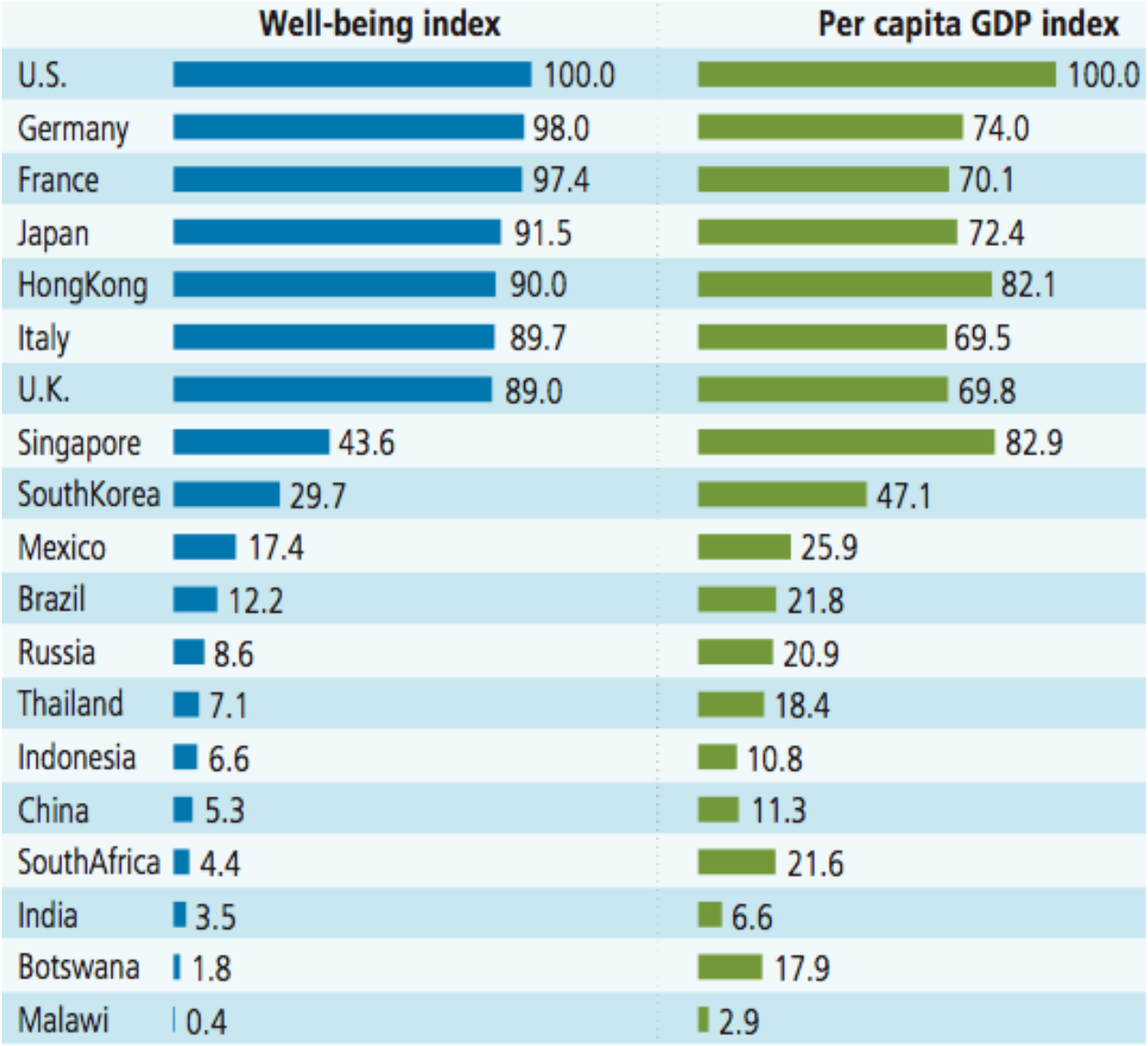
     Thus, by looking at labor supply elasticity, we can deduce the value of leisure, which will allow us to calculate $u(C_a, \ell_a)$.

Jones and Klenow (2016)

λ is a welfare index

- The higher the λ, the higher the welfare of a country.
- E.g., $\lambda^{India} = 0.035$ means that for a random person living in the U.S. who enjoys U.S. distribution of consumption, leisure, and life expectancy, in order for her to be willing to live in India instead – and enjoy Indian distribution of consumption, leisure, and life expectancy, her consumption in the U.S. must be reduced by 96.5%.

Jones and Klenow (2016)



The well-being index shows λ^j for each country. $\lambda^{U.S.} = 1$ by construction.

Reference


Jones, C. I. and P. J. Klenow. 2016. "Beyond GDP? Welfare across Countries and Time," *American Economic Review*, 106(9).