



Income and Wealth Distribution

MIR@W The Dynamics of Money

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February 4, 2019

Most have some, a few have a lot..

Jeff Bezos, founder of Amazon.com: \$125 billion

56	 Kazakhstan	184,209
57	 Hungary	156,393
58	 Kuwait	144,523
59	 Ukraine	126,390
60	 Morocco	118,178
61	 Angola	114,504
62	 Ecuador	107,266
63	 Slovakia	106,940
64	 Puerto Rico	104,557
65	 Venezuela	96,328
66	 Sri Lanka	92,504
67	 Kenya	89,591
68	 Ethiopia	83,836

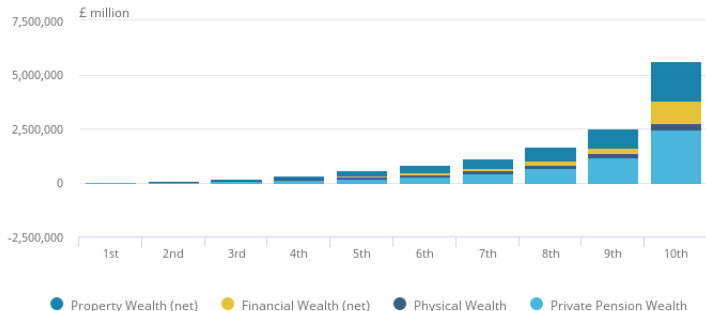
NGDP/year (US \$million)

Source: business insider, IMF

Types of Wealth

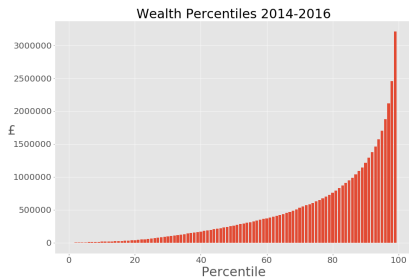
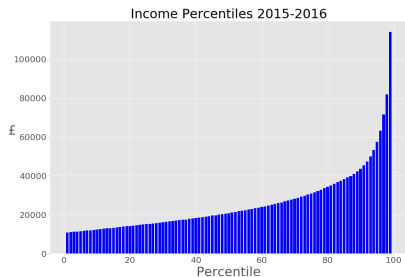
Figure 5: Breakdown of aggregate total wealth, by deciles and components¹¹

Great Britain, July 2014 to June 2016



Source: Wealth and Assets Survey, Office for National Statistics

Income and Wealth in UK



	Income (£)	Wealth (£)
Bottom 1%	10800	-5129
Top 1%	114000	3208546
Median	20800	259430
Mean	25679	458556

Source: Office for National Statistics

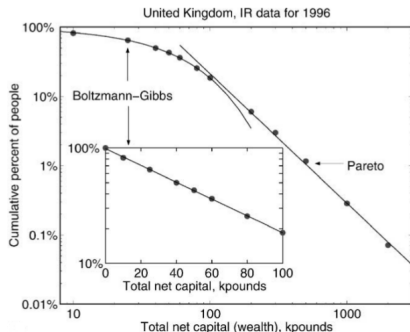
Tail Empirical Distribution

Sample $\mathbf{x} = \{x_1, x_2, \dots, x_n\}$, $t \in [\min(\mathbf{x}), \max(\mathbf{x})]$

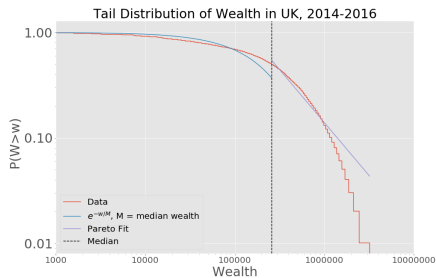
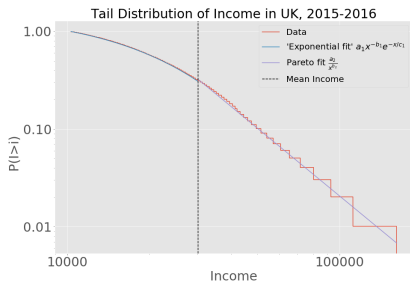
$$\hat{\mathbb{P}}(X \leq t) = \frac{\text{number of elements in sample } \leq t}{n} = \frac{1}{n} \sum_{i=1}^n \mathbf{1}_{x_i \leq t}$$

Tail empirical distribution:

$$\hat{\mathbb{P}}(X > t) = 1 - \hat{\mathbb{P}}(X \leq t)$$



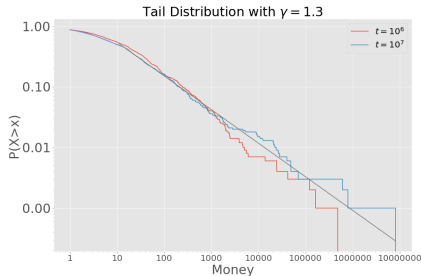
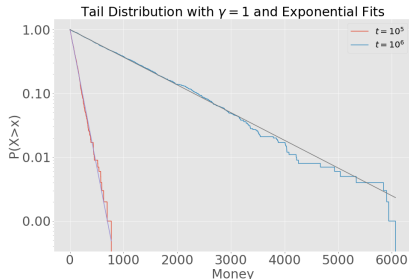
Tail Distributions UK Data



Simulations

n agents with initial income/wealth $\{x_{0,1}, x_{0,2}, \dots, x_{0,n}\}$ of 1 unit each. At every time step:

$$\mathbb{P}(x_{t,i} \text{ given 1 unit}) = \frac{x_{t,i}^\gamma}{\sum_{j=1}^n x_{t,j}^\gamma}$$



[Based on model from Vallejos et. al. 2017]