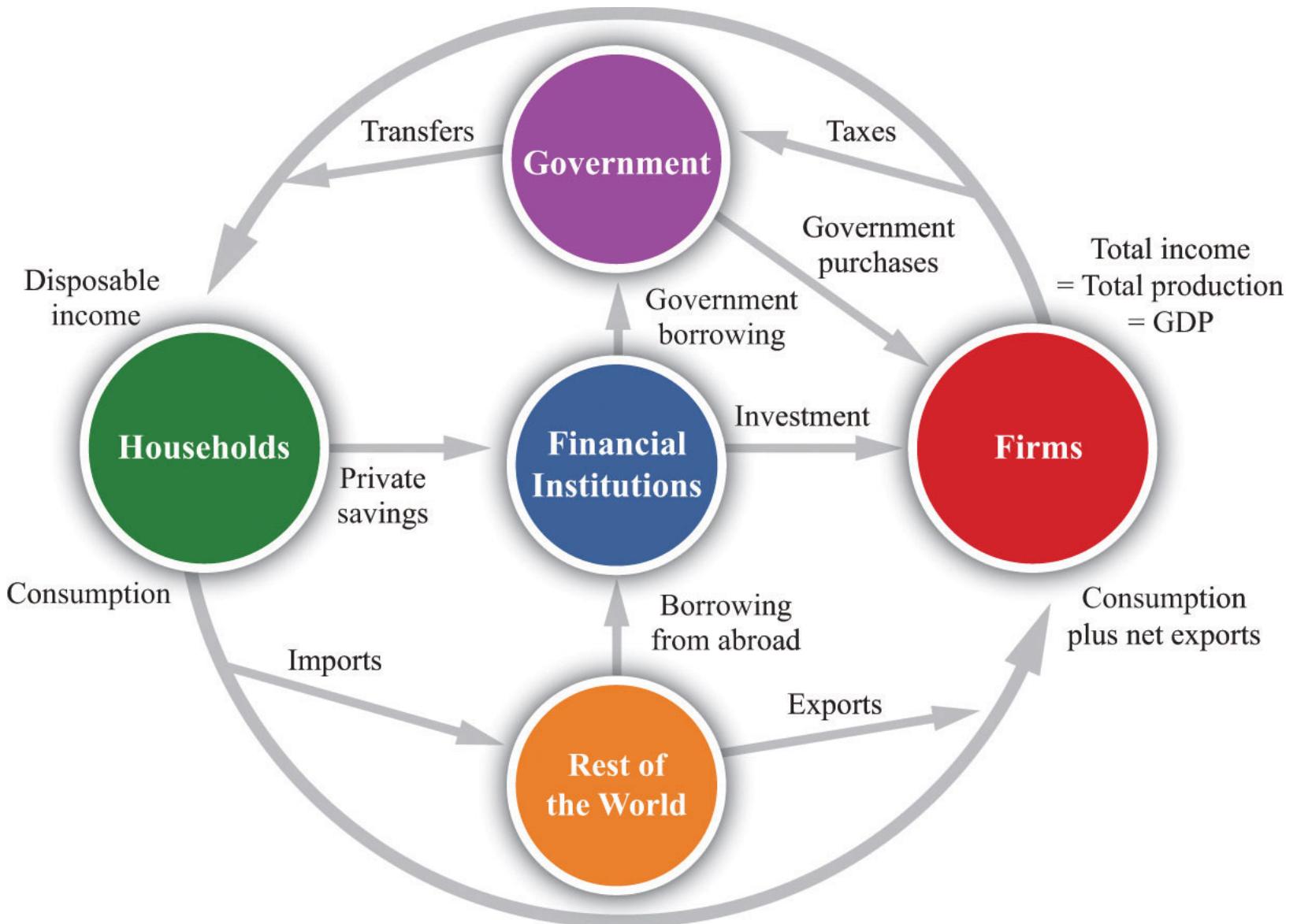


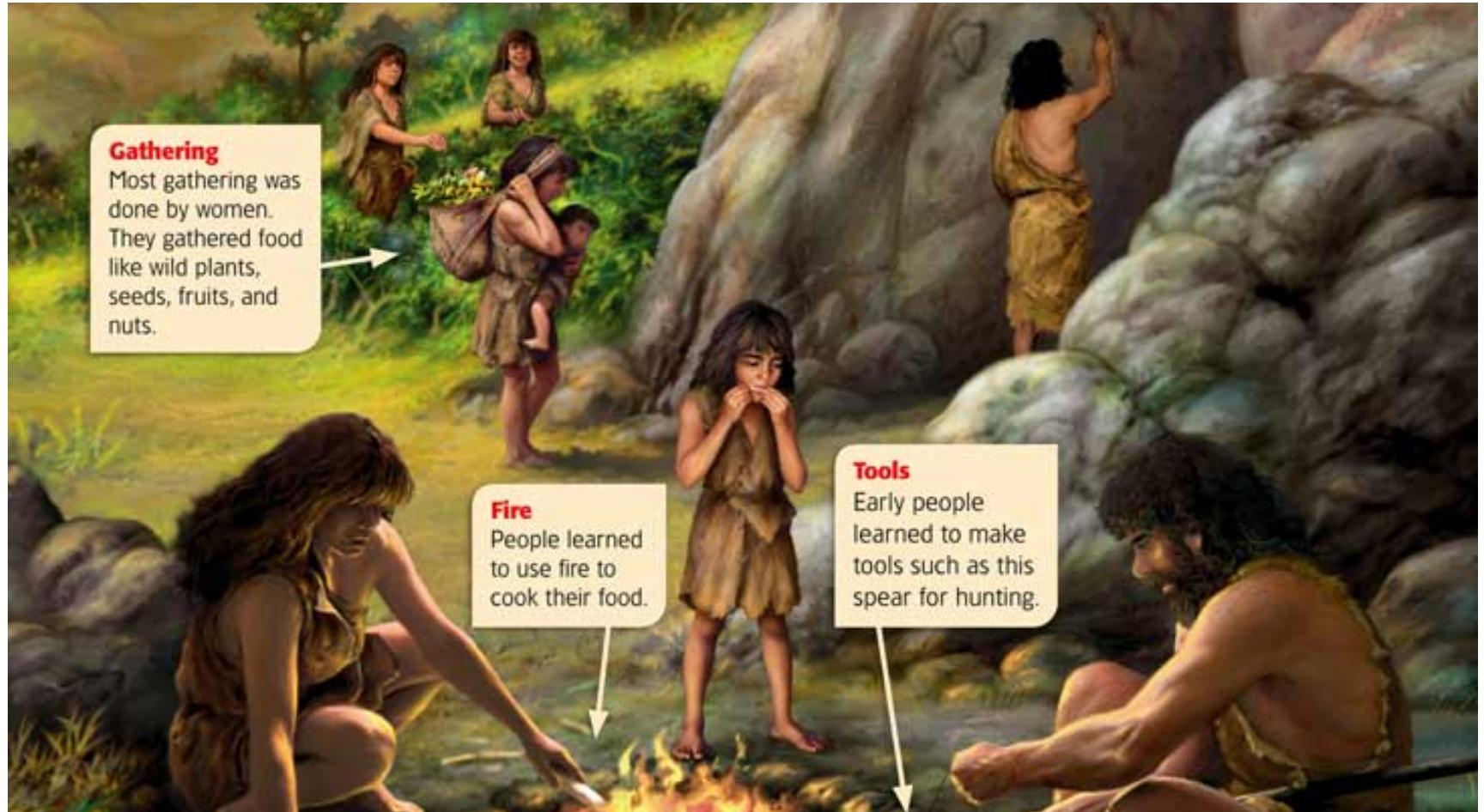
INTRODUCTION

Jiaming Mao



A Modern Economy

The Hunter-Gatherer Society



The Hunter-Gatherer Society

- Many modern economic ideas and activities can find their roots in the most primitive of human societies and the simplest of human relationships.
- Imagine a primitive family at the beginning of human civilization: The wife has just given birth to a child. The wife is responsible for child care. The husband is responsible for producing food and security
 - There is **specialization** of labor.

The Hunter-Gatherer Society

- The husband and wife build a house (hut) together
- Each contributes **labor** and **capital** (tools and materials for creating the house) and shares the fruits of their investment.
- They are *shareholders* in the house: each has taken an **equity** investment.

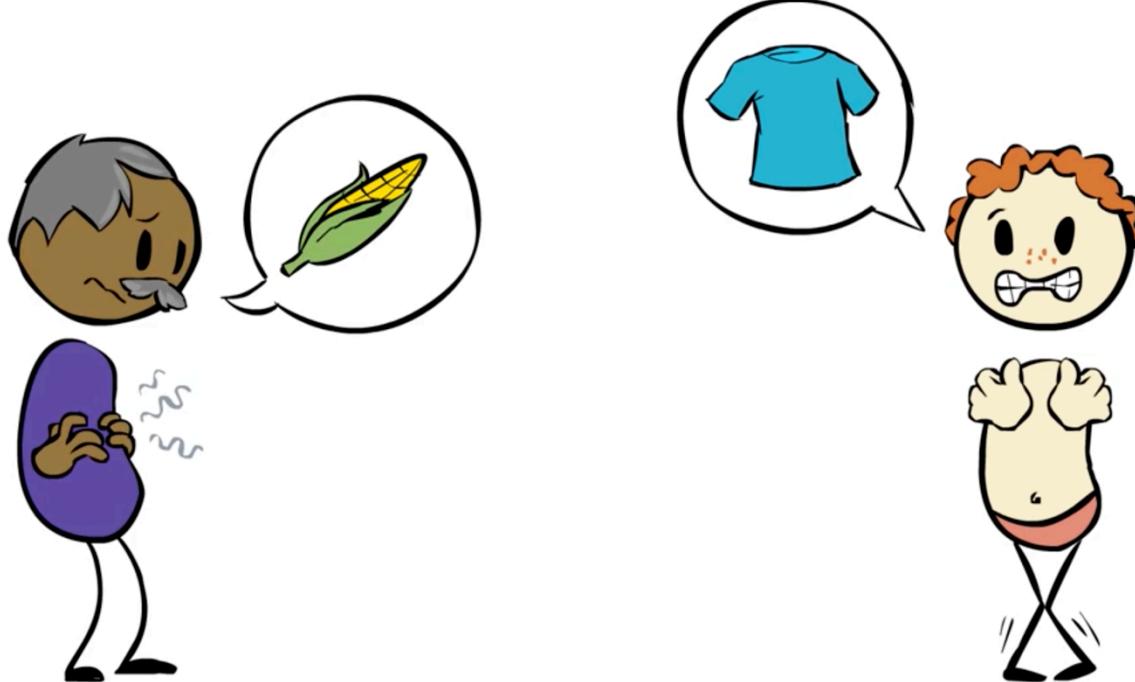
The Hunter-Gatherer Society

- The husband and wife also raise their child together.
- In turn, the child is expected to care for the parents when they are old.
- In this sense, the child has issued a **debt** to her parents that she repays when she grows up
- The parents have created a **savings** that they can rely on in old age or times of need by accumulating **credits**.

The Hunter-Gatherer Society

- The husband and wife team cannot create everything by themselves. They need to **trade** with other villagers.
- How? If they need something (e.g., clothing) that they know another villager has and they have something that they know that villager wants (e.g., food), then they can go and trade with that villager. Such trade is called **bartering**.
- Bartering requires a *double coincidence of wants*.

The Hunter-Gatherer Society



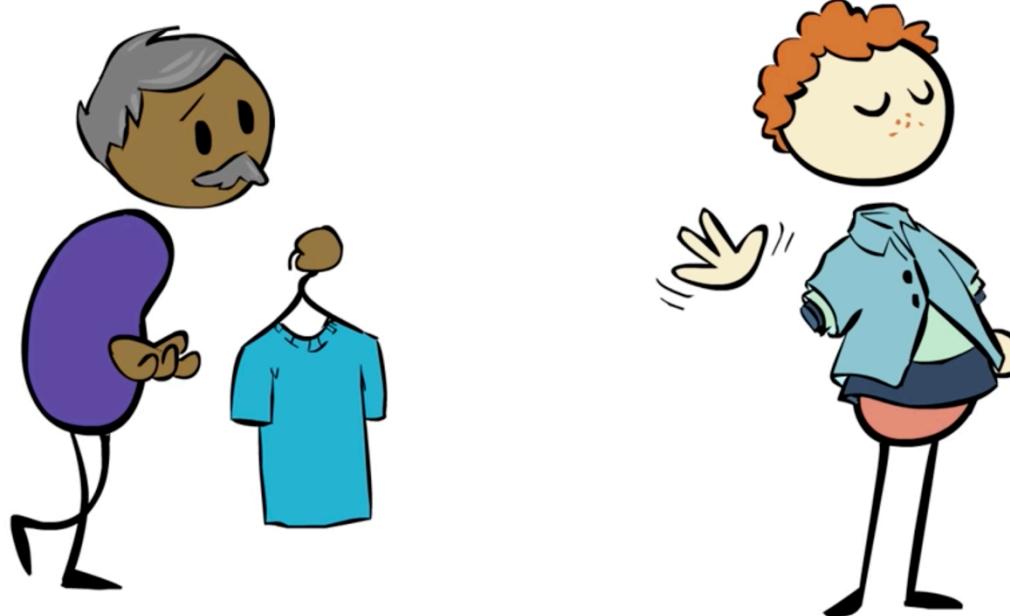
The Hunter-Gatherer Society



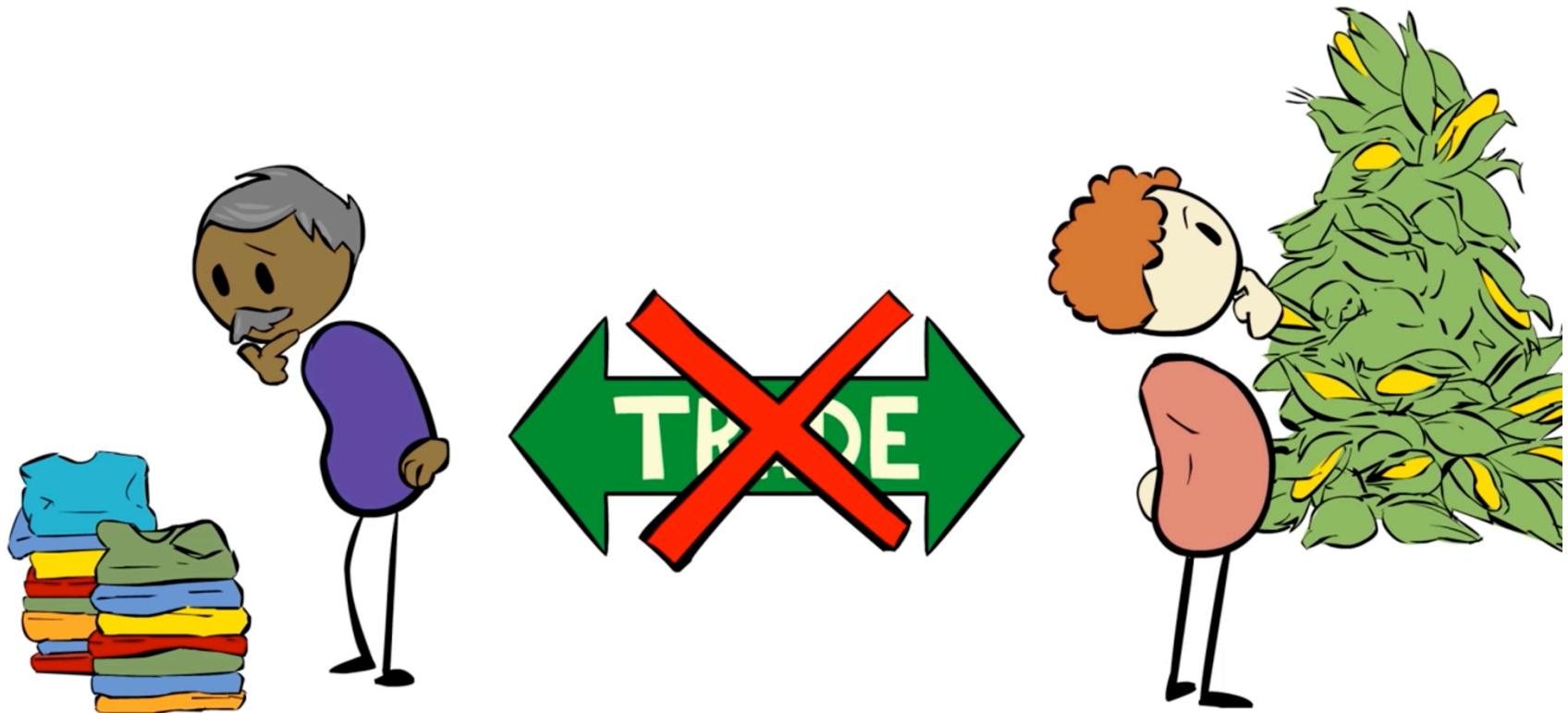
The Hunter-Gatherer Society



The Hunter-Gatherer Society



The Hunter-Gatherer Society



The Hunter-Gatherer Society

- But that is very inefficient. First, they need to go to a different villager's house every time they want to trade something. Second, every trade has to involve two parties that both have something the other party wants. This is hard to do. There is too much **search friction**.
- To solve the first problem, the villagers can come together and form a **market**, so that there is a central place for people to trade.

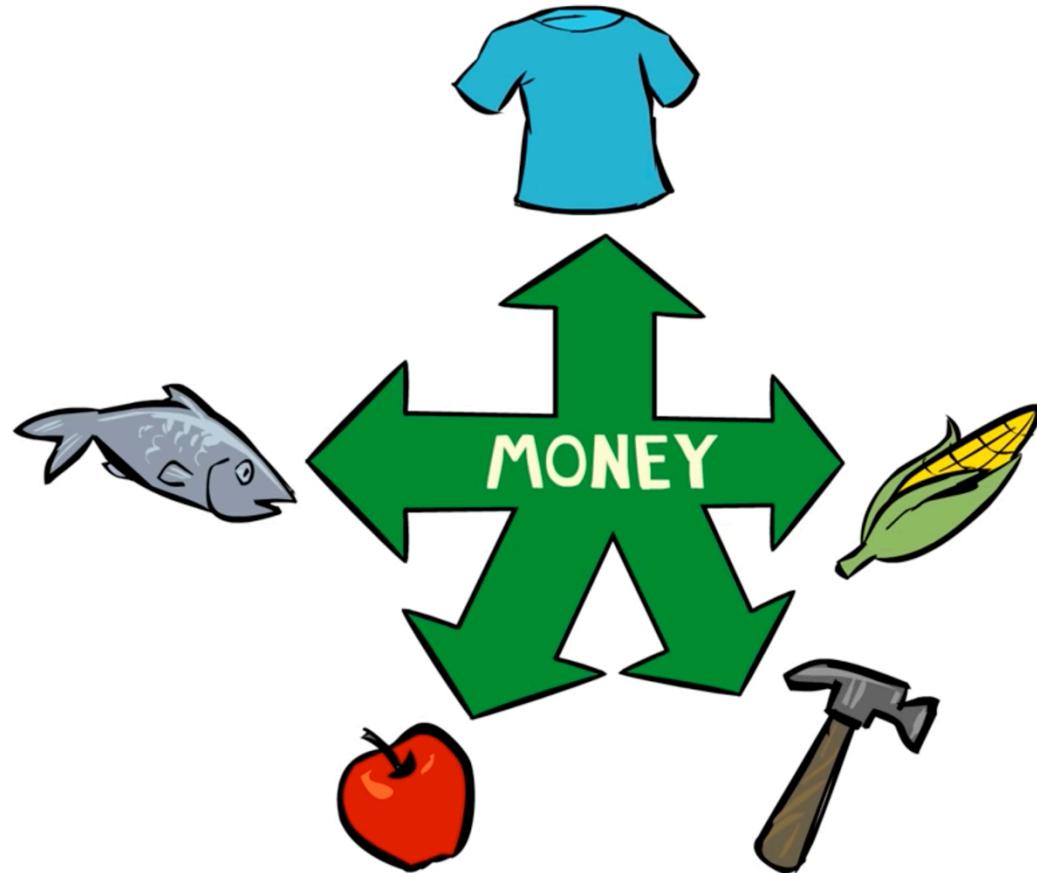
The Hunter-Gatherer Society

- To solve the second problem, they need a **medium of exchange** – something that is widely desired and accepted in the market. This is the birth of **money**.
- Thus, even in their most simple state, humans can hardly exist without engaging in **specialization** and **trade**, jointly entering into productive endeavors (**equity investment**), forming contracts, or promises, with others (**bonds**), and developing **markets** and **medium of exchange**.

The Hunter-Gatherer Society



The Hunter-Gatherer Society



The Hunter-Gatherer Society



Lydia, 600 BC

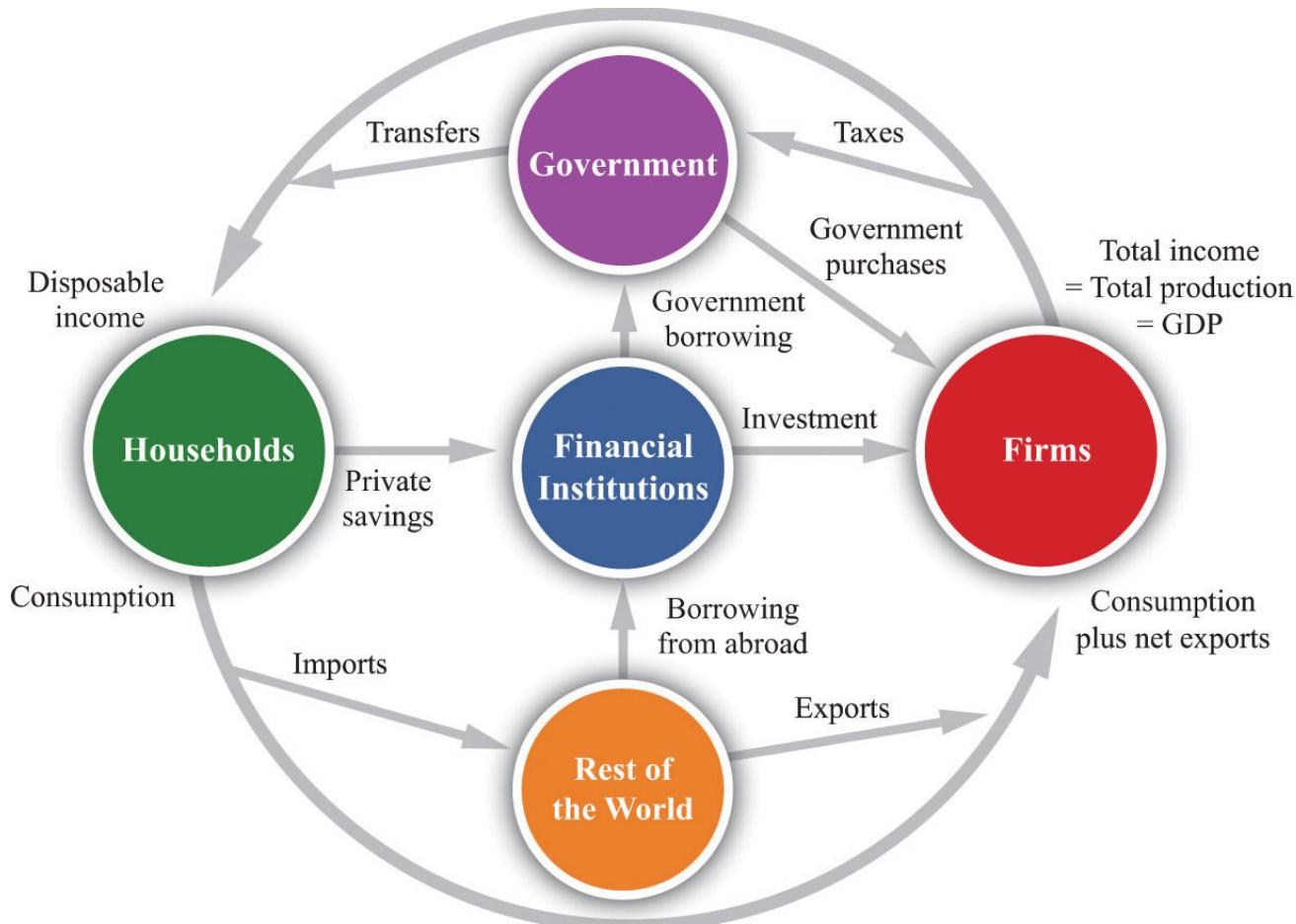


Coin commemorating Alexander's campaigns in India,
struck in Babylon around 323 BC.



半两
221 BC

Modern Economy



The Study of Economics

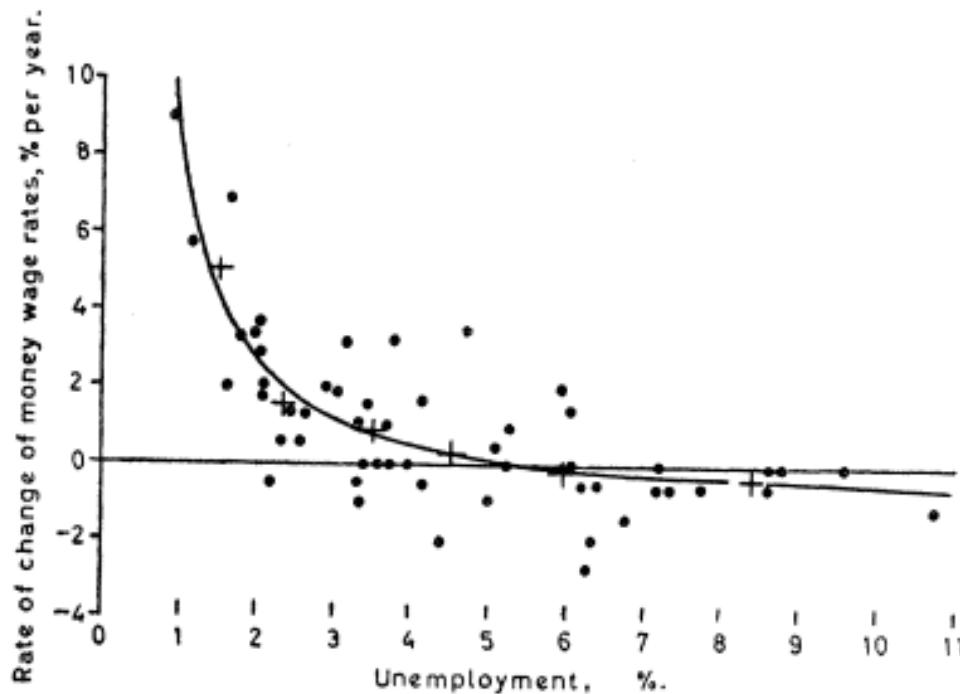
- Macroeconomics
 - Economic Growth
- Labor Economics: labor market
- Industrial Organization: goods market
- Finance: financial market
- Public Finance: government
- International Trade/Finance: world goods and financial market
- ...

The Study of Economics

- Economics study the economic exchanges and their outcomes in all these markets, but it starts with the study of the individual: how each person makes her choices, decides what to buy, whether to work, how to invest, and interact with other people in market and non-market settings.
- The individual is the building block for the economy. Hence economics is a social science: at the most fundamental level, it is a study of human behavior.

The Methodology of Economics

□ The micro-foundation revolution



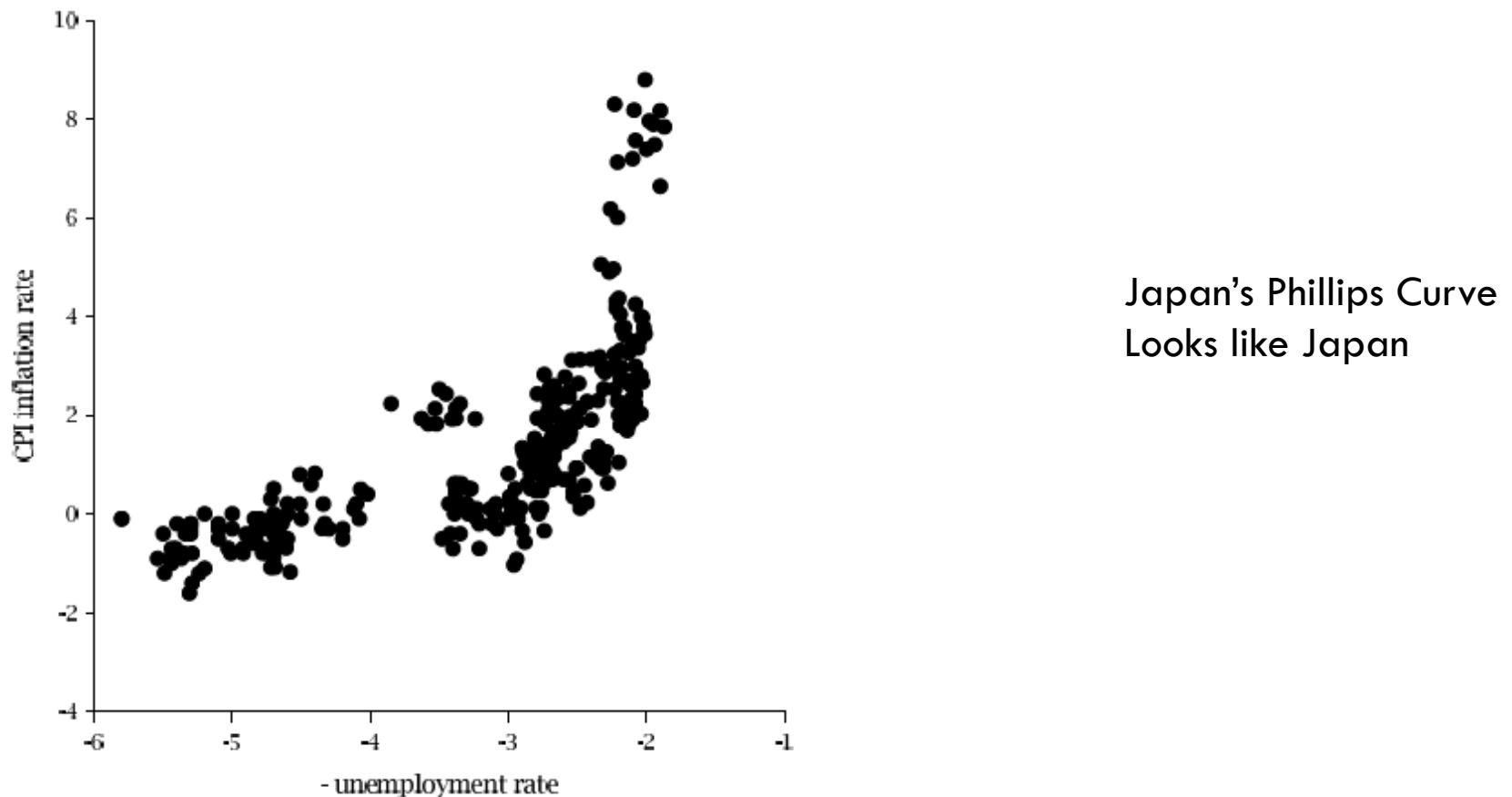
The Original Phillips Curve

Fig.1. 1861 – 1913

P140512-2p Source: AWH Phillips, The Relation between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861-1957, *Economica* 1958

The Methodology of Economics

Figure 2: Japan's Inflation Rate and (Minus) Unemployment Rate
January 1980 to August 2005



The Methodology of Economics

□ The micro-foundation revolution

Boyle-Marriotte Law



P and V are inversely proportional at constant T and n.

$$P_1 V_1 = P_2 V_2$$

Gay Lussac's Law

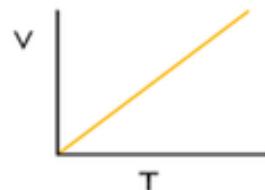


P and T are directly proportional at constant V and n.

$$\frac{P_1}{T_1} = \frac{P_2}{T_2}$$

Macro or Micro?

Charles's Law



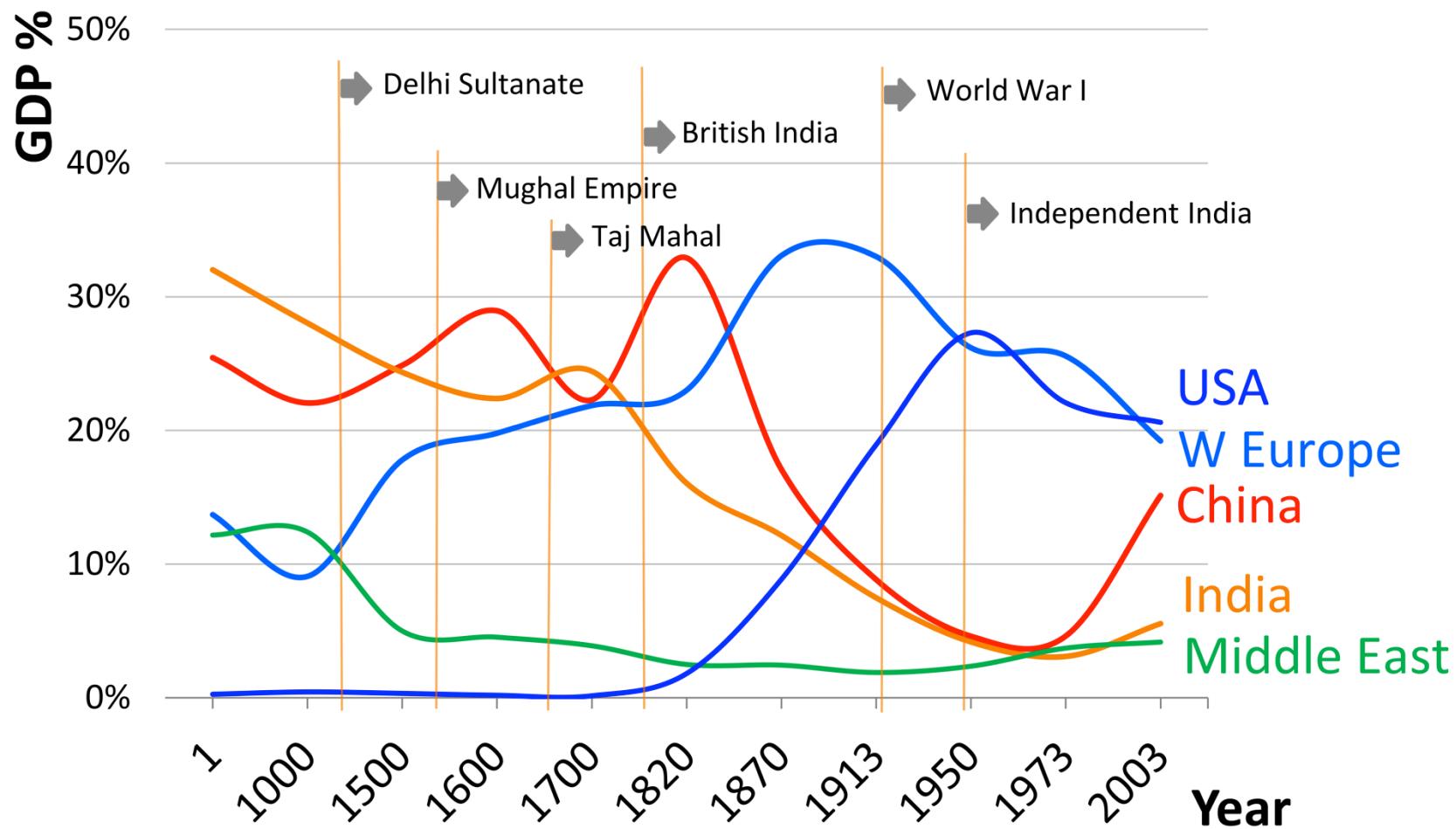
T and V are directly proportional at constant P and n.

$$\frac{V_1}{T_1} = \frac{V_2}{T_2}$$

The Methodology of Economics

- How to study individual behavior?
- Mathematical modeling of individual behavior under the rationality assumption.
 - Decision theory (from operations research), game theory, statistics
- New: behavioral study (from psychology)
- Future: neuroscience?

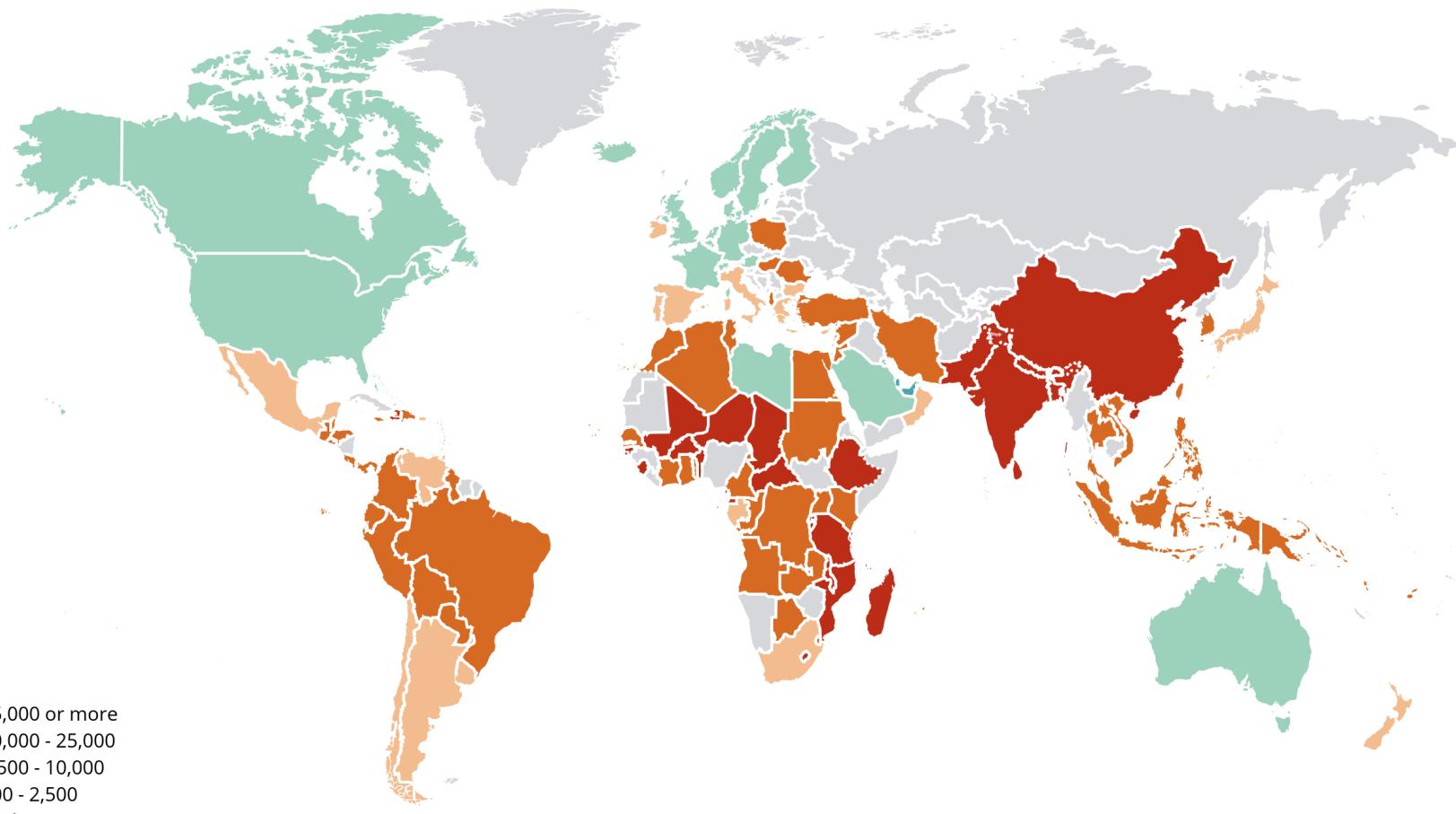
Economic Growth



Economic Growth

IMF DataMapper

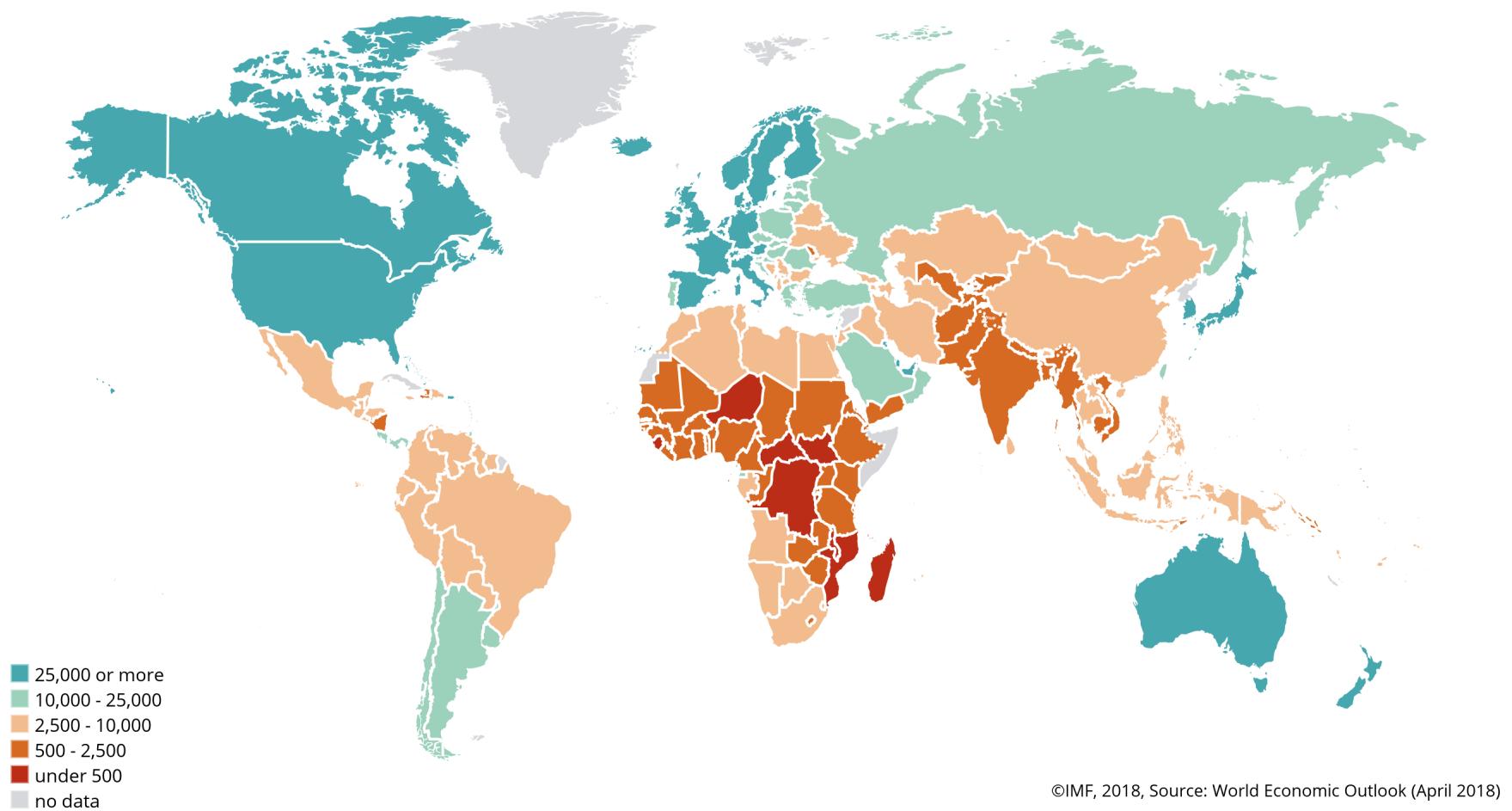
GDP per capita, current prices (U.S. dollars per capita, 1980)



Economic Growth

IMF DataMapper

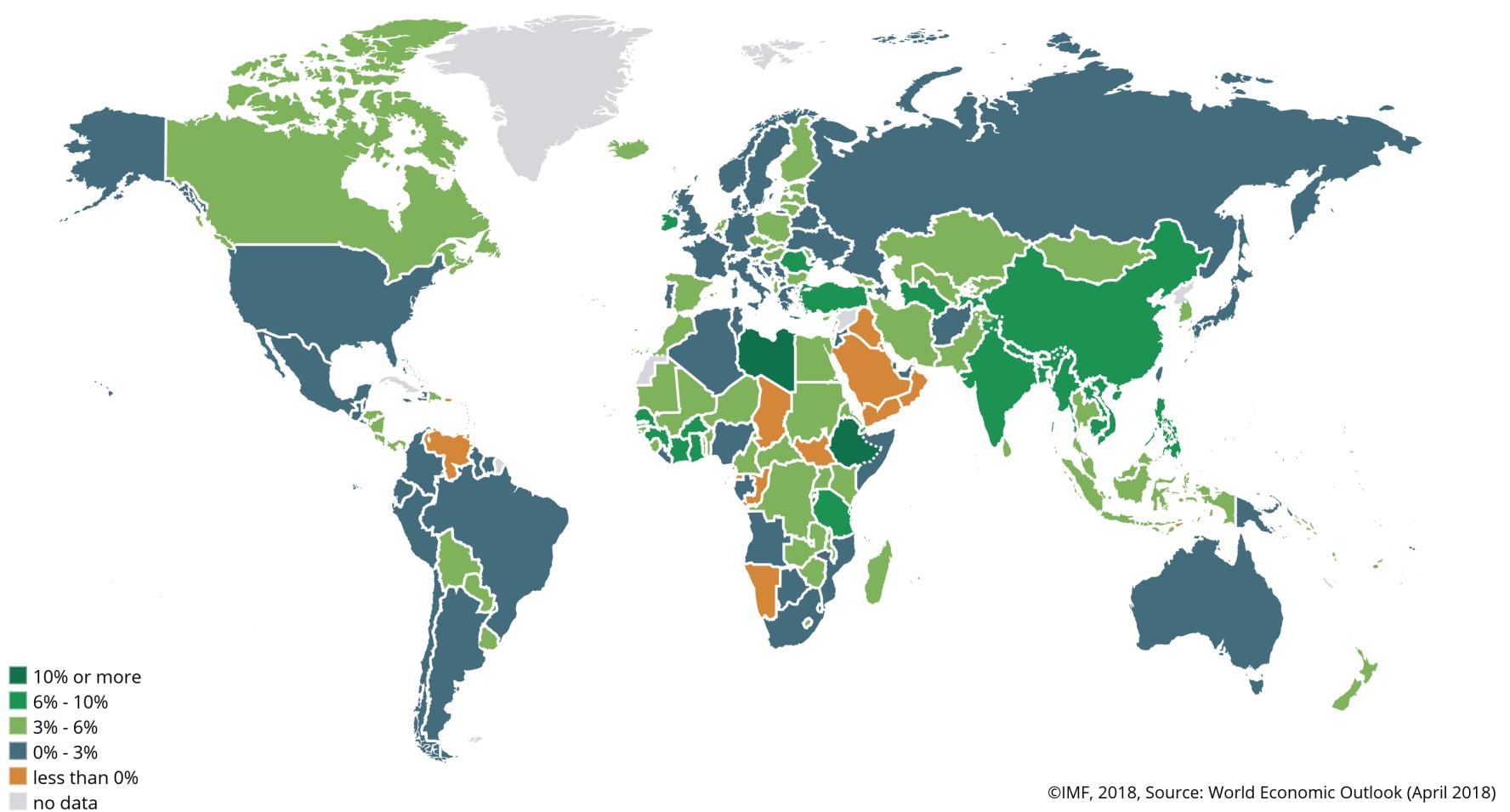
GDP per capita, current prices (U.S. dollars per capita, 2017)



Economic Growth

IMF DataMapper

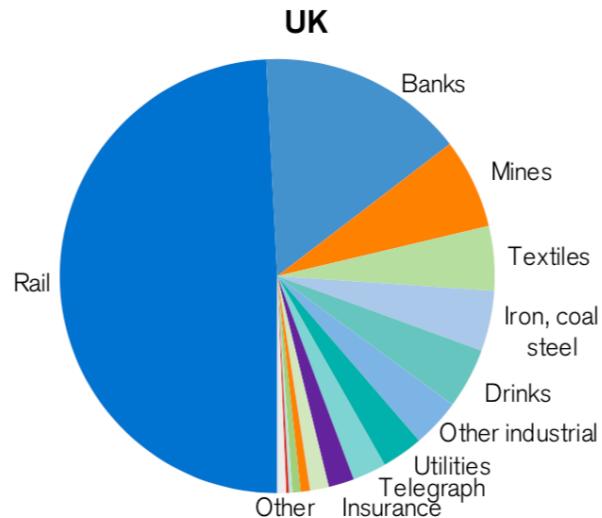
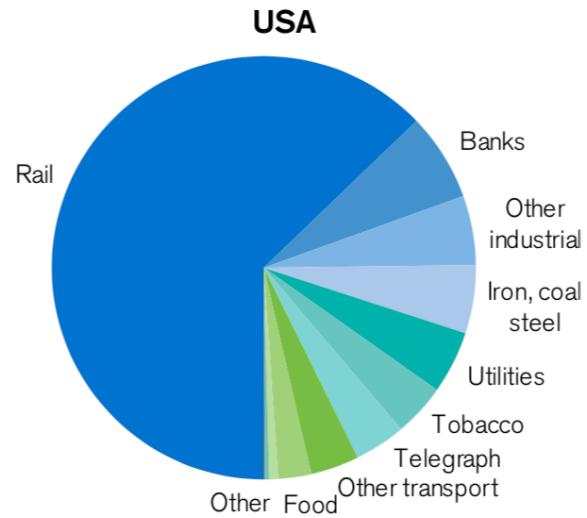
Real GDP growth (Annual percent change, 2017)



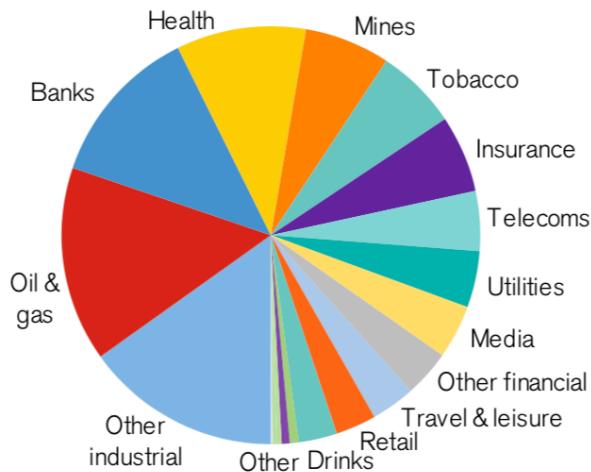
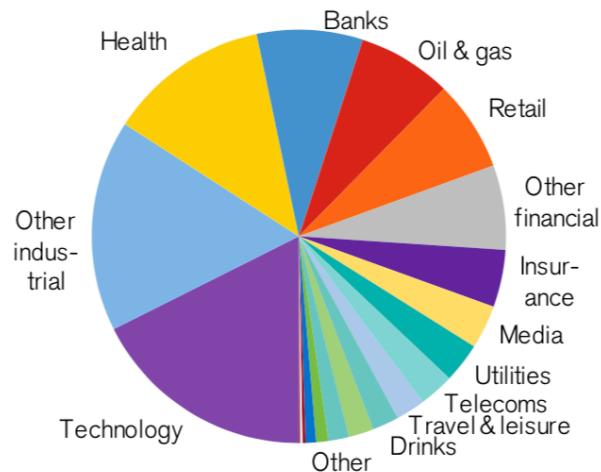
©IMF, 2018, Source: World Economic Outlook (April 2018)

Economic Growth

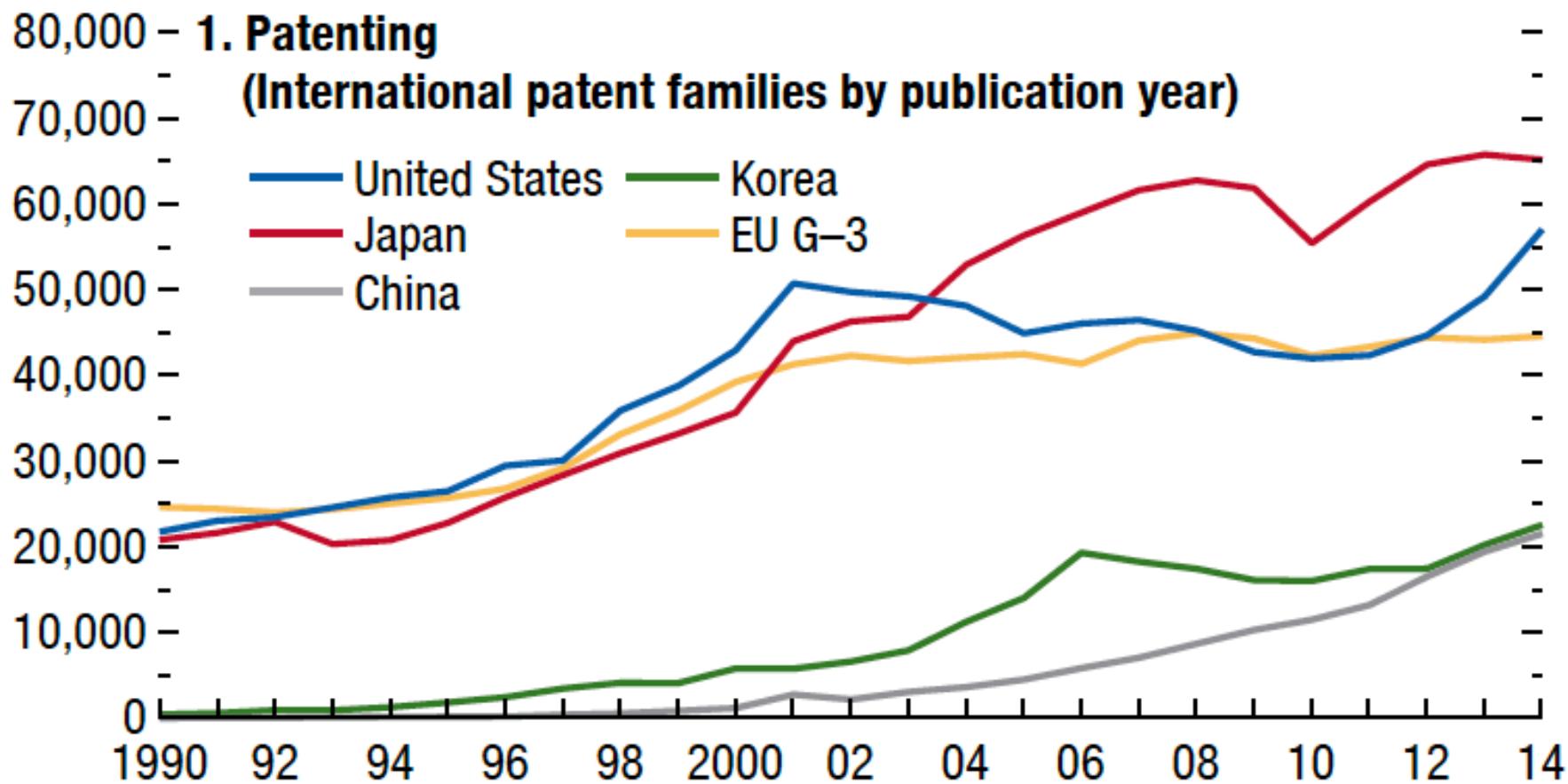
1900



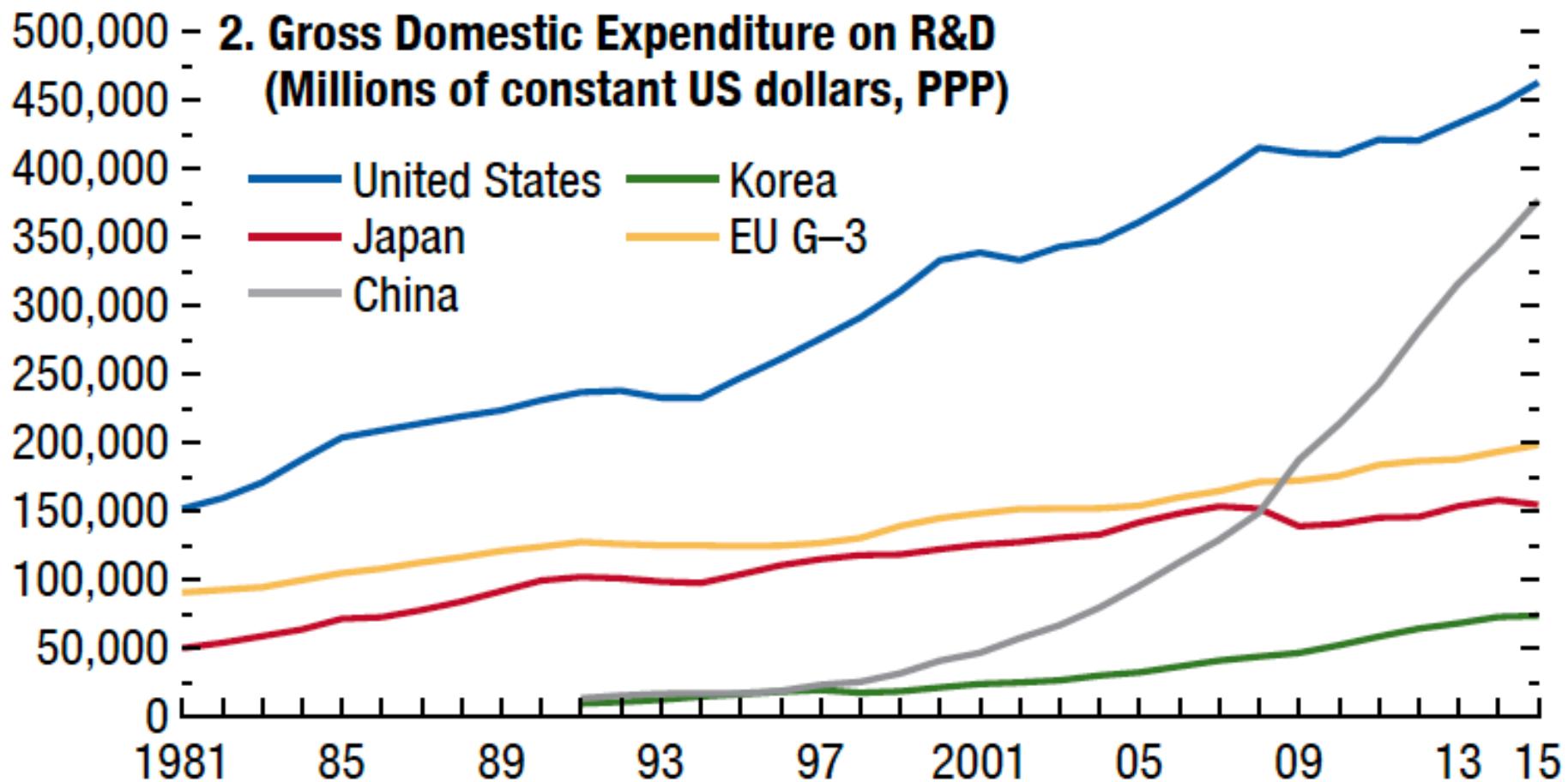
2017



Economic Growth



Economic Growth



Economic Growth

Exhibit 10: Equity market cap (\$bn) as of 6/12/18

	Total	Energy	Materials	Industrials	Cons. Disc.	Staples	Healthcare	Financials	Tech	Telecom	Utilities	REITs
ACWI	46,659	3,092	2,492	5,004	5,838	3,661	5,093	8,258	9,268	1,263	1,294	1,395
DEVELOPED	41,079	2,703	2,068	4,707	5,291	3,301	4,918	6,993	7,688	1,033	1,159	1,218
N. America	26,307	1,829	834	2,572	3,439	1,677	3,393	4,028	6,664	492	683	695
US	24,901	1,529	684	2,450	3,365	1,627	3,384	3,456	6,602	461	658	686
Canada	1,406	300	150	122	75	51	572	63	31	25	-	-
Europe	9,349	775	820	1,223	1,025	1,209	1,132	1,845	533	318	337	133
UK	2,627	454	249	219	219	424	269	566	23	91	80	33
Switzerland	1,128	-	76	106	74	254	364	227	-	12	-	-
Eurozone	4,856	279	446	708	695	474	391	884	463	177	246	94
France	1,624	149	89	343	316	160	133	203	84	39	54	54
Germany	1,438	-	215	194	261	48	190	195	184	61	47	40
Spain	454	33	-	44	37	-	-	182	36	42	70	-
Italy	357	65	-	37	63	-	-	117	-	14	53	-
Asia Pacific	5,347	100	406	909	827	415	371	1,102	471	221	140	387
Japan	3,575	40	213	760	713	309	271	430	452	178	64	144
Australia	995	59	189	52	30	83	91	378	-	10	20	72
Hong Kong	548	-	-	65	72	11	-	193	-	-	52	143
EMERGING	5,579	389	425	297	547	360	175	1,265	1,580	230	135	177
EM Asia	4,251	223	238	238	370	223	156	851	1,572	149	96	135
China	1,889	93	38	85	183	47	68	407	738	72	49	109
Korea	833	20	67	71	87	54	47	103	367	-	10	-
Taiwan	643	-	63	14	17	19	-	106	391	24	-	-
India	465	62	41	28	53	51	24	106	74	11	15	-
EMEA	759	117	74	24	143	46	16	245	-	45	12	34
South Africa	346	-	37	-	129	28	13	90	-	22	-	19
Russia	182	96	27	-	-	-	-	41	-	-	-	-
LATAM	570	49	112	35	35	91	-	169	-	36	27	-
Brazil	317	37	66	19	17	41	-	106	-	-	11	-
Mexico	143	-	24	13	11	43	-	19	-	26	-	-

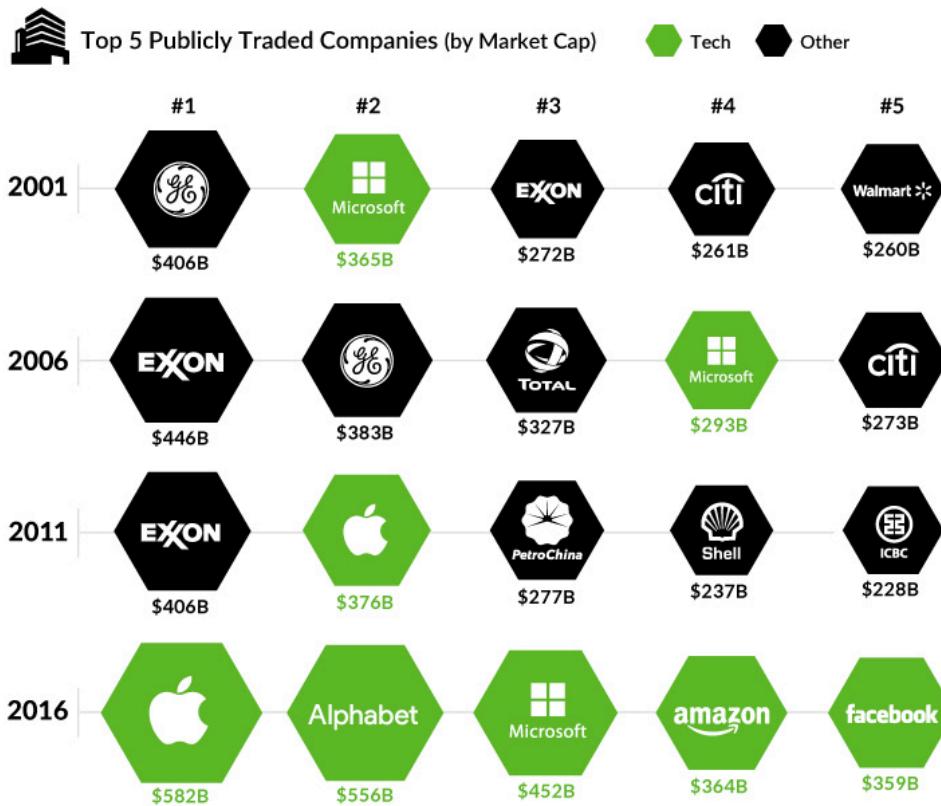
Source: BofA Merrill Lynch Global Investment Strategy, MSCI, Datastream. Note: table above and following excludes sectors with <\$10bn market cap.

Economic Growth

Chart of the Week

THE LARGEST COMPANIES BY MARKET CAP

The oil barons have been replaced by the whiz kids of Silicon Valley

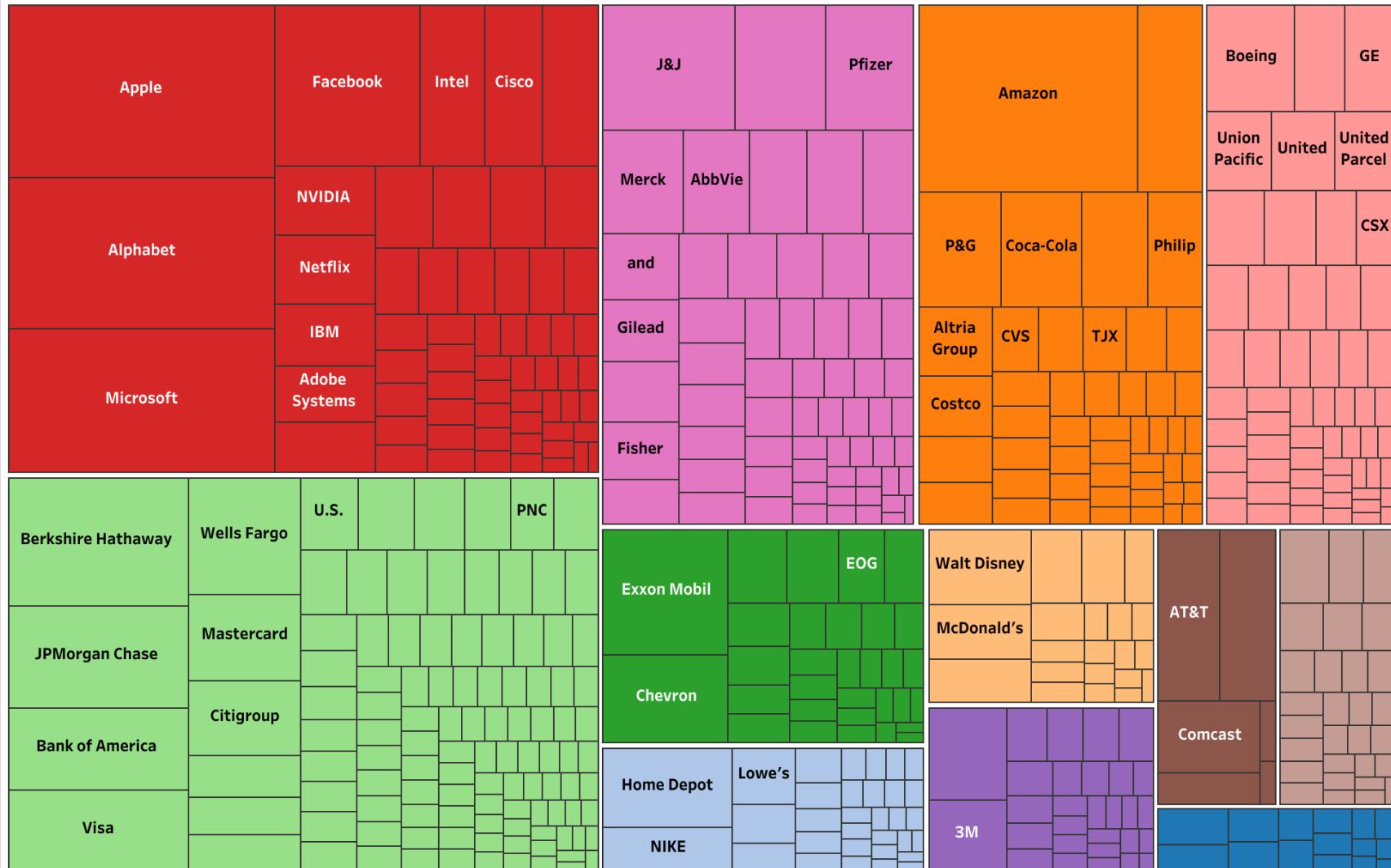


Economic Growth



S&P 500 market caps

CNBC



CLICK to highlight a sector

- █ Business Services
- █ Consumer Cyclical
- █ Consumer Non-Cyclical
- █ Consumer Services

- █ Energy
- █ Finance
- █ Healthcare
- █ Industrials

- █ Non-Energy Materials
- █ Technology
- █ Telecommunications
- █ Utilities

Economic Growth



Economic Growth

Tectonic shift

China's tech sector as % of United States

Five years ago
2018 or latest

Twice the level of the United States

Same level as the United States

Foreign sales of listed tech firms

*
Number of AI professionals

Capital expenditure and R&D of listed tech firms

Digitisation index for non-tech industries

Market value of listed internet stocks

Market value of listed tech stocks

Venture capital funding

Value of "unicorns"
(startups valued at over \$1bn)

AI papers cited by third parties

1,068%
Mobile payments

E-commerce transaction value

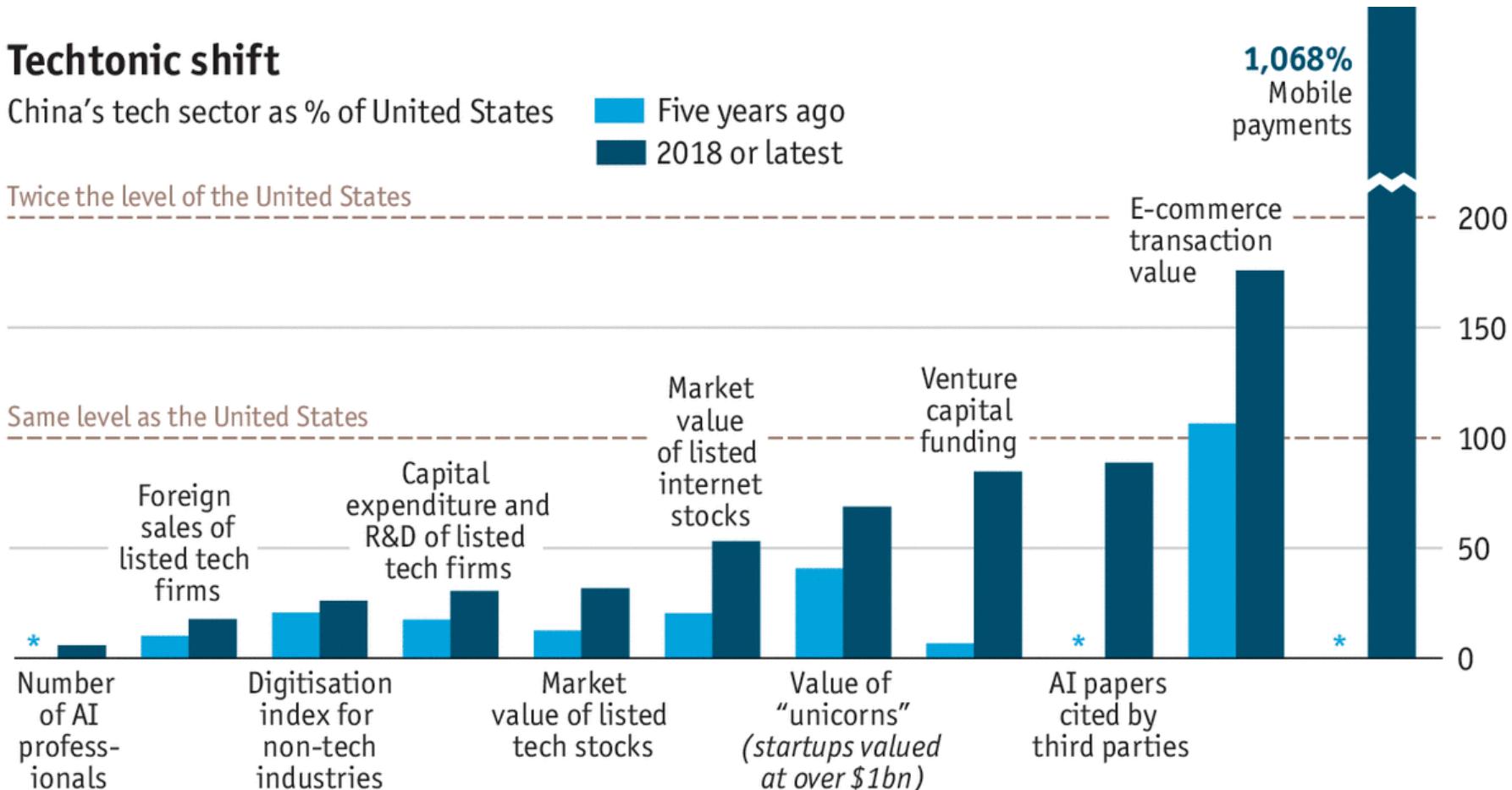
200

150

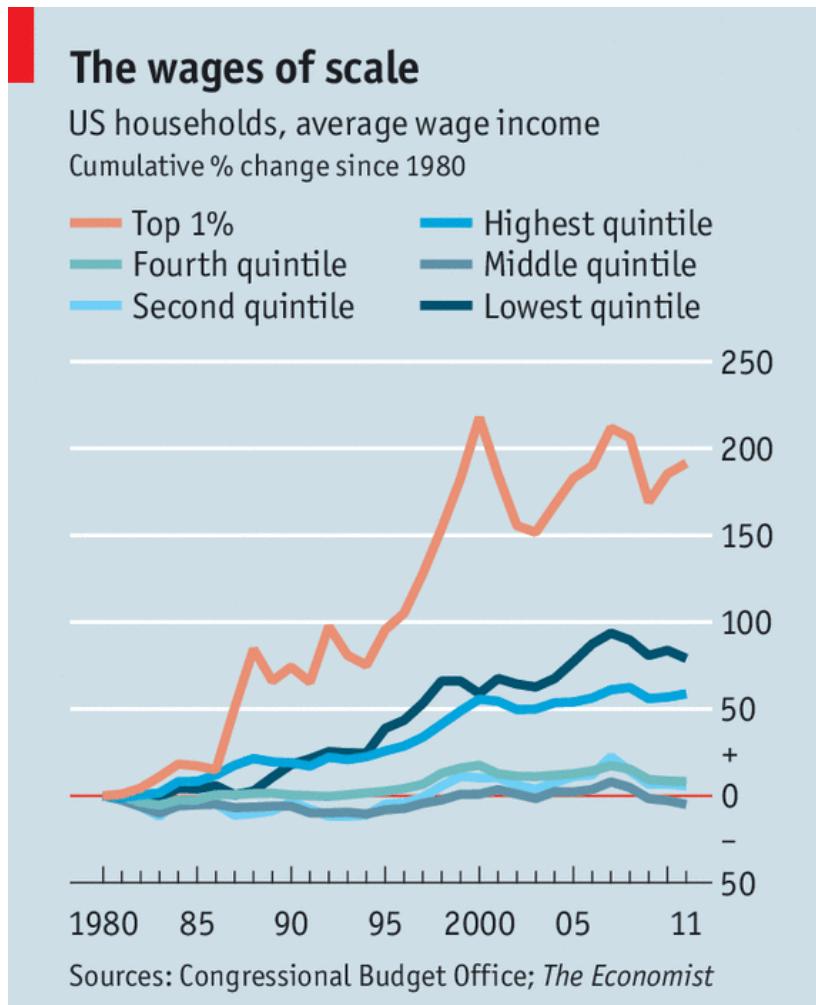
100

50

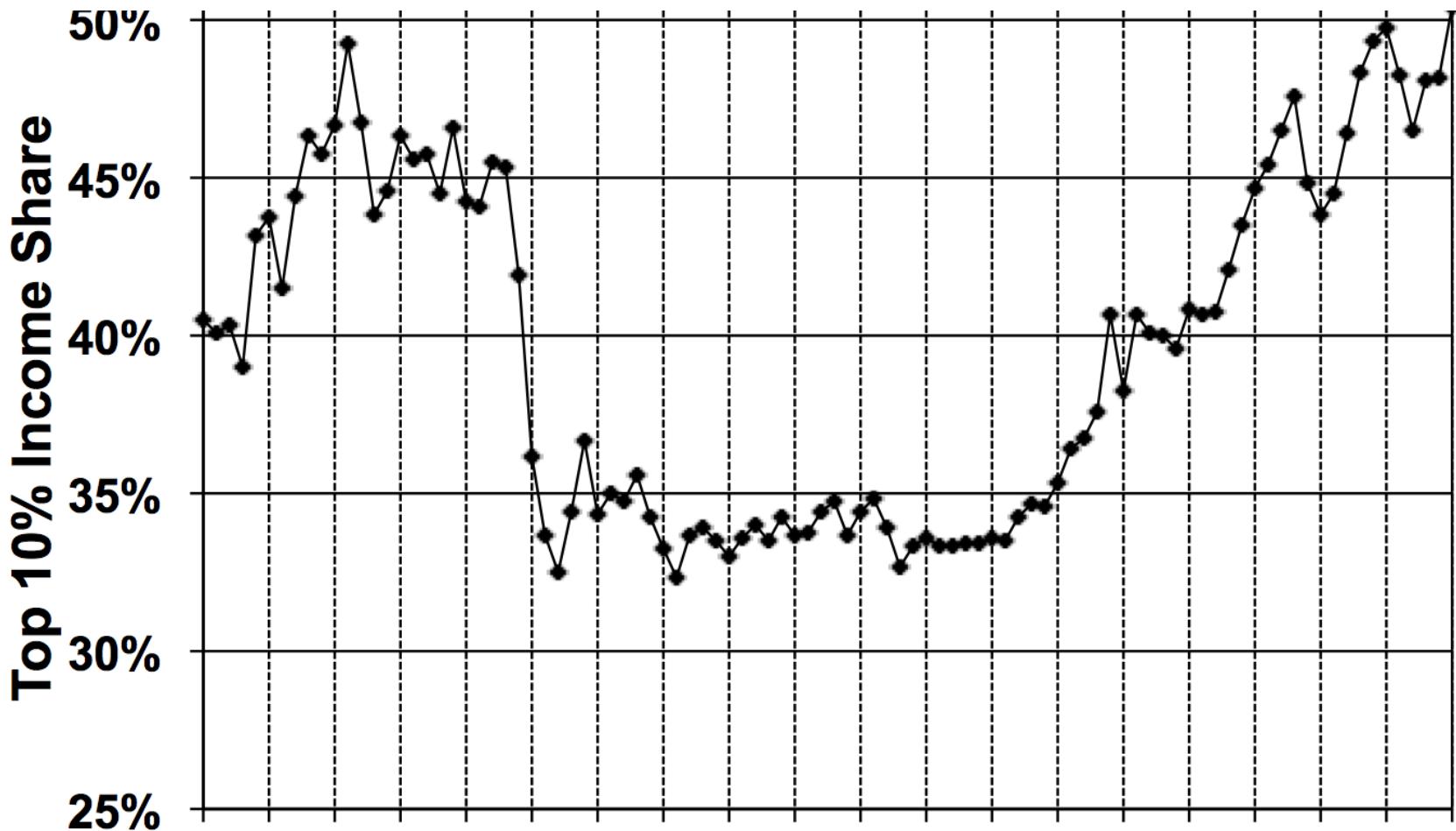
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Labor Economics



Labor Economics

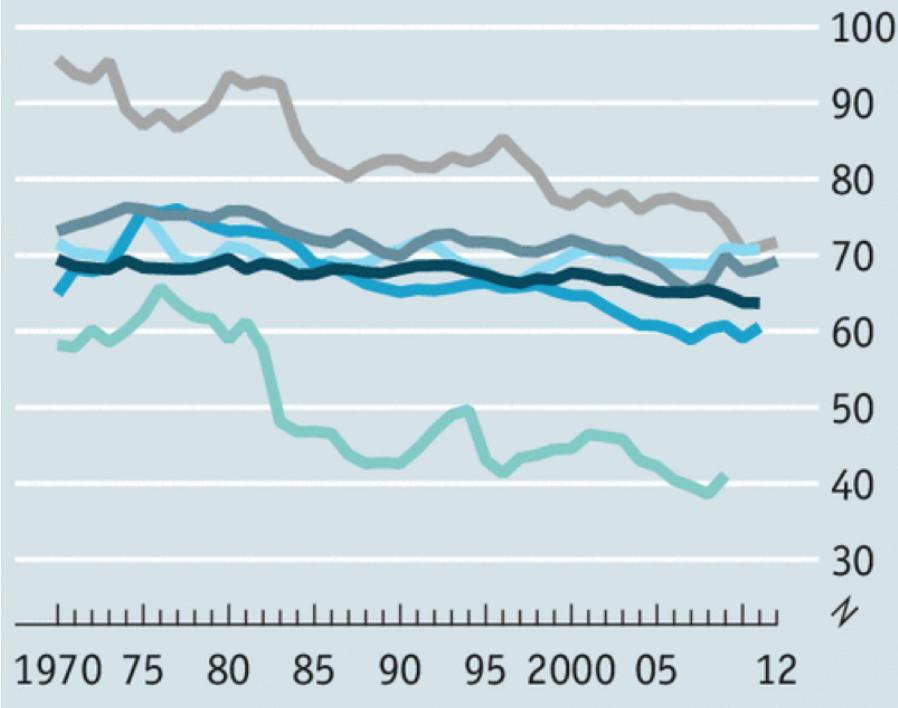


Labor Economics

Unrewarding work

Labour costs as % of nominal GDP

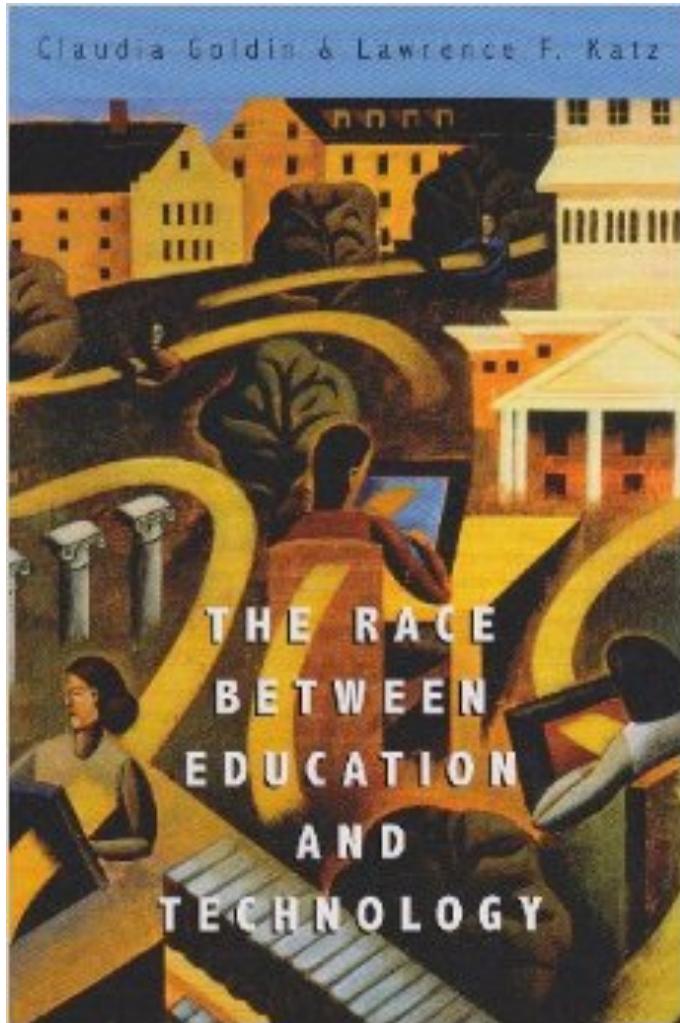
South Korea Germany Japan
Britain United States Mexico



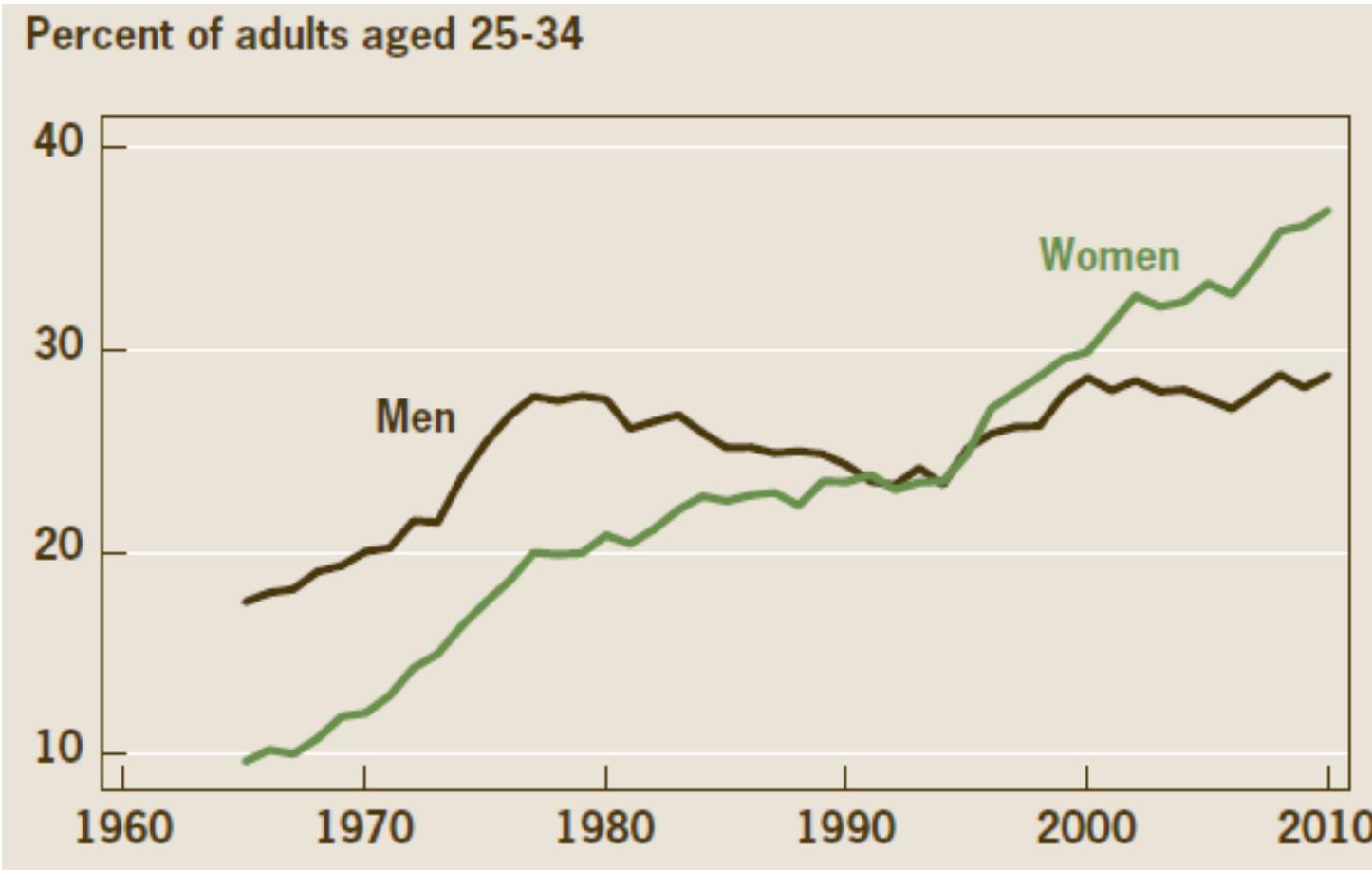
Labor Economics



Labor Economics



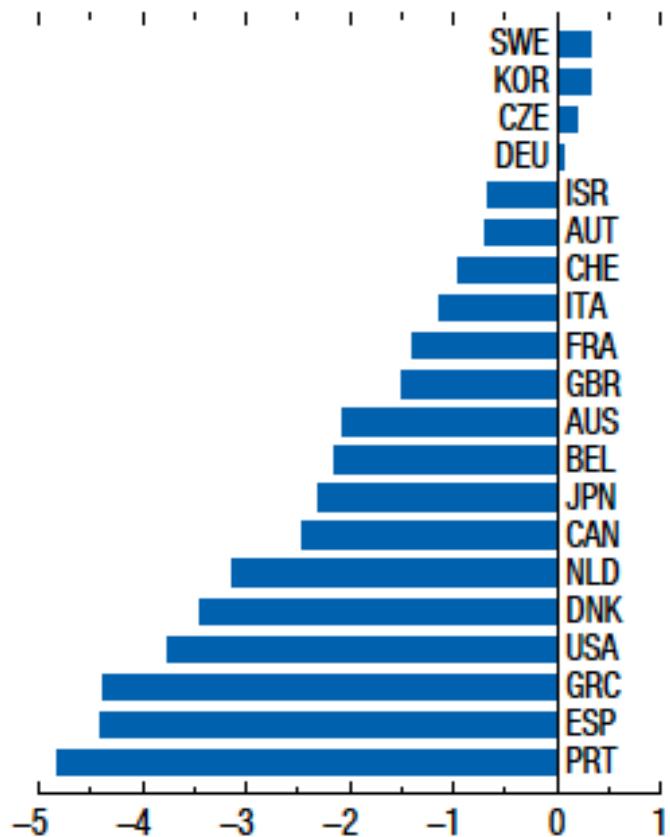
Labor Economics



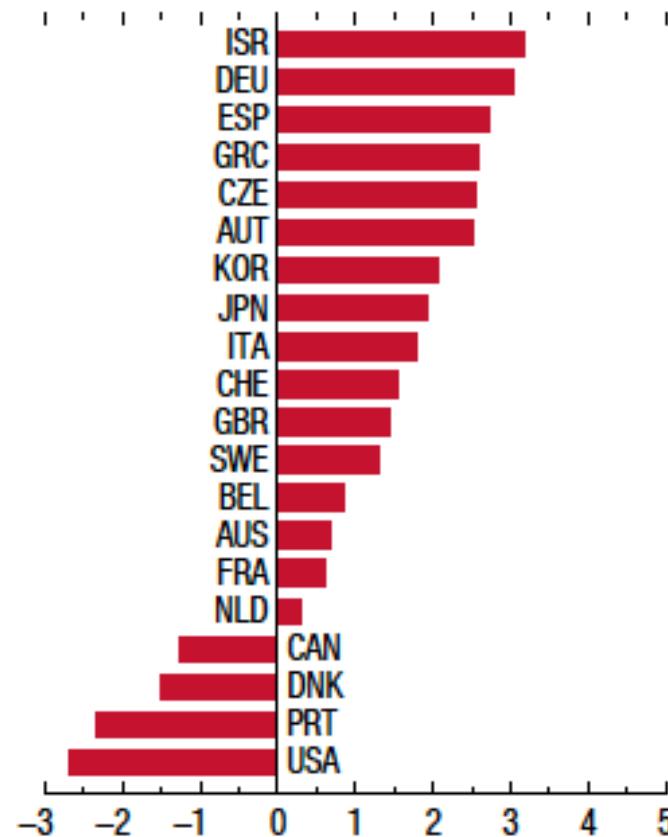
US College Attainment by Gender

Labor Economics

2. Men

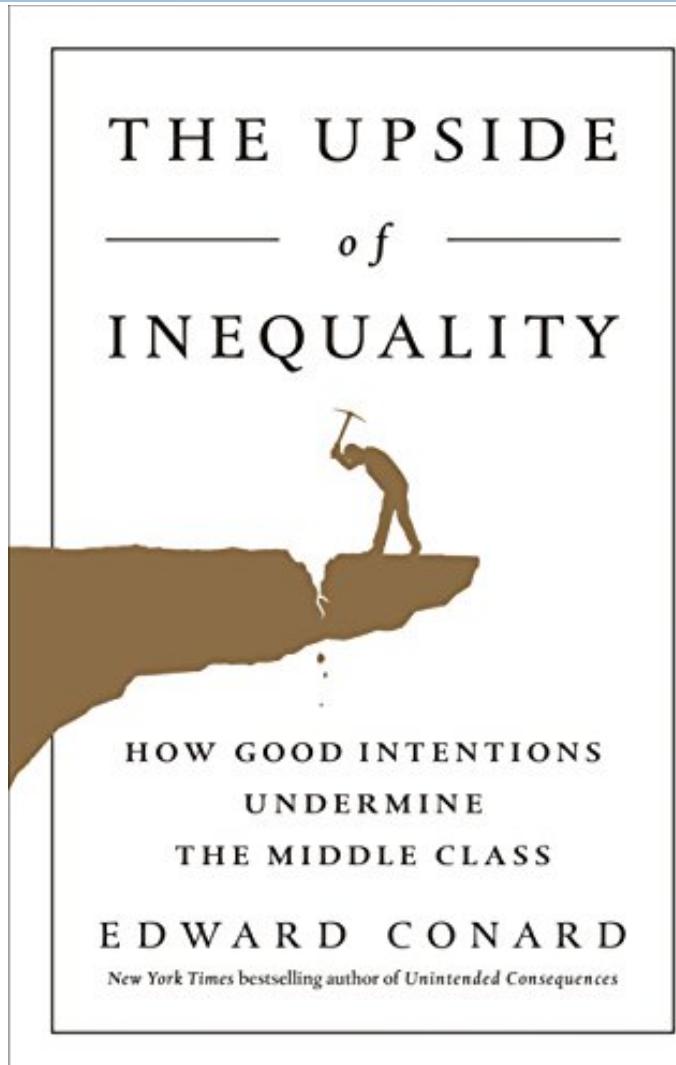


3. Women

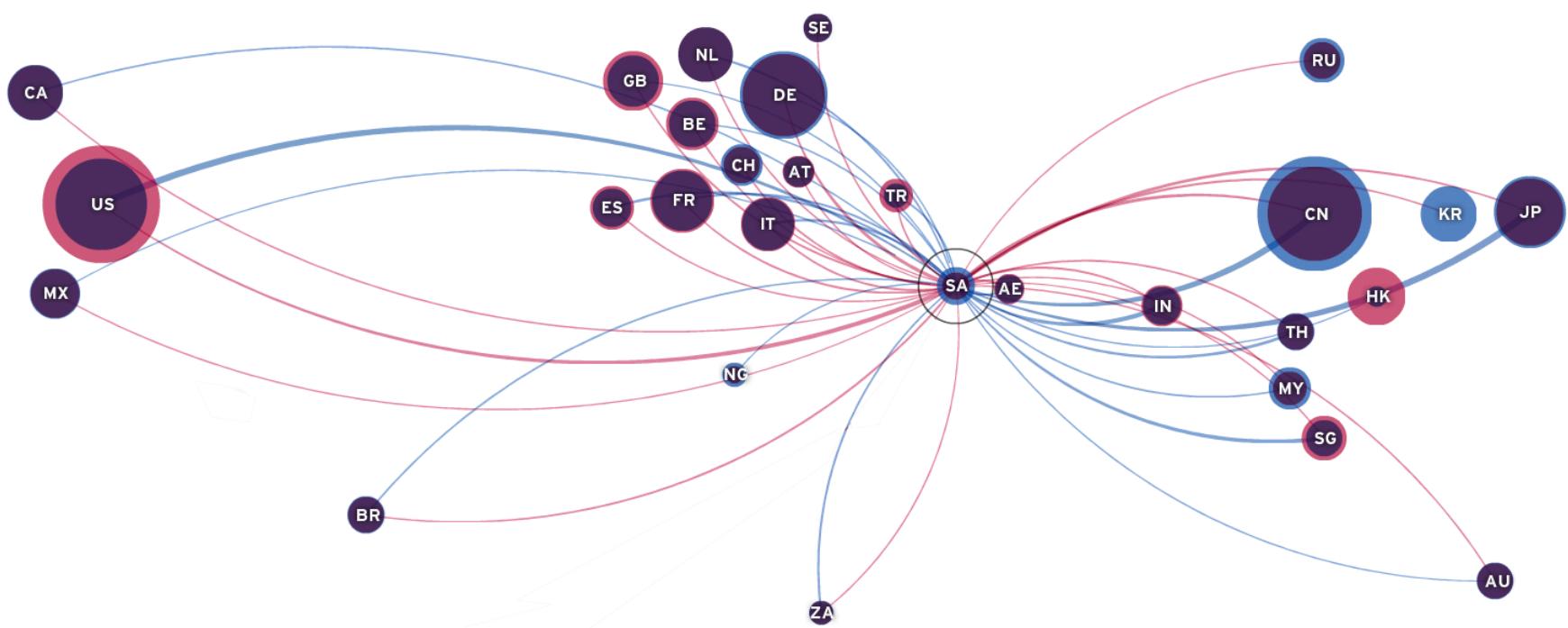


Change in Labor Force Participation Rate 2008 - 2016

Labor Economics

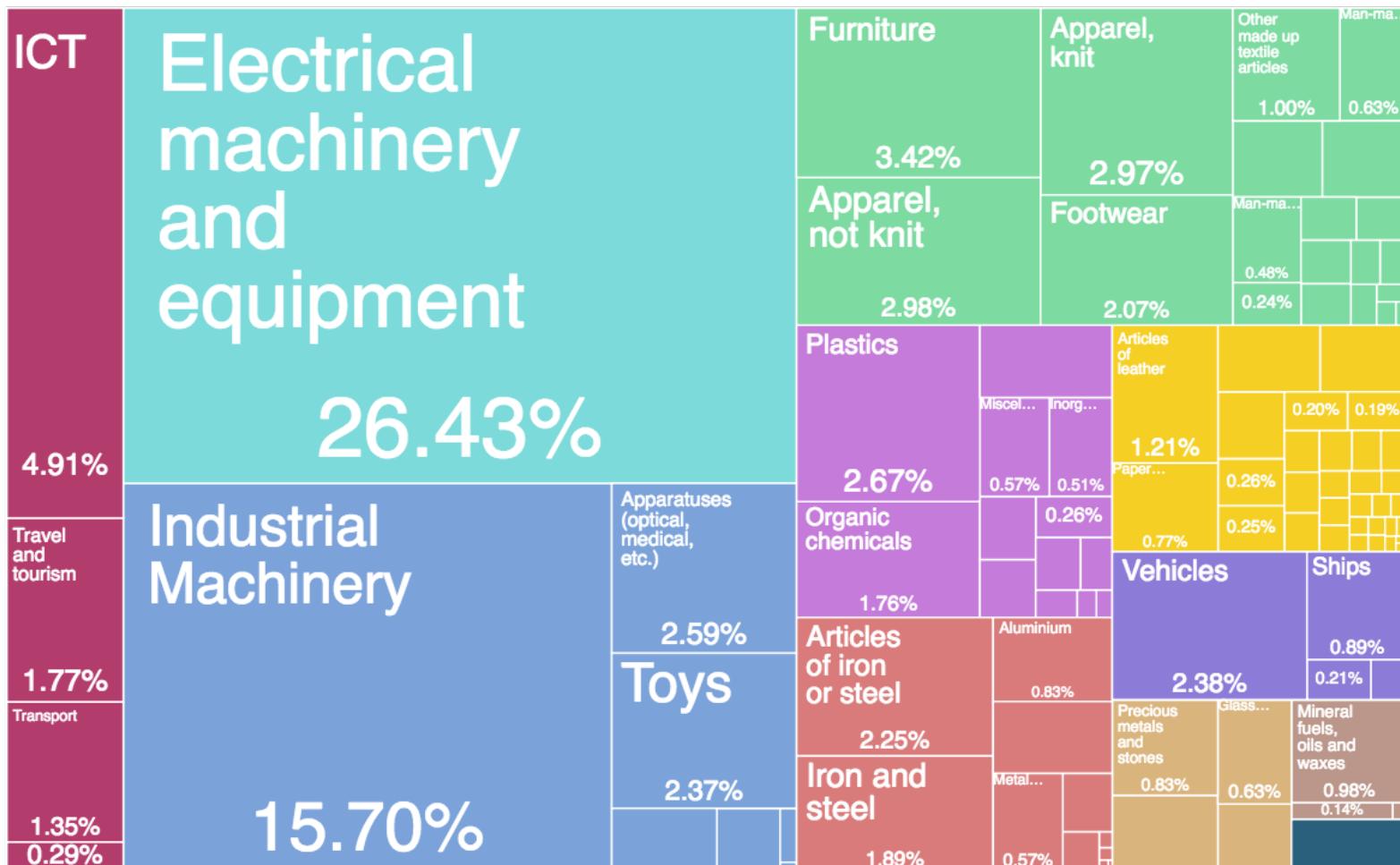


Trade



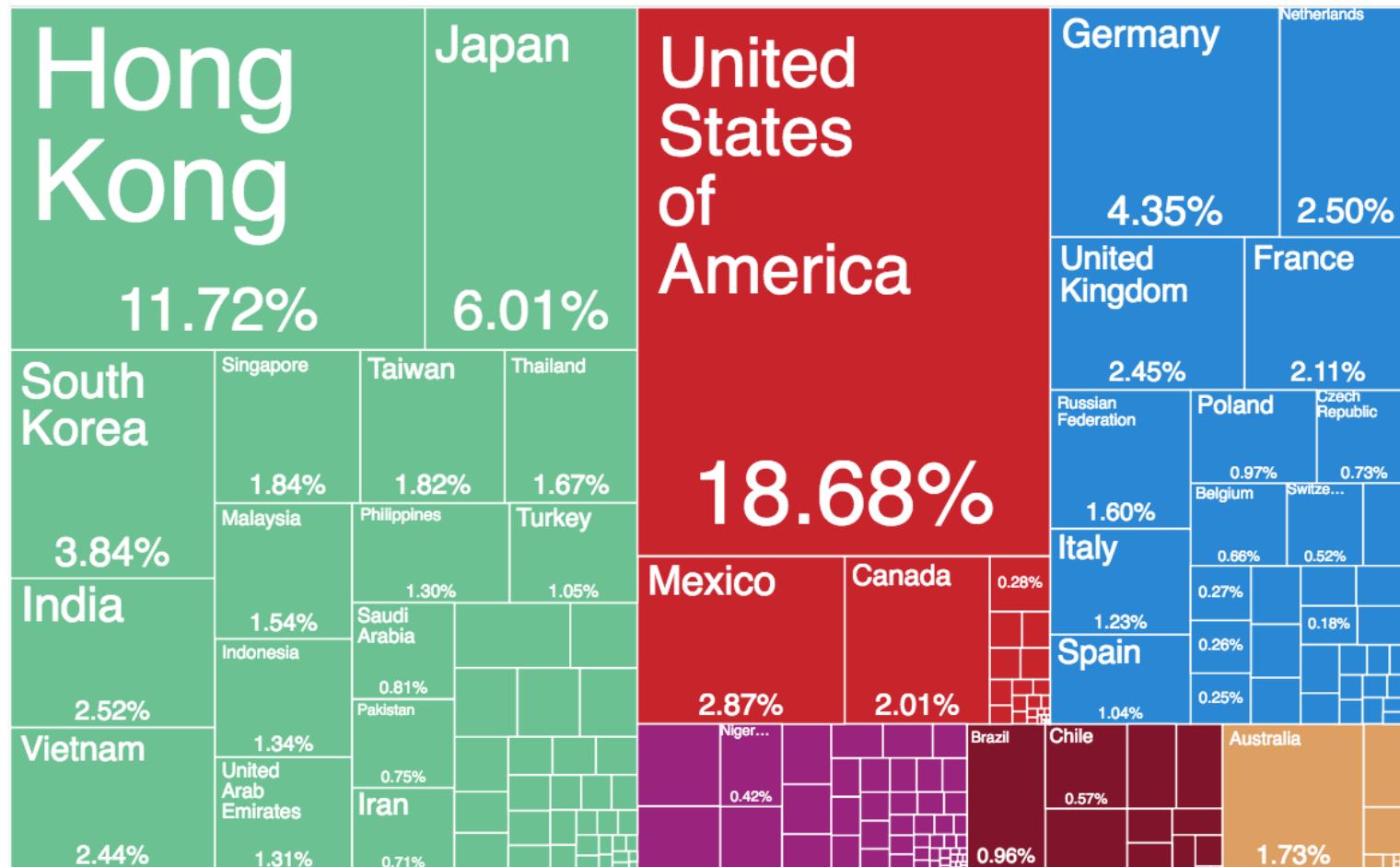
Global Trade Flows (2016)

Trade



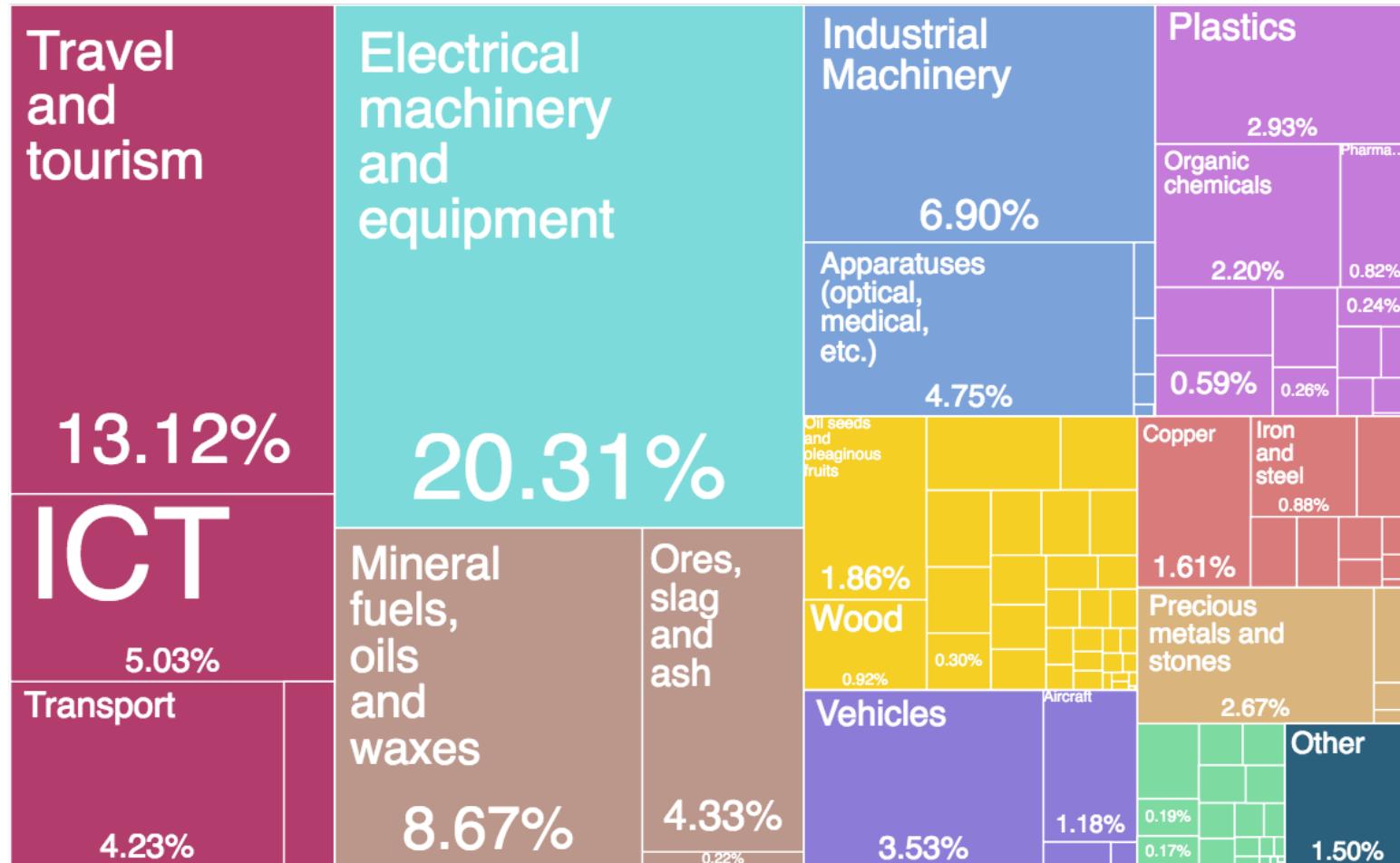
Mainland China's export in 2016

Trade



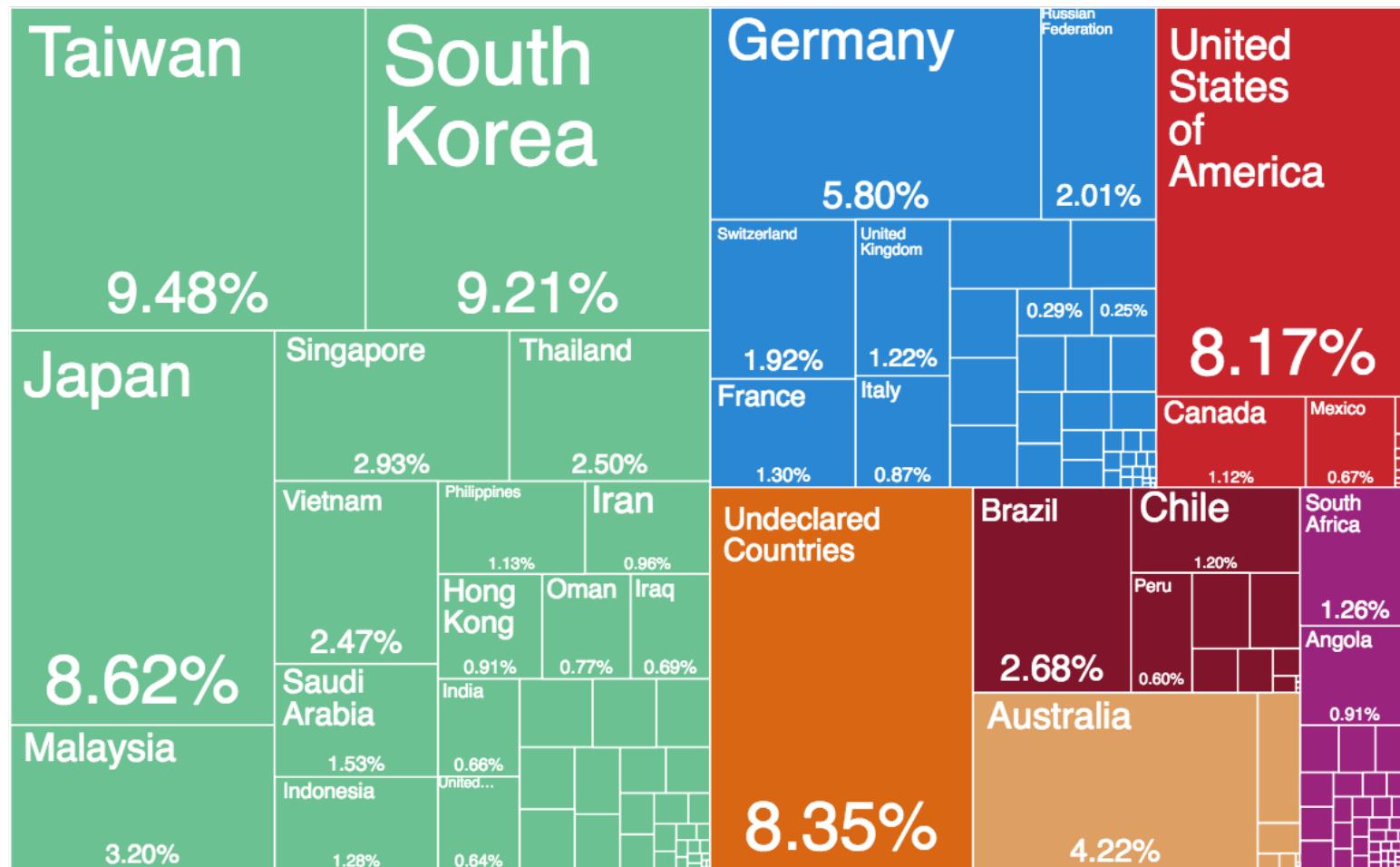
Mainland China's export in 2016

Trade



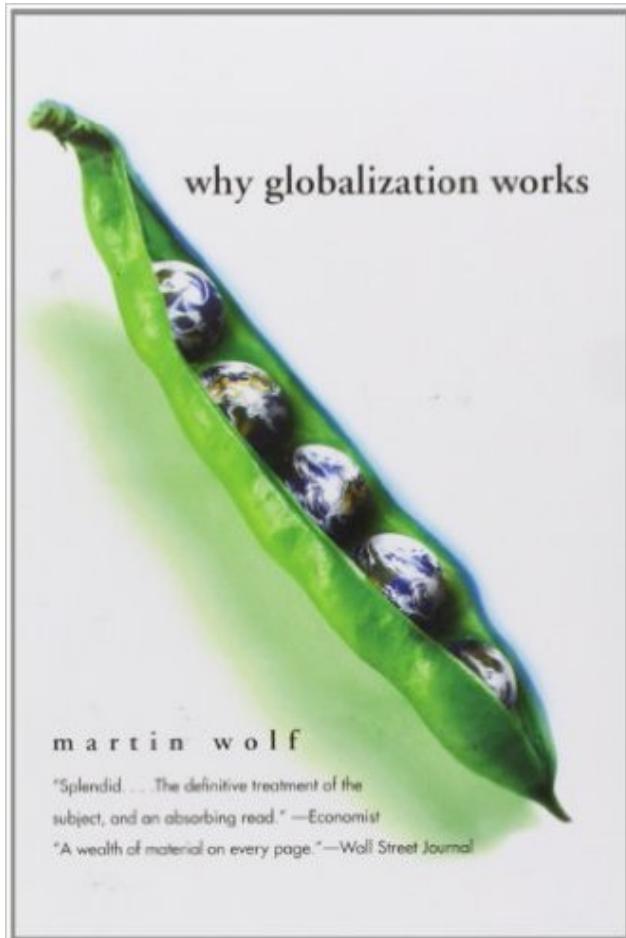
Mainland China's import in 2016

Trade

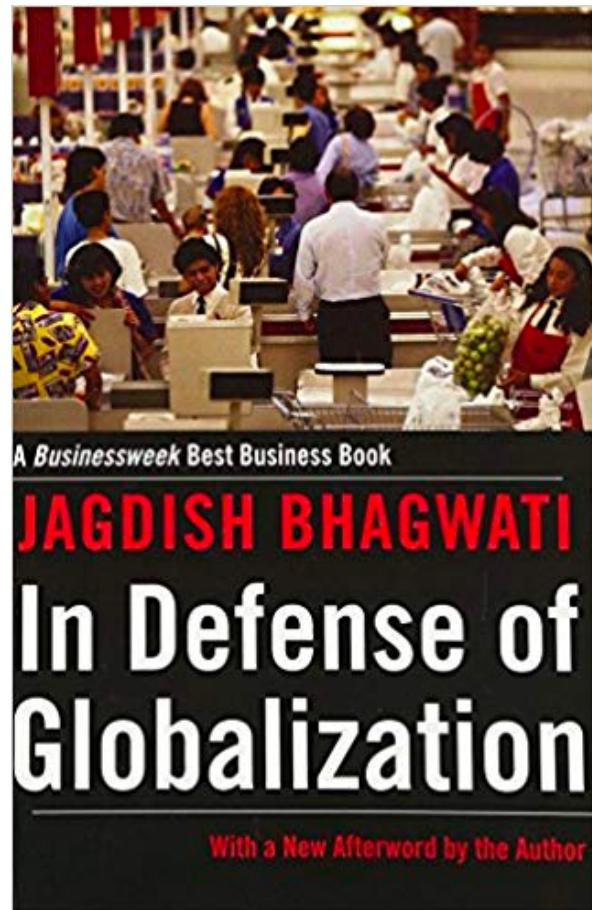


Mainland China's import in 2016

Trade

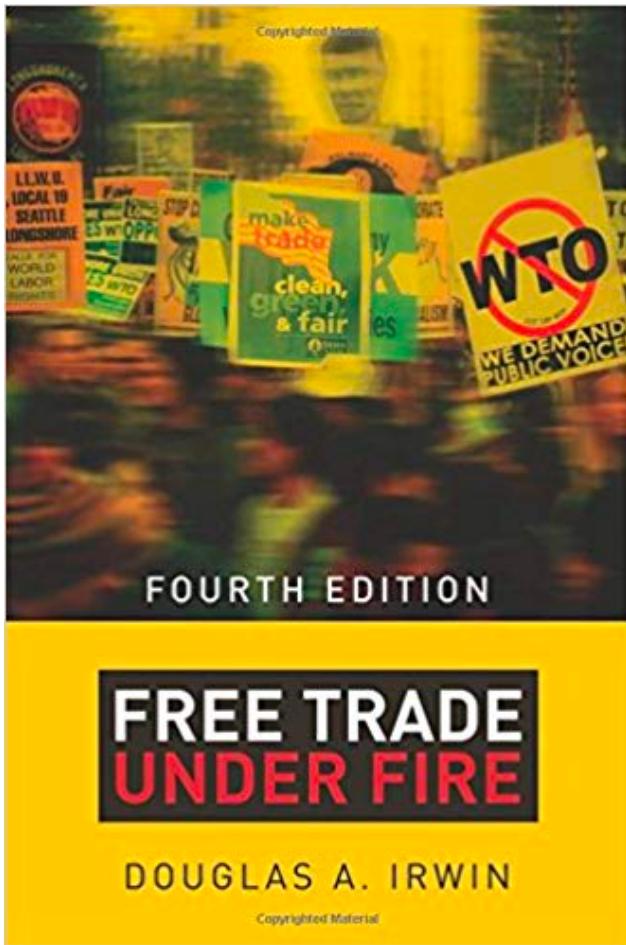


2005

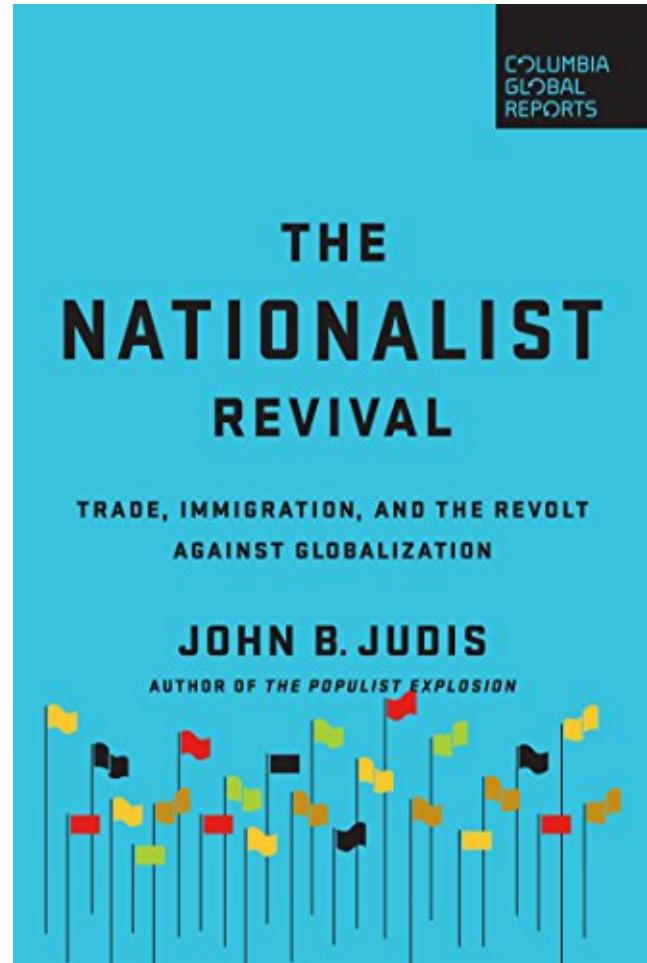


2007

Trade



2015



2018

Trade



The US-China Trade War

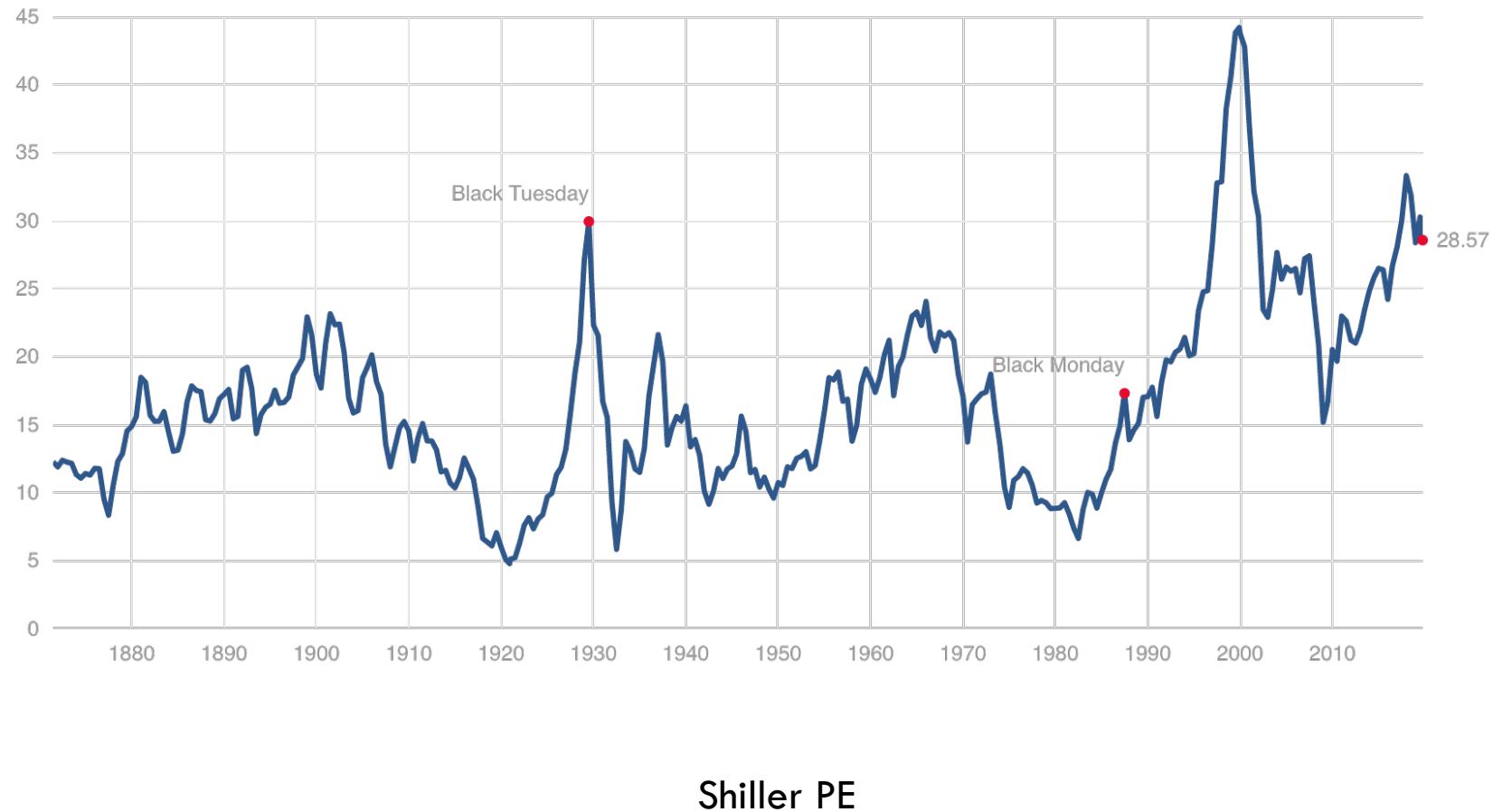
Industrial Organization (IO)

- Firm production, pricing, and competition strategies.
- Price discrimination and dynamic pricing
- Platform competition
- Anti-trust and consumer welfare

Industrial Organization (IO)



Finance

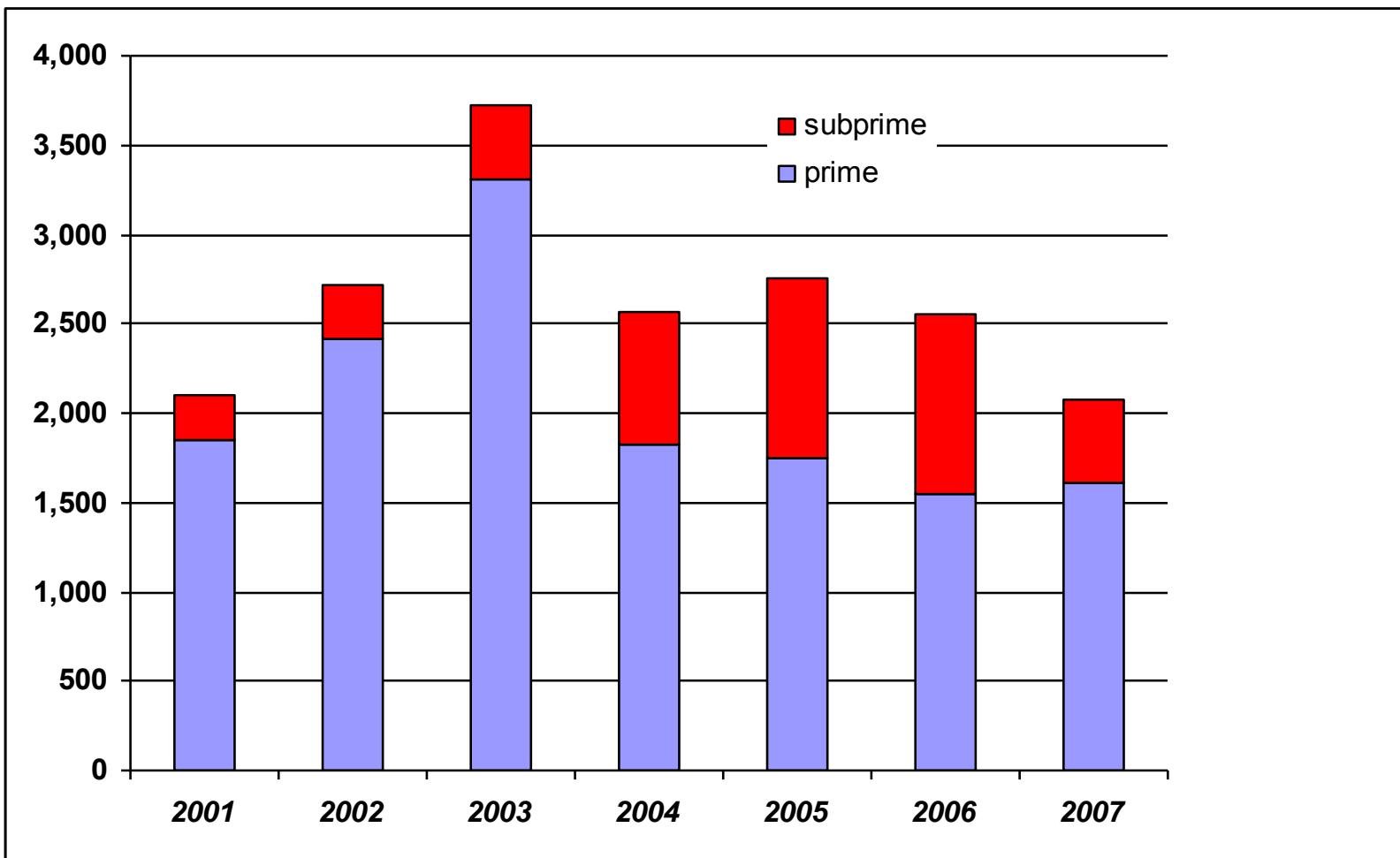


Finance



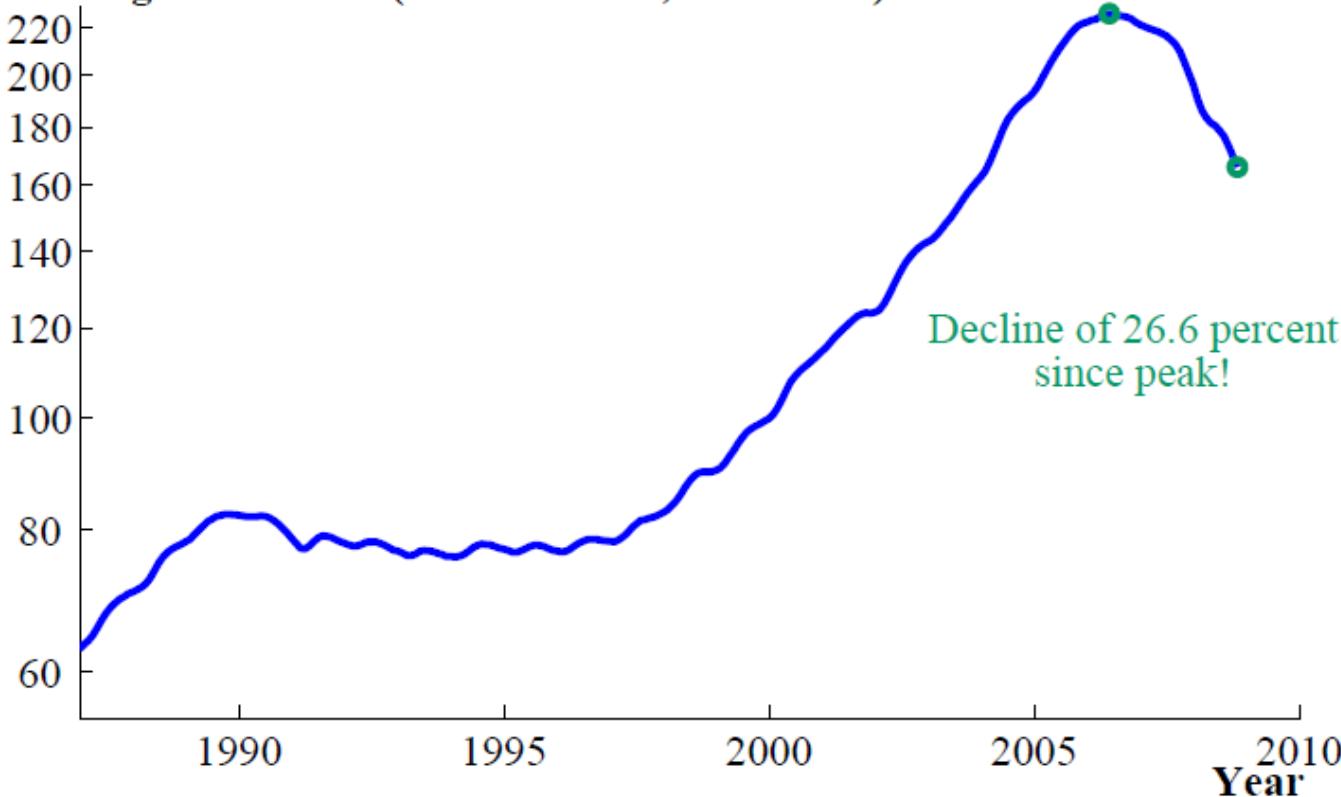
Run on Union Bank, New York, Apr 26, 1932

Finance



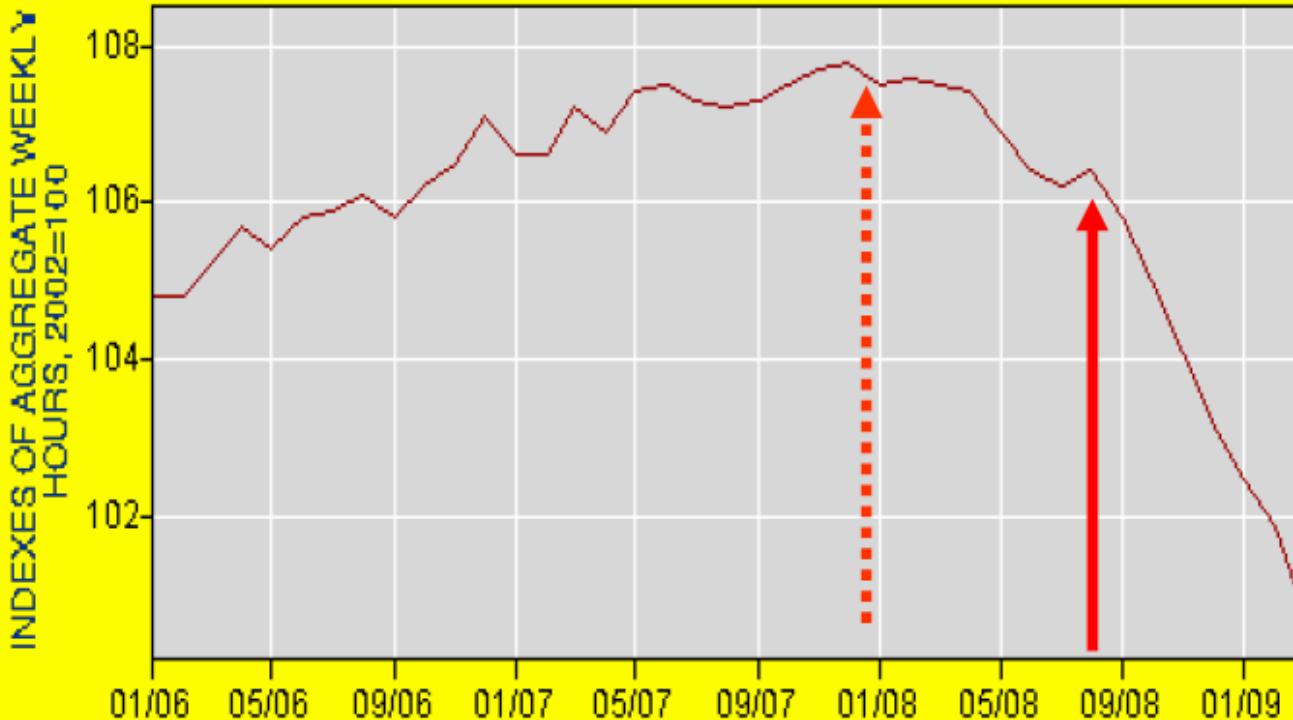
Finance

Housing Price Index (Jan 2000=100, ratio scale)



Note: After rising sharply in the years up to 2006, housing prices have since fallen dramatically. Source: The S&P/Case-Shiller U.S. 10-City monthly index of housing prices (nominal).

Finance



It confirms: US recession turned severe in September^{Month}
when the worst of the financial crisis hit (Lehman bankruptcy...)

Finance

Retail and Food Services Sales (RSAFS)
Source: U.S. Department of Commerce: Census Bureau



Shaded areas indicate US recessions.
2009 research.stlouisfed.org

Finance

World GDP*

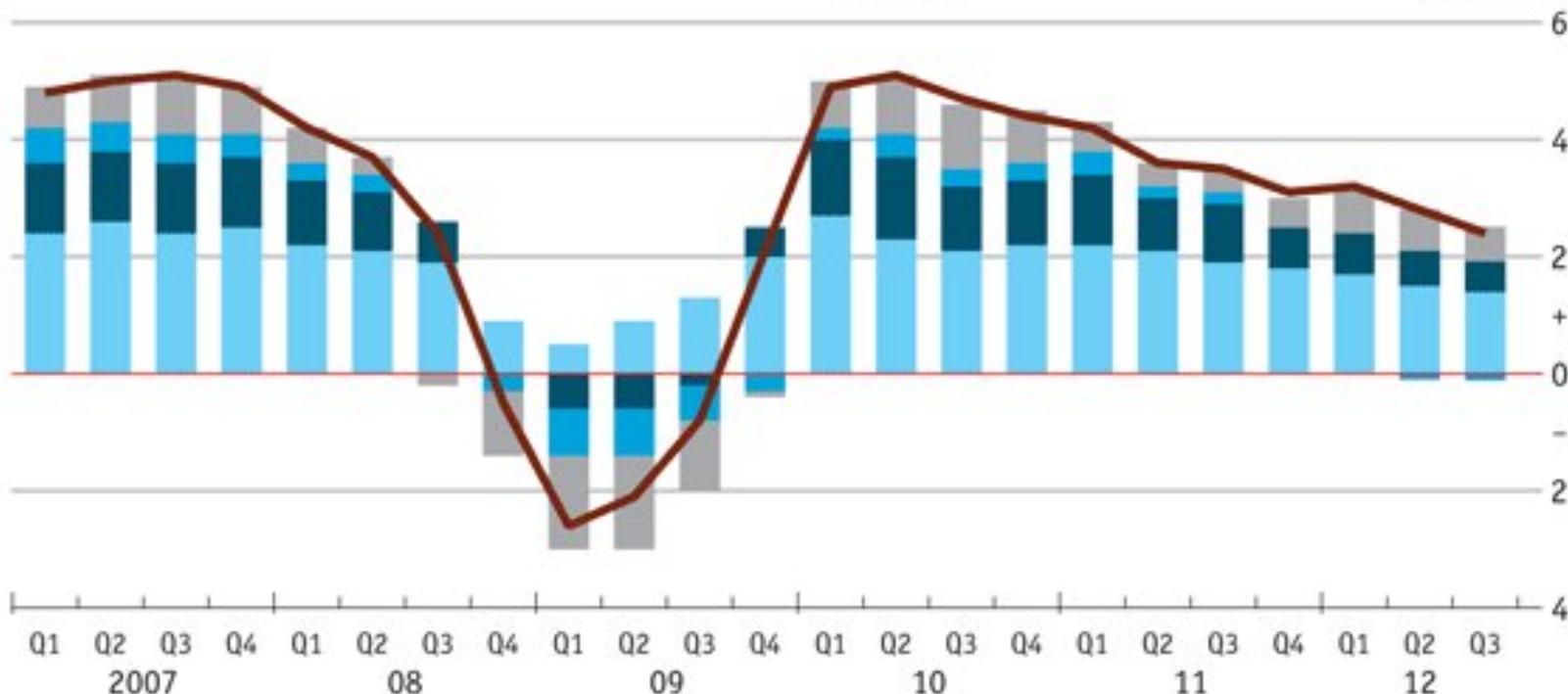
% change on a year earlier

BRICs

Other emerging countries

Euro area

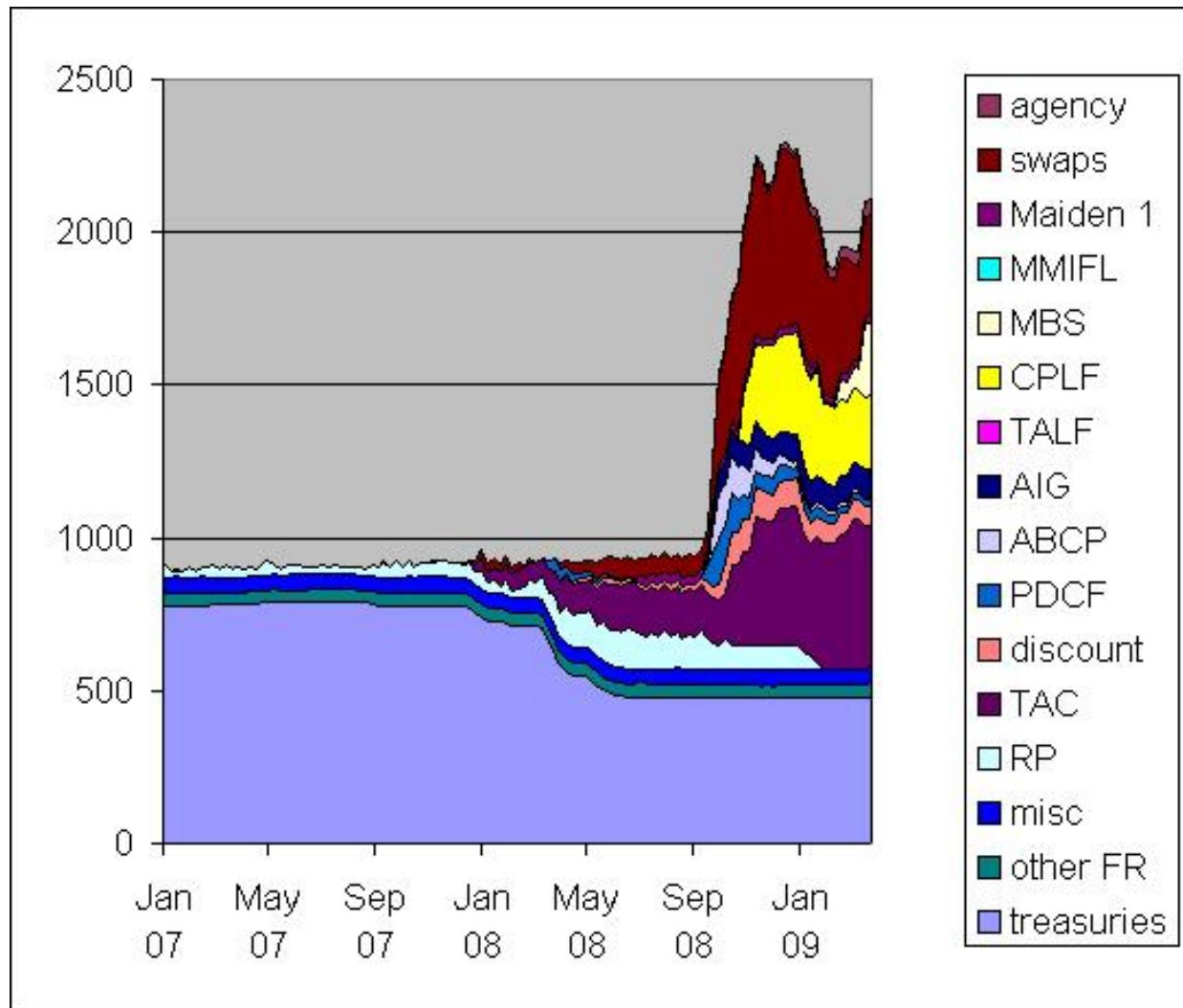
Other rich countries



Source: *The Economist*

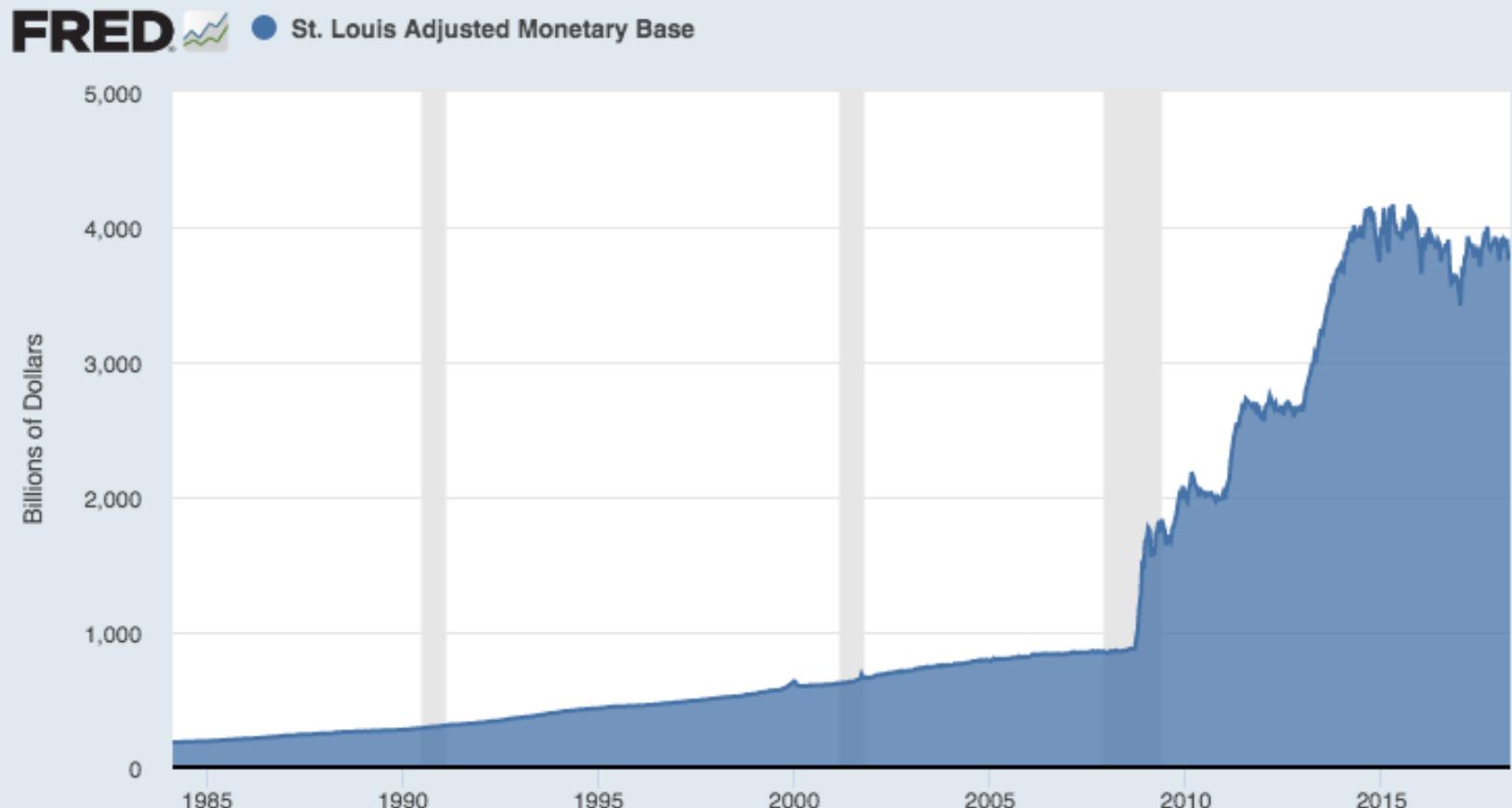
*Estimates based on 52 countries representing 90% of world GDP. Weighted by GDP at purchasing-power parity

Finance



Quantitative Easing:
Fed Asset

Finance



Source: Federal Reserve Bank of St. Louis

Finance

