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WHAT THE HUMAN BODY TEACHES US ABOUT THE GLOBAL ECONOMY

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Contents

I

SETTING UP THE THEORY

- *What the Human Body Teaches Us When Thinking About an Economy*

II

FINDING THE SIMILARITIES IN PRACTICE

- *Analogies from the Human Body To Illustrate the Workings of an Economy*

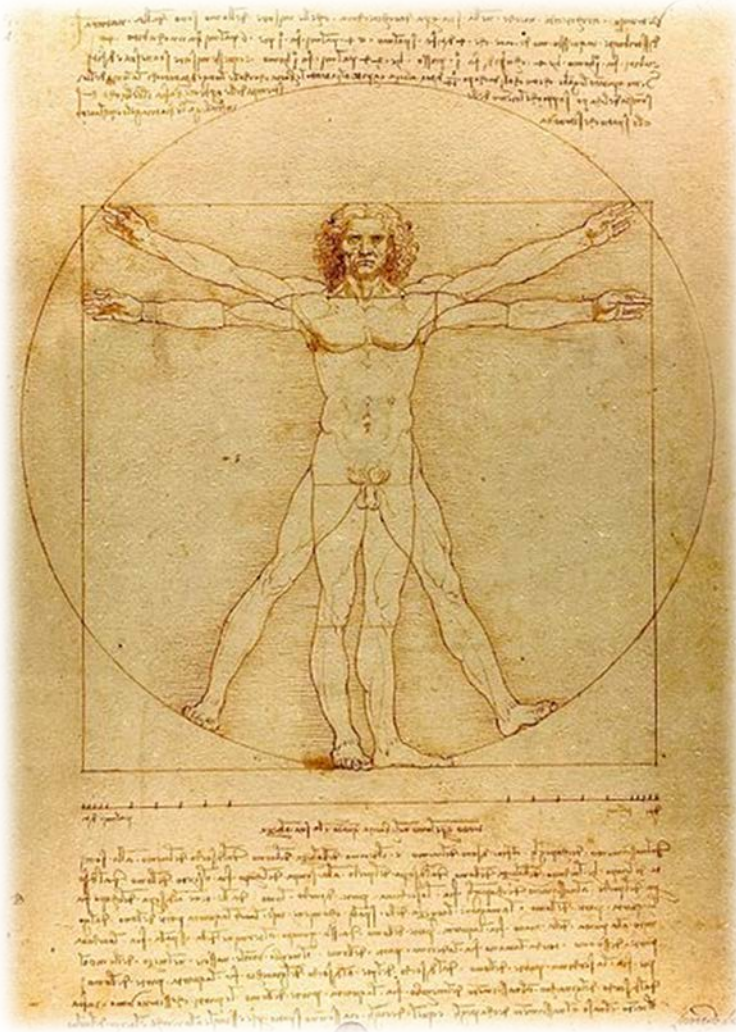


I

The Human Body and the Economy in *Theory*: What the Human Body Teaches Us When *Thinking About an Economy*

“The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed the world is ruled by little else. **Practical men, who believe themselves to be quite exempt from any intellectual influence, are usually the slaves of some defunct economist.**”– John Maynard Keynes

The Economy and the Human Body: Complexity Problems



Source: *The Human Degree*, Anthony Smith (1976), et. al.

- You have **30,000,000,000** (thirty billion) working sections in your brain.
- You have **131,000,000** photoreceptors in your eyes.
- You have **24,000** hair-like cells in your inner ear which react to sound and convert it to nerve impulses.
- Your small intestine has a surface area of **970,000** square feet.
- Your heart beats **100,000** times and pumps **2,000** gallons of blood every day.
- You have **60,000** miles of blood vessels in your body.
- You breathe **438** cubic feet of air each day.
- There are **35,000,000** gland cells in your stomach to allow it to break down food without digesting itself.
- Your kidneys have **40** miles of tubing and clean **500** gallons of your blood every day.
- Your body has **639** muscles that must work together.
- Our joints must move **25,000,000** times in our lifetime without wearing out.
- There are **30,000,000,000,000** (thirty trillion) cells in our body with **10,000** functions.



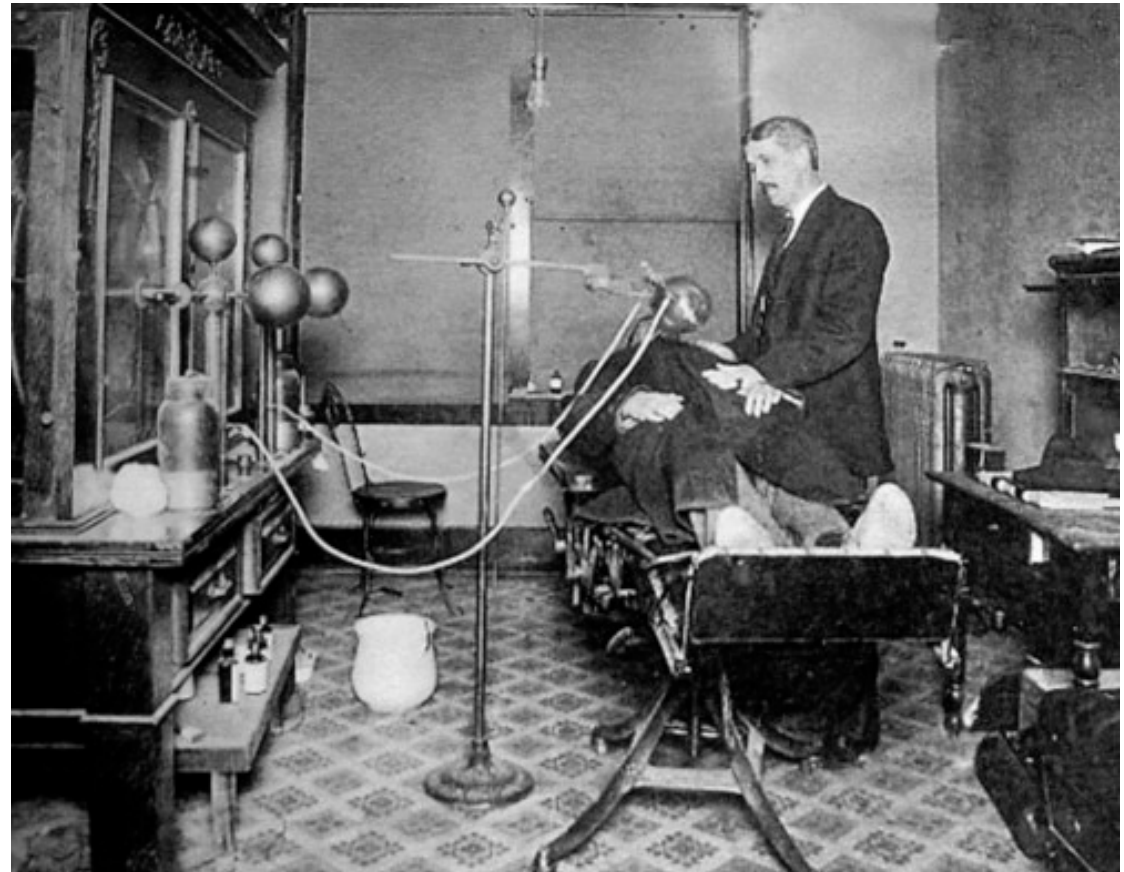


“Complex environments often instead call for simple decision rules. That is because these rules are more robust to ignorance. Under uncertainty, policy may only respond to every thunderstorm: it is coarse-tuned.”

-Andrew Haldane, Director of Financial Stability Bank of England

Problems with Doctors and Diagnoses

11
DOCTORS
APPOINTMENT
12



The New York Times :

Most of all, perhaps, **we need better coordination and communication among caregivers.** Consider what happened to Mary, my former wife and the mother of our two children. In 1988, she was lying in an intensive care unit **with less than a 10 percent chance of survival. Her first symptom, a pain in the sole of her right foot, had seemed so innocent.** A neurologist said she had most likely injured a nerve during aerobic dance and the doctor ignored our requests for further tests. But when Mary's leg began to swell, we sought the help of an internist. She diagnosed thrombophlebitis, inflammation from blood clots. Mary was then admitted to the hospital for a blood thinner, but the medical team gave her too small a dosage. Her clots extended into her lungs. **Next she suffered a heart attack, respiratory failure, renal failure and shock.**

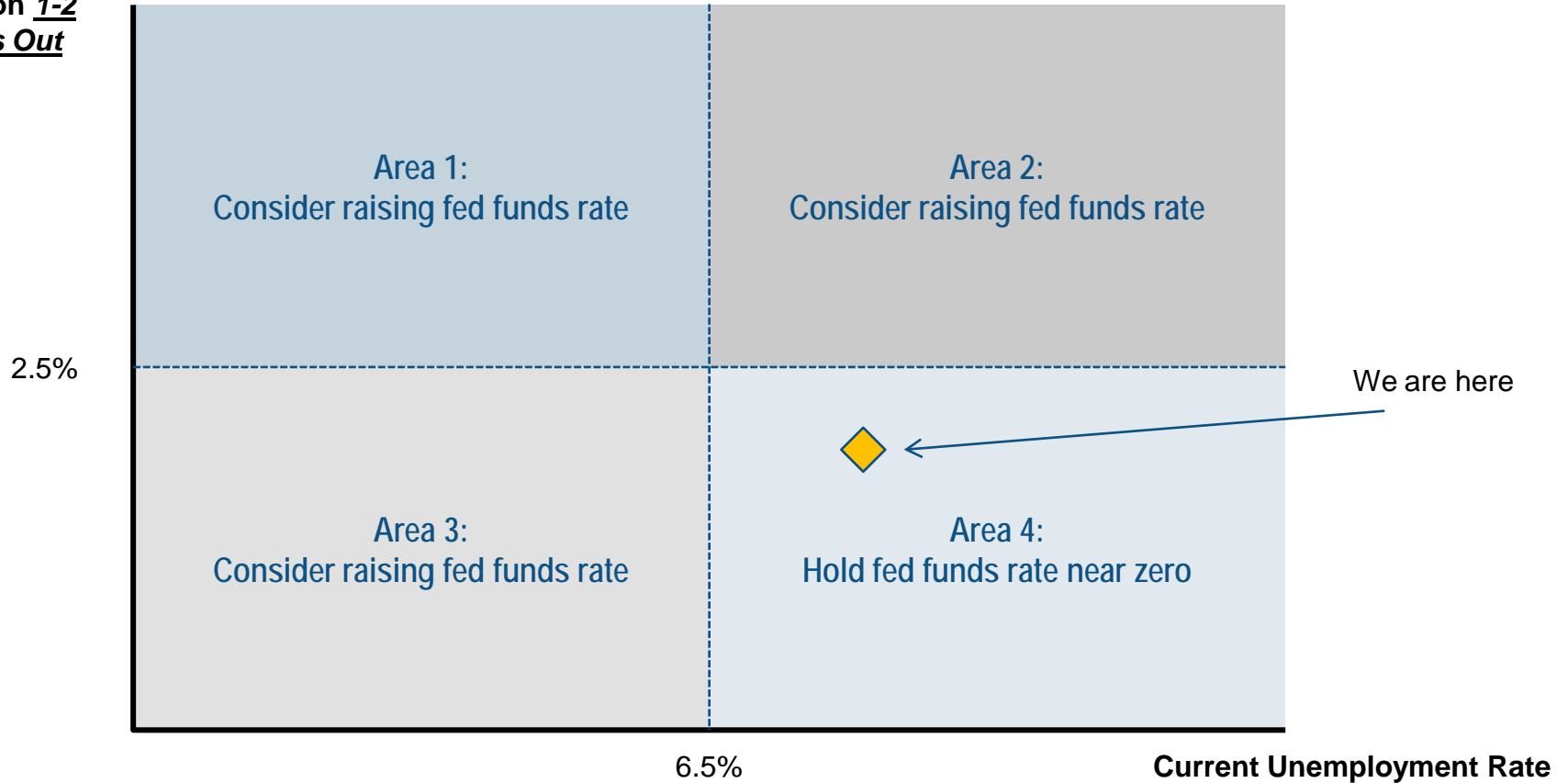
In desperation we transferred her care to another physician, who finally began treating her with corticosteroids for inflammation of the blood vessels. **Over the next 24 hours, Mary's symptoms reversed and she fully recovered. But we nearly lost her as a consequence of delayed decision-making, poorly coordinated care and a medication error.**

19 February 2013

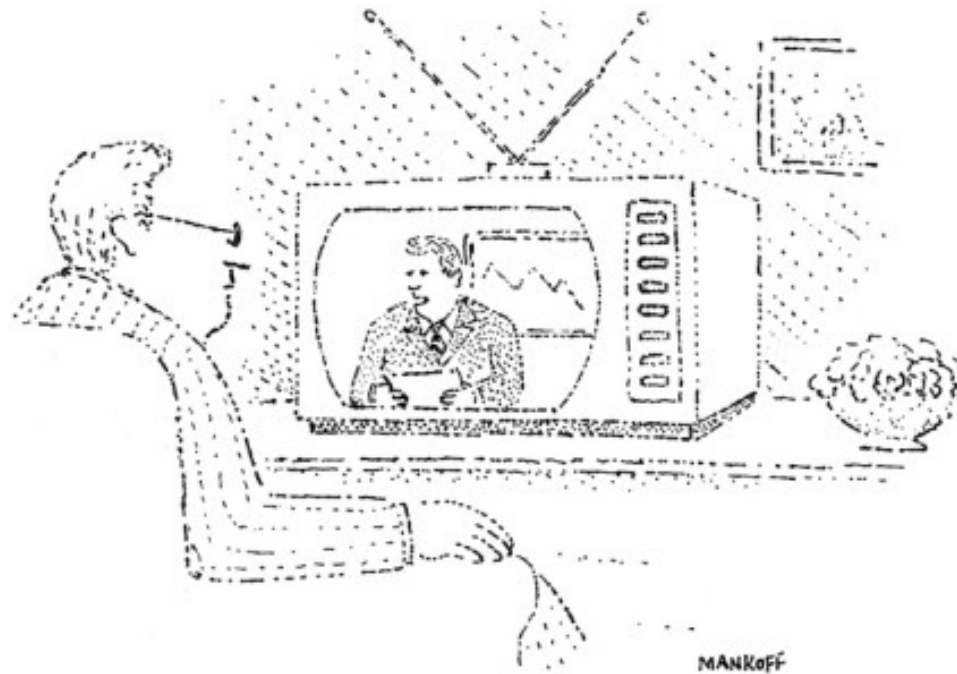
	March 2012	March 2013	Our Comment
Unemployment Rate	8.3%	7.6%	Better
Monthly Nonfarm Payroll Change (in 1000s)	271k	88k	Weaker
6 month Avg. Monthly Nonfarm Payroll Change (in 1000s)	230k	187k	Weaker
Initial Claims for Unemployment Insurance (4WMA)	369k	340k	Better!
Labor Force Participation Rate	63.9%	63.3%	Weaker!
Quits Rate	1.6%	1.7%	Nearly unchanged
Hire Rate	3.3%	3.3%	Unchanged

In a speech in late February, Federal Reserve Vice Chair Janet Yellen (one possible successor to Mr. Bernanke) detailed her “data dashboard” in a speech. Above we list the key indicators she follows along with our assessment of the latest data versus year ago levels. In short: the labor market is still disappointingly weak. At the press conference after the March 19-20th FOMC meeting, Bernanke said: “we’ll be looking for sustained improvement in a range of key labor market indicators, including obviously payrolls, unemployment rate, but also others like the hiring rate, the claims for unemployment insurance, quit rates, wage rates, and so on.”

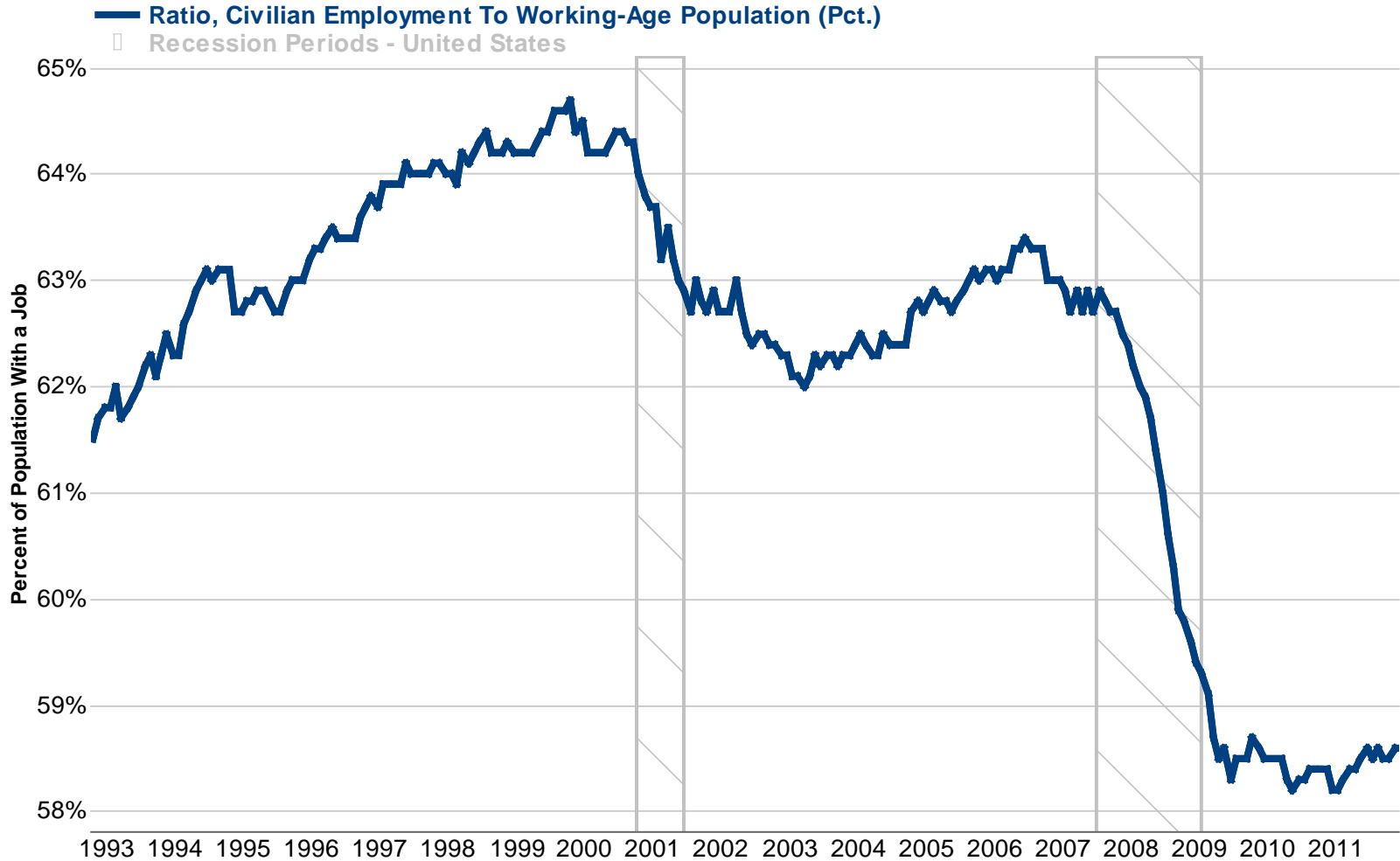
FOMC
Forecast Core
Inflation 1-2
Years Out



Treating Symptoms or Causes? The Plight of Policy



"On Wall Street today, news of lower interest rates sent the stock market up, but then the expectation that these rates would be inflationary sent the market down, until the realization that lower rates might stimulate the sluggish economy pushed the market up, before it ultimately went down on fears that an overheated economy would lead to a reimposition of higher interest rates."



Source: BLS



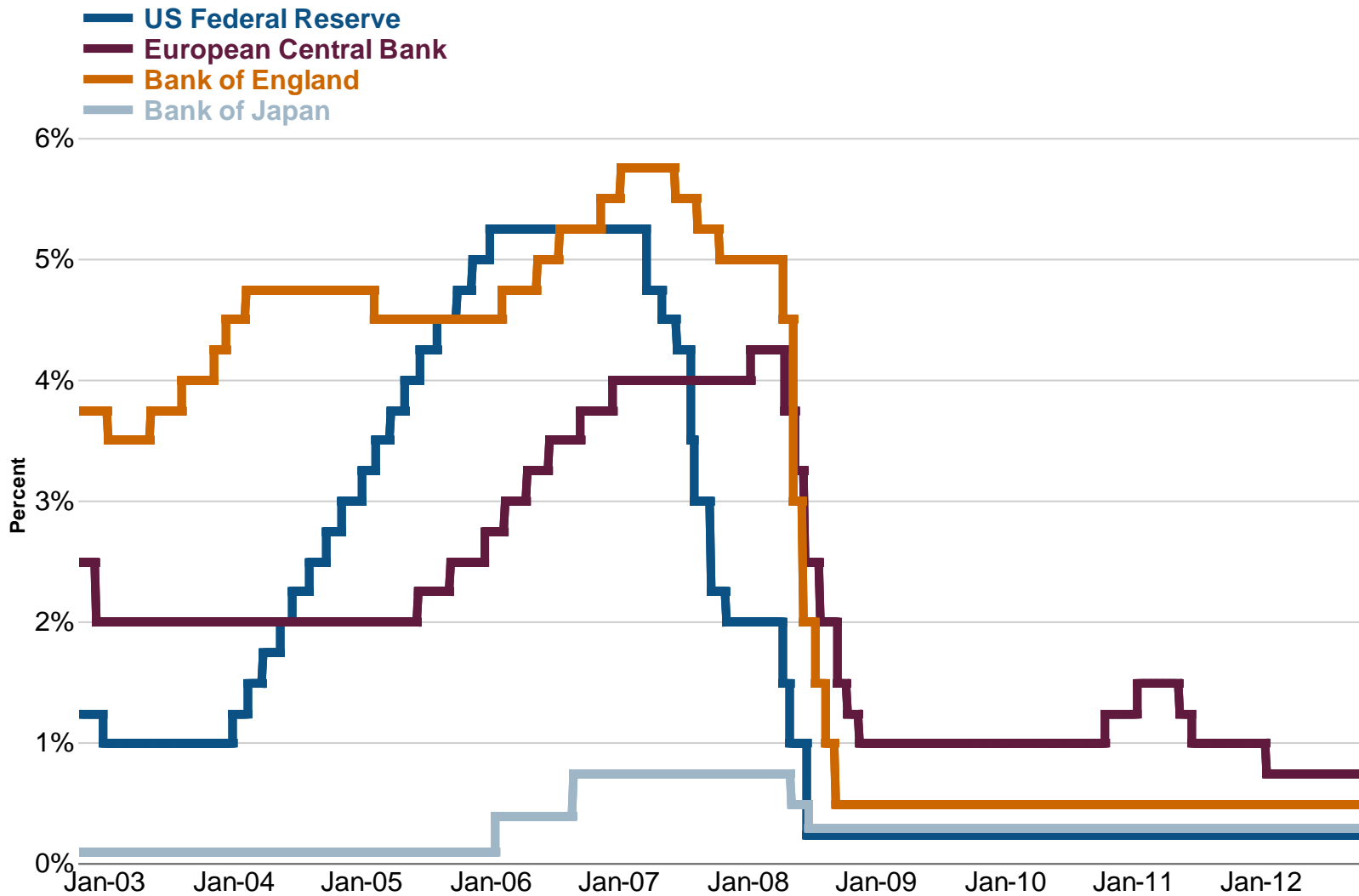
II

The Human Body and the Economy in *Practice*: Analogies from the Human Body To Illustrate the *Workings of an Economy*

“Nothing endures but change...There is nothing permanent except change. All is flux, nothing stays still.” – Heraclitus, 500 BCE

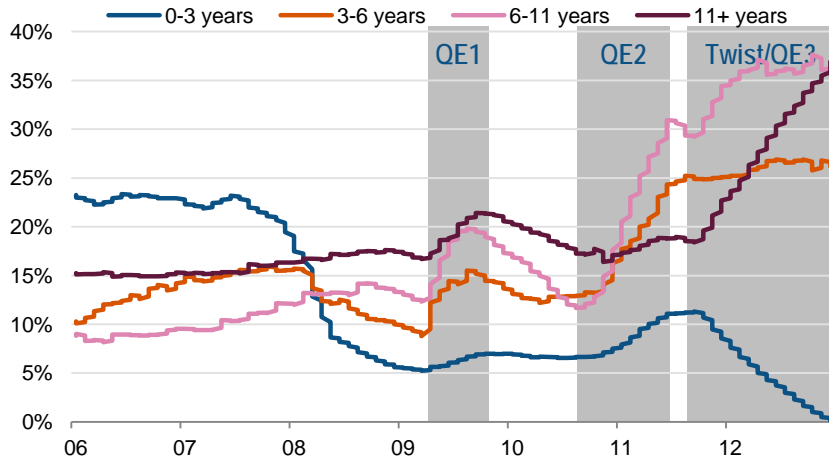
Reusable Plastic Bags and Bacteria



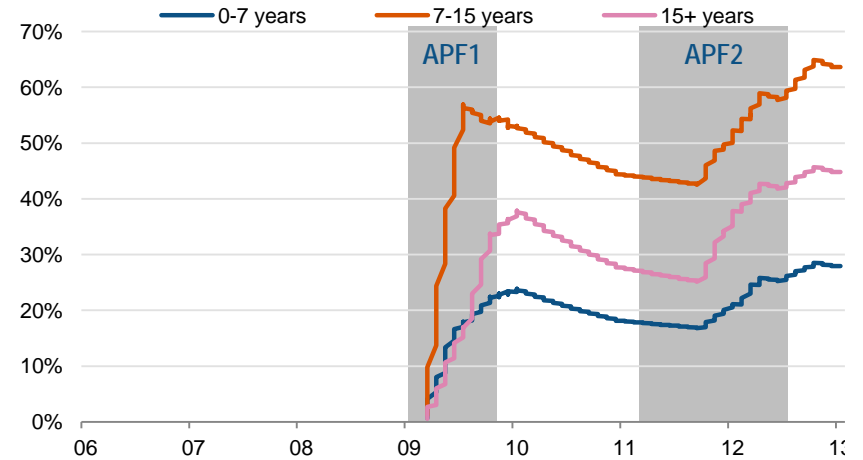


Source: National Central Banks

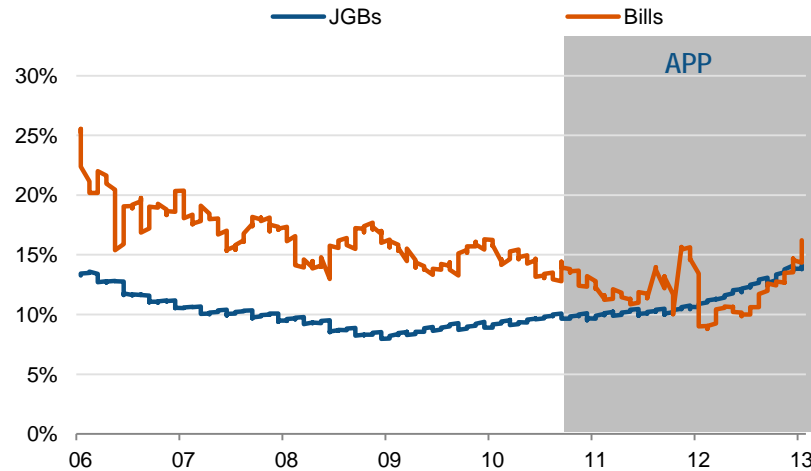
Fed Holdings of U.S. Treasury Securities



BoE Holdings of U.K. Gilts



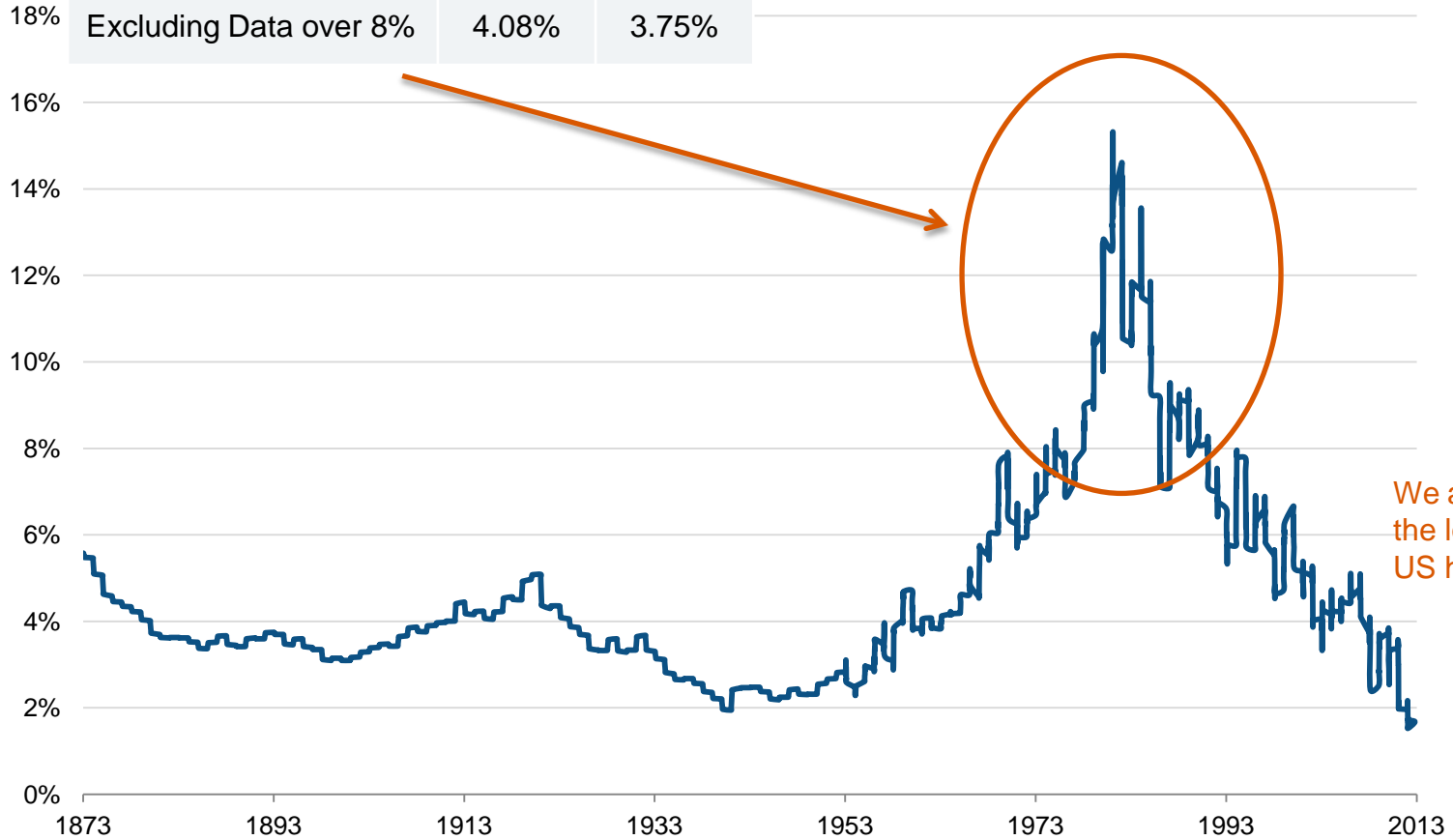
BoJ Holdings of Japanese Government Securities



Source: International Monetary Fund

Practice #1: Are Interest Rates Too High?! Or Too Low?

Data	Average	Median
Total Statistics	4.65%	3.92%
Excluding Data over 8%	4.08%	3.75%



We are currently at the lowest rates in US history!

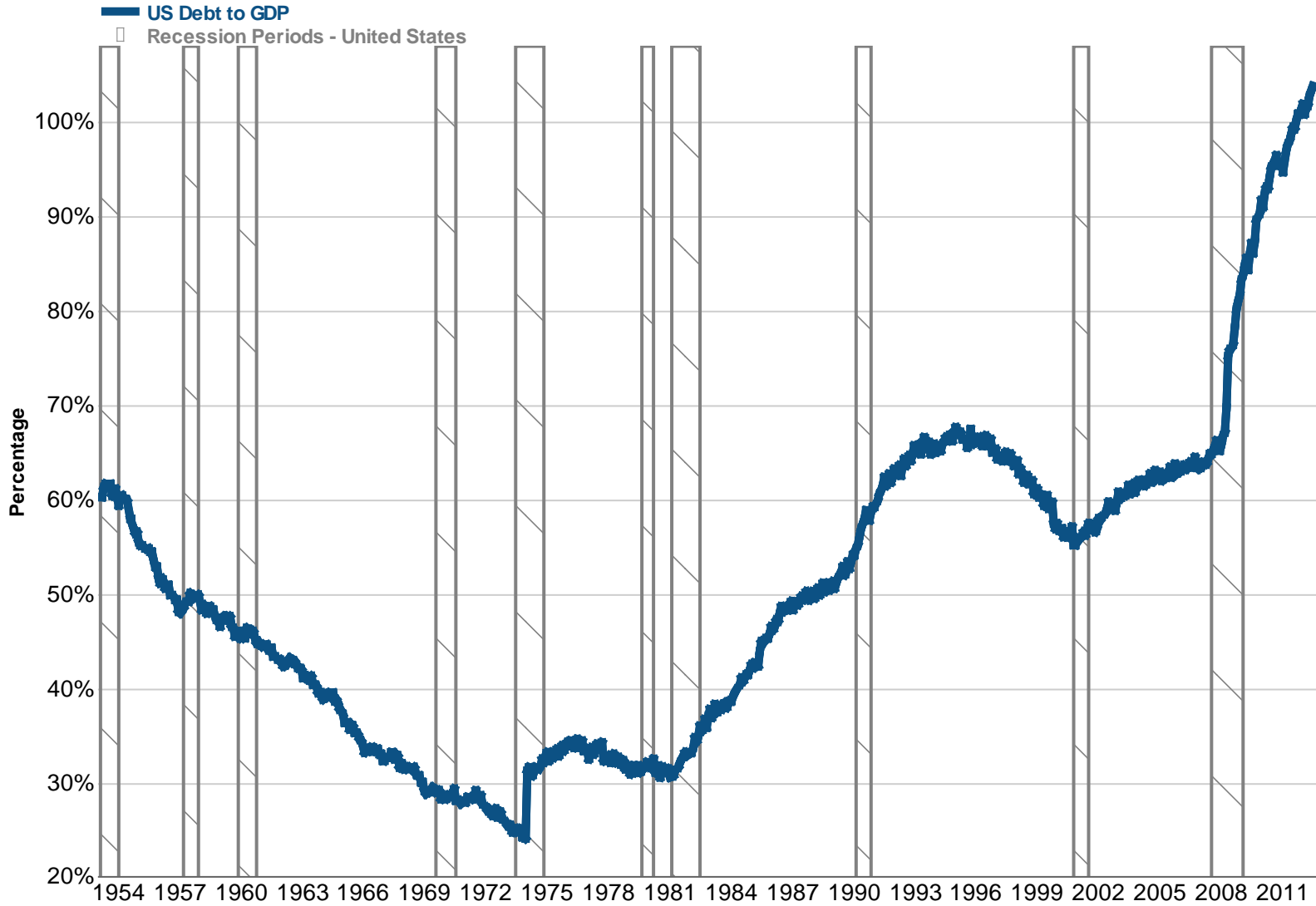
Source: Robert Shiller

Note: Nominal interest rates for 10 year US Treasury Note; prior to 1953 nominal interest rates for longer-term US Treasury bonds.

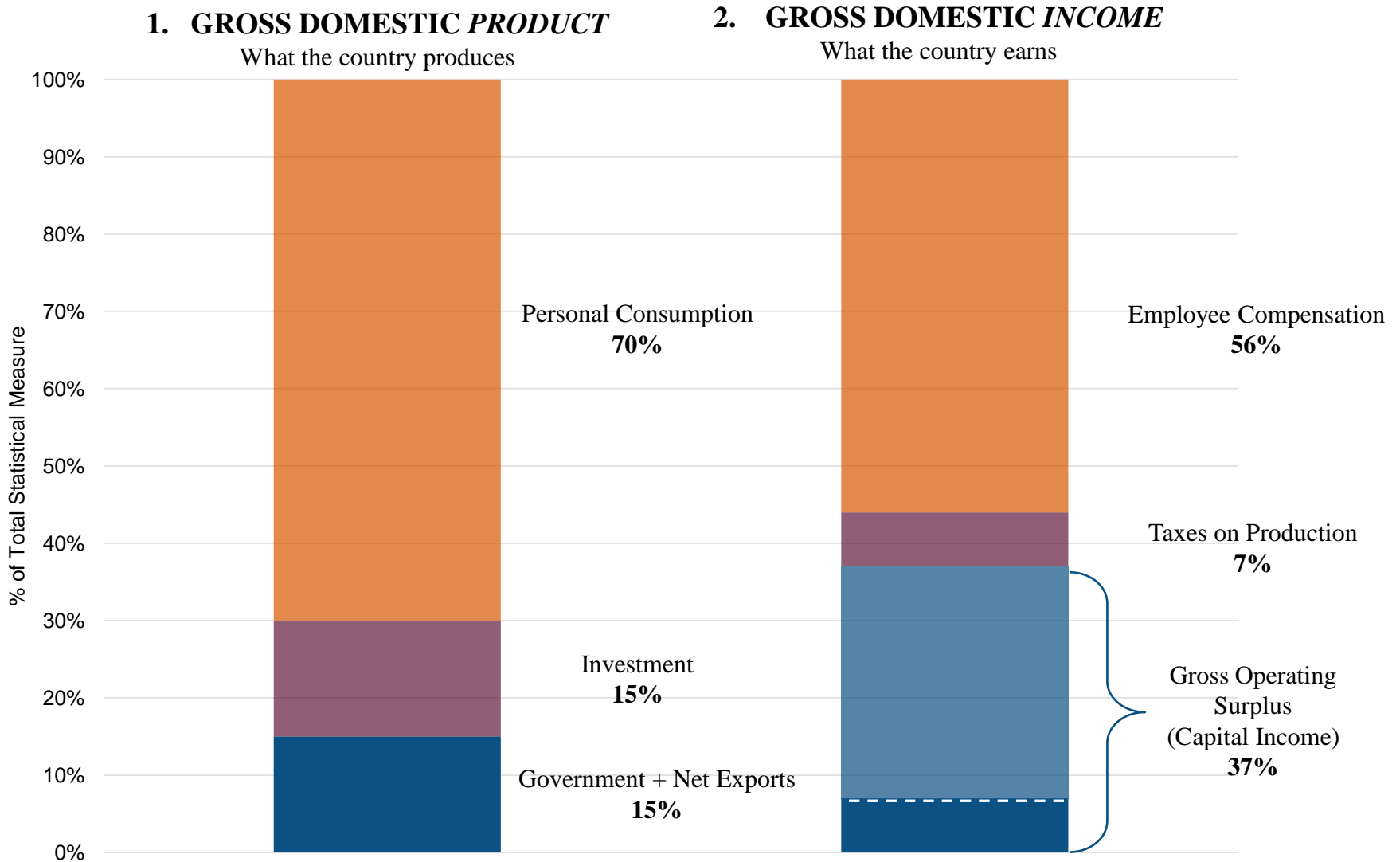
Keynesianism and Dieting



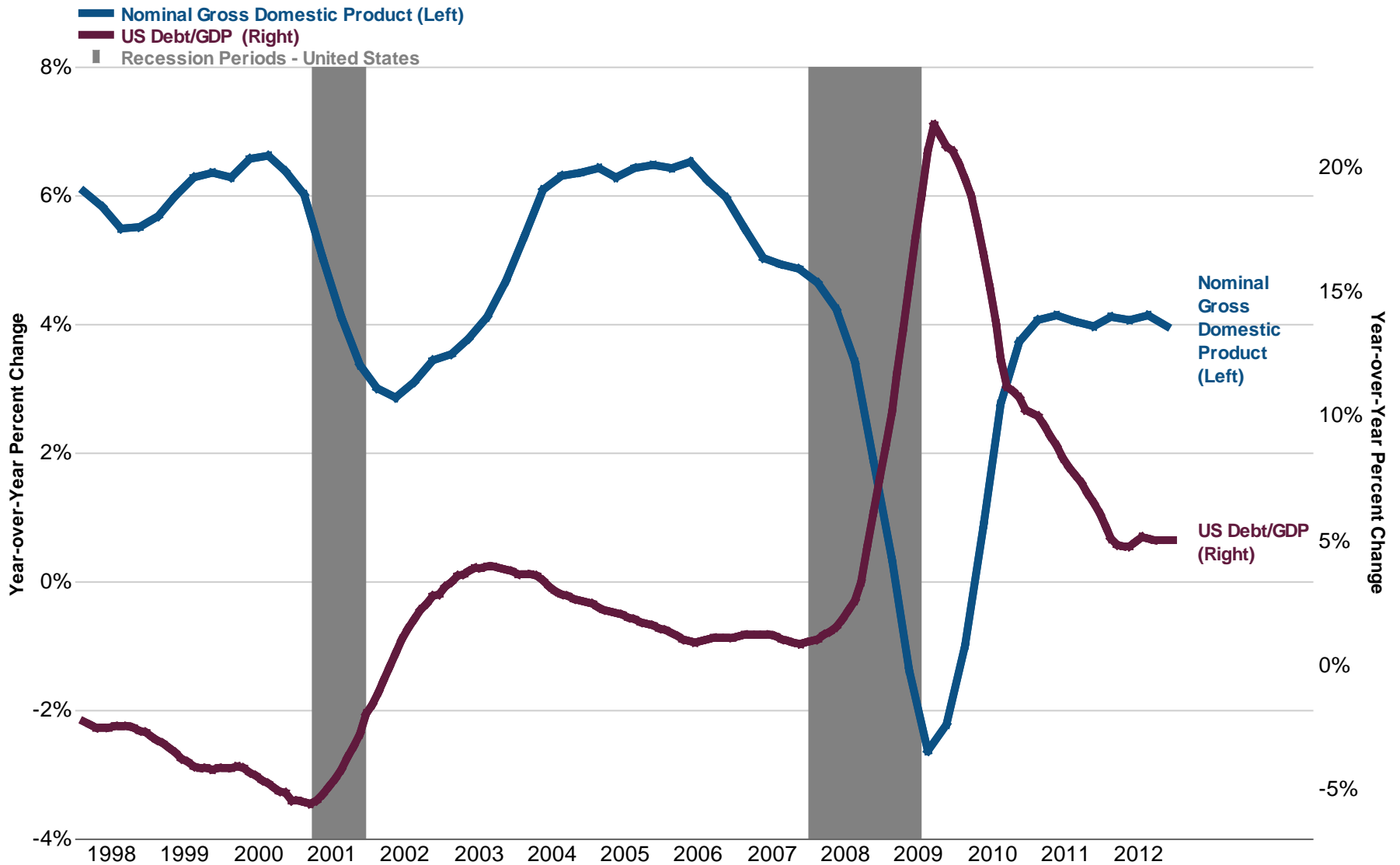




Source: Treasury Department



Source: Bureau of Economic Analysis



Sources: BEA, Treasury Department

Cholesterol and the Free Market

The body needs oxygen



Blood carries oxygen



Blood needs clear passageways through your arteries and veins. Cholesterol (plaque) builds up in your circulatory system and can lead to heart-attacks, strokes, and many sorts of other potential fatal consequences



Some good cholesterol keeps the blood stream cleaner

The economy needs entrepreneurs



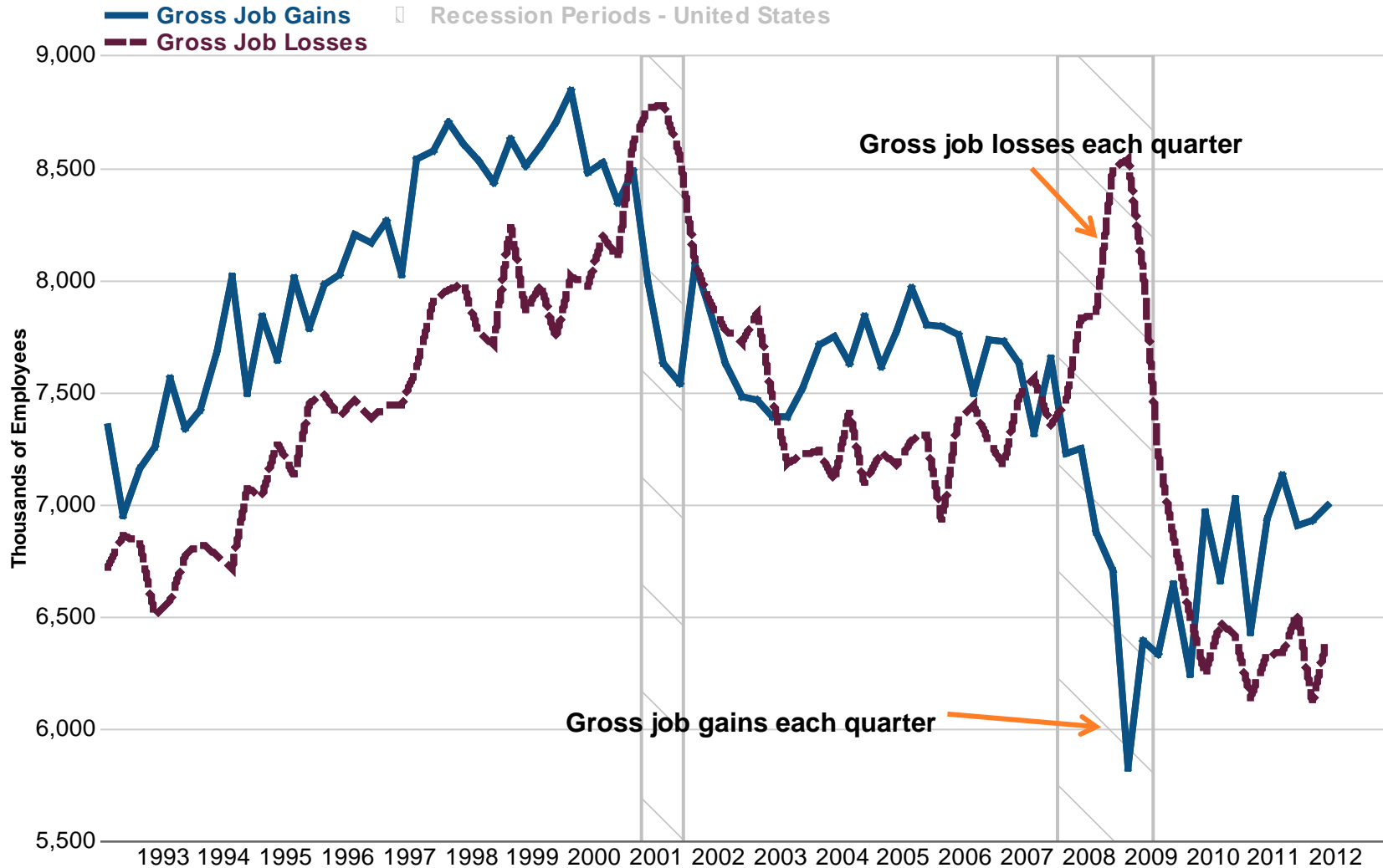
Entrepreneurs start businesses, employ people, test monopolies



Entrepreneurs already bear enormous risk: they need no regulation to make the process harder. Overly cumbersome regulation discourages innovation, stymies boldness, and withers away growth



Some regulation is necessary to keep the playing field level



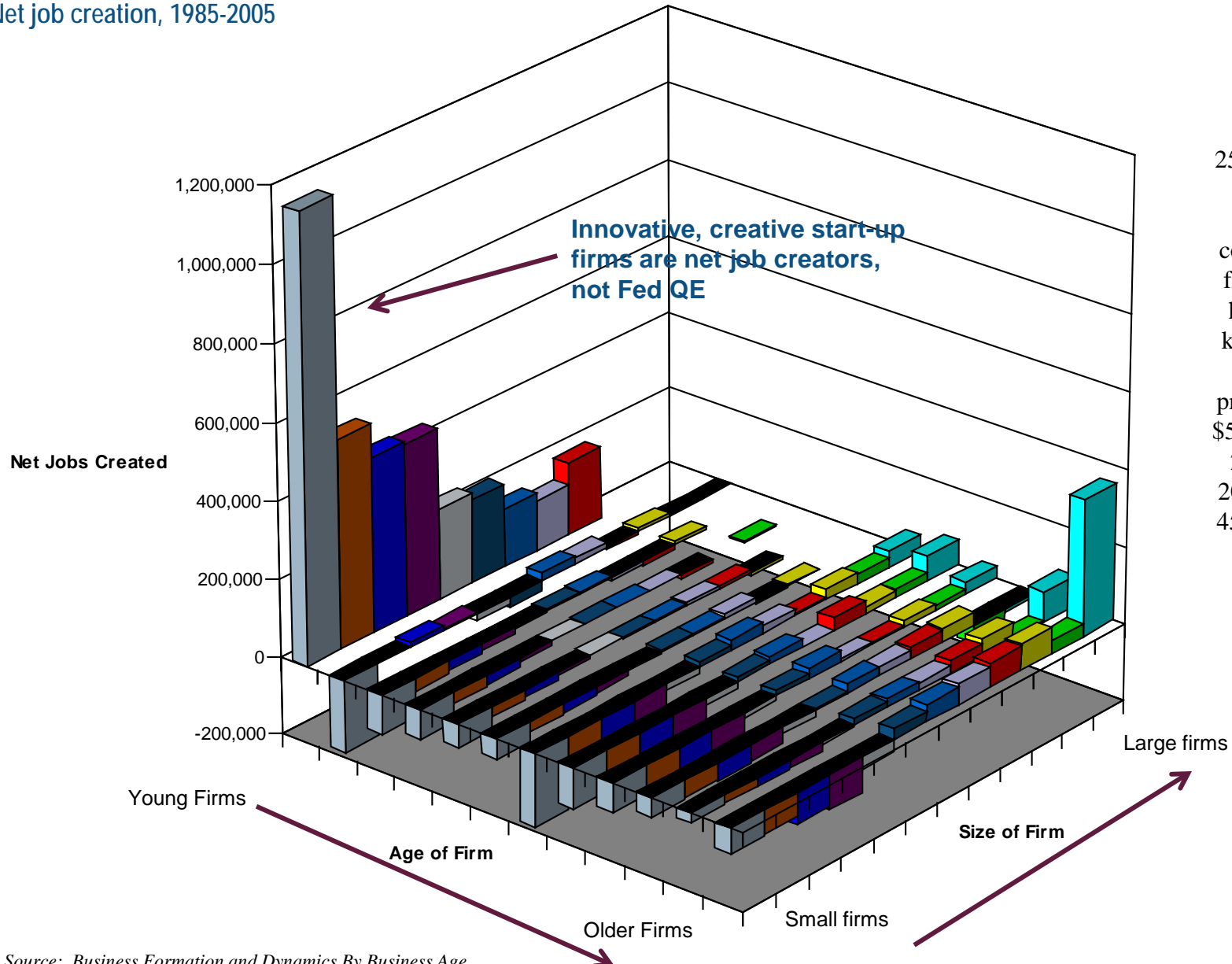
Source: BLS

©FactSet Research Systems

Source: BLS

Updated through Q2 2010

Net job creation, 1985-2005

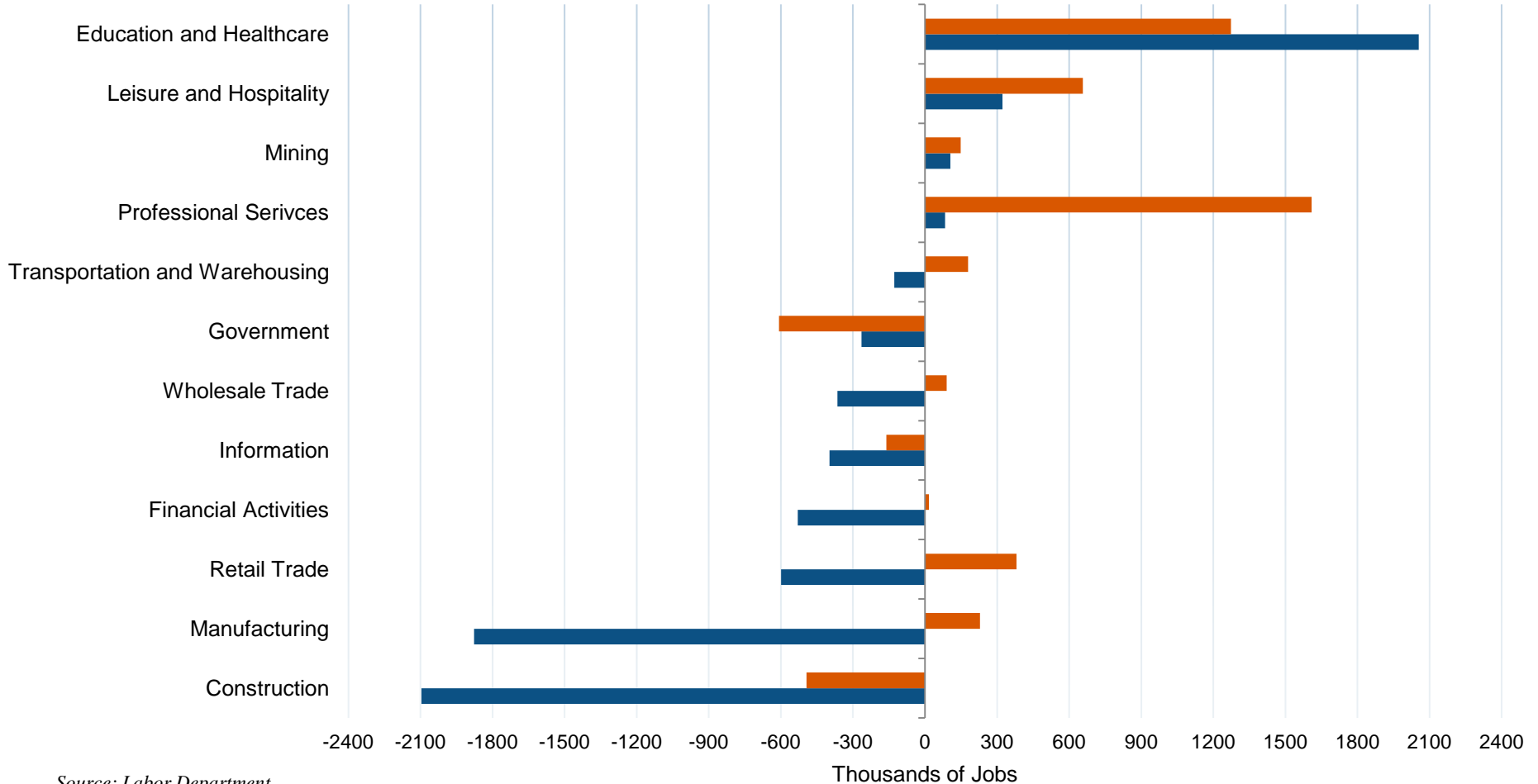


25.3% of the 28,776 engineering and technology companies founded from 1995 to 2005 had an immigrant key founder. These 7,283 companies produced more than \$52 billion dollars in 2005 sales and in 2005 had just under 450,000 employees.

Source: *Business Formation and Dynamics By Business Age*

Lifestyle Changes and Structural Recovery

■ Jobs Gained Since the Recovery Began (June 2009 to December 2012) ■ Total Jobs Gained or Lost Since the Start of the Recession (August 2007 to December 2012)

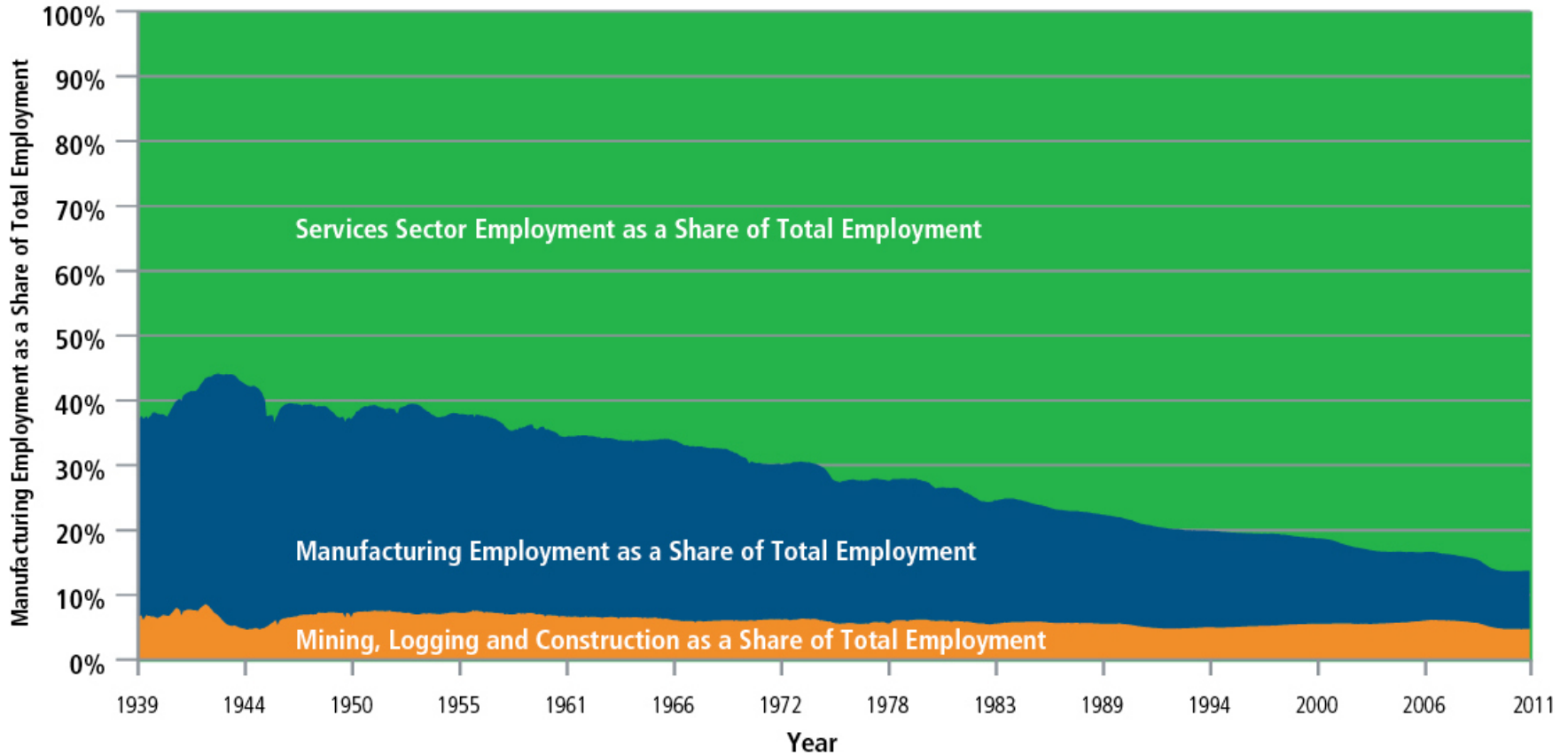


Source: Labor Department

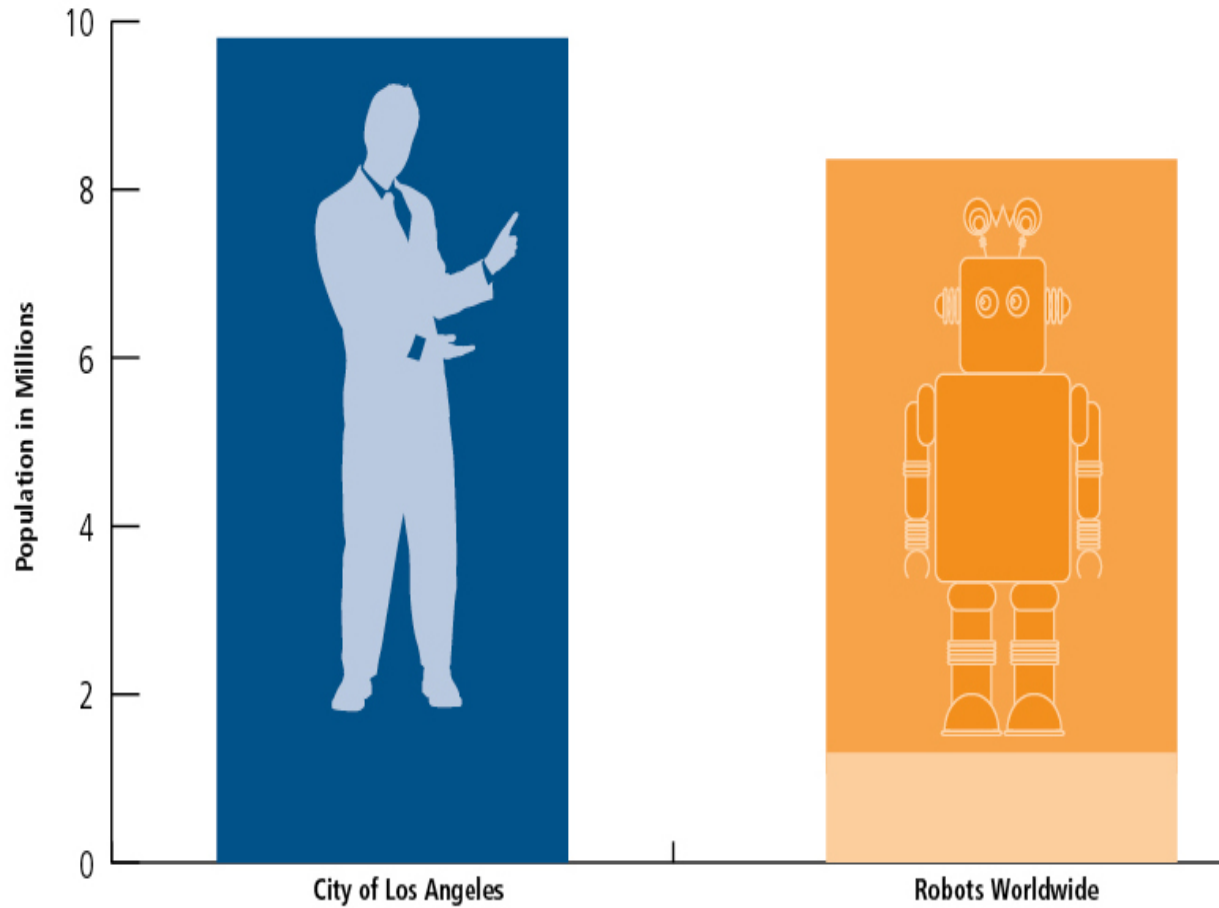
Structural misalignments in the US labor market appear in the sector-by-sector breakdown. Construction and manufacturing led the job declines—and both sectors have yet to recover. However, on net, some sectors like education/health care and professional services have, on net, added to payrolls over the period.



ARE MACHINES STEALING OUR JOBS?

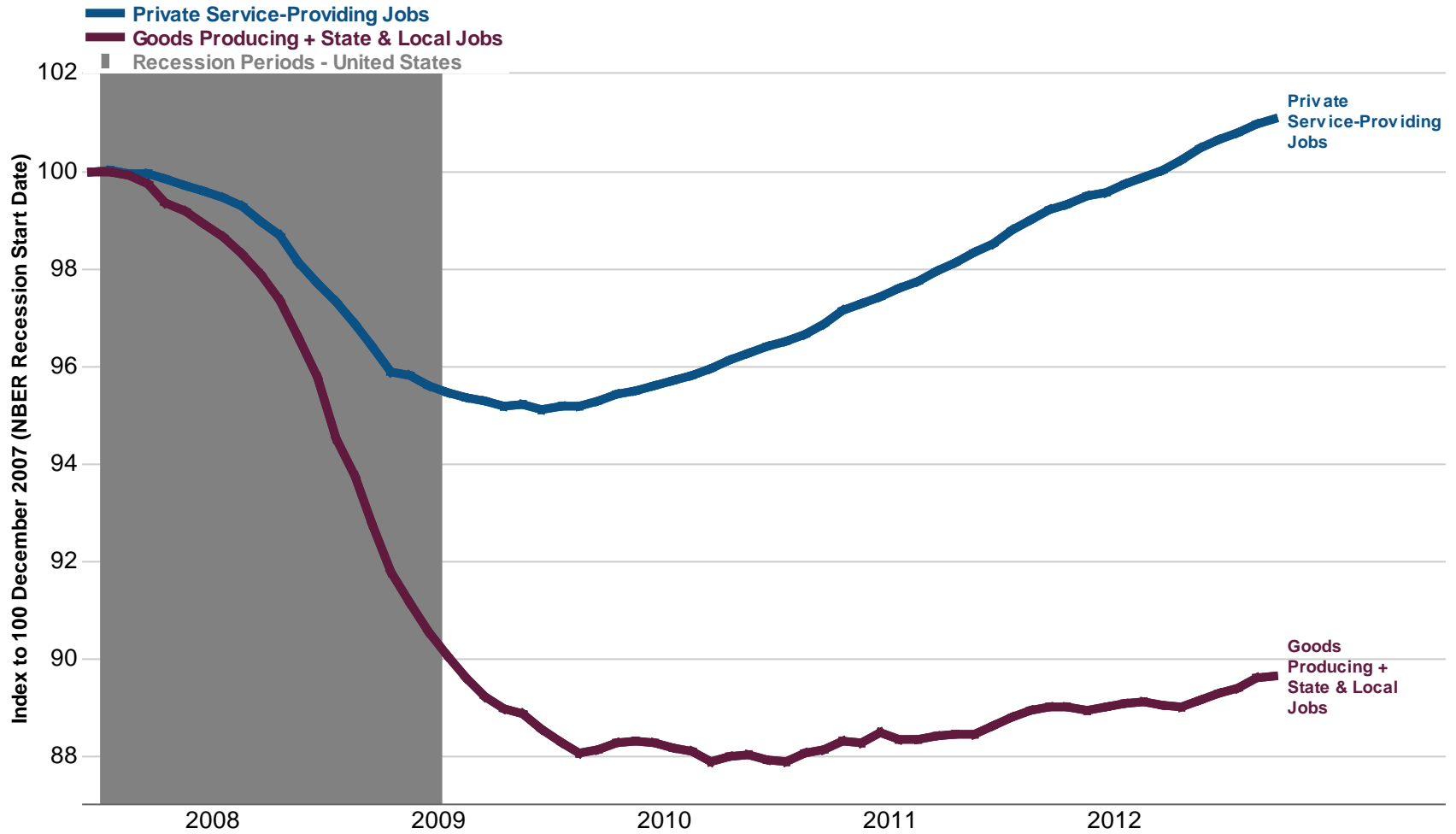


Sources: Bureau of Labor Statistics, Payden Calculations

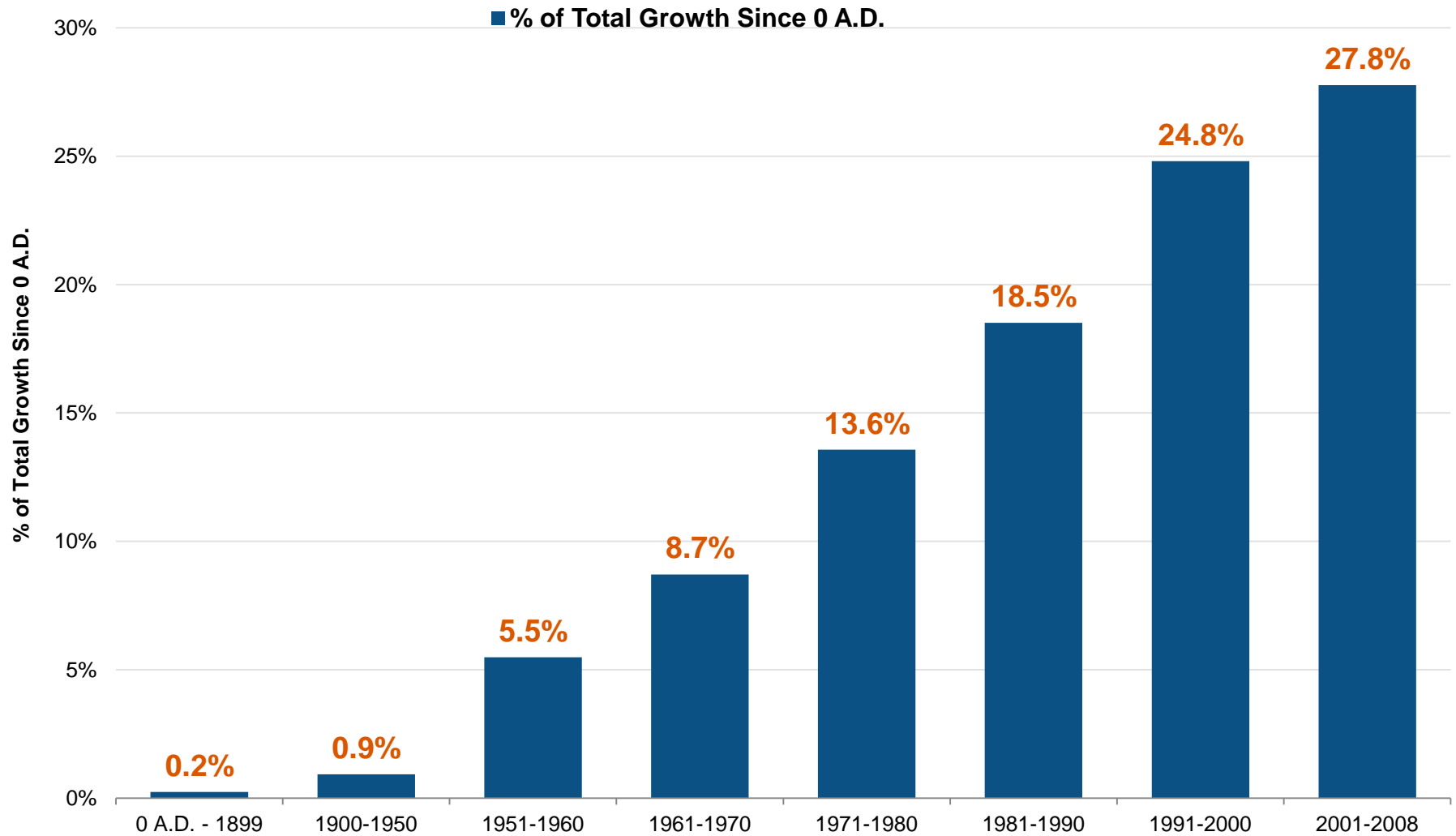


Sources: Payden Calculations, IRS Statistical Department

Practice #4: Restructuring Underway: Services Employment Rebounds as Goods Producing and State/Local Declines



Source: BLS, Payden Calculations

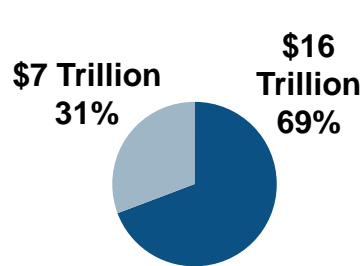


Source: Angus Maddison, Payden Calculations

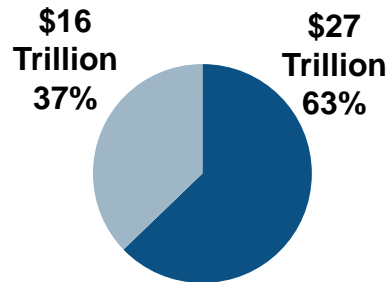
● Emerging Economies ● Advanced Economies

Global GDP

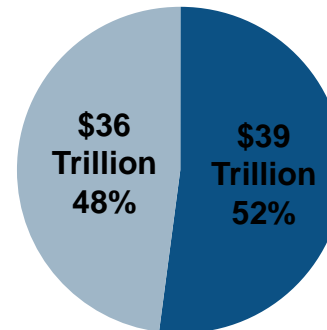
\$23 Trillion
 \$43 Trillion
 \$75 Trillion
 \$98.0 Trillion (Estimated)



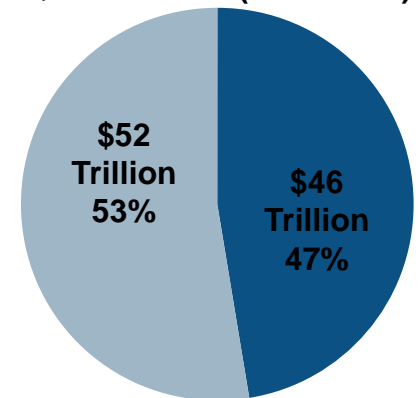
1990



2000



2010



2015

Per
Capita
GDP

\$1,841/\$18,623

\$3,136/\$27,734

\$6,165/\$38,112

\$8,391/\$44,412

Currently, emerging markets (as a share of global GDP) are just surpassing developed markets. EM countries tend to have larger population growth and far more room for investment than DM countries, allowing them to grow at a much faster rate.

***All numbers based on Purchasing Power Parity valuation of country GDP*

Source: International Monetary Fund, World Economic Outlook April 2012



"Everybody's in favor of growth but nobody wants change." – Paul Romer