REGIONAL

ECONOMIC BRIEFING

An Examination of Current Economic Conditions in the Nation and in the Memphis Area

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Memphis, TN

FEDERAL RESERVE BANK of ST. LOUIS

Disclaimer

The views we will express are our own and do not necessarily reflect the positions of the Federal Reserve Bank of St. Louis or the Federal Reserve System.

The Big Picture

- Healthy forward momentum heading into the second half of 2018. Bodes well for 2019.
- But recent data have been partially distorted by Hurricanes Harvey and Irma.
- Solid labor and financial market conditions and low inflation.
- Fed normalization process is underway.

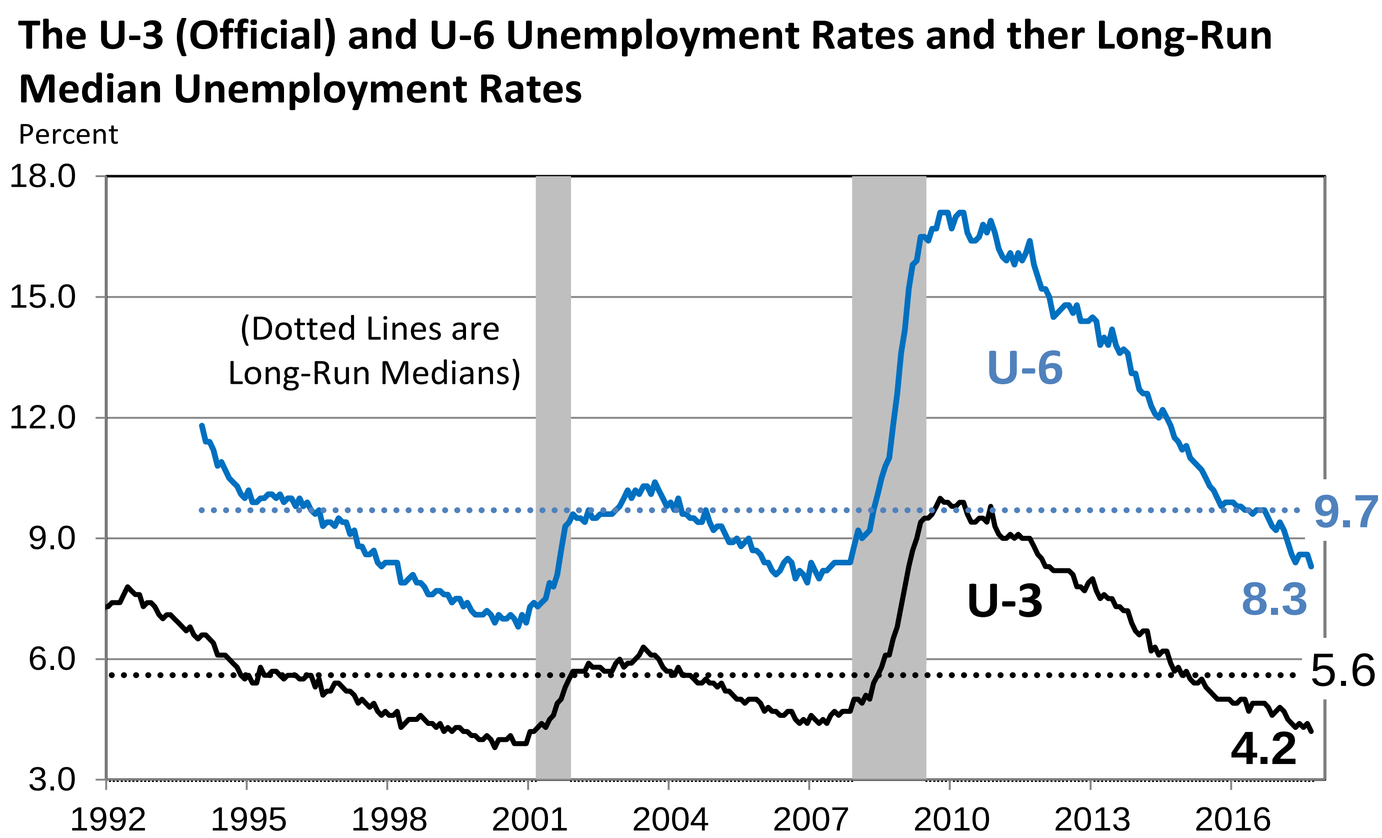
Key Questions in the Outlook

- Is 2% economic growth still the norm.
- Is inflation temporarily low?
- Have we moved to a low interest rate regime?
- If we are in a low interest rate regime, what does that imply for the economy and monetary policy?

A Brief on the U.S. Economy: A Near-Term View

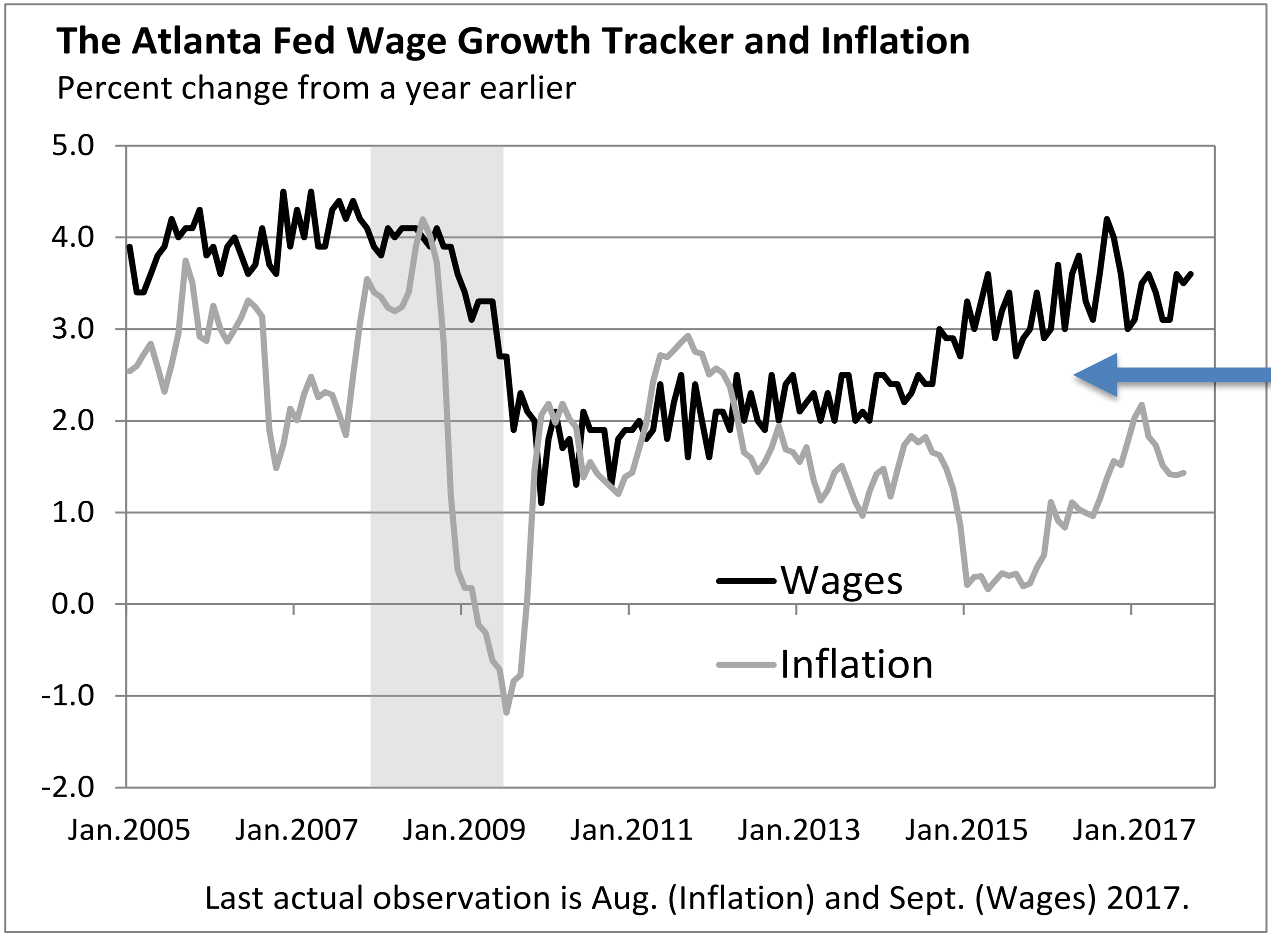
- As usual, there are tensions in the data that influence the near-term outlook.
- First, the outlook for manufacturing and business capital spending is improving.
  - An improving global economy is a tail wind for the U.S. manufacturing sector.
- Second, labor markets conditions remain solid; the unemployment rate is falling.

Unemployment Rates are Low, Regardless of How They are Measured



Source: Bureau of Labor Statistics. Data through Sept. 2017.

Inflation-Adjusted Wage Gains Have Accelerated Since 2012.

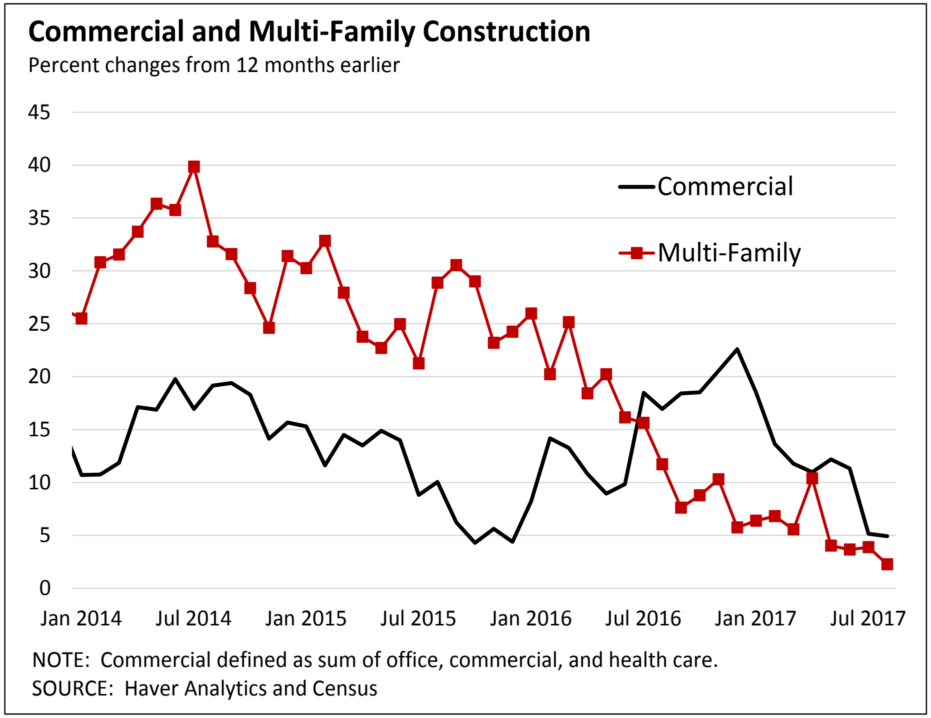


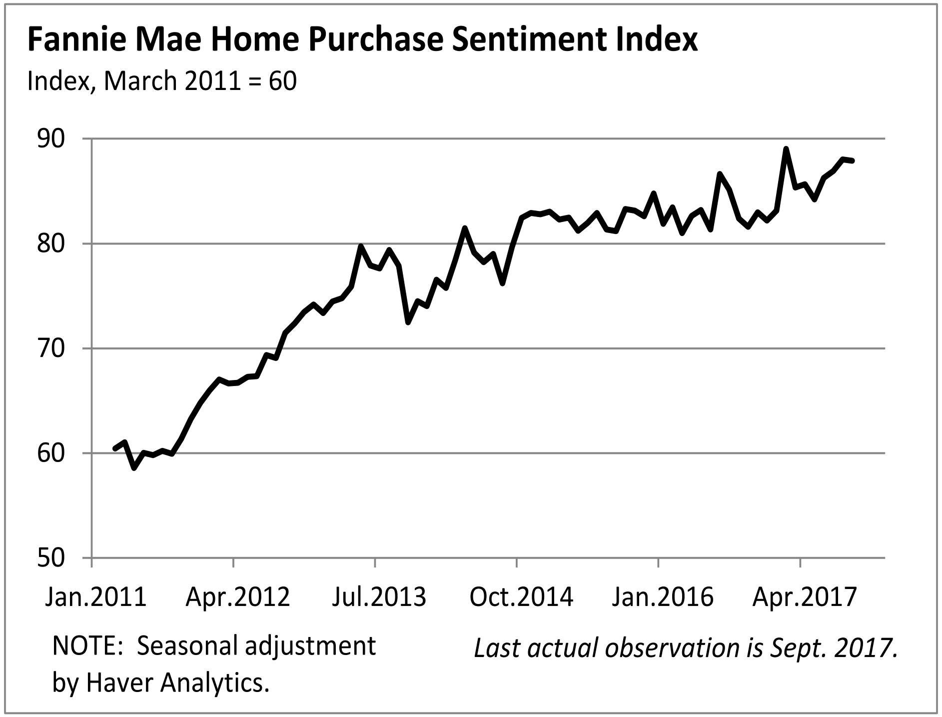
A positive gap is positive!

A Brief on the U.S. Economy: A Near-Term View

- Third, financial conditions are broadly supportive of continued economic growth.
- Fourth, consistent with solid fundamentals, consumer spending growth should remain healthy; auto sales boomed in September.
- Finally, there are divergent trends between single-family and commercial and multi-family construction activity.

Starkly Different Trends in Construction Activity

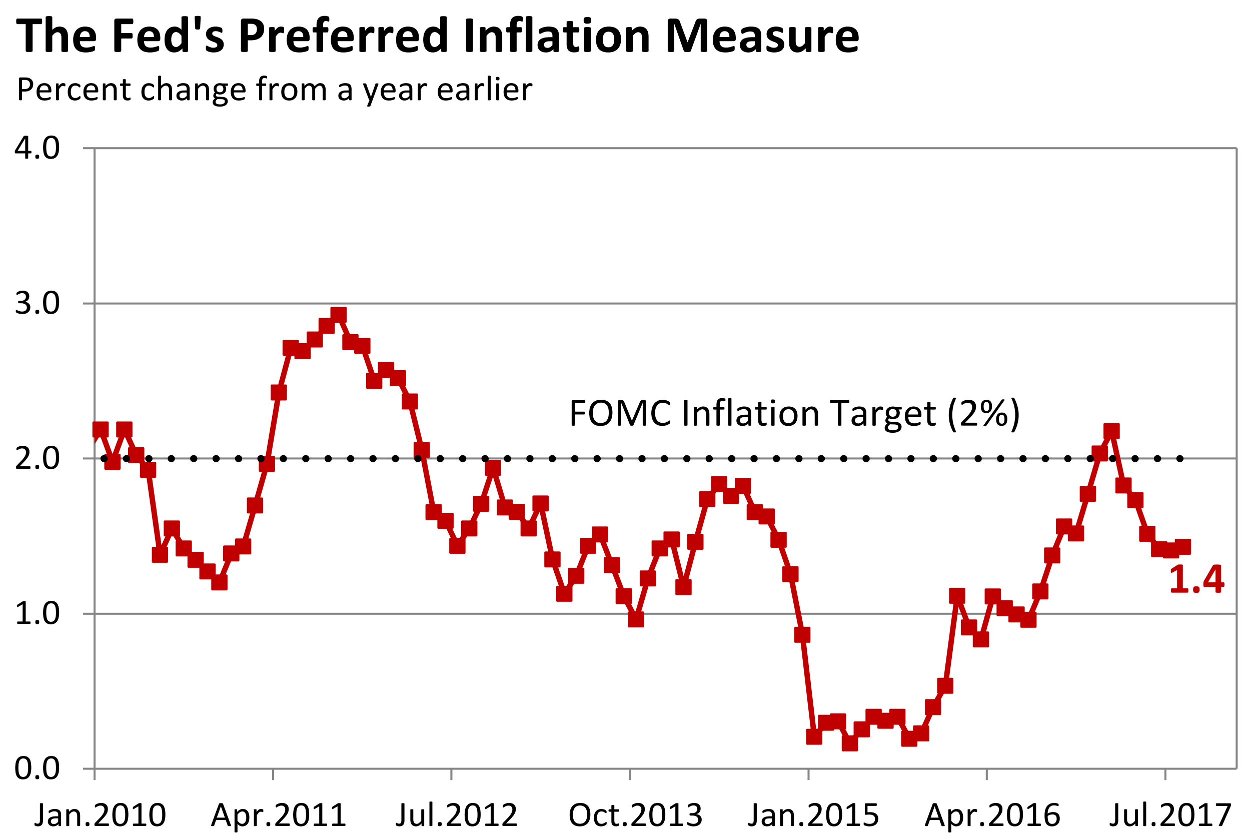




What’s Up with Inflation? It’s Low

- In 2012, the FOMC established a 2% inflation target.
- But inflation has been below the target for most of this time.
- Gyrations in food and energy prices can cause inflation to deviate temporarily from the target.
  - The collapse in oil prices in June 2014 is an example.

Going nowhere fast—inflation remains below the Fed's target rate (2%).

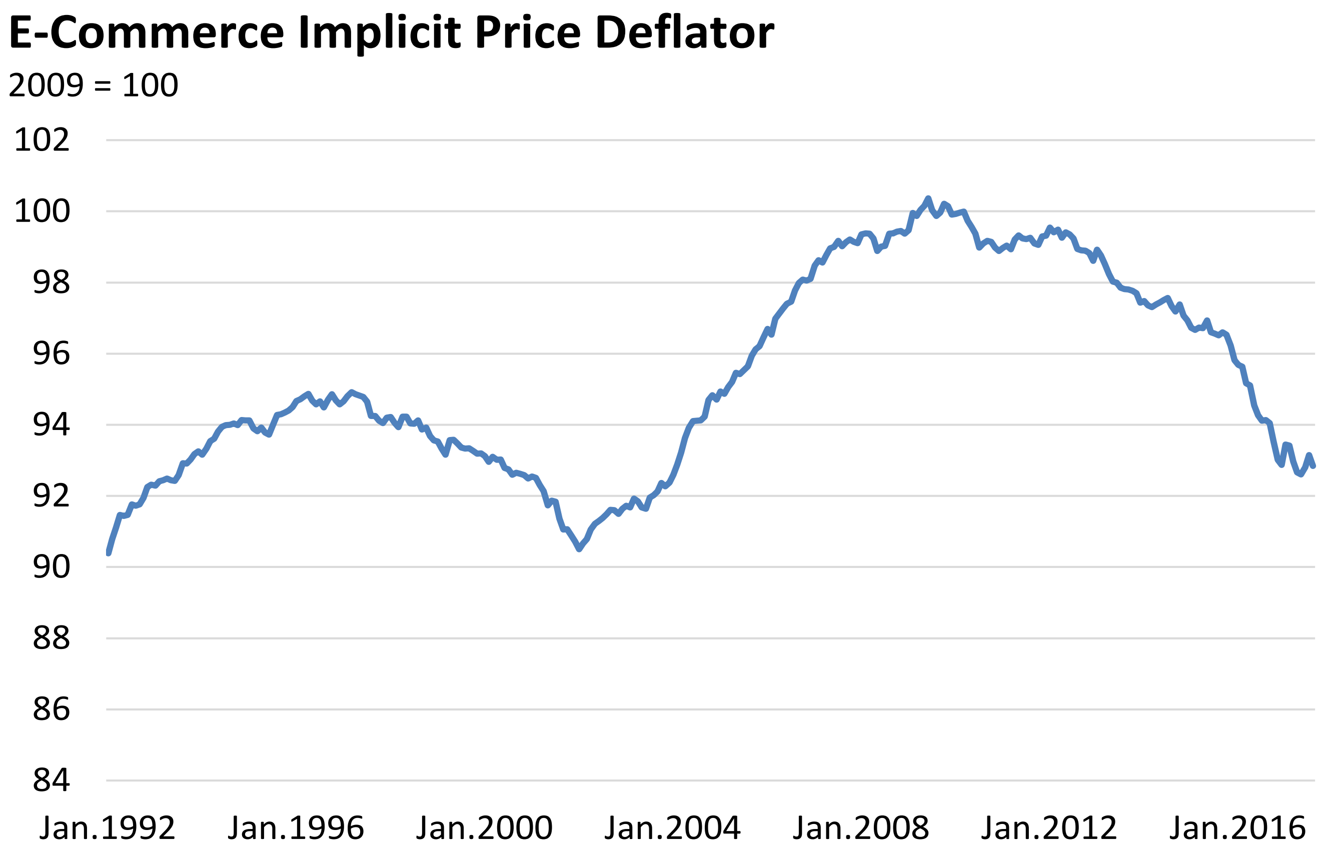


NOTE: Inflation calculated from the personal consumption expenditures price index . Last observation is August 2017. Source is the Bureau of Economic Analysis.

Is There a New Normal for Inflation? Perhaps.

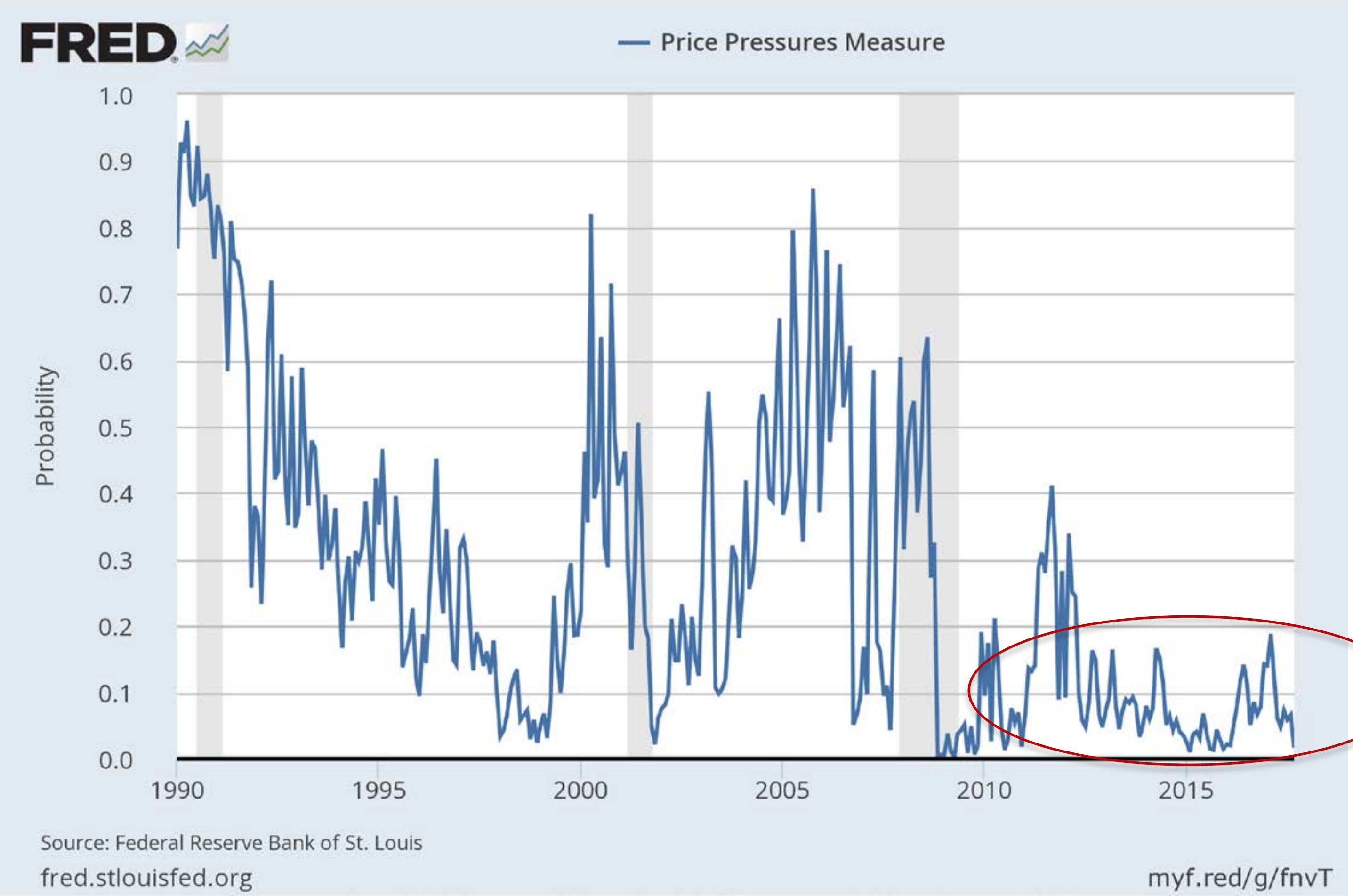
- Some economists are beginning to wonder if 2% is attainable in light of fundamental changes in the economy.
- For example, the fracking revolution in the United States seems to have permanently lowered the price of crude oil (“shale band”).
- Others wonder whether the “Amazon effect” has exerted similar effects on retail prices.

The "Amazon Effect?" Falling Prices of Goods Purchased Via Electronic Shopping.

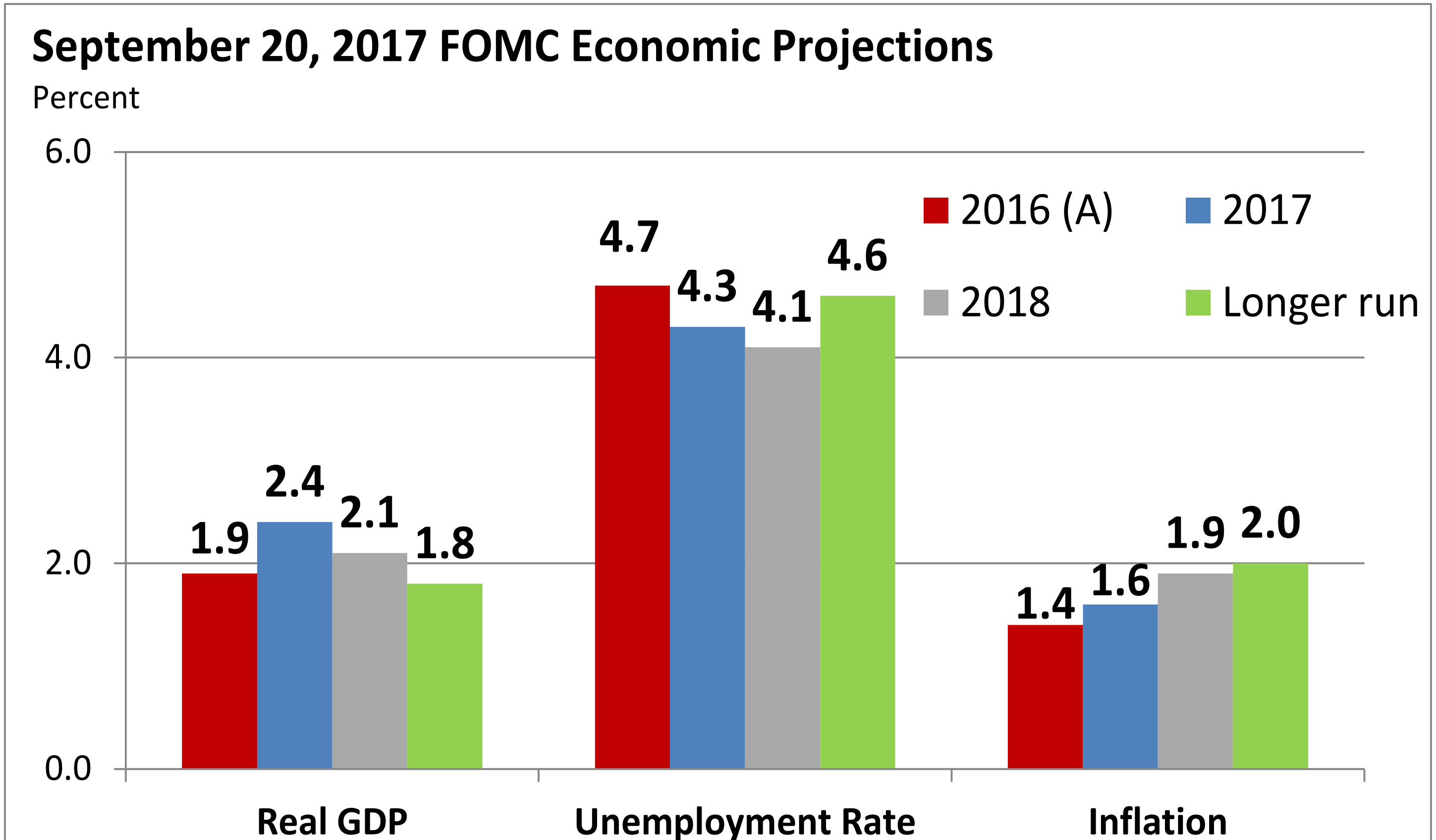


SOURCE: Bureau of Economic Analysis.

The St. Louis Fed's Price Pressures Measure Suggests Inflation is Behaving Differently.



FOMC: Stronger-than-average growth and lower-than-average inflation in 2017 and 2018.

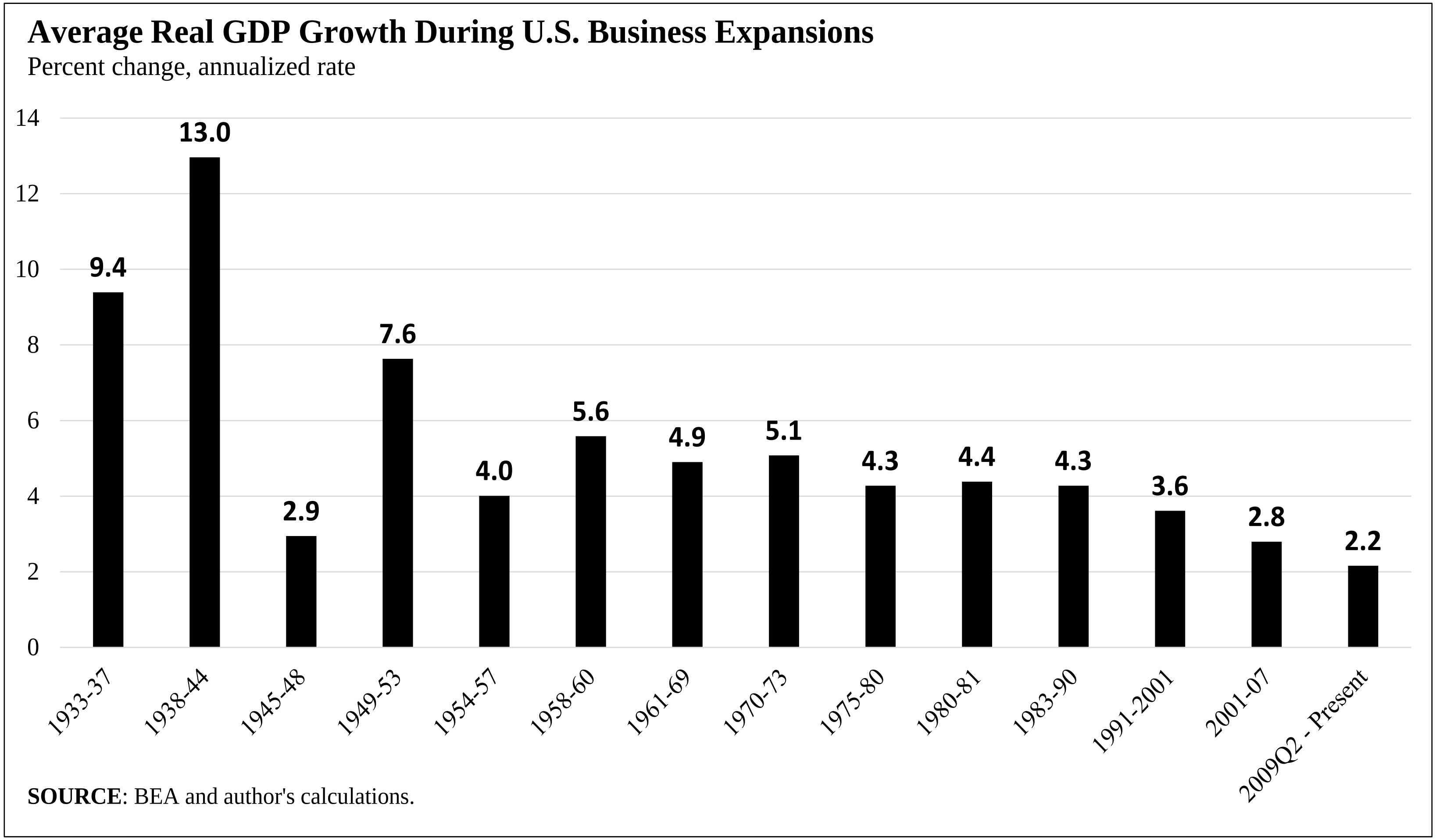


NOTE: FOMC Projections are the median estimates of FOMC participants. The unemployment rate is the average of the fourth-quarter for the year indicated.

A Brief on the U.S. Economy: A Longer-Term View

- We're into the 8th year of expansion . . . The average expansion lasts about 5 years.
- Real GDP growth during this expansion has been the weakest on record; growth has averaged a little less than 2.25% per year.
- There are many reasons for this: Deleveraging, tighter access to credit, reregulation, higher taxes, demographics.

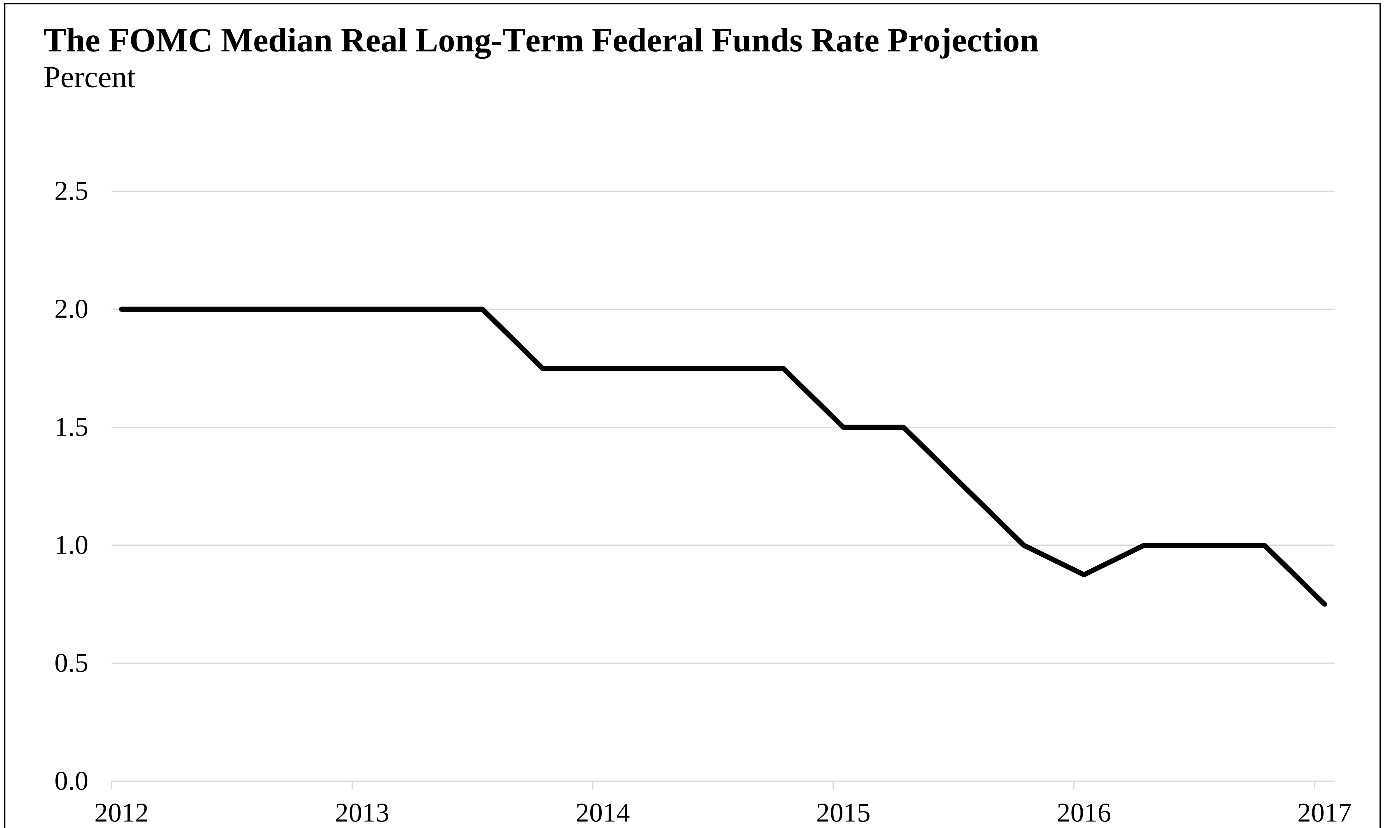
Real GDP Growth in the Current Expansion is the Weakest on Record.



The St. Louis Fed's New View of the U.S. Economy, Circa 2016.

- In summer 2016, we argued that the U.S. economy could be characterized by:
  – Persistently low real GDP growth.
  – Goal variables (unemployment rate and inflation) near targets.
  – Low real interest rates.
- Our conclusion: It would be a mistake to assume a rapid return to a 4% policy rate.

The FOMC Believes that the U.S. Economy has Transitioned to a Low-Interest Rate Regime.



NOTE: The real rate is the median nominal rate less the longer-run projected headline PCE inflation rate.
Source: Quarterly Federal Reserve Summary of Economic Projections

Is the Low-Interest Rate Regime Temporary or Permanent?

- Well, nothing is really permanent except death and taxes!
- There are many reasons why the FOMC has steadily lowered its longer-run policy interest rates projection.
- But a key reason is their assessment that the U.S. economy is now stuck in a low economic growth regime ("the new normal").

The Framework for Economic Growth: The Factors that Matter

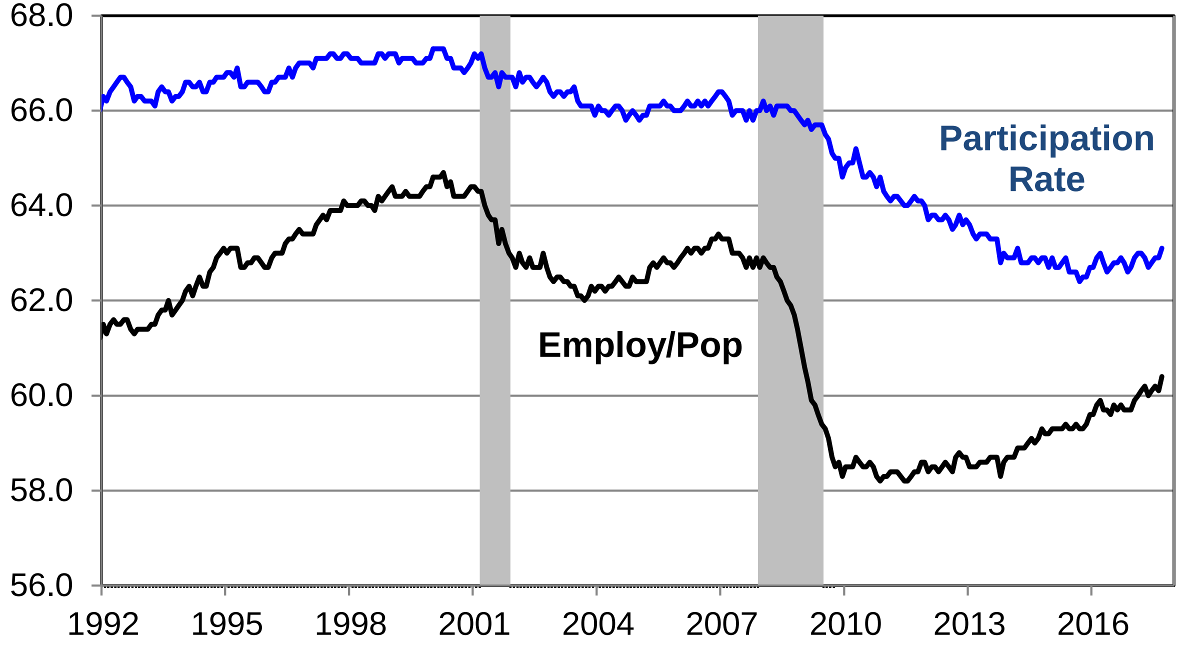
- Growth arises from a discovery of new ideas.
- Economists focus on four factors:
  - Capital outlays by business and, less so, government.
  - Educational attainment
  - R&D (search for new ideas)
  - Number of people in the economy
- Second and third factors explain about 80% of economic growth from 1950 to 2007.

The Macroeconomic Growth Recipe

- We can boil this framework down to a simple identity that links labor inputs with productivity:
  - Real GDP = GDP/Workers * Workers/Population * Population (age 16+)
- The terms are expressed in growth rates.
- Few metrics in macroeconomics are more important than the growth rate of productivity.

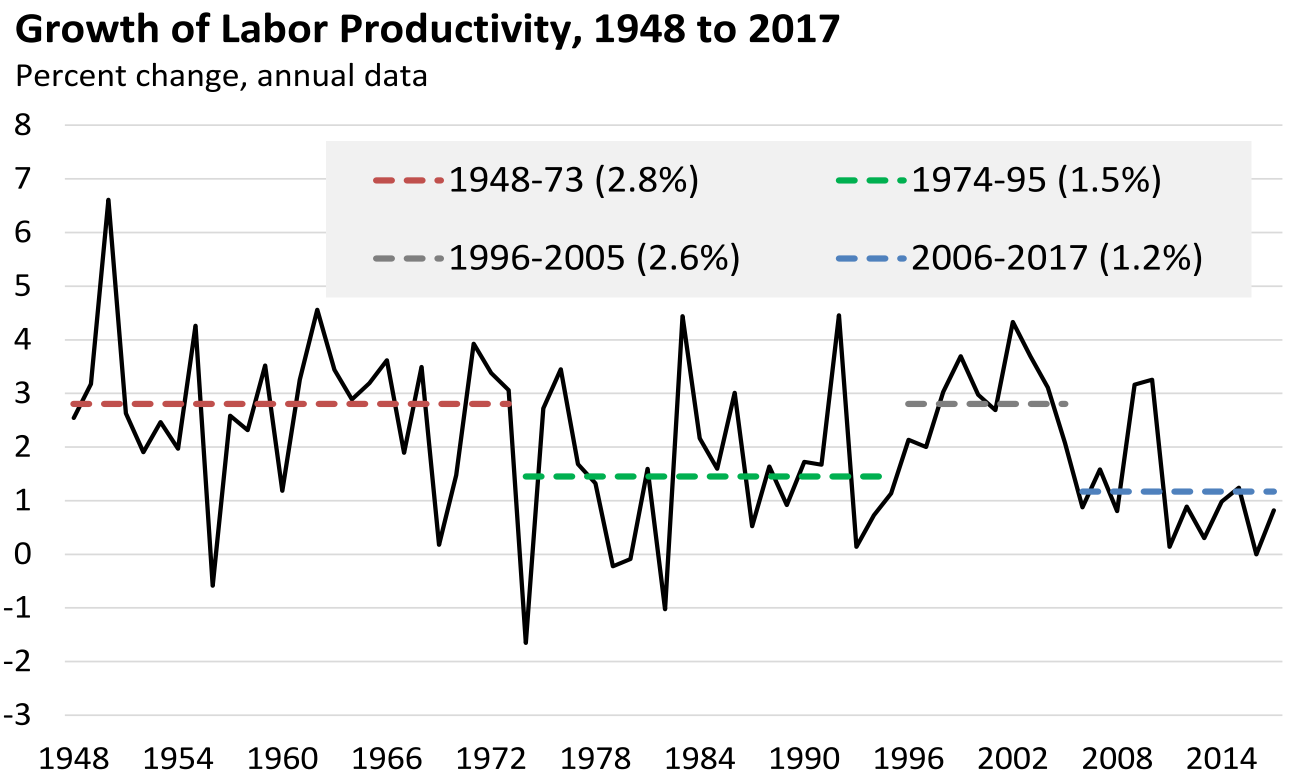
Macro Explanations for Lower Economic Growth: Labor Market Developments

The Labor Force Participation Rate and the Employment-to-Population Ratio
Percent



Source: Bureau of Labor Statistics. *Data through September 2017.*

Macro Explanations for Lower Economic Growth: Weaker Labor Productivity



NOTE: Labor productivity is output per hour in the nonfarm business sector. Data for 2017 are for the first and second quarters.

Where Might We Be Wrong? Some Considerations.

- Economic growth could be low because we are not measuring productivity accurately.
- How? The Internet of things could have created a series of innovations that are not accurately captured in the data.
- Comprehensive tax reform could spur firms to expand their capital stock, which could raise productivity.

Two Scenarios for Future Productivity Growth

Conservative and optimistic projections for productivity growth		
Item	**Conservative scenario**	**Optimistic scenario**
Annual percentage growth in labor productivity (baseline assumption)	1.50	1.50
Plus: Sources of additional potential productivity growth (percentage points)		
Big data in healthcare	0.07	0.14
Robotics	0.07	0.25
E-learning	0.15	0.30
Higher R&D spending in non-Western economies	0.10	0.25
Equals: Total potential labor productivity growth (percent)	**1.89**	**2.44**

Source: Branstetter and Sichel (2017)

Answers to Key Questions in the Outlook

- 2% economic growth is still the consensus forecast, but there are reasons for optimism.
- Inflation is stubbornly low.
- We are still in a low interest rate economy.
- The FOMC is likely to remain cautious without firm evidence of either faster or slower growth and/or inflation.

END

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Startups, STEM Jobs, and the Tech Sector

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Regional Economist

October 20, 2017

FEDERAL RESERVE BANK *of* ST. LOUIS

6% of all **US** Jobs are **STEM** Jobs

4% of all **Memphis** Jobs are **STEM** Jobs

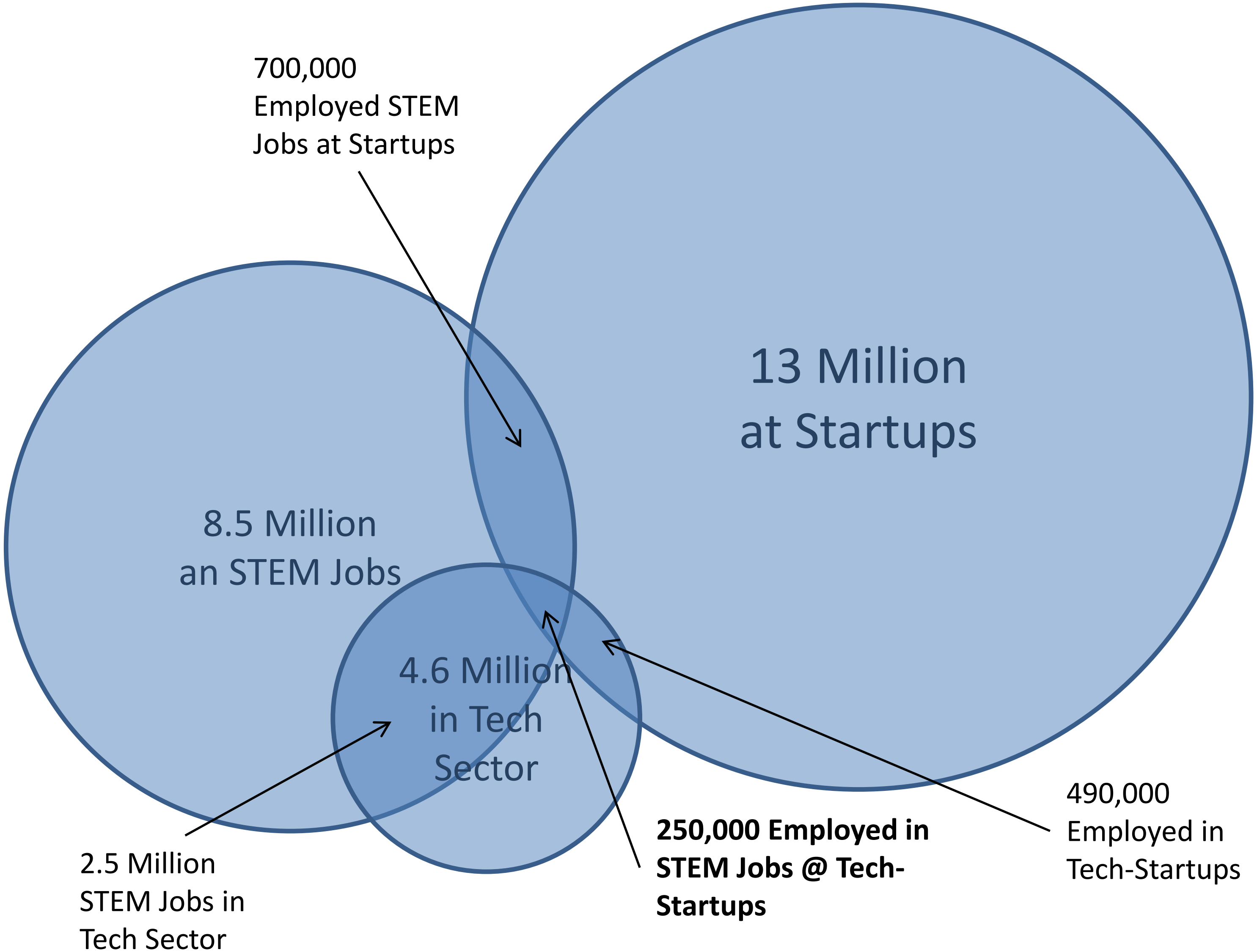
11% of all **US** Jobs are at **Startups**

4% of all **US** Jobs are in the **Tech** Sector

2% of all **Memphis** Jobs are at **Startups**

1% of all **Memphis** Jobs are in the **Tech** Sector

Understanding the intersections

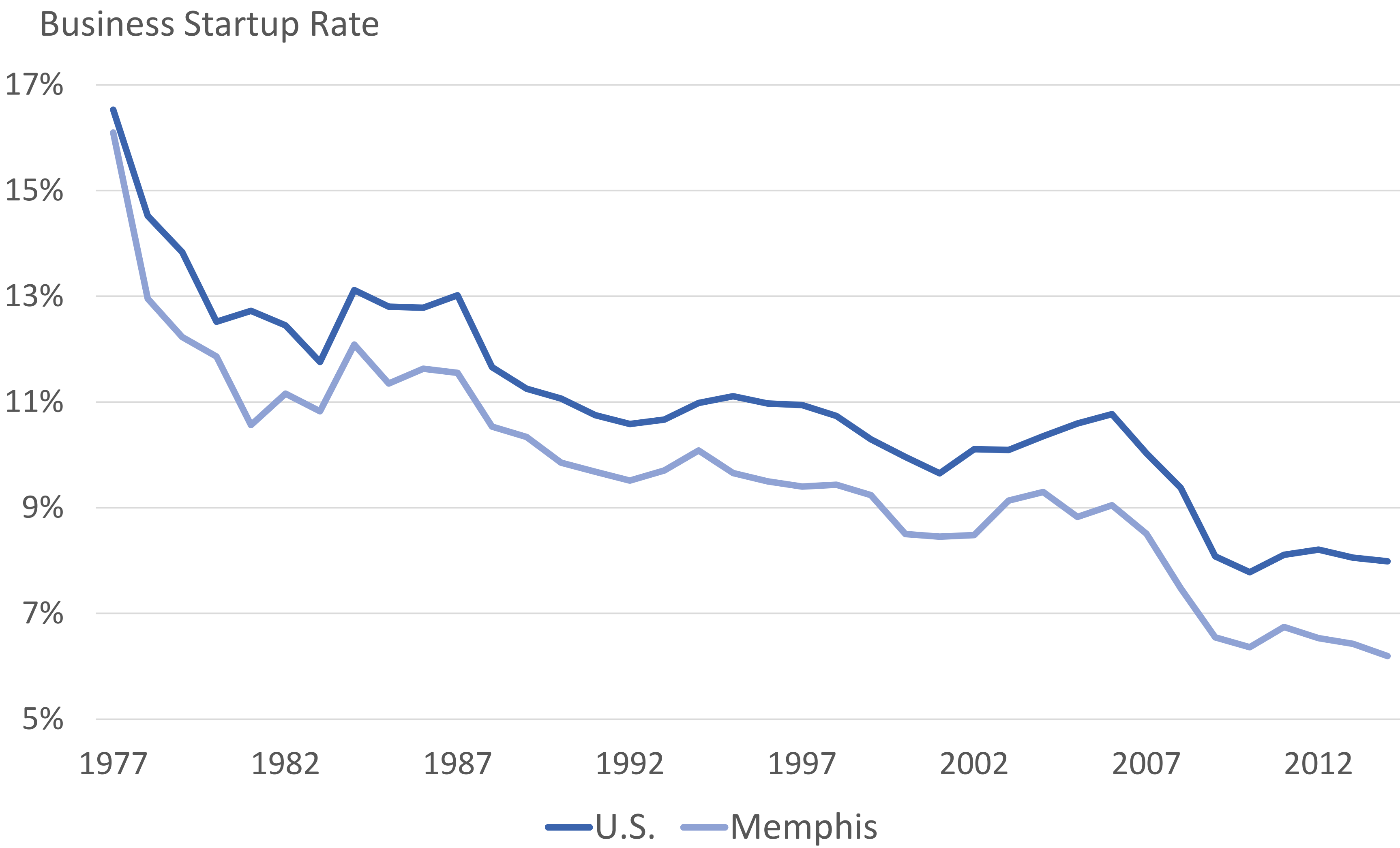


If these groups are small why do we care?

- Business startup activity key to US job creation and economic dynamism
- STEM job growth is faster than non-STEM growth
- STEM jobs pay higher wages
- Tech sector is small, but innovations are disrupting many other industries

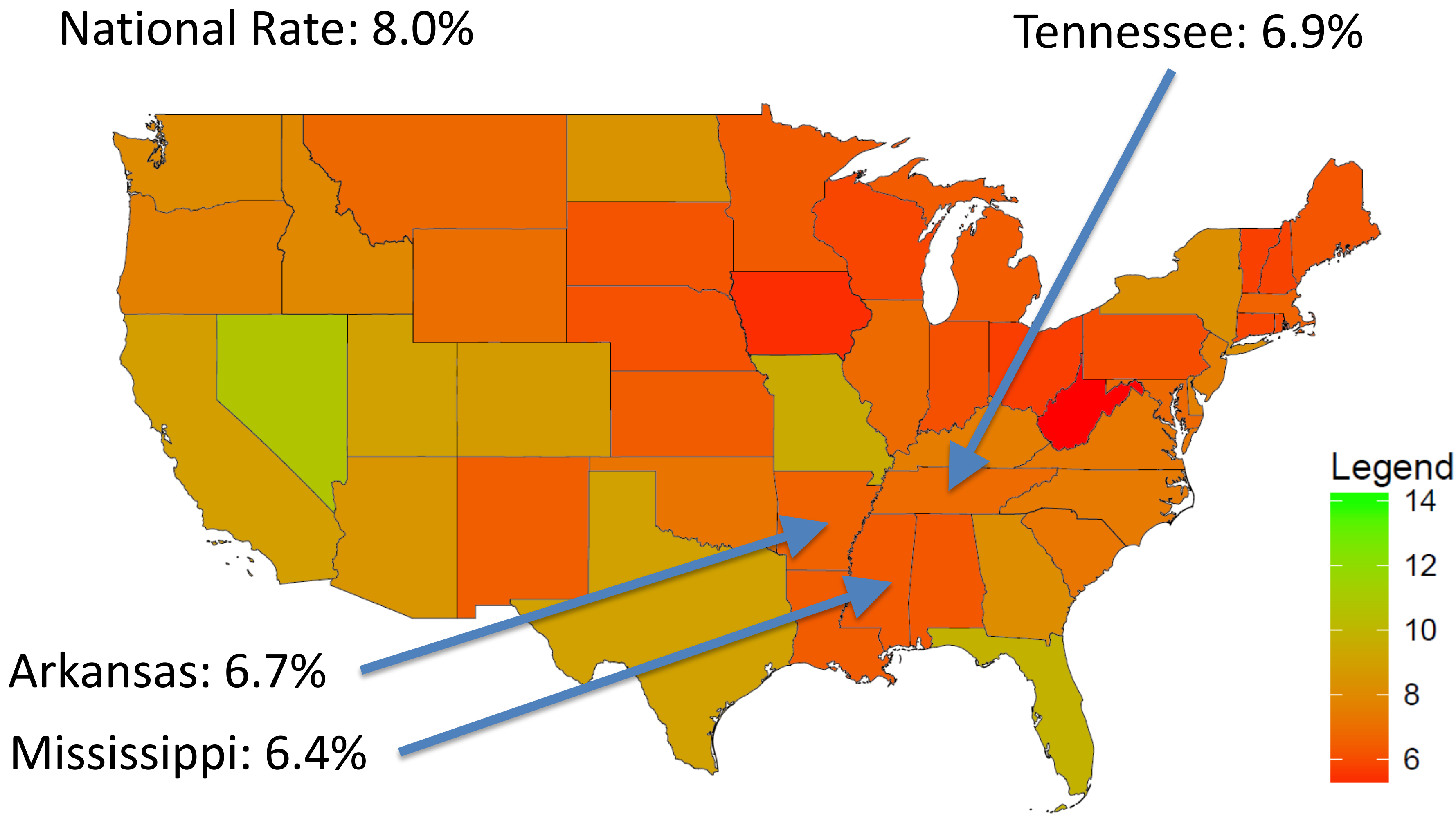
Startups

Is today's economy less dynamic?



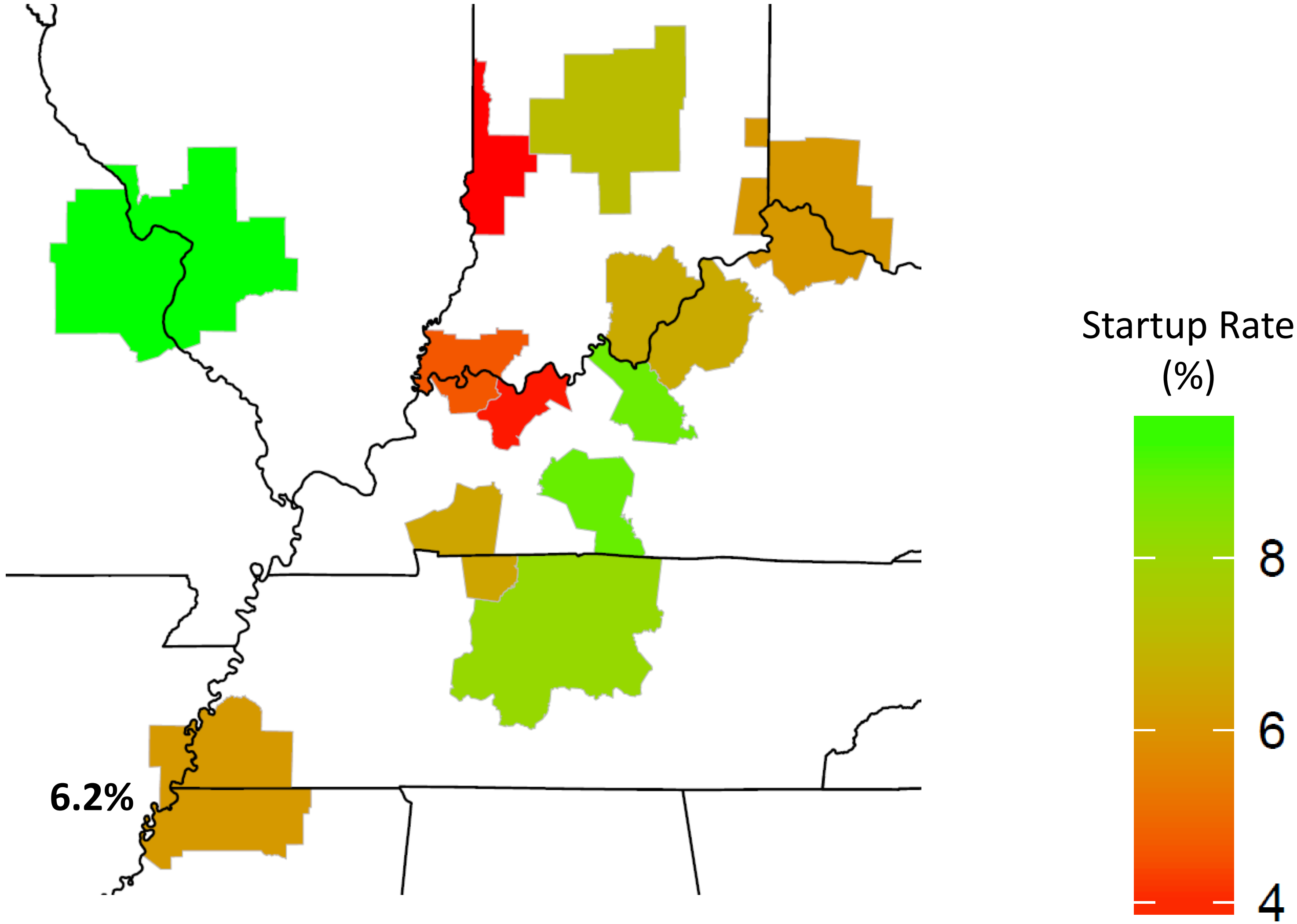
Source: Census Bureau, Business Dynamics Statistics

Business Startup Rates (2014)



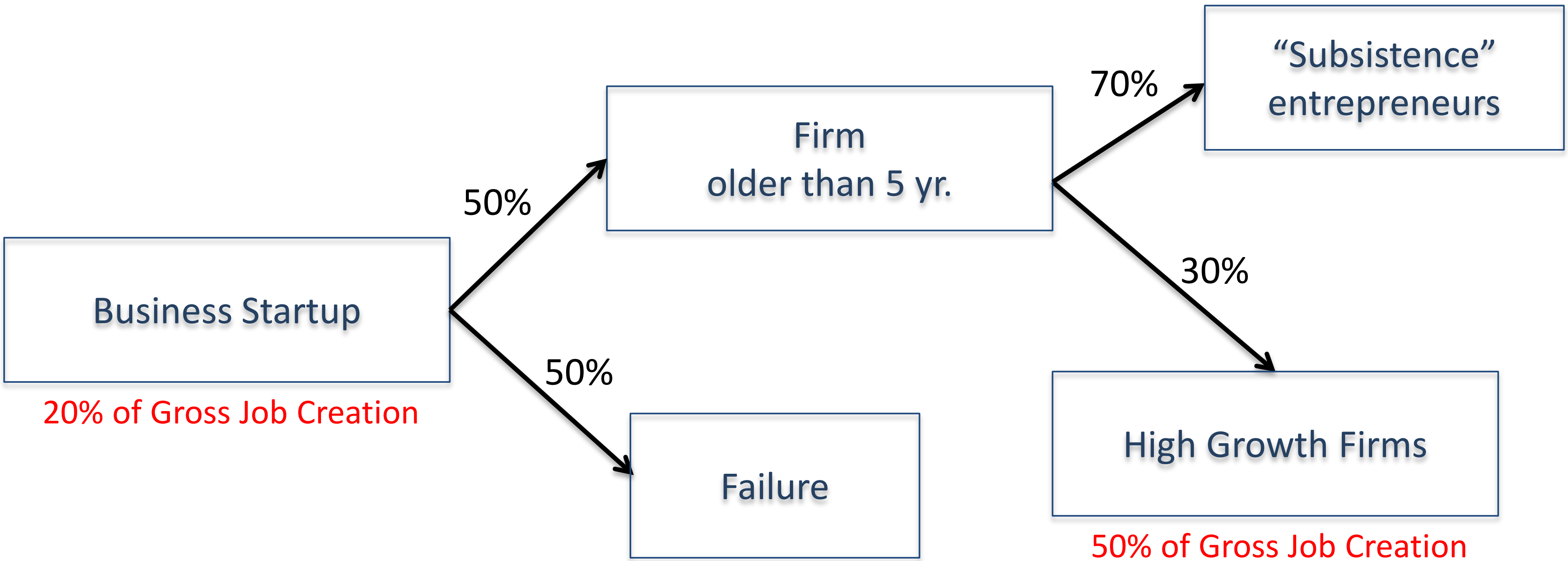
Source: Census Bureau, Business Dynamics Statistics

Startup rates vary across the region



Source: Census Bureau, Business Dynamics Statistics

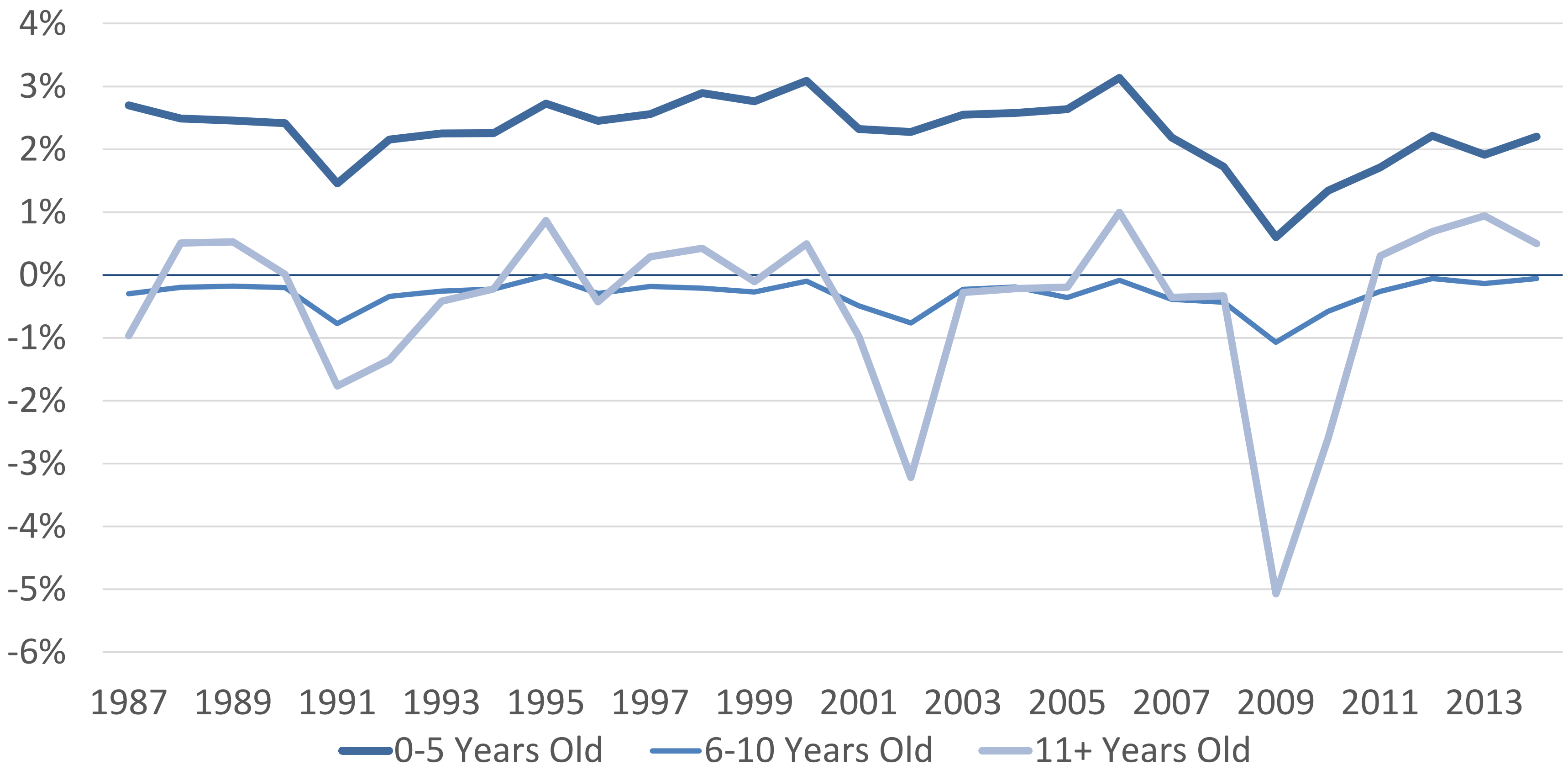
It is only a small set of "high-growth firms" driving overall job growth



Source: Decker et. at, *Journal of Economic Perspectives (Summer 2014)*

Startups account for a disproportionate share of job creation

Net job creation as share of total employment - US



Source: Census Bureau, Business Dynamics Statistics

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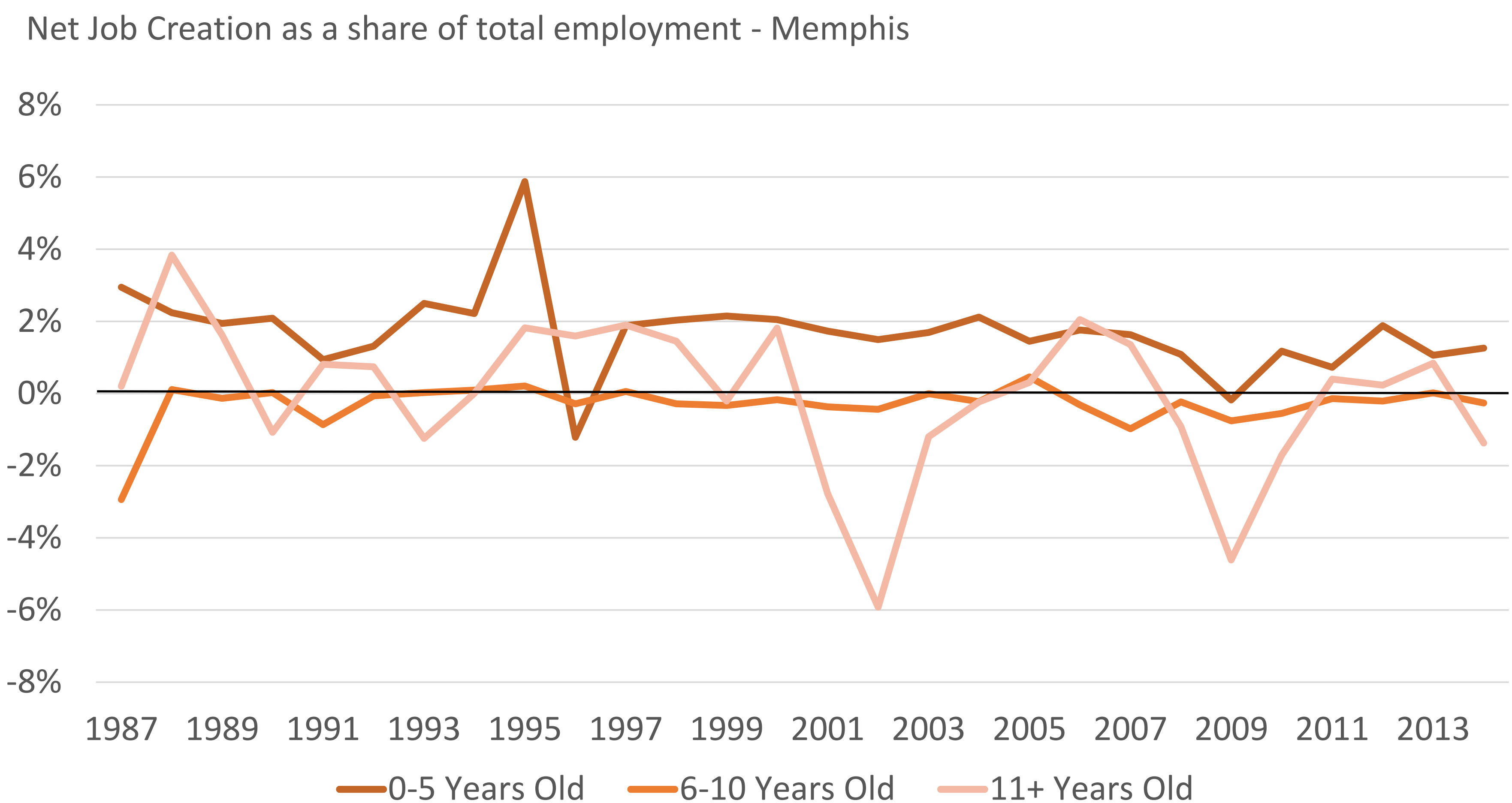
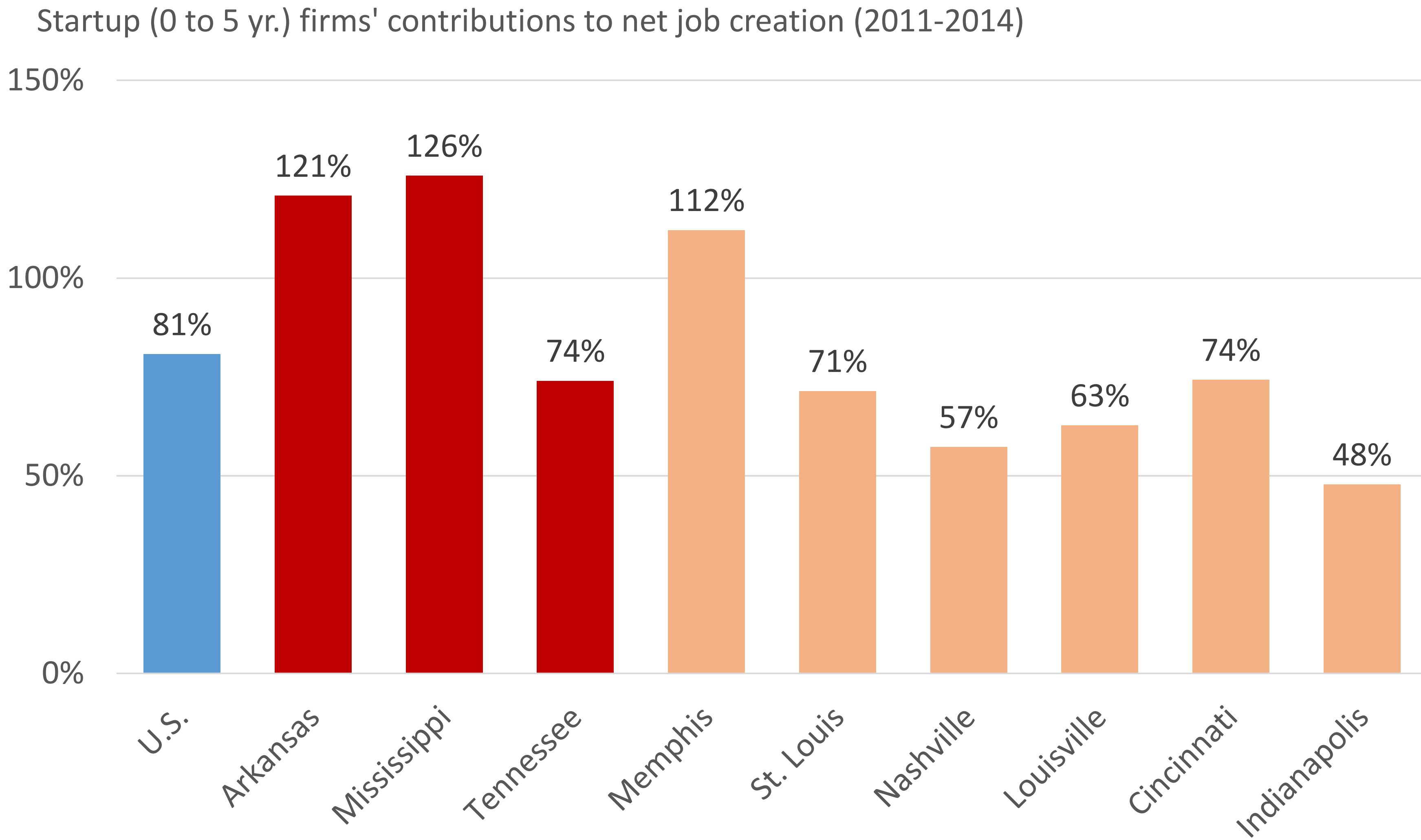


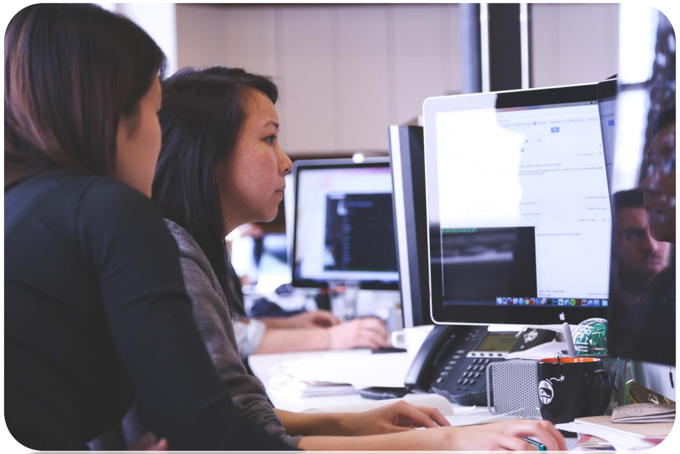
Source: Census Bureau, Business Dynamics Statistics

Young firms driving net job creation



Source: Census Bureau, Business Dynamics Statistics

STEM Jobs

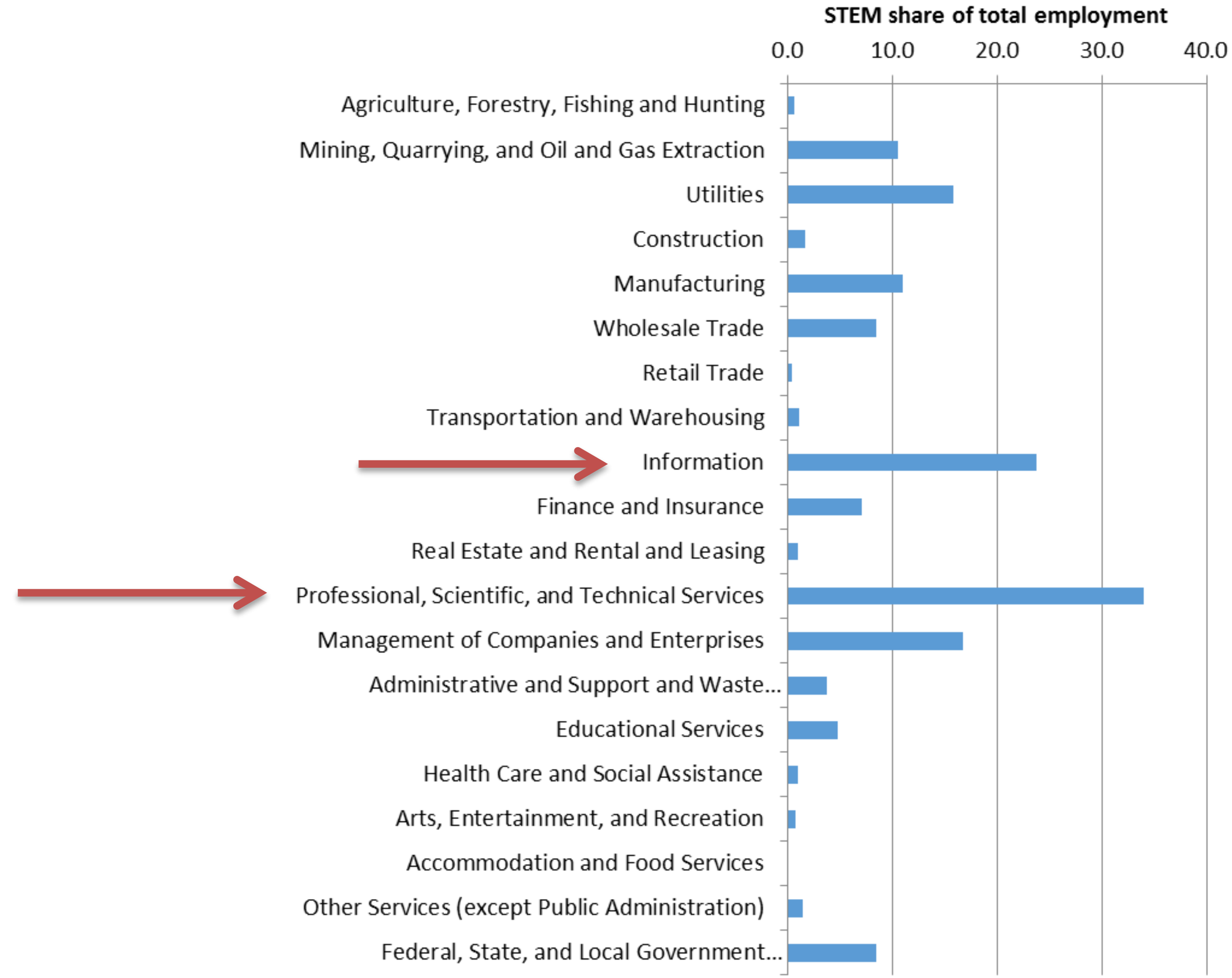


STEM jobs = “Tech Jobs”

- 6% of US Jobs are STEM
- 4% of Memphis Jobs are STEM
- TN STEM Jobs are concentrated in 3 MSAs:
  - 37% in Nashville, MSA
  - 18% in Memphis, MSA
  - 17% in Knoxville, MSA

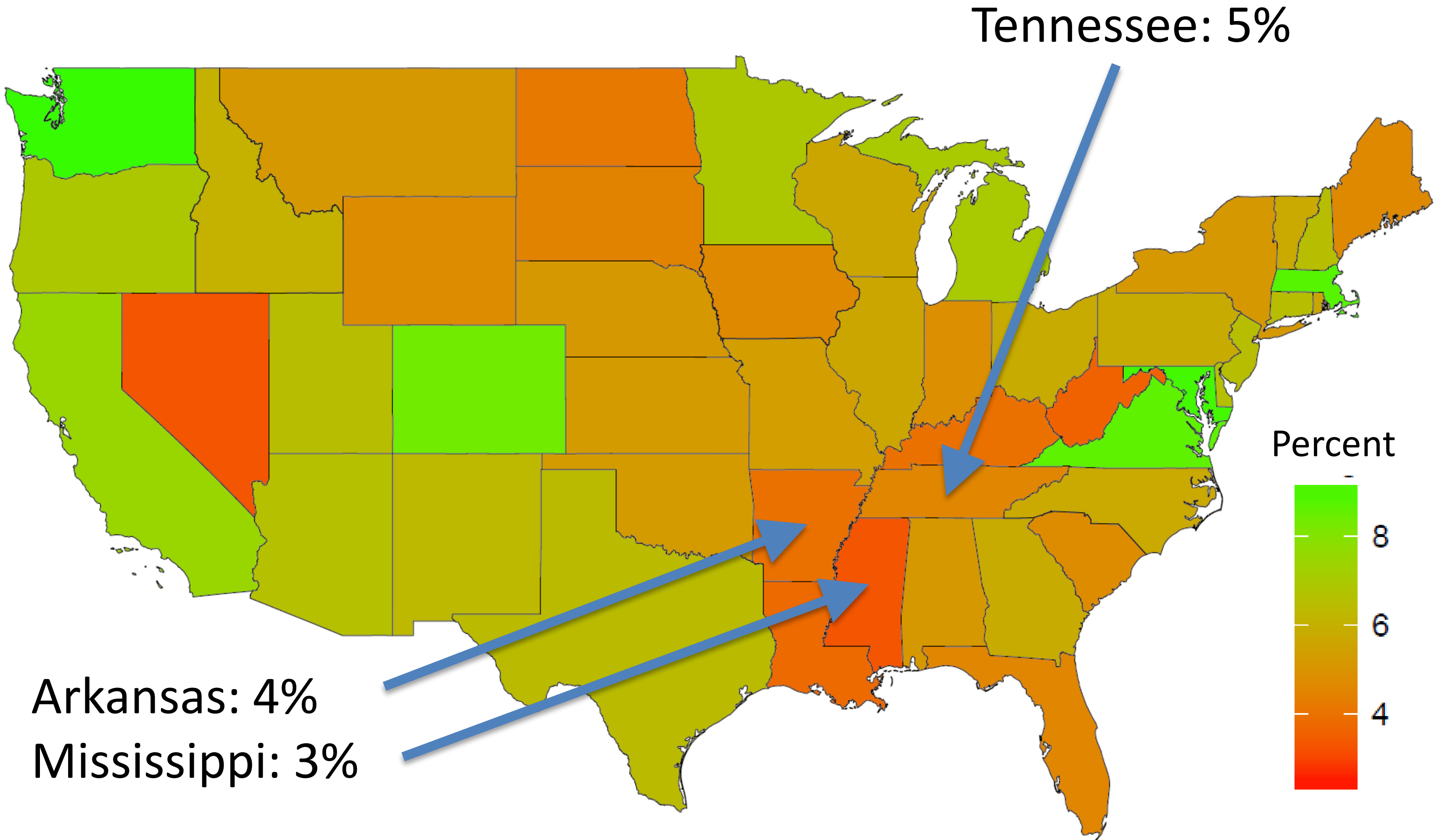
Source: Bureau of Labor Statistics, Occupational Employment Statistics

STEM Jobs are found in all sectors of the economy



Source: Bureau of Labor Statistics, Occupational Employment Statistics

STEM share of total employment (2015)



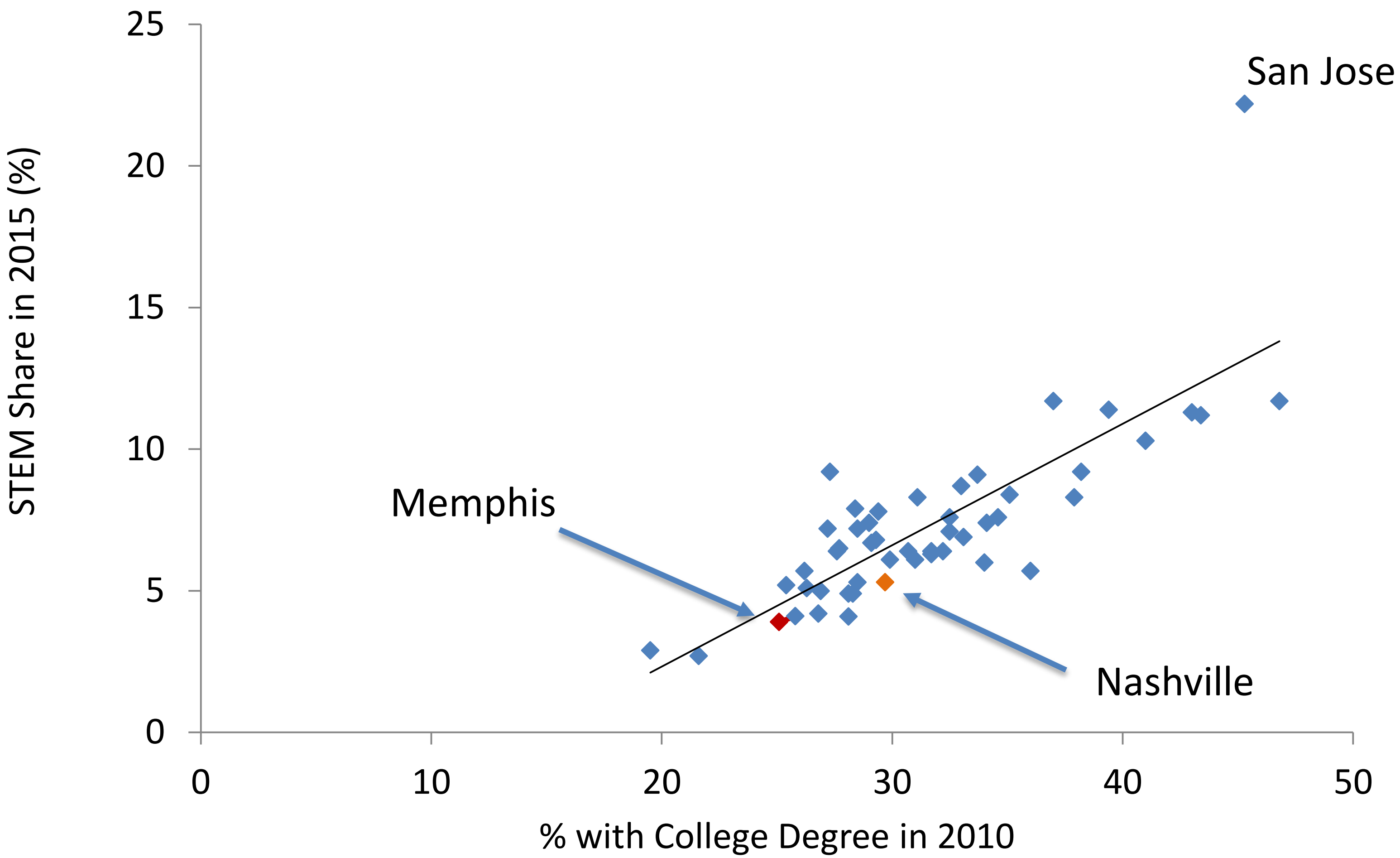
Source: Bureau of Labor Statistics, Occupational Employment Statistics

Low rates of STEM employment in the region

	STEM Share	STEM Growth (2014- 15)
US	**6.2%**	**2.9%**
AR	4.0%	3.4%
MS	3.3%	2.5%
TN	4.6%	4.0%
Memphis	**3.9%**	**-3.8%**
Nashville	5.3%	7.0%
Louisville	4.1%	0.9%
Cincinnati	6.8%	3.4%
Indianapolis	6.4%	0.3%
St. Louis	6.1%	-2.2%

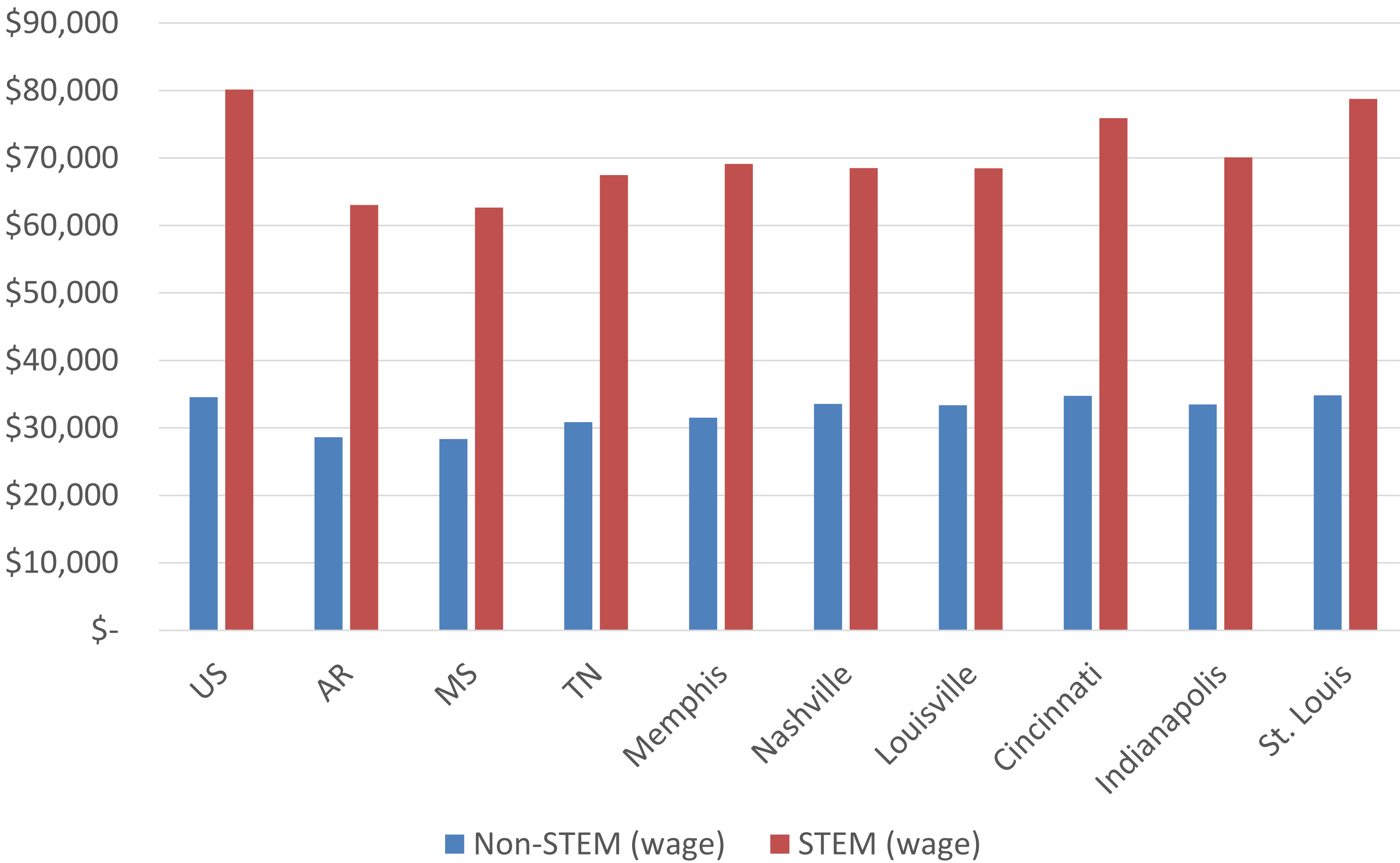
Source: Bureau of Labor Statistics, Occupational Employment Statistics

Educational attainment key factor for STEM employment

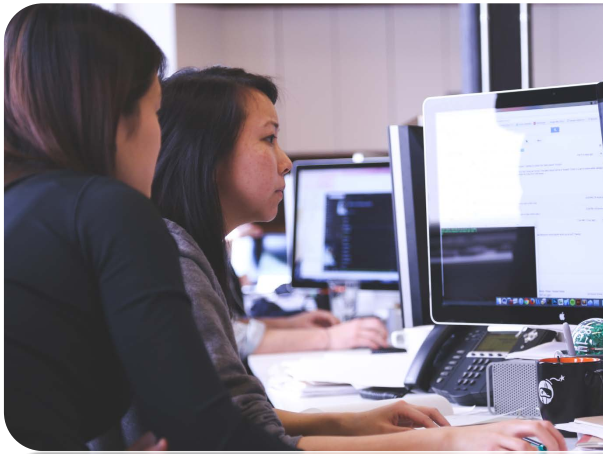


Source: American Community Survey, BLS Occupational Employment Statistics

STEM wages are 2 times non-stem wages



Tech Sector

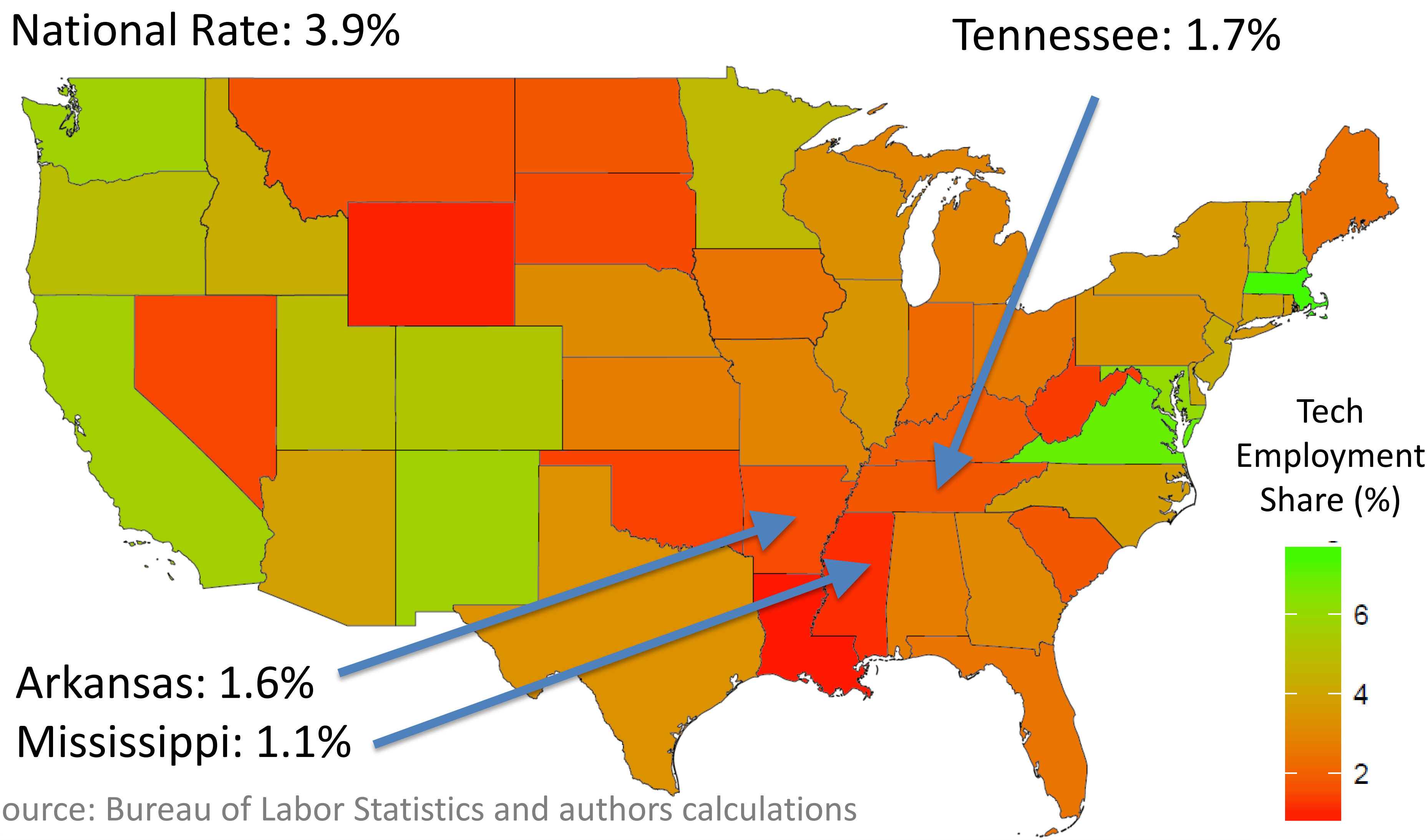


The “Tech sector” defined

NACIS	Industry Name	Largest Firm
334	Computer Manufacturing	Apple
454111	Electronic Shopping	Amazon
5112	Software Publishing	Microsoft
518	Data Processing, Hosting & Related Services	Xerox
51913	Internet Publishing & Broadcasting and Web Search	Google
5415	Computer Systems Design	IBM
5417	Scientific and R&D Services	QuintilesIMS

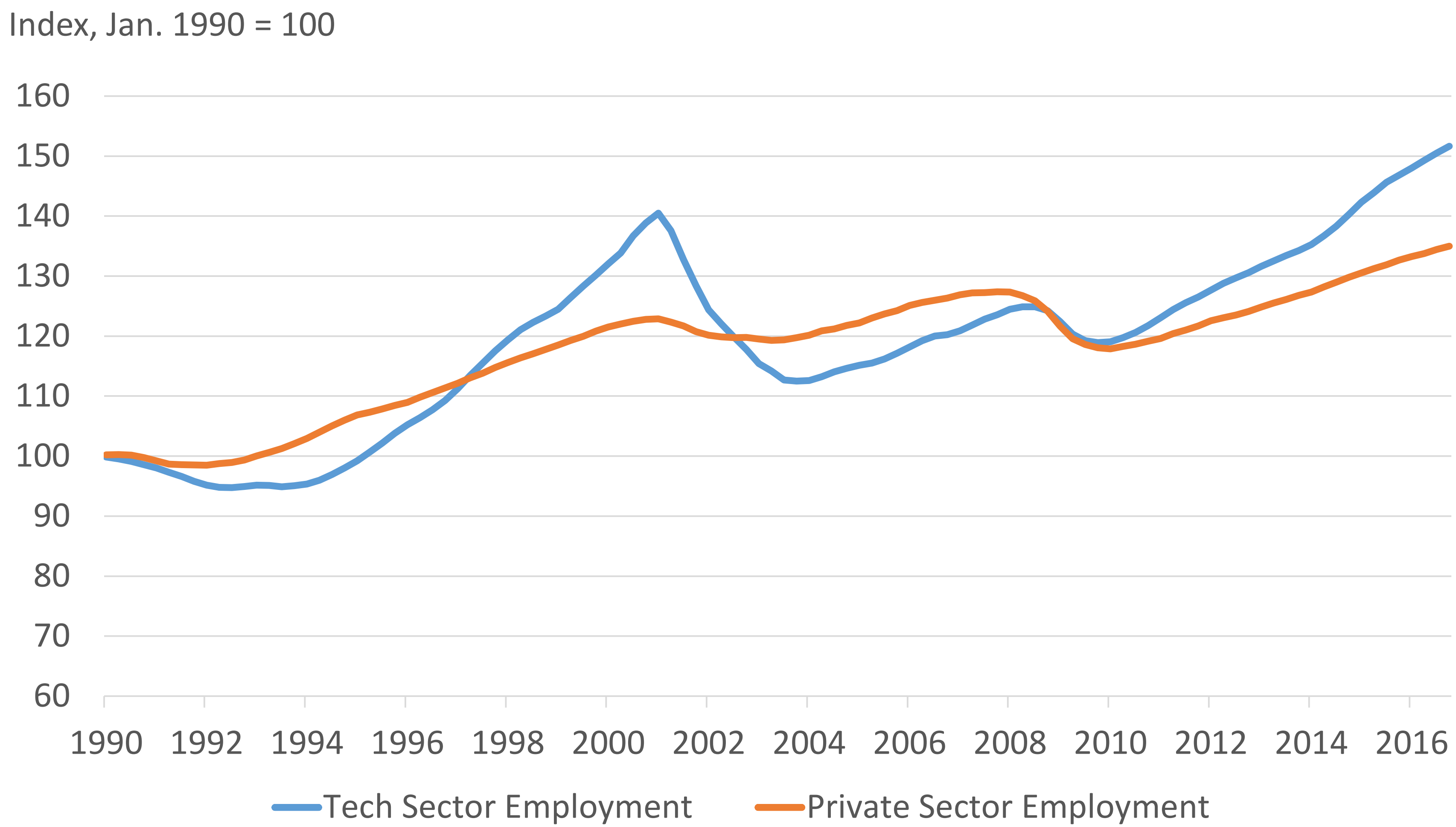
Source: Compustat and Authors calculations

Tech sector generally concentrated in the northeast and west coast



Source: Bureau of Labor Statistics and authors calculations

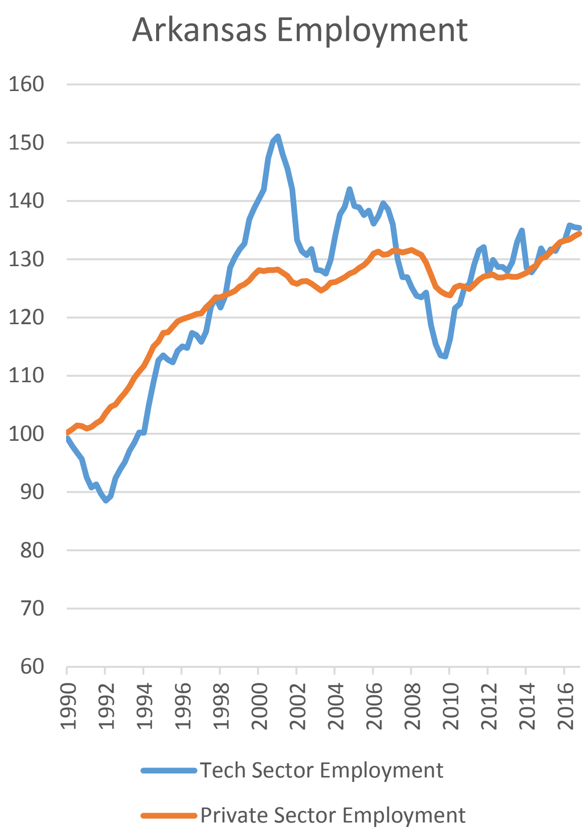
Growth in the tech sector has outpaced the broader economy since 2010

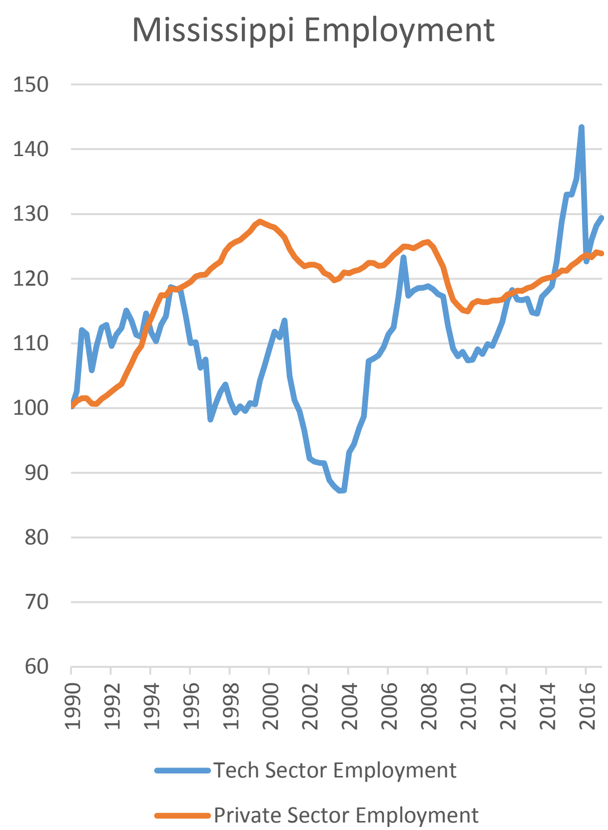


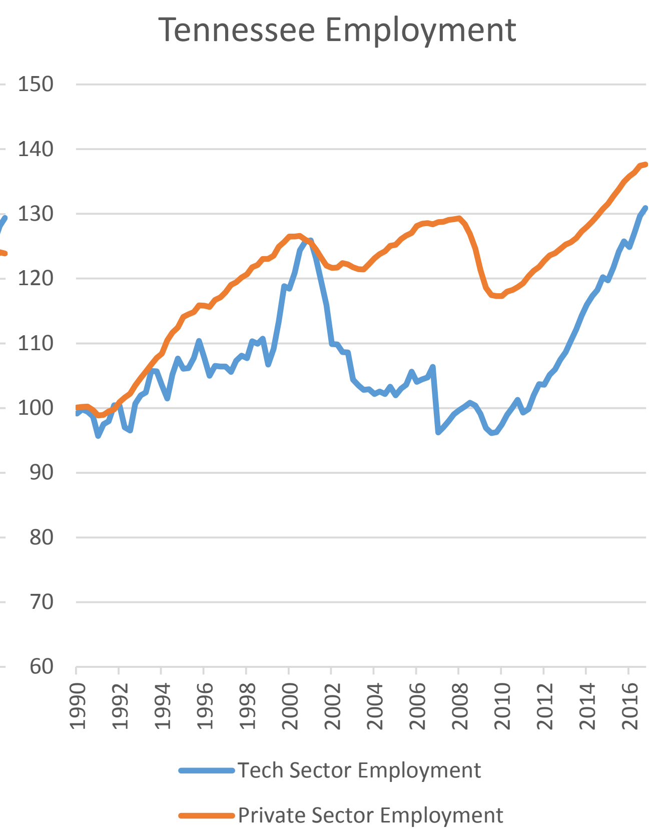
Source: Bureau of Labor Statistics and authors calculations

Regional performance a bit weaker

Index, Jan. 1990 = 100

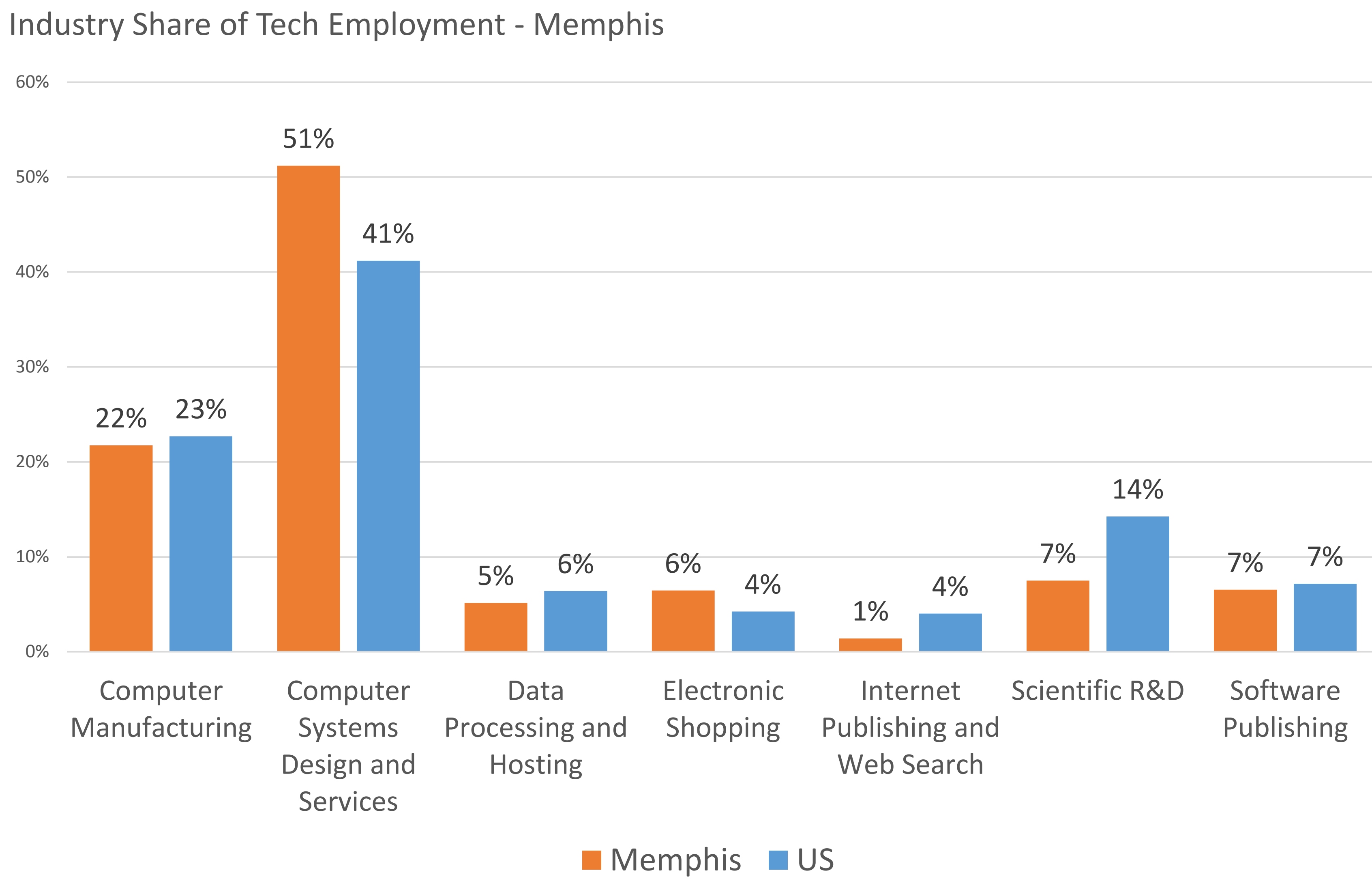






Source: Bureau of Labor Statistics and authors calculations

Computer systems focus in regional tech sector



Final thoughts

While employing a relatively small share of workers, these areas are vital to economic prosperity.

- They are key drivers of job growth;
- the jobs provide high wages;
- they can lead to productivity growth and positive spillovers within a region.

Find out more!

research.stlouisfed.org/regecon