August 2016 Housing Commentary

Urs Buehlmann
Department of Sustainable Biomaterials
Virginia Tech
Blacksburg, VA
540.231.9759
buehlmann@gmail.com

and

Al Schuler
Economist (retired)
Princeton, WV

Return TOC

Table of Contents

This report is a free monthly service of Virginia Tech. Past issues can be found at: http://woodproducts.sbio.vt.edu/housing-report/

To sign up for the report please email buehlmann@gmail.com

August 2016
Housing Scorecard

	M/M	Y/Y
Housing Starts	▽ 5.8%	△ 0.9%
Single-Family Starts	▽ 6.0%	▽ 1.2%
Housing Permits	▽ 0.4%	▽ 2.3%
Housing Completions	▽ 3.4%	△ 8.3%
New Single-Family House Sales	▽ 7.6%	△ 20.6%
Existing House Sales[1]	▽ 0.9%	△ 0.8%
Private Residential Construction Spending	▽ 0.3%	△ 1.4%
Single-Family Construction Spending	▽ 0.9%	▽ 1.5%

M/M = month-over-month; Y/Y = year-over-year

Source: U.S. Department of Commerce-Construction; [1]National Association of Realtors® (NAR®)

Return TOC

Housing Data

	August	July	August 2015
Total permits*	1,139,000	1,144,000	1,166,000
Single-family permits	737,000	711,000	710,000
Multi-family 2-4 unit permits	32,000	29,000	30,000
Multi-family ≥ 5 unit permits	370,000	404,000	426,000
Total starts	1,142,000	1,212,000	1,132,000
Single-family starts	722,000	768,000	731,000
Multi-family 2-4 unit starts**	17,000	11,000	7,000
Multi-family ≥ 5 unit starts	403,000	433,000	394,000
Total completions	1,043,000	1,080,000	963,000
Single-family completions	752,000	754,000	664,000
Multi-family 2-4 unit completions**	8,000	8,000	7,000
Multi-family ≥ 5 unit completions	283,000	318,000	292,000

* All data are presented at a seasonally adjusted annual rate (SAAR).

** US DOC does not report 2-4 multi-family starts and completions directly, this is an estimation.

Source: U.S. Department of Commerce-Construction: www.census.gov/construction/nrc/pdf/newresconst.pdf; 09/20/16

Return TOC

Housing Data

	August	July	August 2015
New single-family sales	609,000	659,000	505,000
Median price	$284,000	$293,100	$300,200
Existing sales [a]	5,330,000	5,380,000	5,290,00
Median price	$240,200	$243,300	$228,500
Private Residential Construction	$449.2 billion	$450.4 billion	$443.0 billion
SF construction	$235.6 billion	$237.9 billion	$239.3 billion
MF construction	$62.0 billion	$60.5 billion	$54.4 billion
Improvement construction [b]	$151.6 billion	$152.0 billion	$149.3 billion

[a] NAR®

[b] The US DOC does not report improvements directly, this is an estimation. All data is SAAR and is reported in nominal US$.

Sources:

NAR® www.realtor.org/topics/existing-home-sales; 09/22/16
U.S. Department of Commerce-Construction: www.census.gov/construction/nrs/pdf/newressales.pdf; 09/26/16
U.S. Department of Commerce-C30 Construction: www.census.gov/construction/c30/pdf/privsa.pdf; 10/03/16

Return TOC

Conclusions

Housing remains relatively weak (historical speaking) with homeownership rate falling to lowest rate in 50 years. It appears that "free money" cannot overcome the abundance of low-paying jobs, rising home prices, changing preferences (to renting), poor income growth, and tight credit for first time buyers. The political gridlock and global uncertainty, terrorism, and economic slowdowns (China, Brazil) are not helping either, mostly by preventing businesses to invest.

June's housing data is a mixed bag – total starts are down by 5.8% (m/m), single family homes starts are down by 6.0%, permits down by 0.4%, completions down by 3.4% (m/m), and existing home sales were down by 0.9% from the month before.

With meager economic growth (average growth since 2009 2.1%, slowest recovery since WWII) and with 51% of all worker's in the U.S. making less than $30,000/year, it's hard to envision a scenario where the U.S. housing market returns to "normal" anytime soon. Slowing economies in China, Brazil, among others, and continuing problems in Europe all add up to numerous negative macro-factors endangering a robust housing recovery, in particular:

1) A constrained quantity of well-paying jobs being created;
2) a tepid economy;
3) declining real median annual household incomes;
4) strict home loan lending standards – though loosening with new programs; and
5) slowing world economy; and
6) global uncertainty

Return TOC

July 2016
EU Housing Scorecard

		M/M	Y/Y
Production in Construction[A]	EU 28	△ 1.1%[s]	△ 1.0%[s]
	EU 19	△ 1.8%[s]	△ 3.1%[s]
	Germany	△ 1.1%	△ 2.1%
	France	△ 3.4%	△ 1.8%
	UK	▽ 0.5%[p]	▽ 4.9%[p]
	Spain	△ 2.5%[ps]	△ 15.9%[p]
Building permits (m^2 floor)[A]	EU 28	-.-	-.-
	EU 19	△ 2.7%[(06)]	△ 11.2%[s(06)]
	Germany	△ 2.8%	▽ 0.1%
	France	△ 1.6%[s]	▽ 6.4%[e]
	UK	-.-	-.-
	Spain	△ 12.3[s(06)]	△ 70.9[e(06)]

M/M = month-over-month; Y/Y = year-over-year

Source: Eurostat (http://ec.europa.eu/eurostat/web/short-term-business-statistics/data/main-tables; 10/14/16)

[A] see http://ec.europa.eu/eurostat/web/short-term-business-statistics/overview/sts-in-brief

[e] estimate, [s] Eurostat estimate, [p] provisional, -.- no data available, [(06)] June data

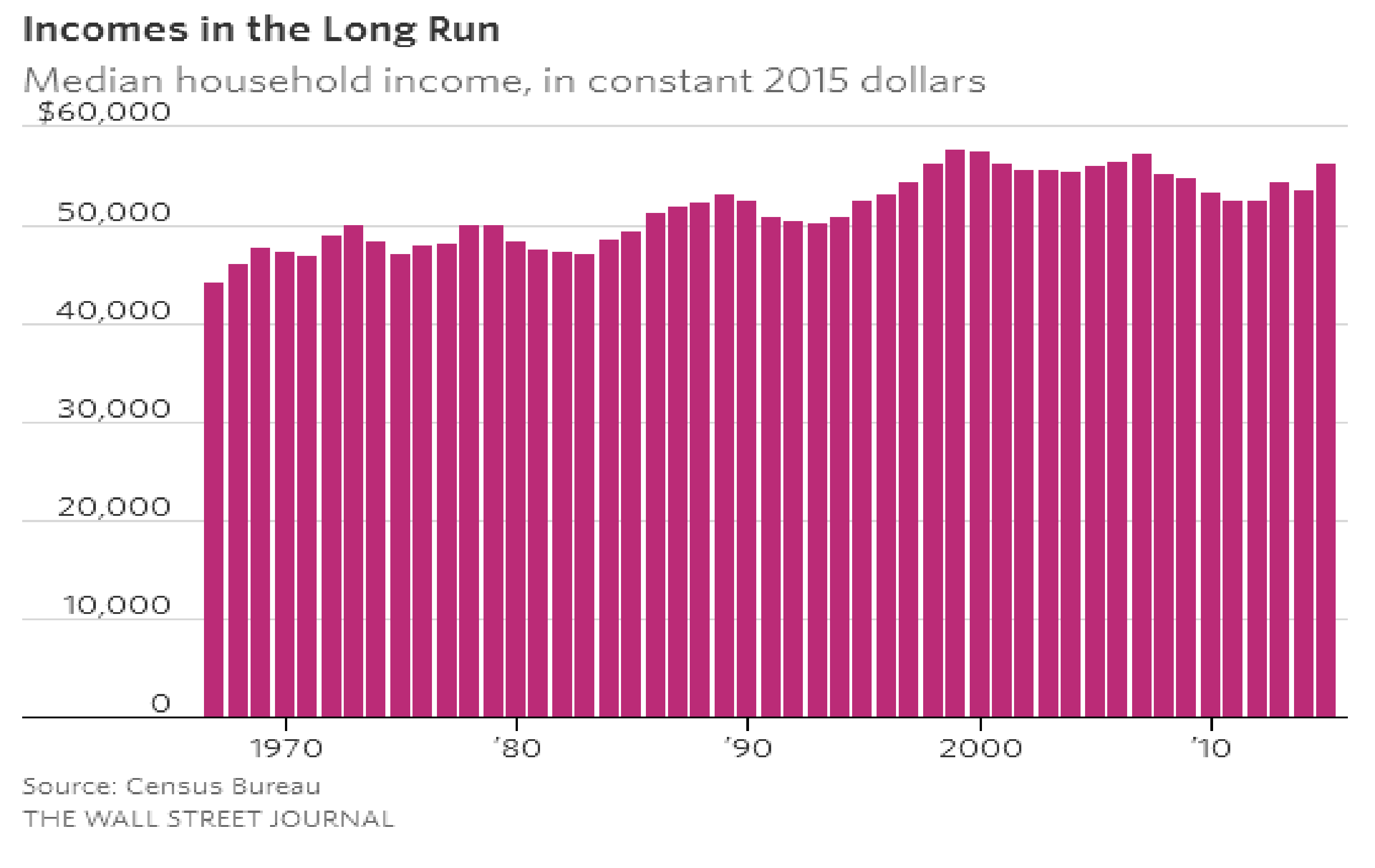
Return TOC

Housing comments – August 2016

- *August starts were down 5.8% to 1.14 (SAAR) - SF at 722,000 (SAAR) – down 7% - MF 37% of total –*
- Home ownership rate fell to 63.5% in QTR1 2016 – *lowest ownership rate in 50 years!* Financing problems; changing *preferences (to renting); and rising home prices - problem for 1st time buyers*
- *Resale market dropped 1% - 5,330,000 (annual rate) – low inventory (4.6 months) driving prices higher – major impediment to sales*
- **Latest jobs report was disappointing +151,000 - unemployment remained at 4.9% –** furthermore , 51% of all workers make less than $30,000/year – can't buy a house on that! (https://www.ssa.gov/cgi-bin/netcomp.cgi?year=2014)
- The Fed doesn't know what to do, so they do nothing. Looking for more confirmation for tightening or reasons to wait. In their defense, they are trying to do the job the Congress and President refuse to do. We have a dysfunctional political system in this country at a time when we need strong leadership and cooperation. We need politicians who aren't afraid to do their job and make the tough decisions– akin to our 1st responders and military who put their lives on the line everyday. Do you think the 1st responders on "9/11" asked themselves "should I enter the tower"; "will I get a promotion if I save lives?; " "will I die?; " -- there was no hesitation because they believed in what they were doing.

  They had a job to do; they had to save as many lives as they could.

Finally, some good news on incomes – Census reported that U.S. Household Incomes Surged 5.2% in 2015, First Gain Since 2007, and largest % gain in recorded history! Also, the poverty rate fell to 13.8%. It appears that the steady job growth over the past 6 years is having an impact!!! This is a resilient economy for sure. We still have problems but, I'll take this as a sign things are getting better.



(http://www.wsj.com/articles/u-s-household-incomes-surged-5-2-in-2015-ending-slide-1473776295)

OK – let's get back to reality ---

Want to Fix the U.S. Economy? Start with the broken political system – new report from M. Porter et. al. on the competitiveness of our nation. Political dysfunction has become the biggest economic stumbling block for the U.S., according to this report.

Here is the hyperlink to the Porter study

(http://www.hbs.edu/competitiveness/Documents/problems-unsolved-and-a-nation-divided.pdf)

An interesting report from experts on competitiveness. Slow reading, but lots of good analysis, charts, and recommendations from some of America's leading thinkers on competitiveness.

Here are suggestions from the Porter study on how to fix America's economy – however, to accomplish this, we need a functioning government which we don't have.
We can begin to fix the problem this November – make the effort to vote!

FIGURE 1: THE EIGHT-POINT PLAN FOR WASHINGTON

1	Simplify the corporate tax code with lower statutory rates and no loopholes
2	Move to a territorial tax system like all other leading nations
3	Ease the immigration of highly skilled individuals
4	Aggressively address distortions and abuses in the international trading system
5	Improve logistics, communications, and energy infrastructure
6	Simplify and streamline regulation
7	Create a sustainable federal budget, including reform of entitlements
8	Responsibly develop America's unconventional energy advantage

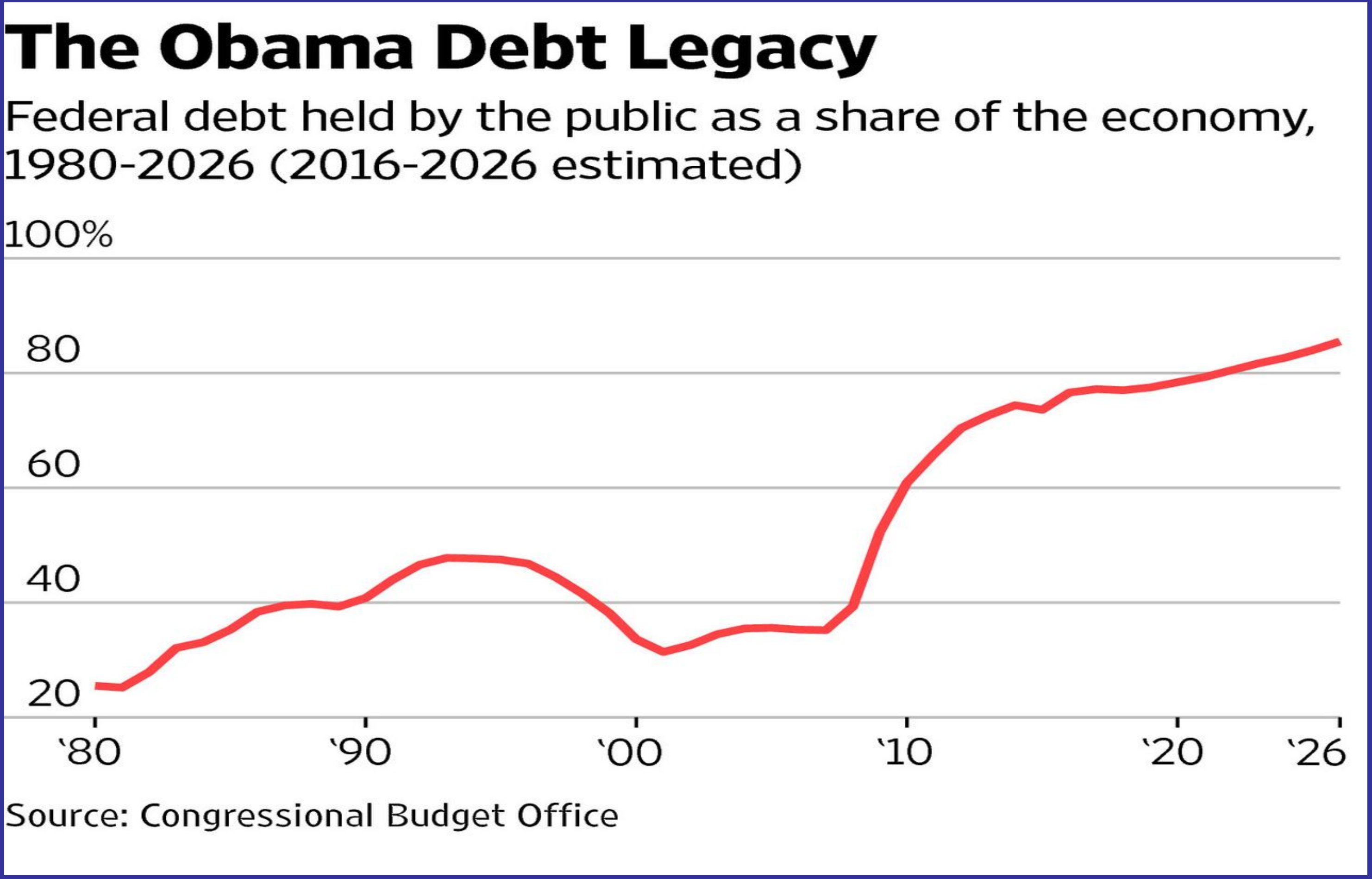
Source: Michael Porter and Jan Rivkin. "An eight-point plan to restore American competitiveness." The Economist: The World in 2013. (Nov 2012).

MY Comments on the economy – it continues to sputter
– propped up by low interest rates, compliments of the FED -
But, business investment remains weak as Washington gridlock
and uncertainty discourages investment needed to create jobs.
Also, businesses don't invest when they see excess capacity –
i.e., they don't invest into a weak economy that shows little
Sign of improving beyond 1% - 2% GDP growth.

I believe we, Europe, and many other countries are following Japan into a prolonged period of weak growth, low inflation, and low interest rates. Central banks can't fix our problems – when will we learn?

Debt - Innovation – Productivity

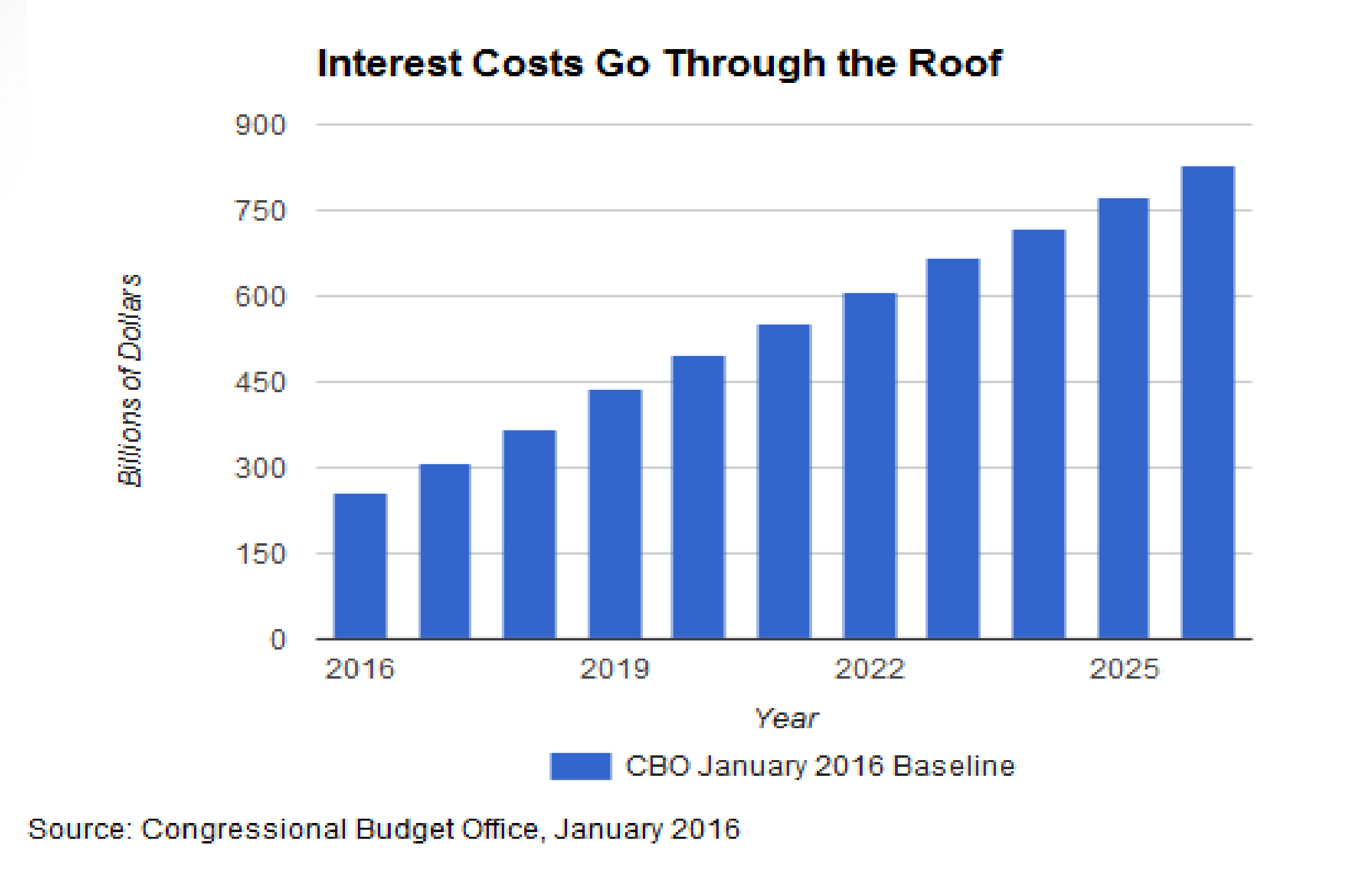
Huge problem facing this country is public debt – that's the debt that has to be repaid. Total debt today ~ $20 trillion, of which $14 trillion is "public debt". The $6 trillion ("borrowed") by the Treasury from the Social Security, Medicare, and highway trust funds is gone/spent. Here is link to real time debt clock (http://www.usdebtclock.org/) - a scary picture! PS. Public debt now equals 75% Of GDP – we're getting very close point of no return – where principal plus Interest payments exceed our capacity to pay, and lenders refuse to lend – that's when "the shit hits the fan" – the USA of Greece!



Main problem with $20 trillion debt is that paying down that debt (including interest) will reduce government spending on social programs, including Social Security, Medicare/Medicaid, housing allowances for the poor, food stamps,….. Furthermore, investments in technology, research/development, education, infrastructure, will suffer, hurting productivity even more. And, defense spending will suffer as well.
These investments and social programs are critical to future growth, GDP, standard of living, and security of our nation. And, yes, a return to a healthy housing market.

Not sure why we don't see this as a major threat to our future – probably because we don't understand the magnitude of the problem. Also, the politicians do a great job in "passing the buck" – i.e., delaying the 'day of reckoning, promising that we'll tax the rich, the banks, etc. – i.e., someone else will pay for the fixes! Guess what – that won't work – they are not the main problem – as a country, we consume too much, save too little, and don't invest enough in our future. We are the problem, and we are the ones who must fix the problem. This November, we can begin the process by electing people who understand the issues, and offer sensible solutions.

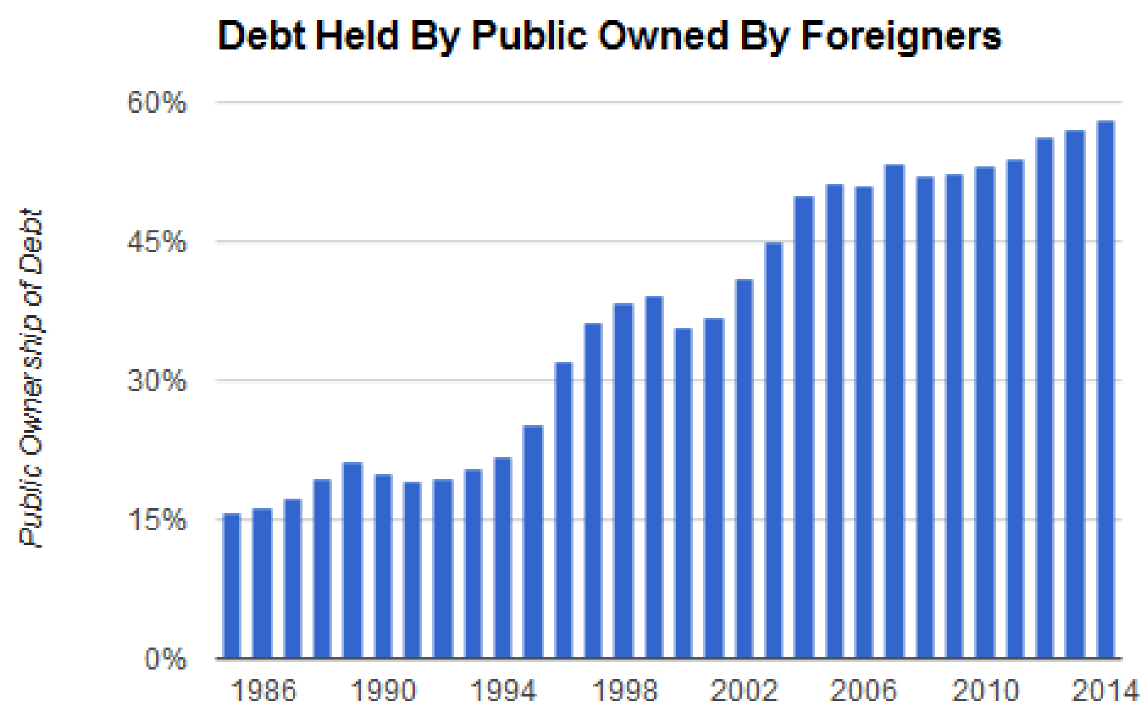
Problems with too much debt – servicing costs will squeeze social programs (Social Security, Medicare Medicaid, food stamps, ..), R&D, education spending, Infrastructure investments, …..



Big problem when foreigners question our ability to repay our debts – they will demand higher rates, etc., and eventually, refuse to buy our debt.

Total debt = $20 trillion, of which $14 trillion is public and $ 6 Trillion is intergovernmental debt (i.e., what government owes itself).

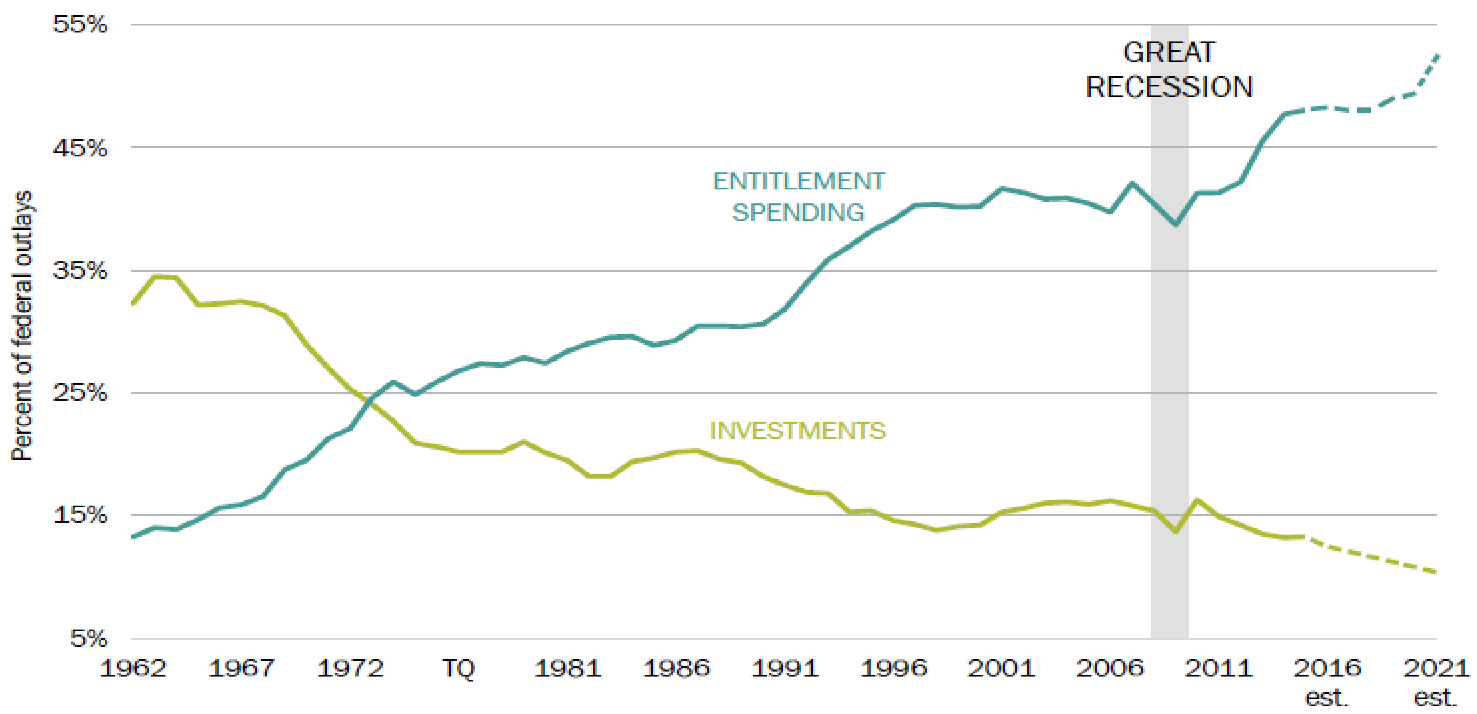
Foreigners hold about $8.5 trillion of our debt, which is 60% of the public debt



Source: United States Treasury Department, Treasury Bulletin, Table OFS-2, December 2015.

Going into debt is OK if you're investing for the future - - but, we're not! **For decades, we, as a nation, have been living a fantasy life. Entitlement spending is now approaching 50% of the federal budget while investment spending (critical to maintain our competitiveness) – has been declining for the past 60 years. (from Porter study)**

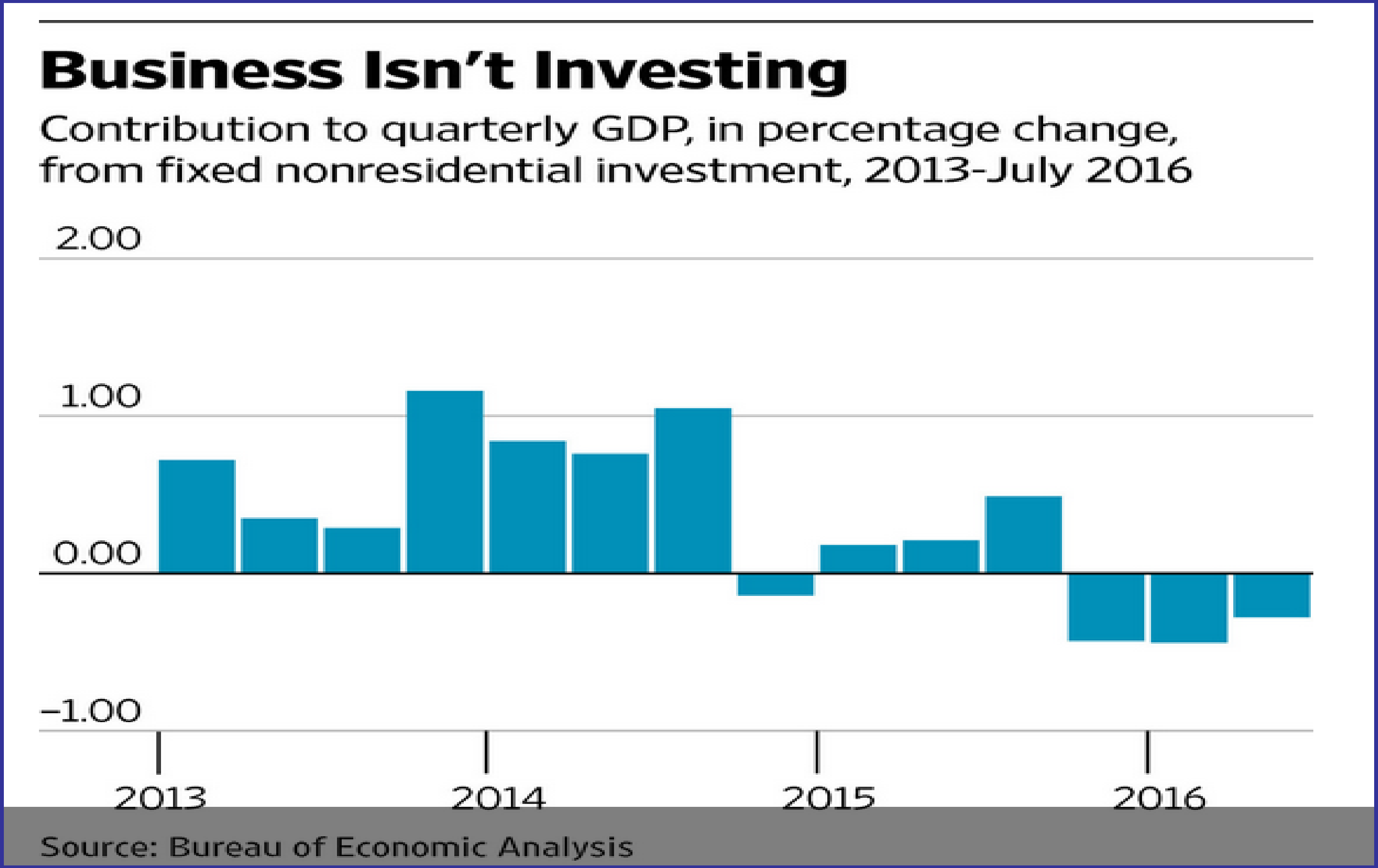
FIGURE 9: SHIFTING COMPOSITION OF FEDERAL SPENDING



Note: Entitlement spending includes outlays for Social Security, Medicare, Medicaid, CHIP, and Affordable Care Act Subsidies. Investments includes outlays for infrastructure, R&D (both defense and non-defense), and education. 2016-2021 figures are Office of Management and Budget estimates. TQ refers to the Transition Quarter from July 1, 1976 to September 30, 1976, after which the federal government changed its fiscal year. Dotted line is a forecast based on previous Office of Management and Budget estimates. Shaded area indicates the recession of December 2007 to June 2009 as defined by the National Bureau of Economic Research.

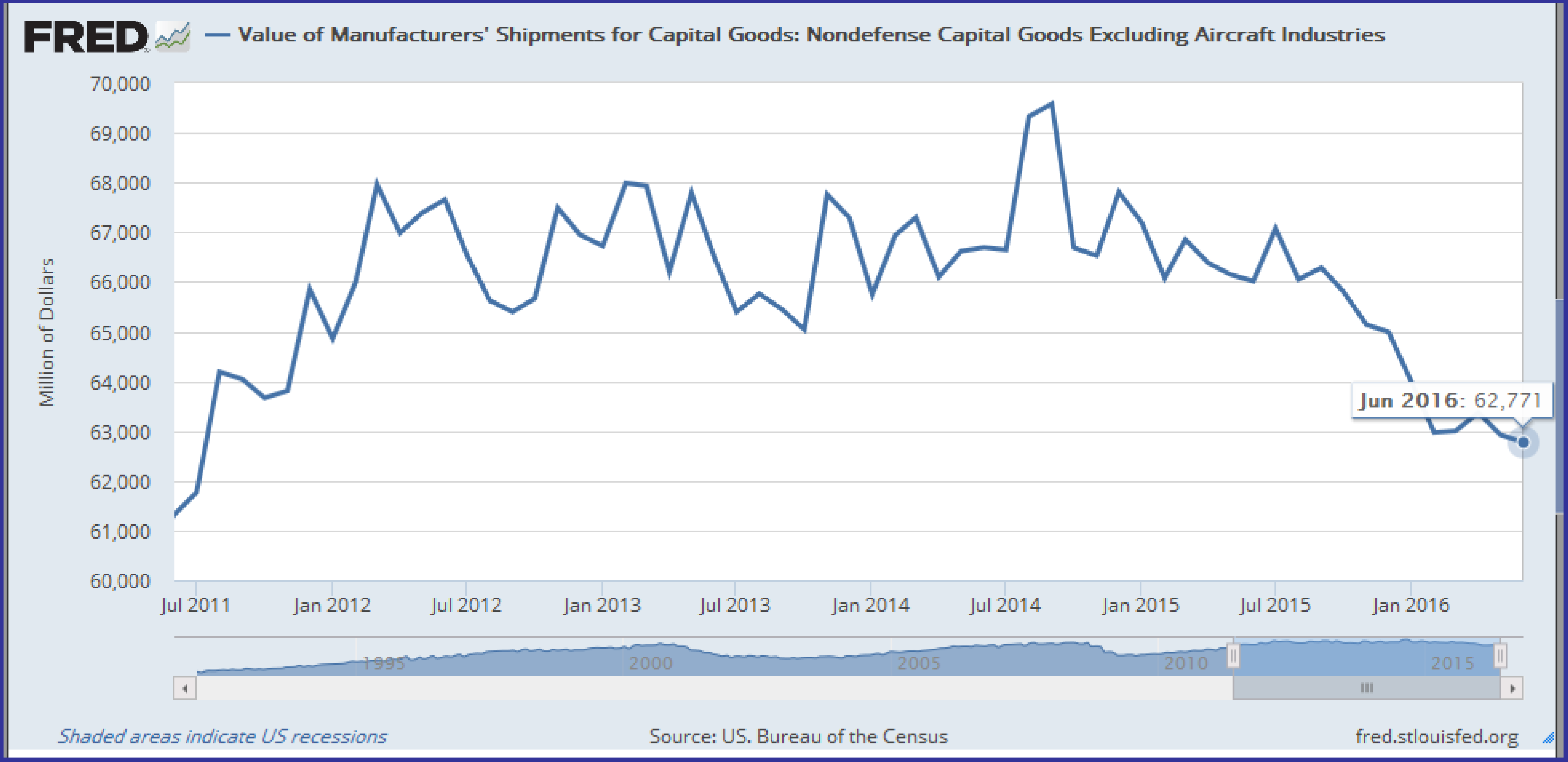
Source: Office of Management and Budget; author's calculations.

Business isn't investing either --- has been trending lower for the past several years. That's why GDP growth remains weak. That means income growth will remain weak and housing will continue to underperform, and creation of good paying jobs will remain an elusive goal.



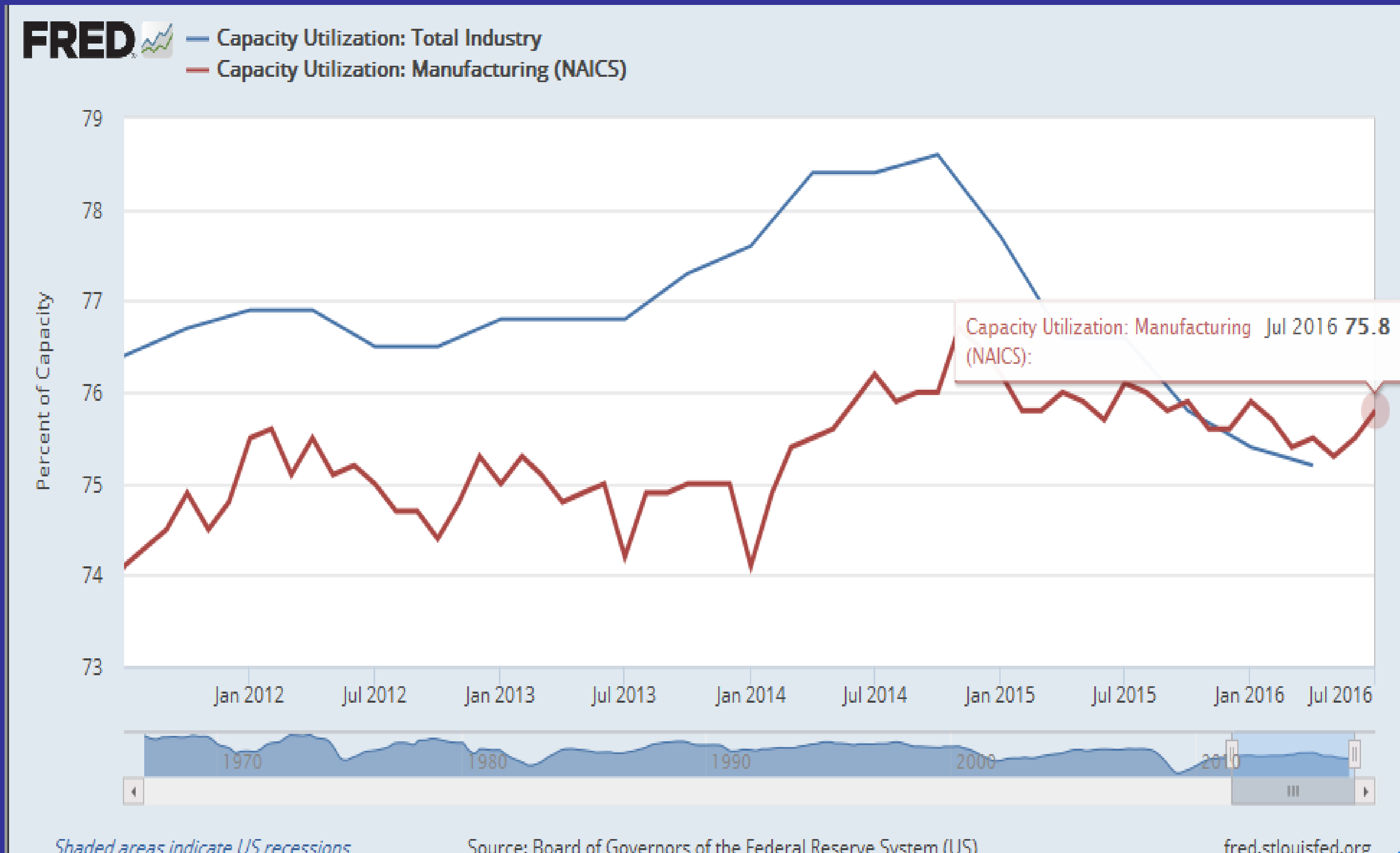
(http://www.wsj.com/articles/make-america-grow-again-1469831784)

Capital spending has been trending lower for past 4 years Why? Companies not confident of future – uncertainty re: Tax code, regulations; Washington grid lock!



(http://www.wsj.com/articles/u-s-durable-goods-orders-fell-2-2-in-may-1466771610)

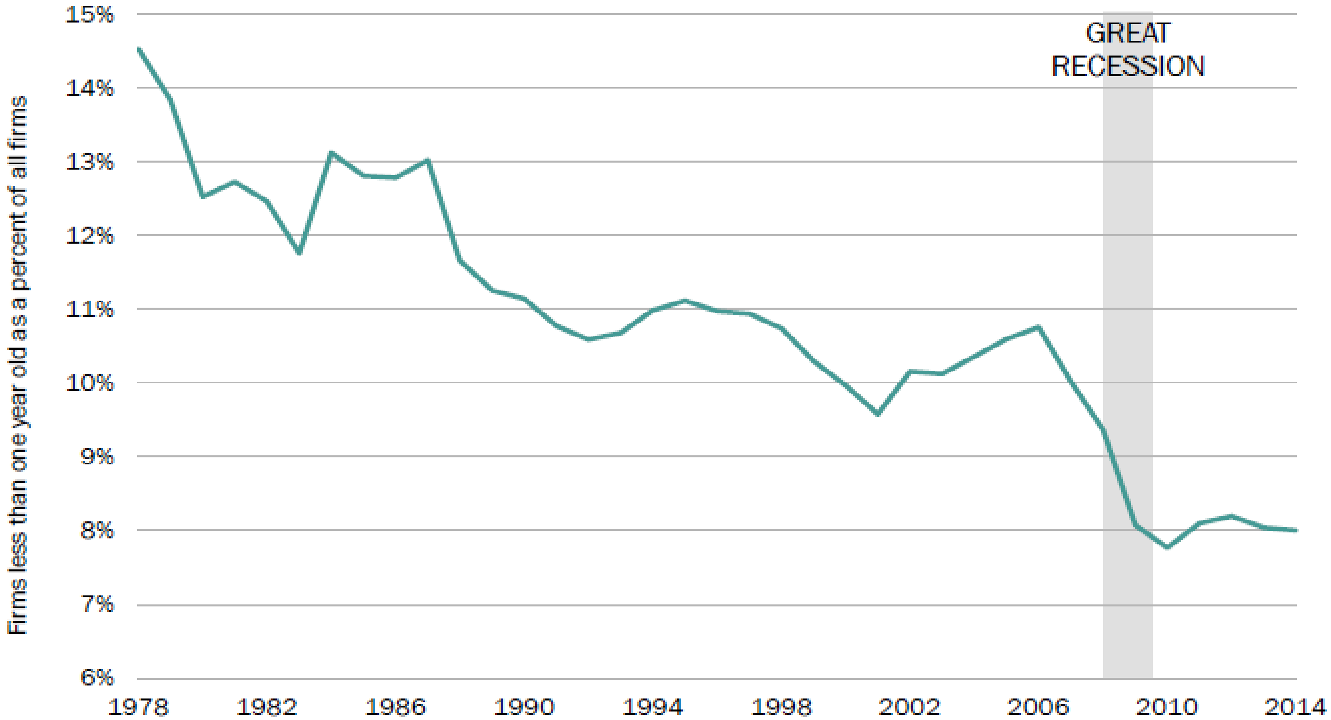
Business won't invest (and create jobs) when there is excess capacity – capacity utilization below 80% suggests "excess capacity" exists – we've had 2 years of falling capacity utilization – my guess the culprit is the weak economy!



Another structural problem – new business formations are down Significantly – why job creation is slow (from the Porter study)

FIGURE 12: SLOWDOWN IN NEW BUSINESS FORMATION

Start-ups as a portion of all U.S. firms, 1978–2014



Note: Shaded area indicates the recession of December 2007 to June 2009 as defined by the National Bureau of Economic Research.

Source: U.S. Census Bureau Business Dynamics Statistics. Chart adapted from Ian Hathaway and Robert E. Litan, "Declining Business Dynamism in the United States: A Look at States and Metros," Economic Studies at Brookings, May 2014.

What happens when innovation is missing!
Dismal productivity growth - - worst performance for US economy since the 1980's when we experienced back to back recessions.
(PS – I understand that productivity measurement is a problem as new products/services quality is difficult To measure so maybe we are underestimating real productivity?)

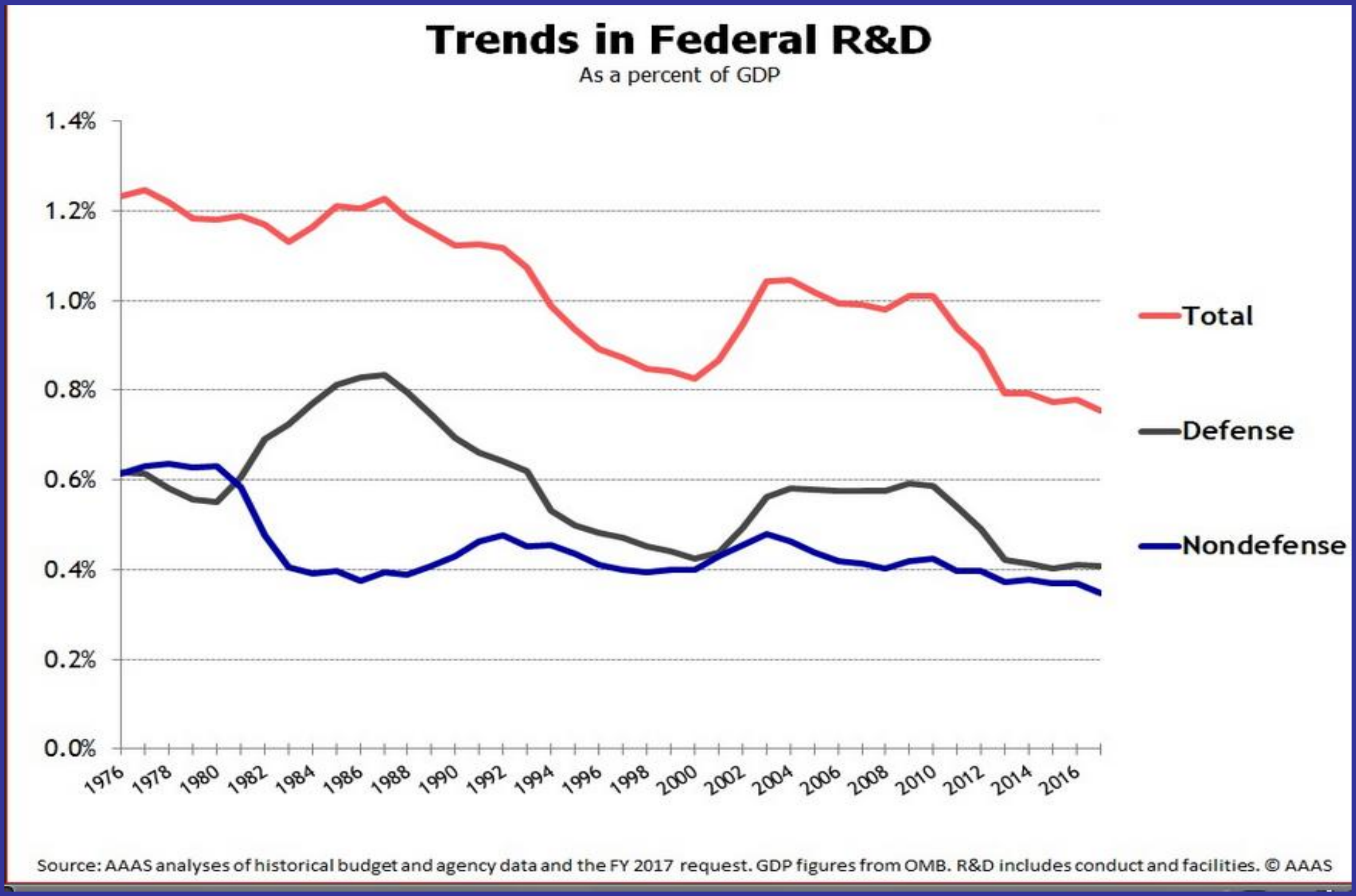
Source: WSJ (http://www.wsj.com/articles/u-s-productivity-dropped-at-0-5-pace-in-the-second-quarter-1470746092)

Waning productivity is major cause of our economic problems. Weakening trend over past 60 years needs to change if wages/standard of living are to improve. According to recent study by Porter et al., competitiveness is key. Solution is infrastructure reform, tax reform, and immigration reform. Political paralysis keeps us from implementing the right solutions according to Porter.

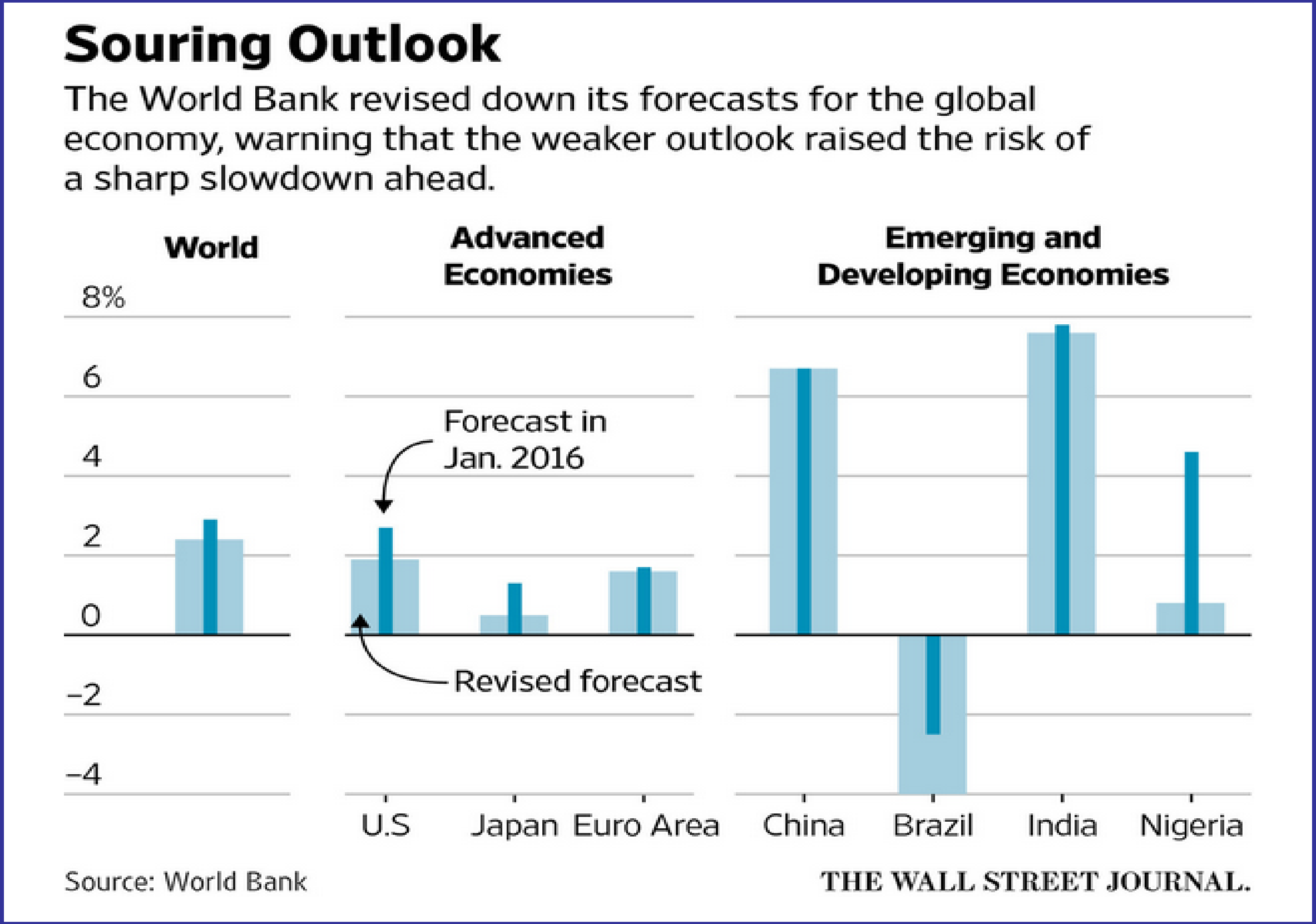
(http://finance.yahoo.com/news/us-competitiveness-project-harvard-business-school-hbs-michael-porter-030021739.html)

Falling R&D - - Not a good trend

Currently, Federal R&D is .78% of GDP – non defense spending is .36%
Federal government funds basic research – which is critical to development of new technology and innovation in science and engineering - critical to economic and job growth, and productivity



World Bank downgrades growth (again) in 2016 to 2.4% as problems in developed and developing world mount



Source: WSJ (http://www.wsj.com/articles/world-bank-cuts-global-growth-outlook-1465329662)

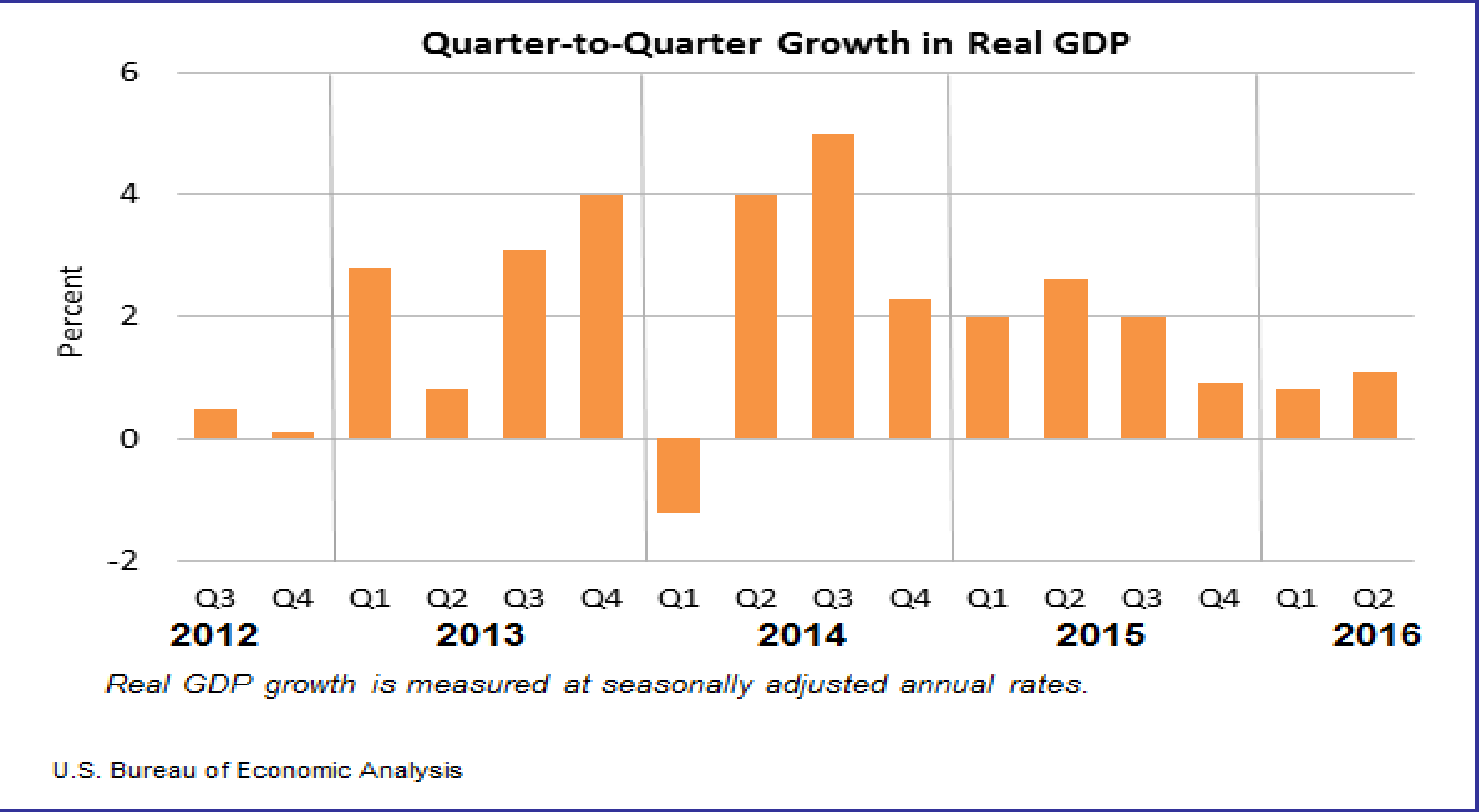
U.S. 2nd Qtr. 2016 economic growth a dismal 1.1% - since last September, the economy has averaged meager 1% growth!

(1) Slowing world economy (weaker China , European, and South American growth)

(2) Stronger dollar will reduce exports and increase imports – negative impact on manufacturing jobs which is key to income growth in USA

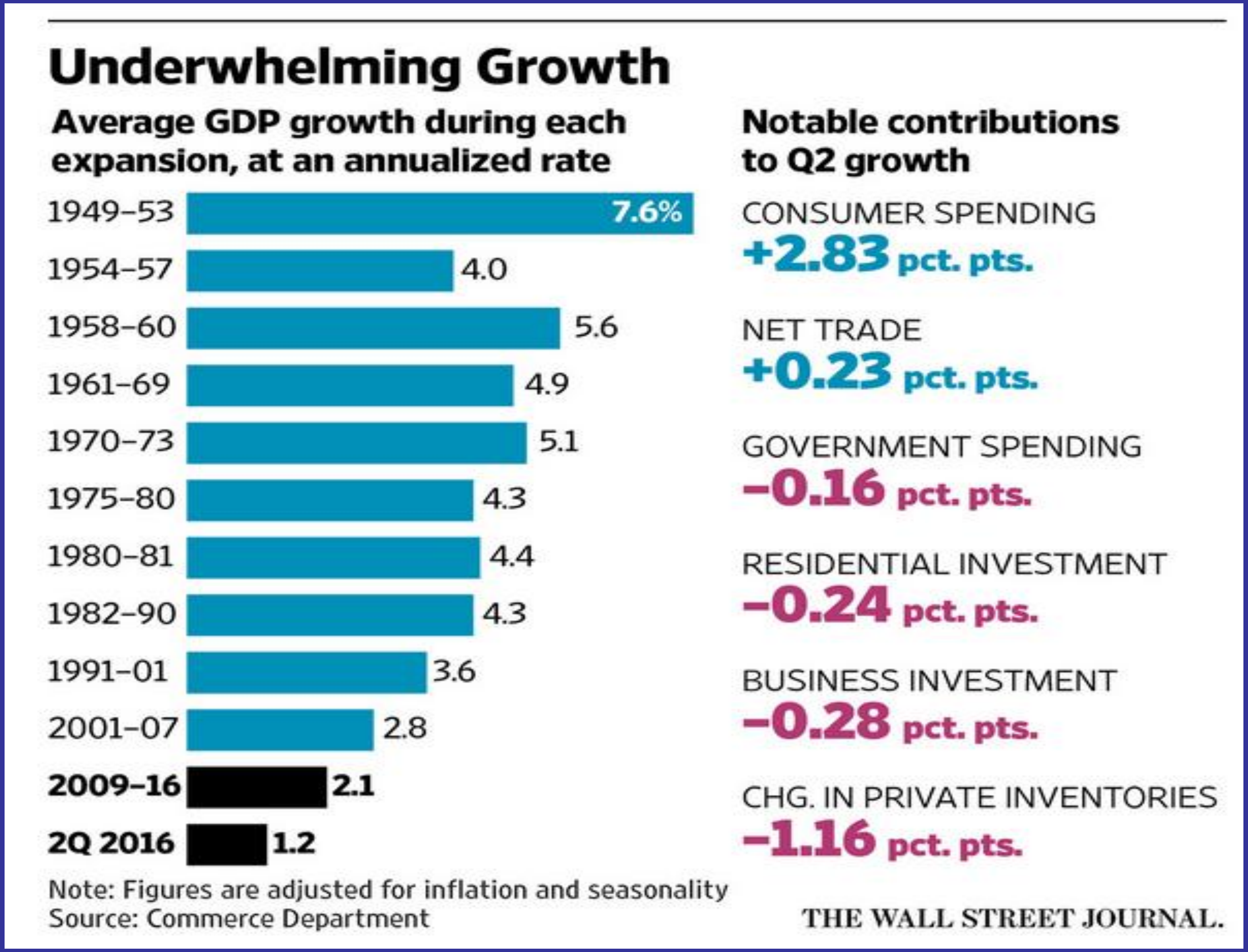
(3) Political stalemate/weak leadership, terrorism, currency wars, growing national debt, …

(4) Weak income growth and continuing high “real unemployment”

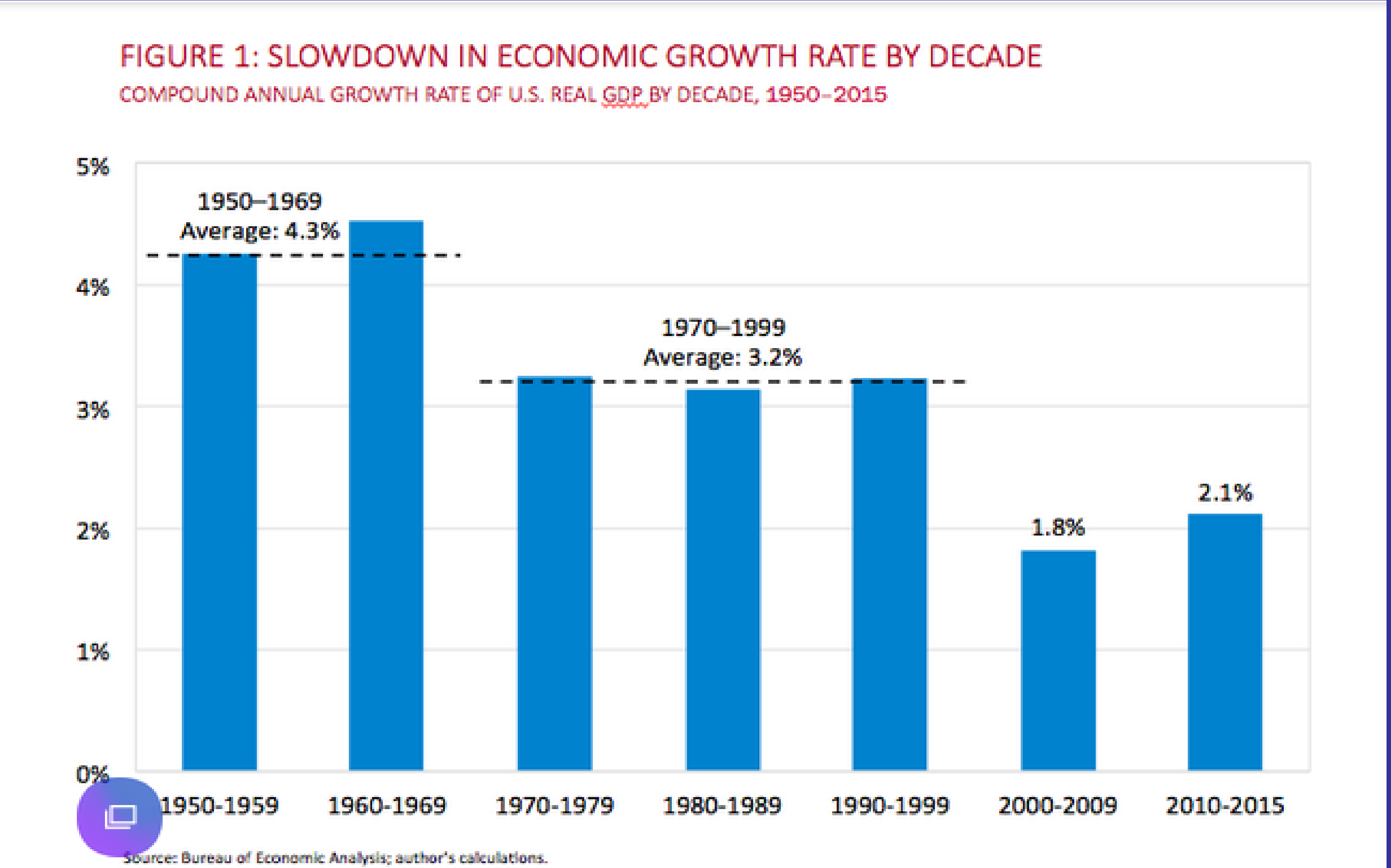


Source: BEA (http://www.bea.gov/newsreleases/national/gdp/gdp_glance.htm)

Weakest recovery since WWII



Weak growth means weak incomes and weak housing numbers in the future unless we address our competitiveness issues.



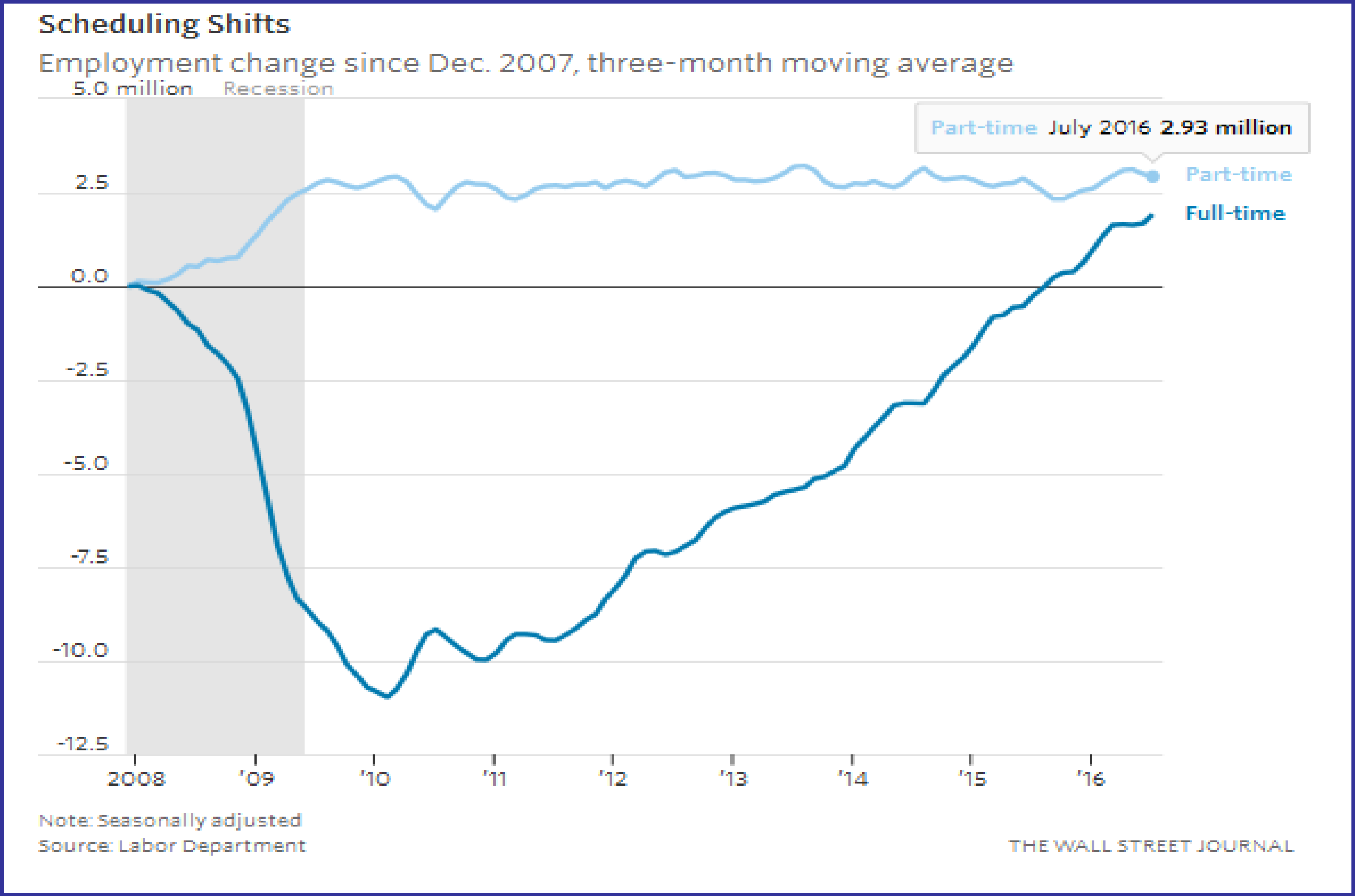
Source: Harvard Business School US Competitiveness Project

(http://finance.yahoo.com/news/us-competitiveness-project-harvard-business-school-hbs-michael-porter-030021739.html)

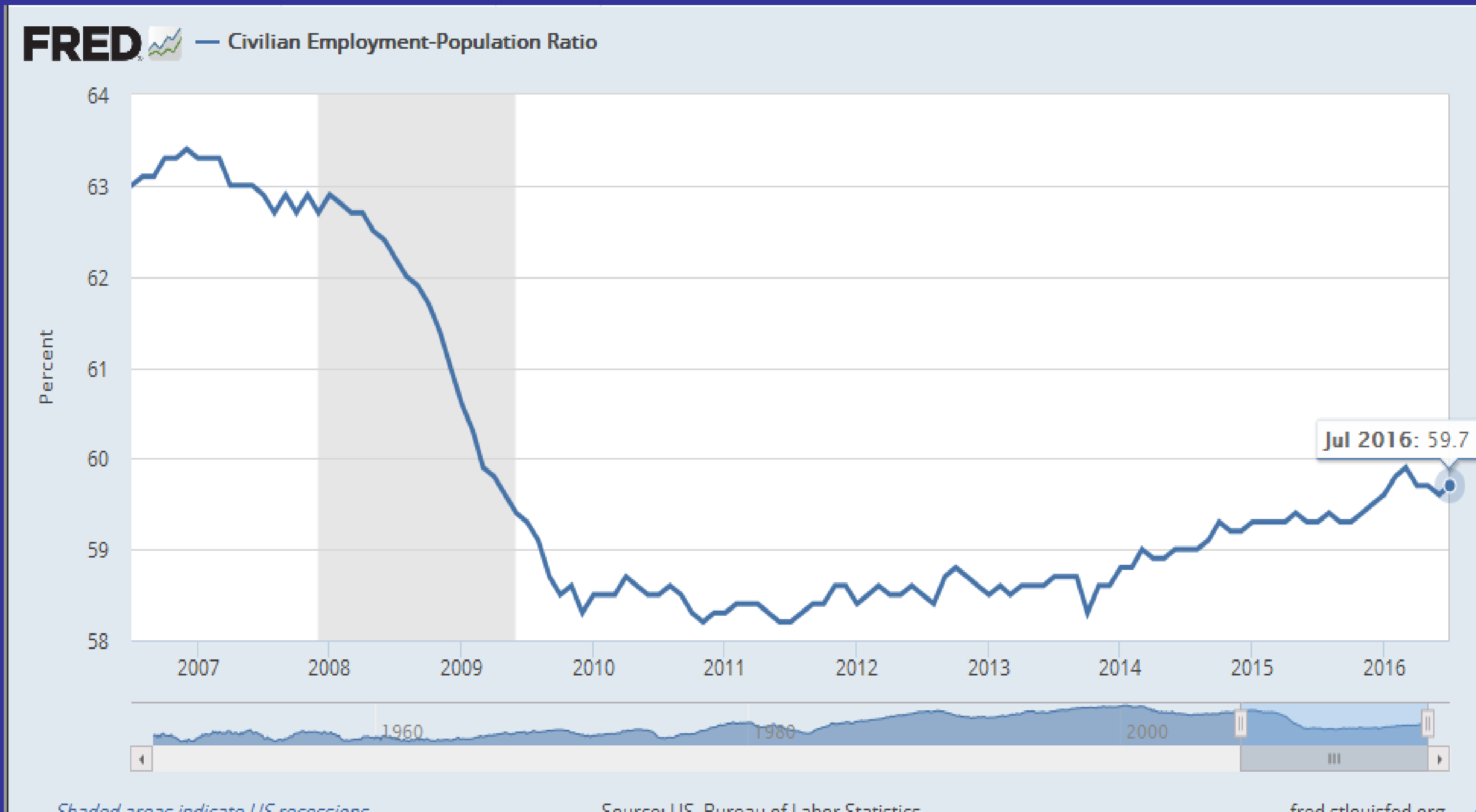
Here are a few slides on labor market conditions – problems persist, but there are solutions

New part time jobs still outnumber full time by 1 million since the recession – also, 51% of workers make less than $30,000/year

Key reason why housing starts remain weak!



Not a good trend for the economy – employment population ratio keeps decreasing – my opinion – too much welfare, plus many people don't have the required job skills

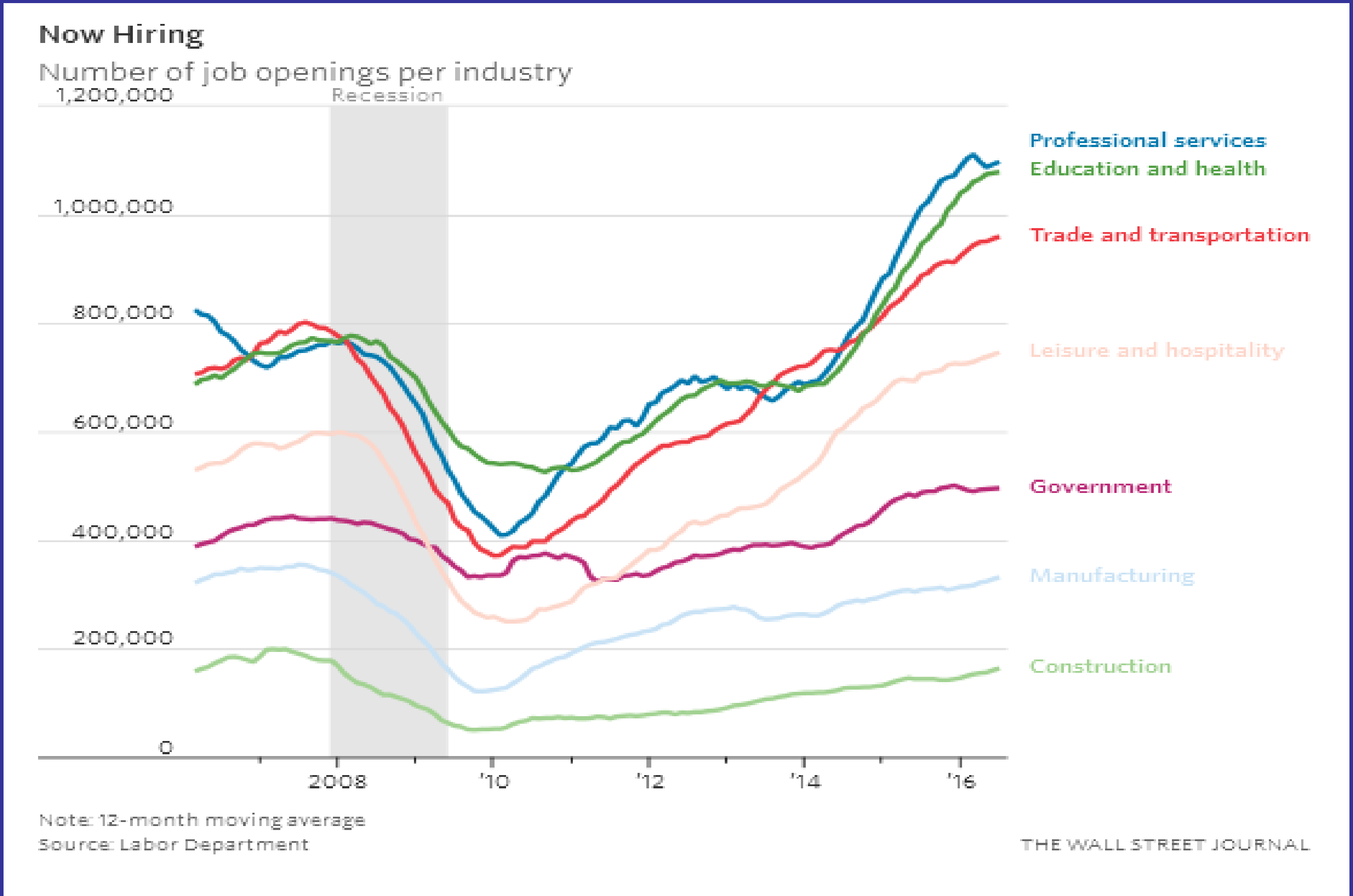


(http://www.wsj.com/articles/the-idle-army-americas-unworking-men-1472769641)

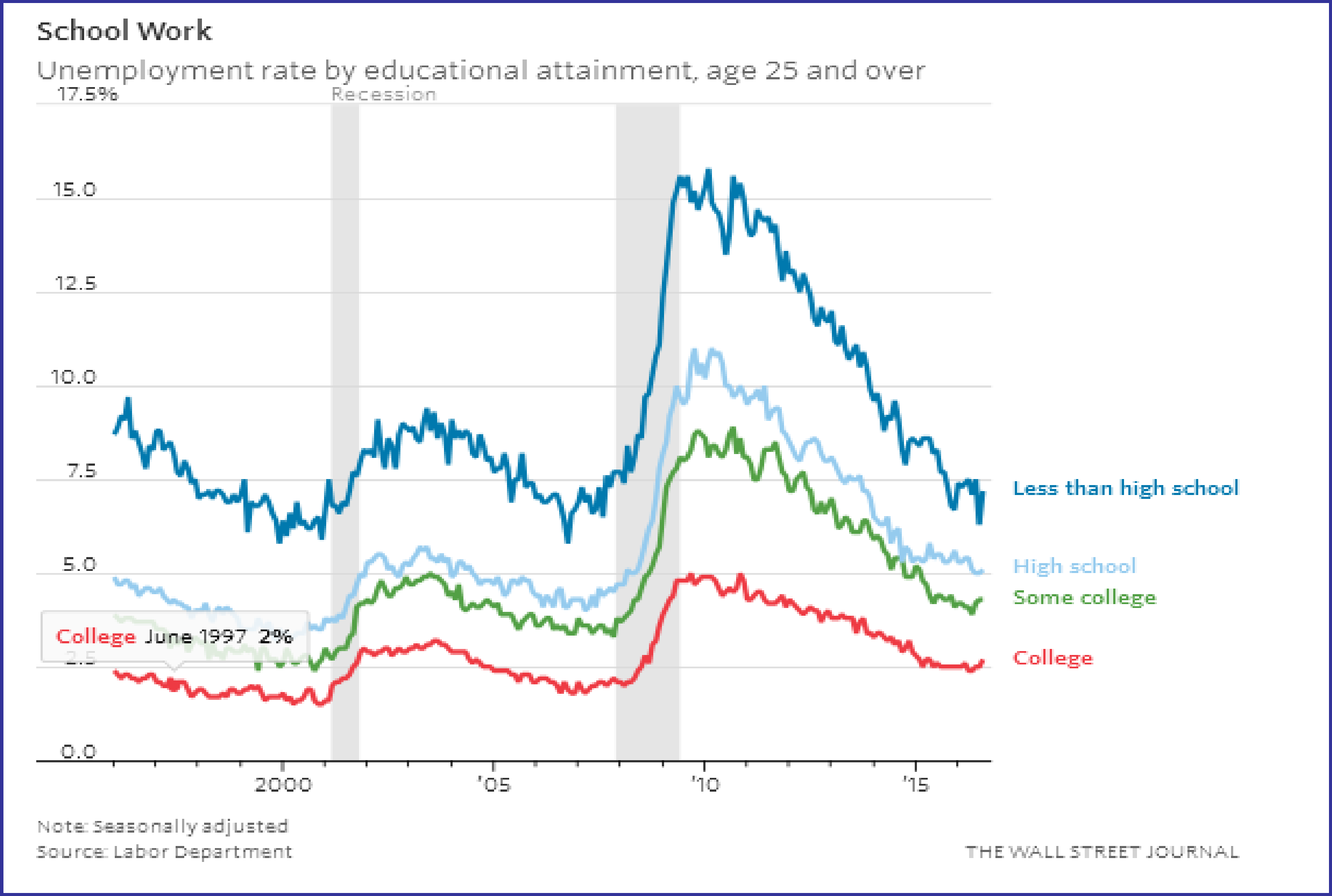
Here's the problem – there are lots of jobs, but Too many job seekers don't have the required skills!!

(http://blogs.wsj.com/economics/2016/09/07/a-new-record-for-job-openings-deepens-mystery-over-lack-of-hiring/)

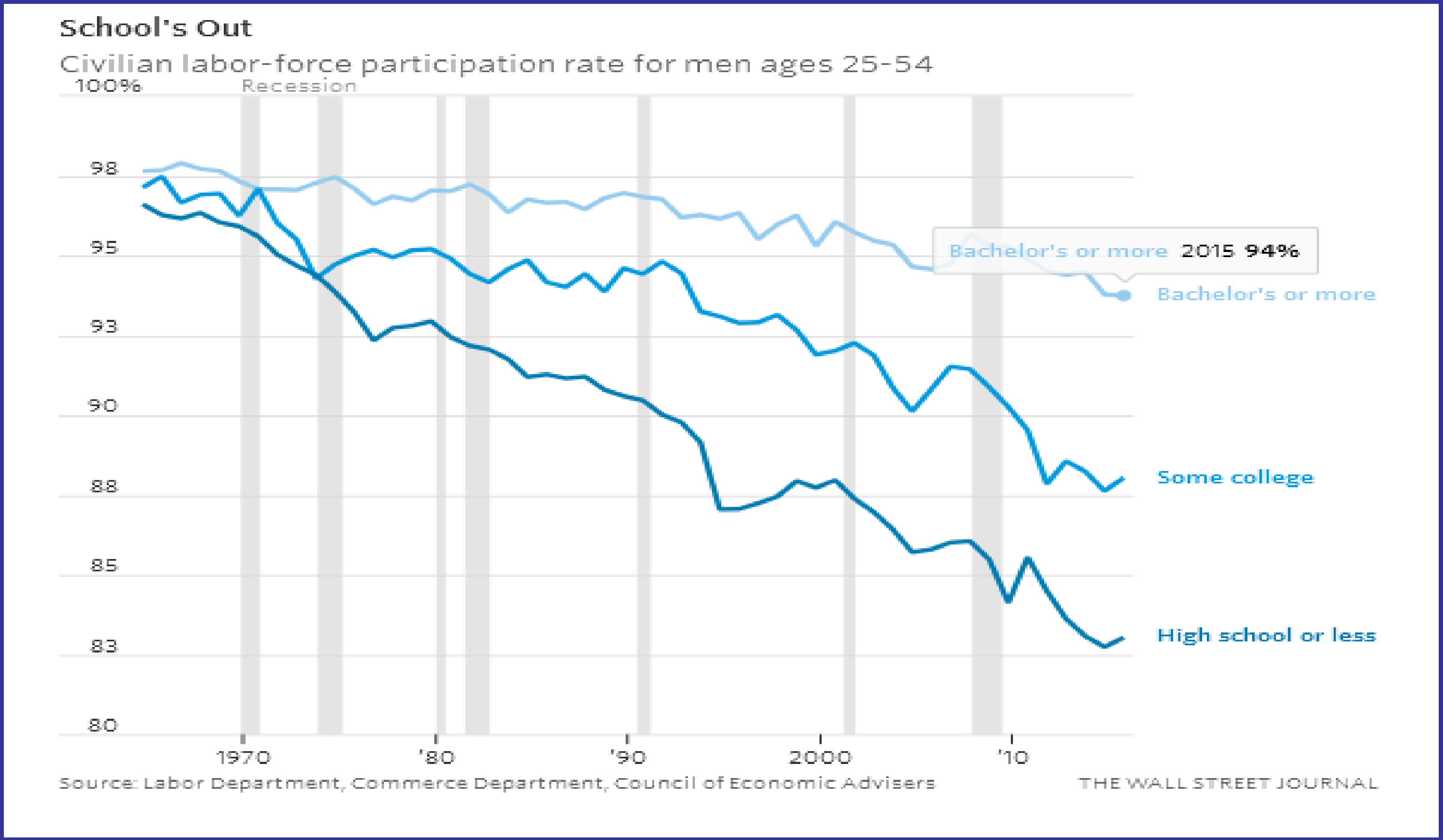
Here's where the jobs are – but, again, lack of skills means many of these positions go unfilled!



Education will help keep you out of the unemployment line

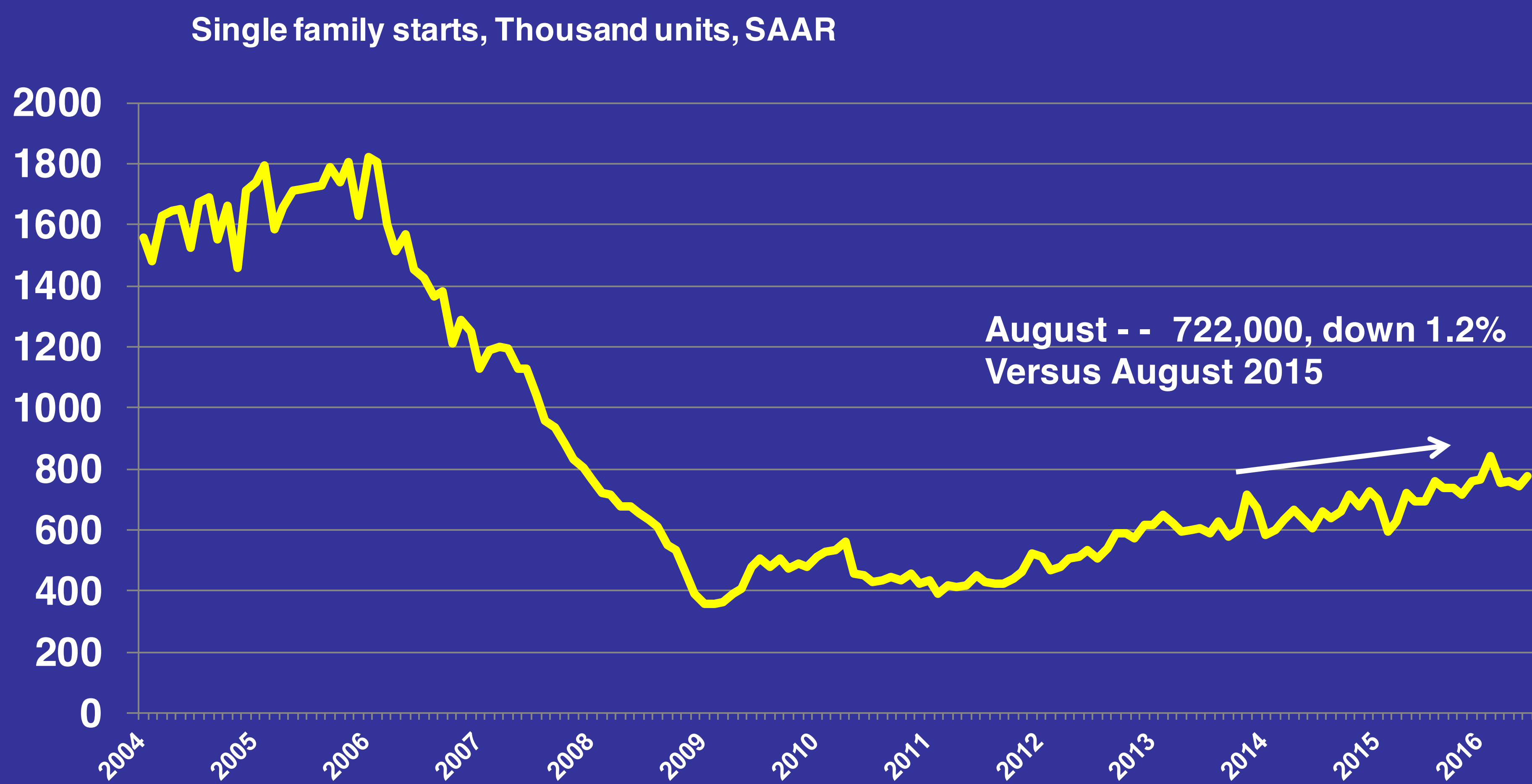


Getting an education will get you back into the labor force



Additional housing comments

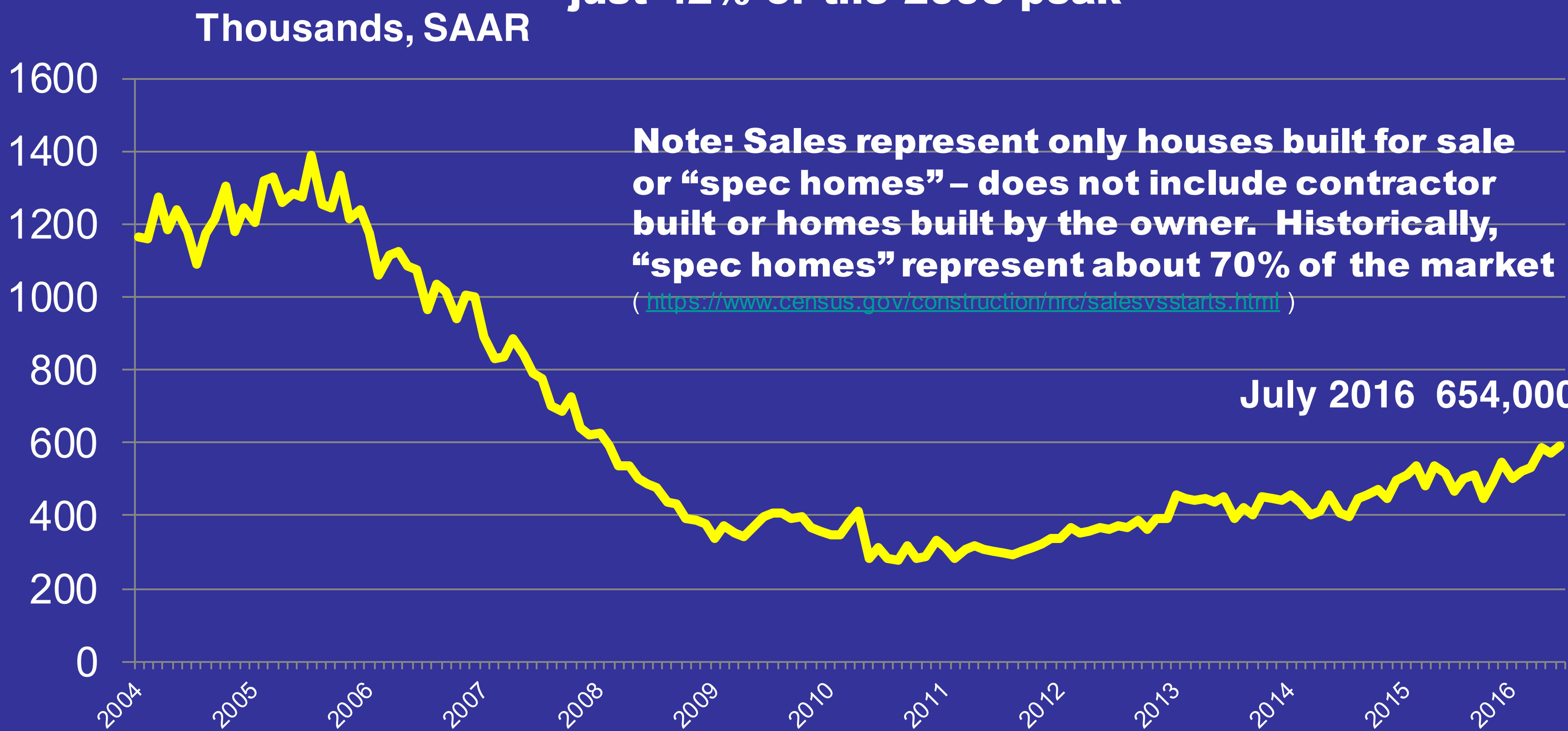
Starts are inching forward – But, *Low interest rates can't fix housing!*
this is basically a two tiered market – healthy upper end versus weak entry level housing - not sustainable



Source: Census (http://www.census.gov/const/www/newresconstindex.html)

New Single Family Home sales are the key statistic to watch for wood products demand – sales drive housing starts – this drives demand for wood products!

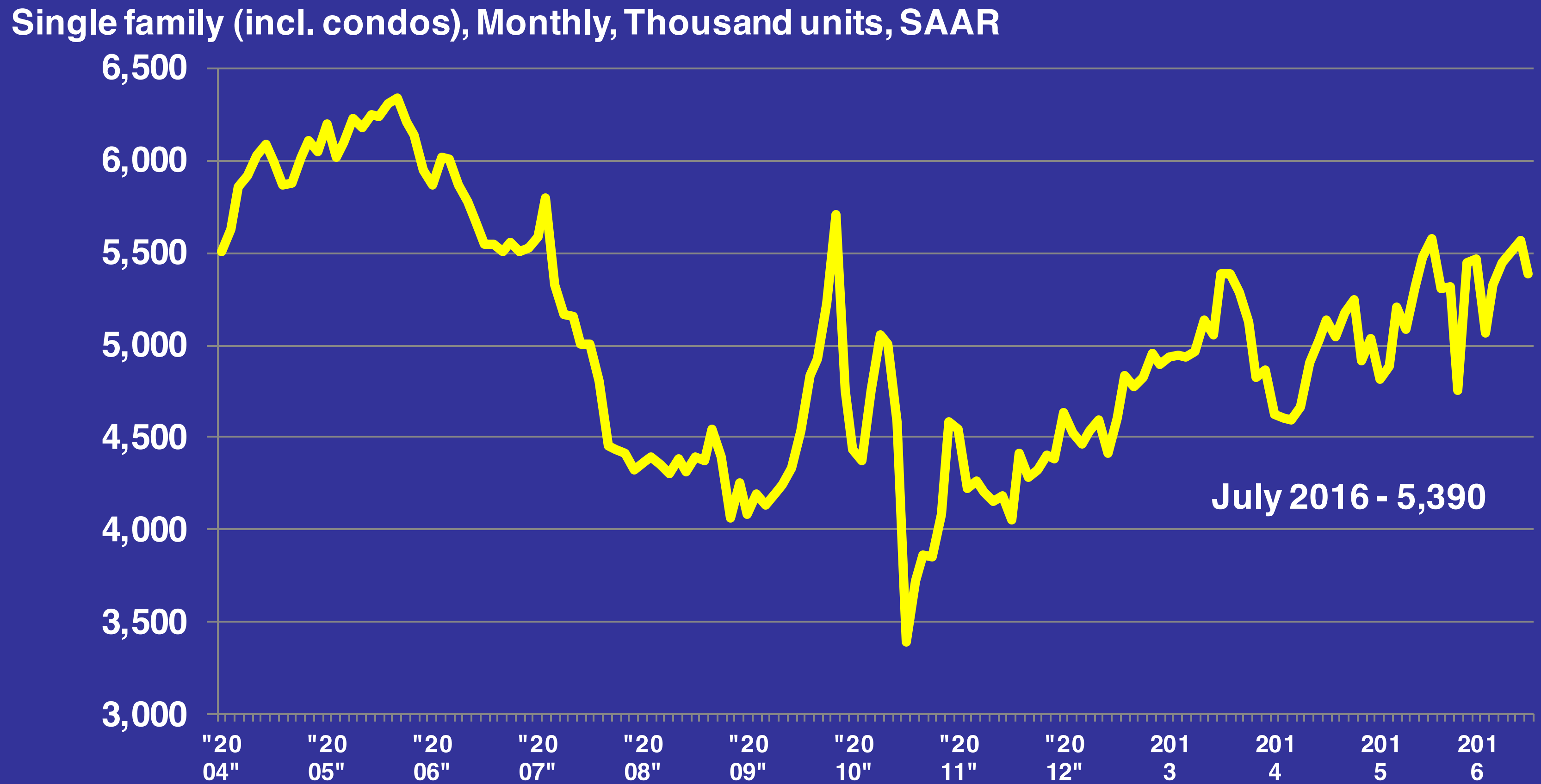
up 31% versus July 2015 - OK. We're making progress, but still just 42% of the 2006 peak



Note: Sales represent only houses built for sale or "spec homes" – does not include contractor built or homes built by the owner. Historically, "spec homes" represent about 70% of the market
(https://www.census.gov/construction/nrc/salesvsstarts.html)

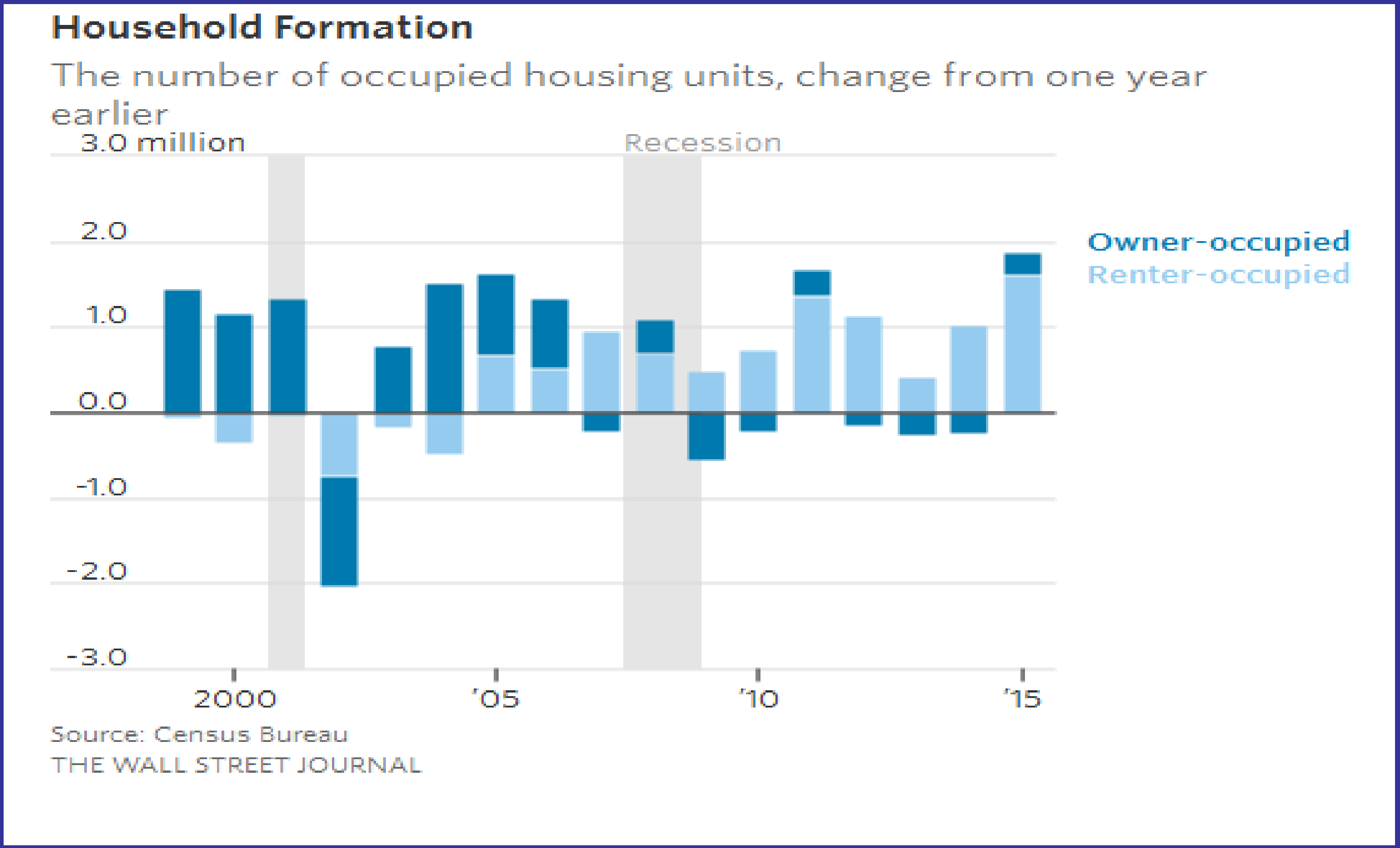
Source: Census (http://www.census.gov/const/www/newressalesindex.html)

Resale market continues to improve - however, tight supply (which drives prices), currently at 4.7 months, remains a problem. Healthy market is about 6 months supply. ***Median prices are up 5.3%, annual basis - 53rd consecutive monthly increase.***



Source: NAR (http://www.realtor.org/news-releases/2016/09/)

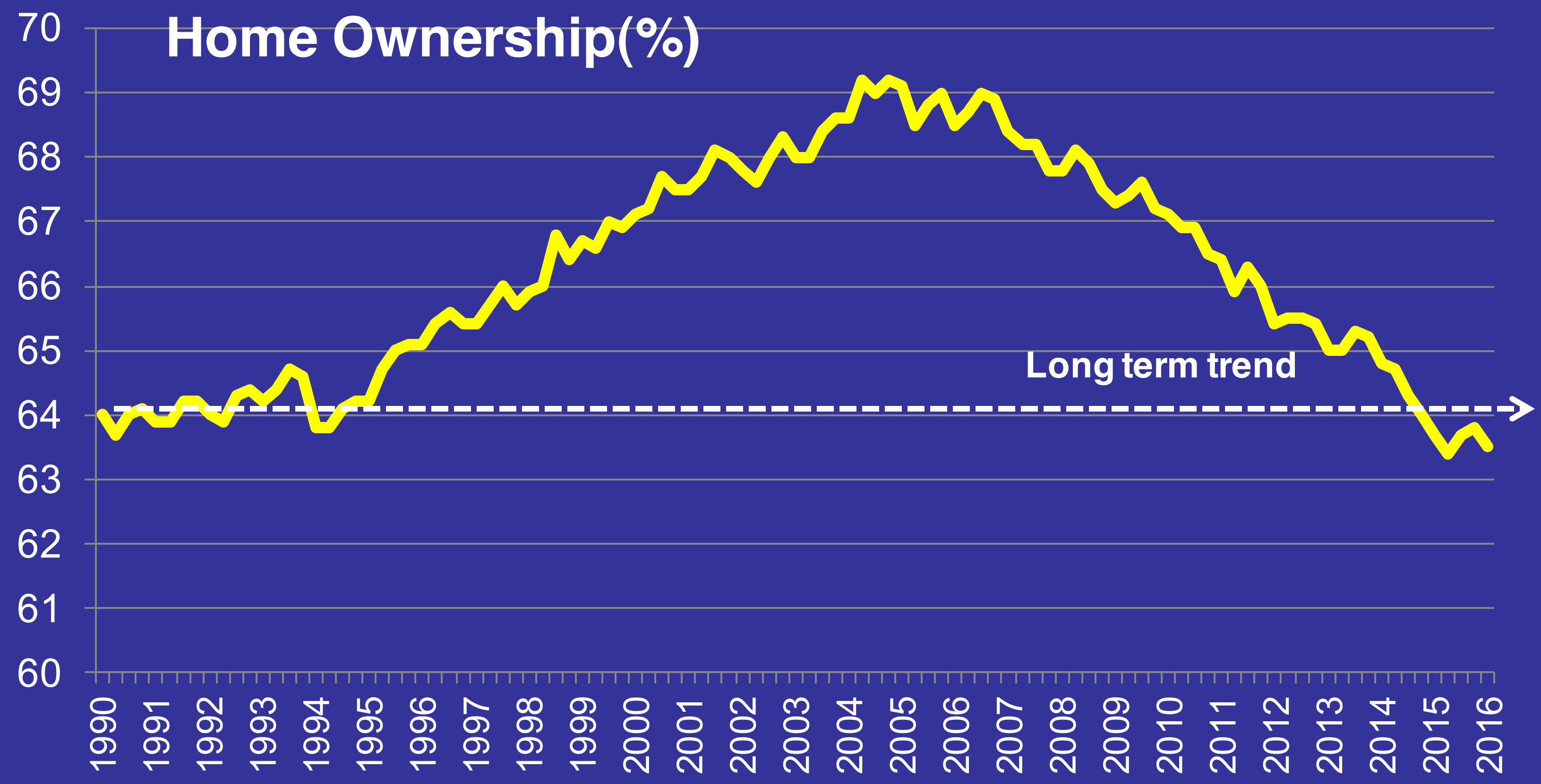
Household formations (HH) are starting to pick up, but since 2007 the bulk of new HH are renting!!



Household formations and shift to renting - - Falling homeownership rate for millenial's - use to be 43% - now it is 33% - young people are renting

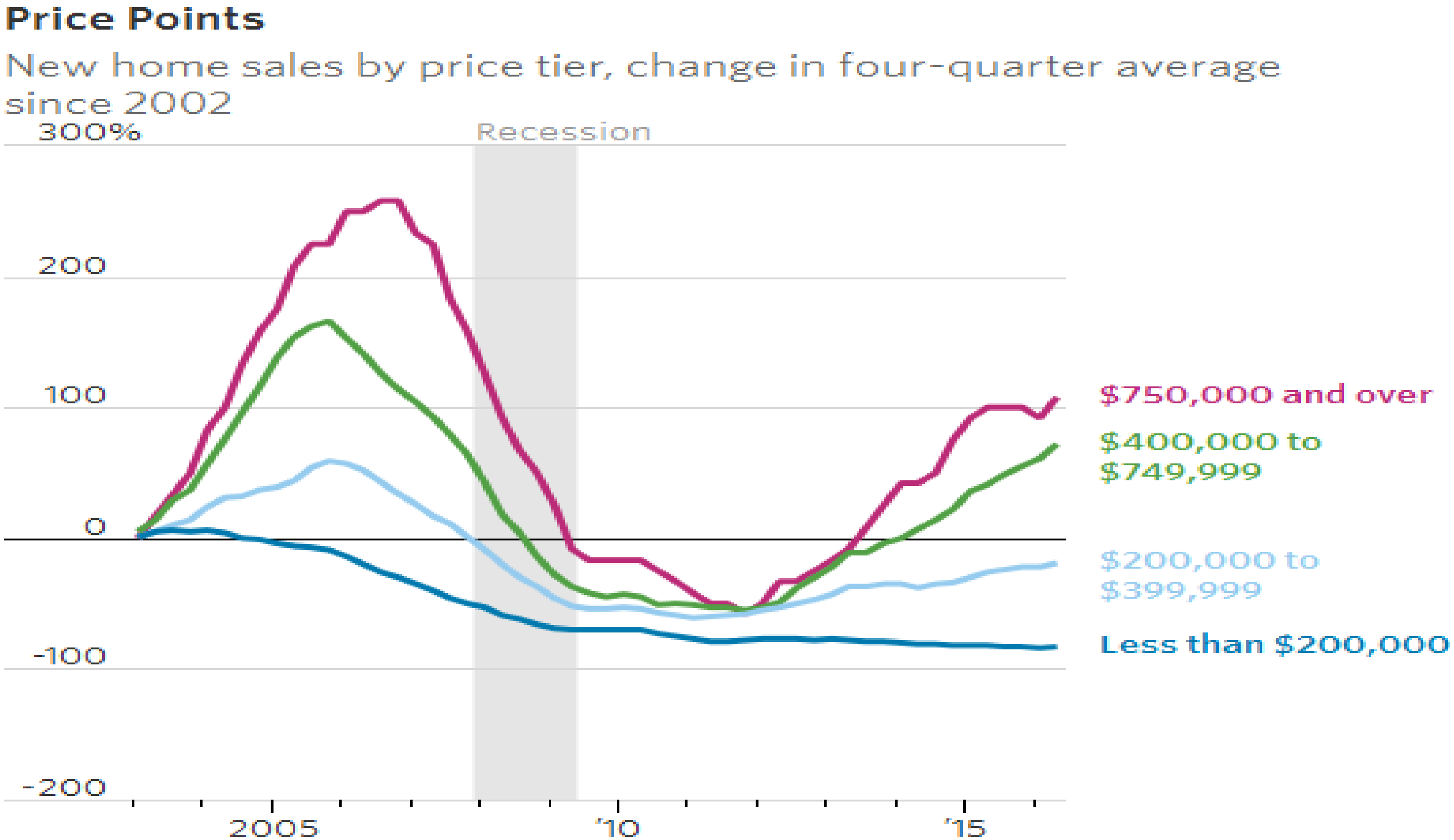
Recent study shows that people with college degree takes 5 years to save enough for down payment for starter home (with student debt – 10 years), no college – 16 years (http://www.wsj.com/articles/homeownership-elusive-for-young-adults-without-college-degrees-1463909402)

Homeownership lowest in 50 years



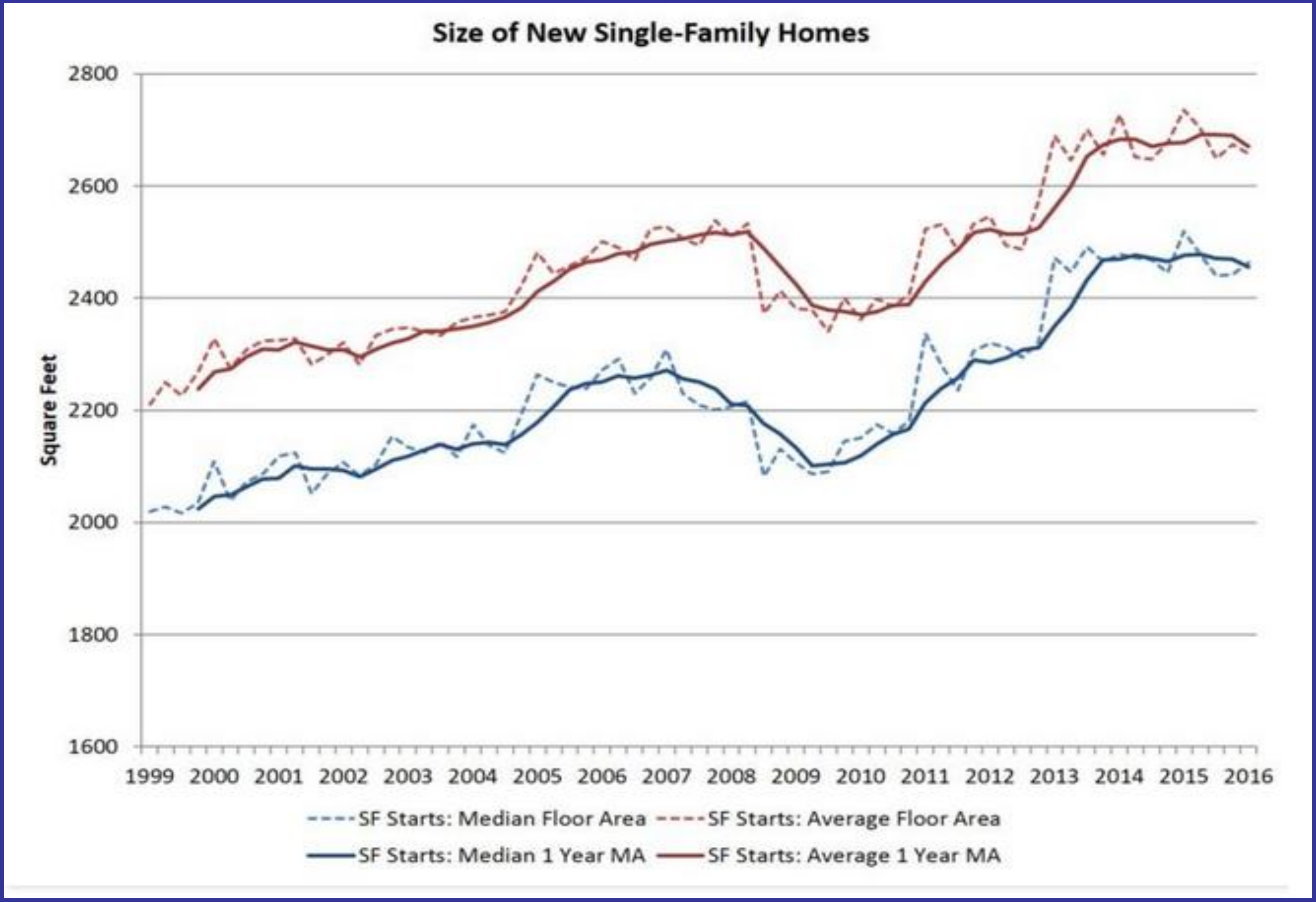
Source: Census (https://www.census.gov/housing/hvs/data/q413ind.html)

The supply of new homes is only 4.3 months – 6 months is considered healthy . The median price in July was $295,000 – but the chart below shows this is heavily skewed to larger homes. 1st time buyers are missing so builders are building larger, more expensive homes



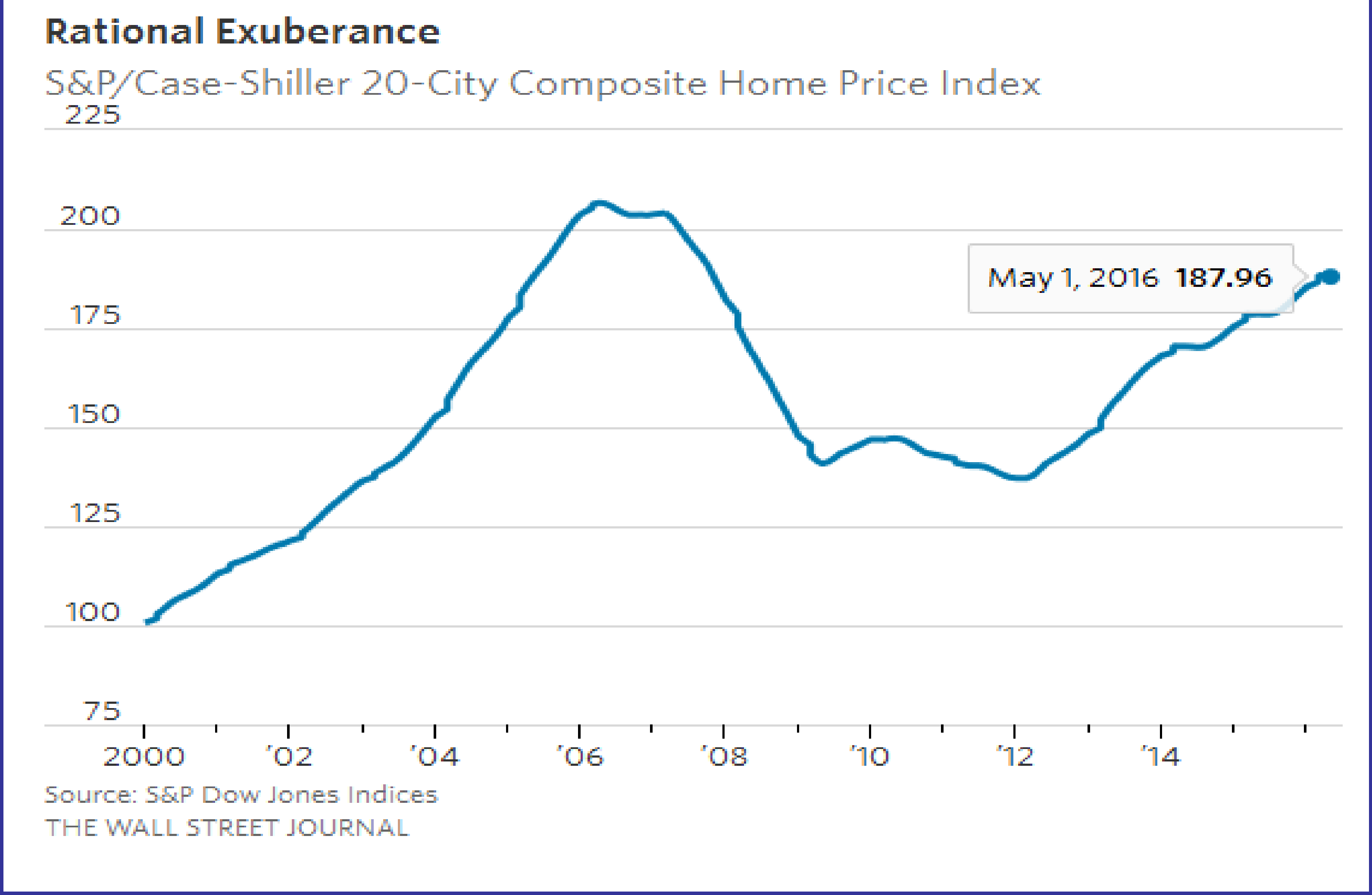
Note: Price tiers aren't adjusted for inflation
Source: Commerce Department
THE WALL STREET JOURNAL

Builders are building bigger homes in response to weaker demand from millennials who buy starter homes



(http://eyeonhousing.org/2016/05/flat-trends-continue-for-new-single-family-home-size/http://eyeonhousing.org/2016/05/flat-trends-continue-for-new-single-family-home-size/)

Existing home prices almost back to pre-recession levels. Good for existing homeowners, but a deterrent to millennial's and other potential buyers



Rental demand versus single family housing ---

Rental demand will continue to increase for years – a recent study by the Urban Institute suggests it may continue for another decade or two

(http://www.wsj.com/articles/new-housing-crisis-looms-as-fewer-renters-can-afford-to-own-1433698639)

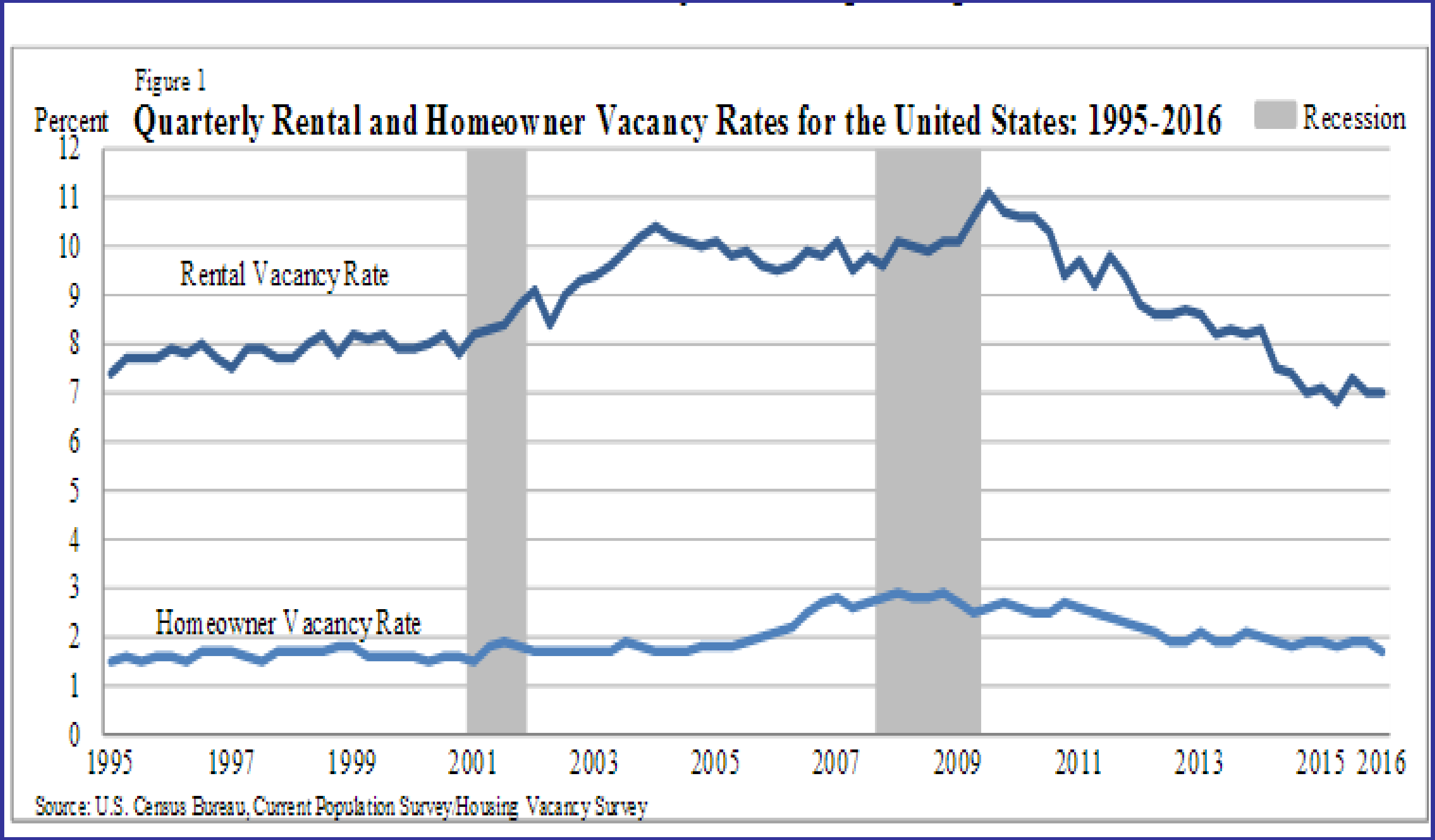
Why - - demographics; growing minority population; student debt; weak income growth; …. E.g., Minorities (nonwhite) will make up 75% of net household growth over the next 10 years, and 85% during 2020- 2030. They are less likely to own homes (lower incomes is main reason) so home ownership continues to fall toward 60% by 2030. During this time, rental demand will increase Dramatically. Although this is just one study, it provides food for thought. One potential question with the study, however, is other studies show that although immigrants, for example, rent initially, but, over time they purchase homes at a rate equal to or higher than native born Americans. Why – people come to the U.S. to Improve quality of life, and for most, this means homeownership. This suggests that the U.S. has to find solutions to immigration issues like "Illegal immigrants" while encouraging legal immigration. This country was founded by immigrants seeking a better life, and they are key to our future. And, incomes for all Minorities has to improve if home ownership is to return to "good old days"

(http://www.engineeredwood.org/Data/sites/3/documents/EngWoodJournal/EWJ_Spring2010.pdf)

Anyway, this has potential implications for home ownership; single family construction; and demand for wood products – lots of variables and scenarios.

Rental vacancy rates lowest in 20 years

Falling rental vacancy rates will drive rental prices higher and this will drive multi family construction – Economics 101 – *if I were a Builder, I would focus on rental construction*

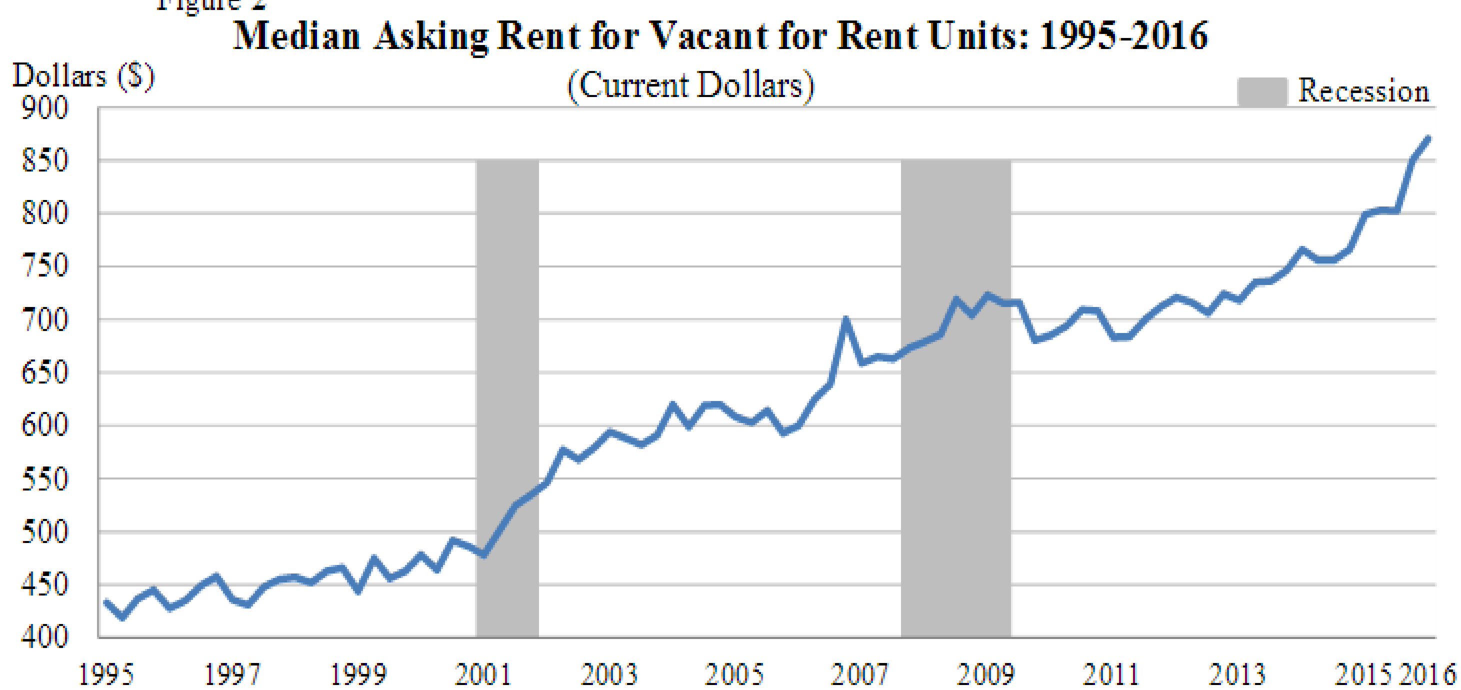


Source; Census (http://www.census.gov/housing/hvs/files/currenthvspress.pdf)

Increasing rents are slowing housing starts - -
more difficult for renters to save for down payment for house purchase

In the first quarter 2016, the median asking rent for vacant for rent units was $870.

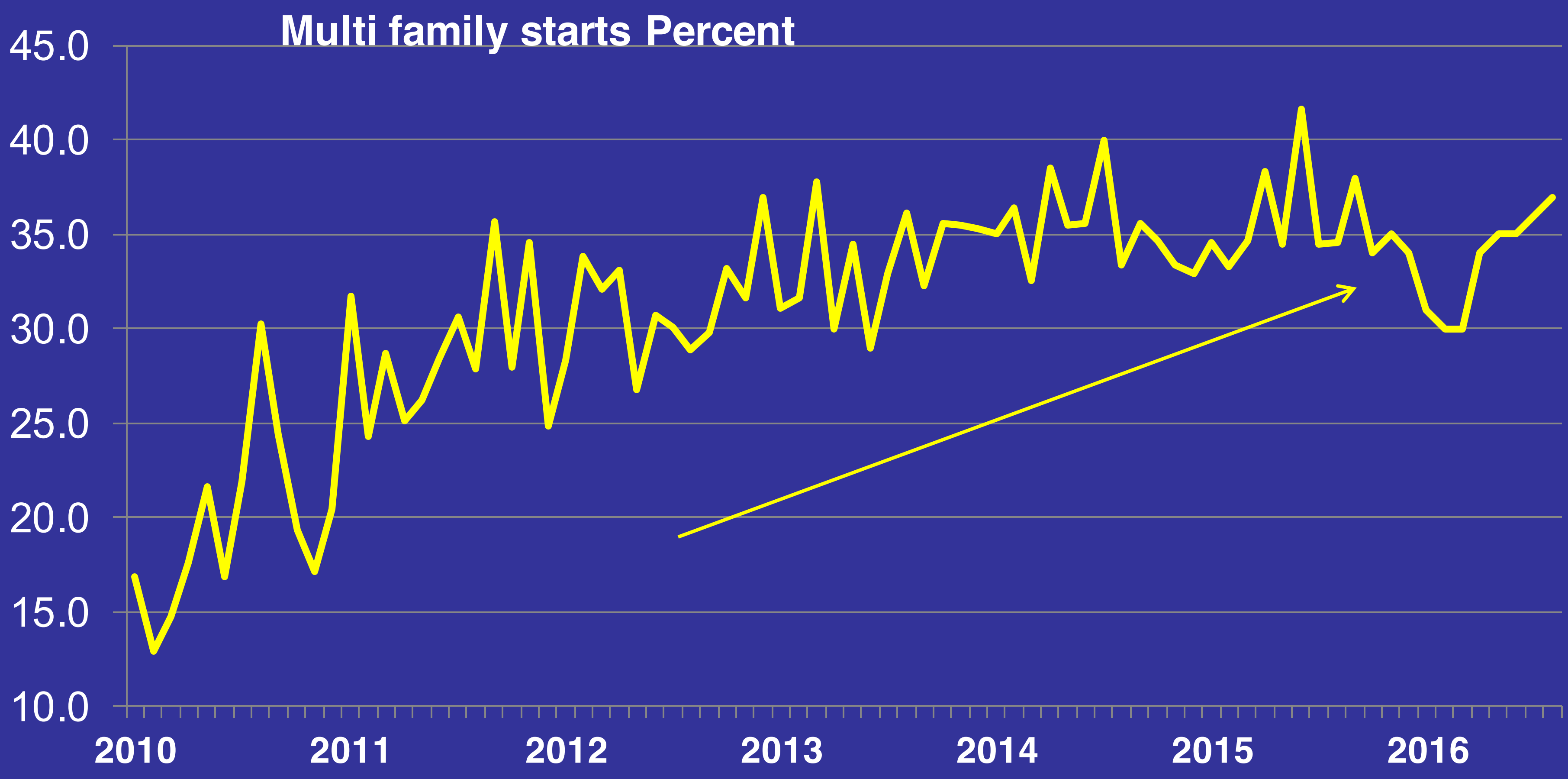
Figure 2



Source: U.S. Census Bureau, Current Population Survey/Housing Vacancy Survey

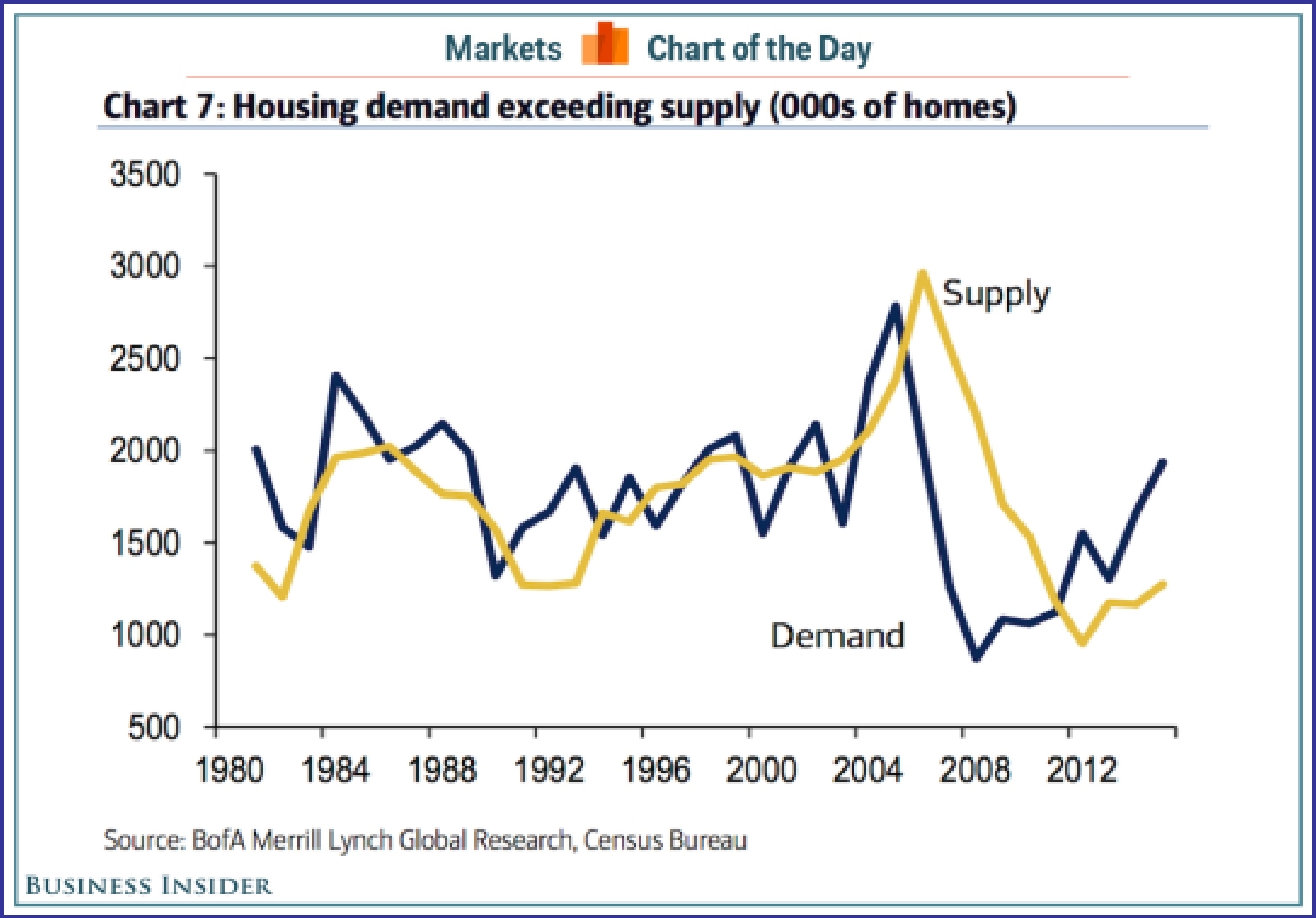
Source: Census : (http://www.census.gov/housing/hvs/files/currenthvspress.pdf)

Multi family share of housing starts – upward trend expected to continue for some time. Also, since the housing crash in 2008, single family rentals have now reached 13% of overall housing stock, up from 9% in 2005 (http://blogs.wsj.com/economics/2015/07/20/signs-of-overheating-in-the-single-family-rental-market/)



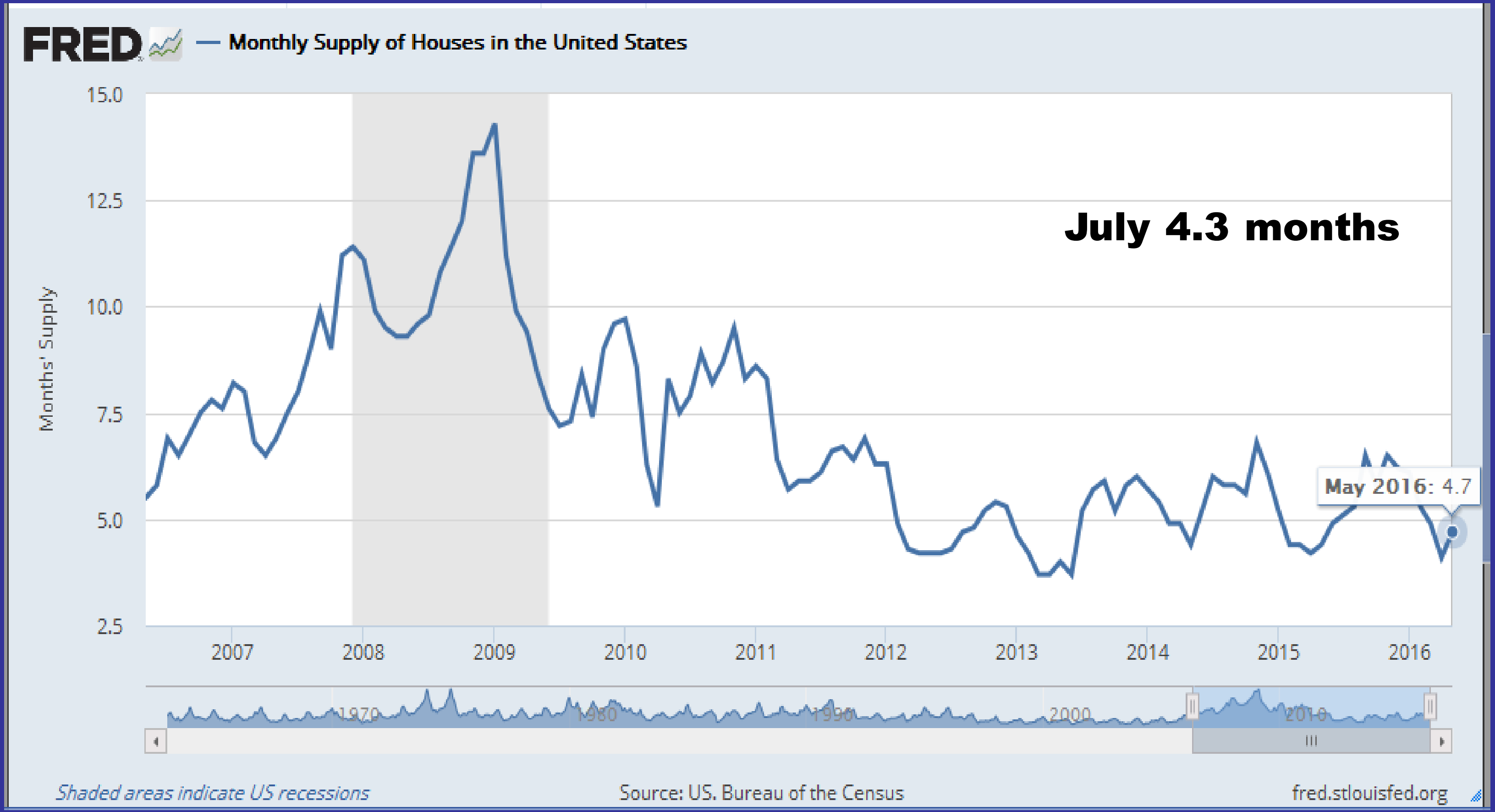
Source: Census

Tight supply drives up prices – existing homes
At 4.7 months supply – normal supply is 6 months



Low new home inventory drives prices higher and out of reach to most 1st time buyers

But, builders can't find enough carpenters, masons, electricians, etc. So construction costs keep escalating = this exacerbates the inventory problem – also, land shortages in parts of the country drive costs higher!



(https://research.stlouisfed.org/fred2/series/MSACSR)

More news on the labor front

Employment situation - our biggest problem – stuck near 200,000, and many of these jobs are part time with little or no benefits – not conducive to driving housing demand higher - *need to encourage innovation and investment in future - that means less government*

Net change in non farm payrolls – monthly, thousands

Good article on how too much government is killing innovation and job creation!
(http://www.wsj.com/articles/whats-killing-jobs-and-stalling-the-economy-1464992963)

Source: U.S. BLS (www.bls.gov)

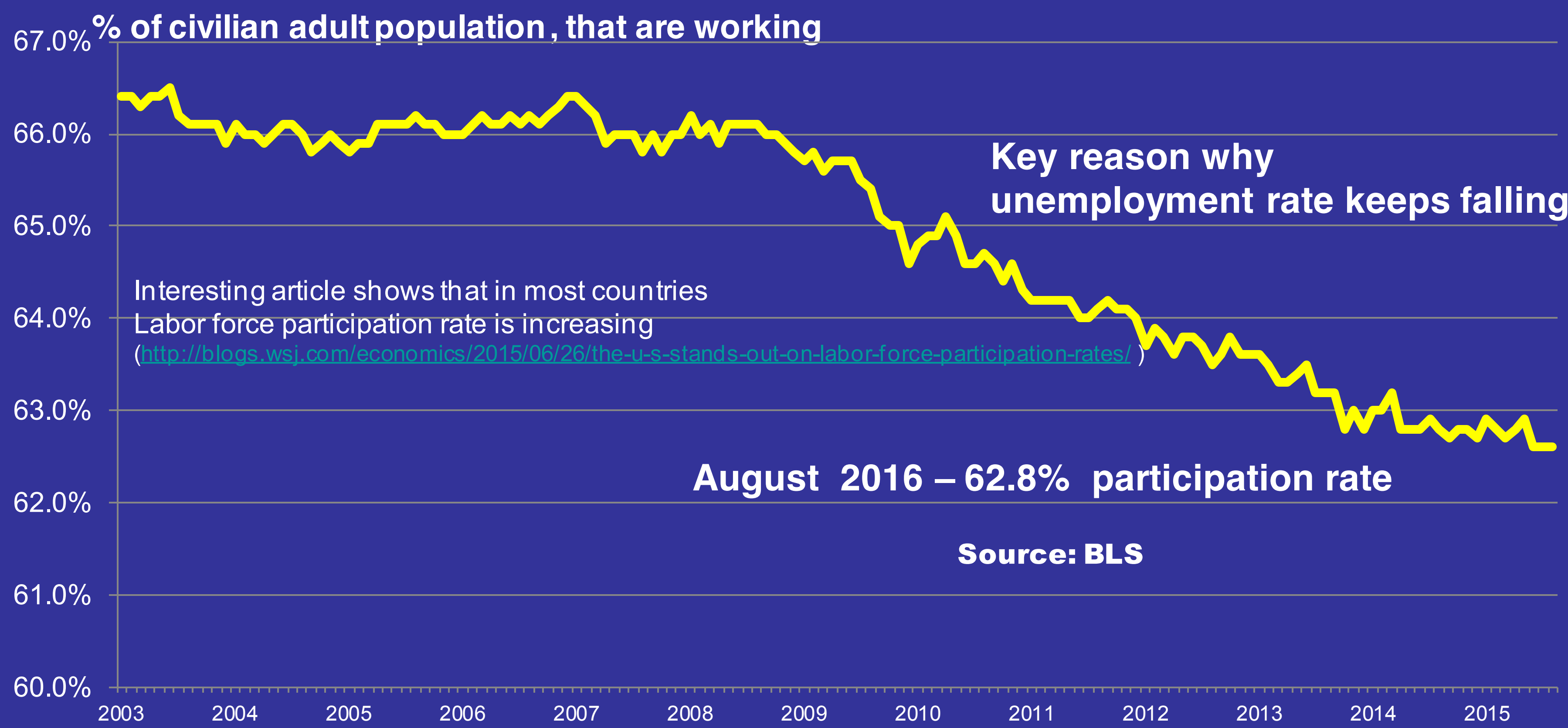
Unemployment rate keeps coming down – but, nearly 7 million remain "underemployed" – working part time, but want full time jobs

There are about 16 million people either unemployed , underemployed, or stopped Looking – **Key reason why wage increases are stagnant!!!

Source - - BLS: http://www.bls.gov/news.release/pdf/empsit.pdf; http://data.bls.gov/cgi-bin/surveymost?ln

Labor force participation rate is shrinking – demographics is one reason – another reason – bloated welfare system – 130 million people on some form of welfare (food stamps, long term disability, housing allowances, Medicaid, ...) - - we'll see skilled labor shortages increase over the next decade - we're already seeing construction related shortages with brick layers, masons, electricians, plumbers, etc.

Excellent article (http://finance.yahoo.com/news/should-i-go-to-a-trade-school-162413337.html#)



Some conclusions – housing continues to improve albeit very slowly. And this will not change soon for the reasons listed below:

(1) Economy will continue to sputter -- 2016 growth expected to be about 2.0%

(2) Housing market not healthy - 1st time buyers (31% today) are below trend (45%) - household formations are improving, but more people will continue to rent

(3) Productivity a major problem for U.S. economy – real GDP driven by population (number of workers) and real GDP/worker or productivity. During past 7 years, productivity has grown 1.7% annually whereas the average over previous 17 years was 2.4%.

(4) "QE" not working – bulk of "printed money" hoarded by the banks to shore up capital positions – not being loaned out to the economy - GDP languishes - We need a new and more effective approach to our competitiveness problems!

(5) *Weak/no leadership from current administration and Congress, - our biggest problem – neither Hillary nor "the Donald' will fix our problems*

(6) The fed can't make decisions – doesn't know what to do – confused – soon, the U.S. will Join Europe and Japan with negative real interest rates. Negative rates are a clear sign of weak demand. Innovation, investment, tax reform, is the solution, but that will be challenging with $20 trillion (and counting) federal debt and 41% of the population on some form of welfare. Many business leaders have lost confidence in where the country is headed so they are not investing.

Virginia Tech Disclaimer

Disclaimer of Non-endorsement

Reference herein to any specific commercial products, process, or service by trade name, trademark, manufacturer, or otherwise, does not constitute or imply its endorsement, recommendation, or favoring by Virginia Tech. The views and opinions of authors expressed herein do not necessarily state or reflect those of Virginia Tech, and shall not be used for advertising or product endorsement purposes.

Disclaimer of Liability

With respect to documents sent out or made available from this server, neither Virginia Tech nor any of its employees, makes any warranty, expressed or implied, including the warranties of merchantability and fitness for a particular purpose, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.

Disclaimer for External Links

The appearance of external hyperlinks does not constitute endorsement by Virginia Tech of the linked web sites, or the information, products or services contained therein. Unless otherwise specified, Virginia Tech does not exercise any editorial control over the information you may find at these locations. All links are provided with the intent of meeting the mission of Virginia Tech's web site. Please let us know about existing external links you believe are inappropriate and about specific additional external links you believe ought to be included.

Nondiscrimination Notice

Virginia Tech prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact the author. Virginia Tech is an equal opportunity provider and employer.