Deutsche Bank

US Economic Outlook: Rate hikes coming

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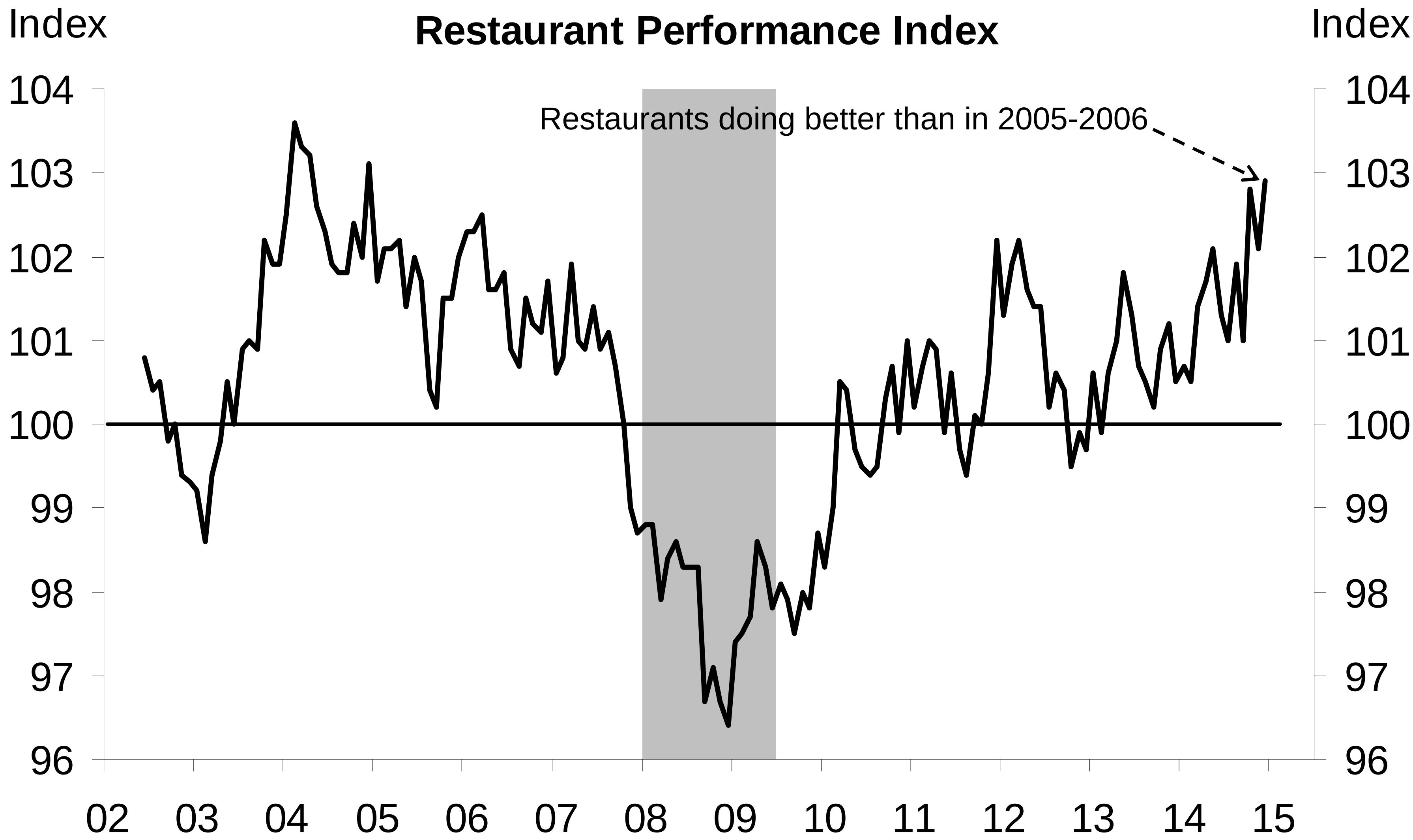
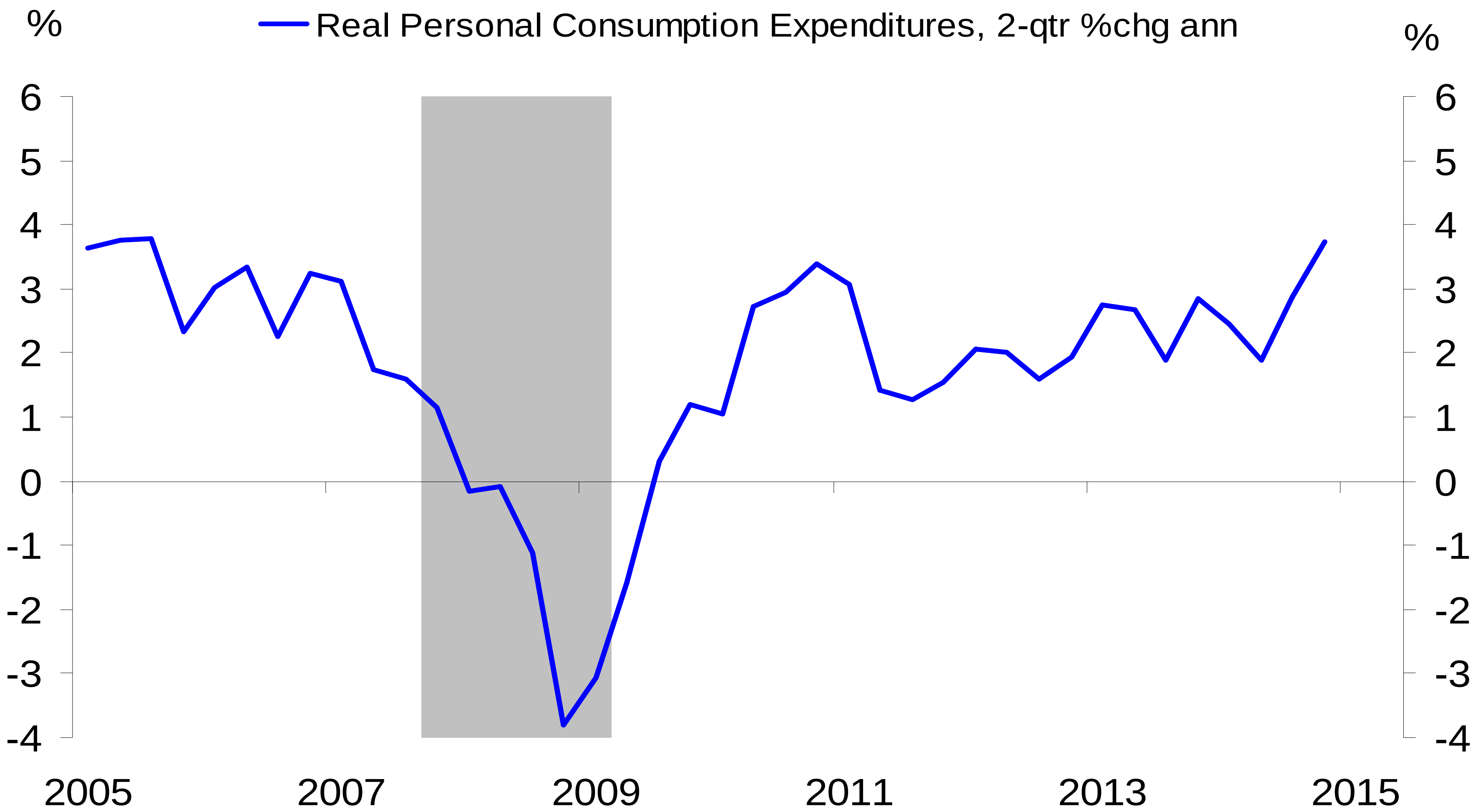
Passion to Perform

Lower oil prices helping restaurants, which is a labor intensive industry, so that bodes well for employment



Note: The National Restaurant Association's Restaurant Performance Index is a monthly composite index that tracks the health of and the outlook for the U.S. restaurant industry. Source: NRA, Haver Analytics, DB Global Markets Research

Consumer spending benefiting from lower oil prices



Source: NFIB, BLS, Haver Analytics, DB Global Markets Research

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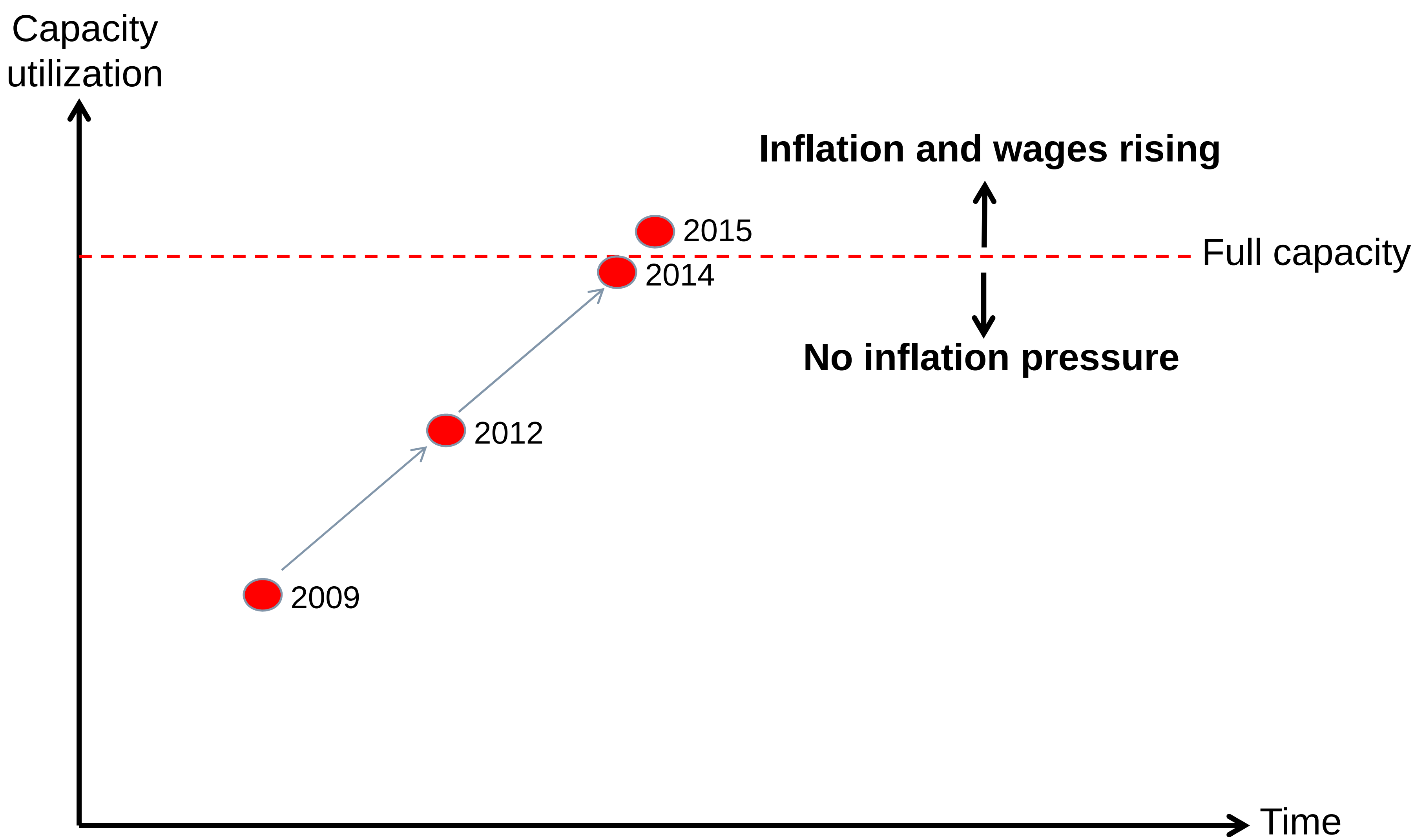
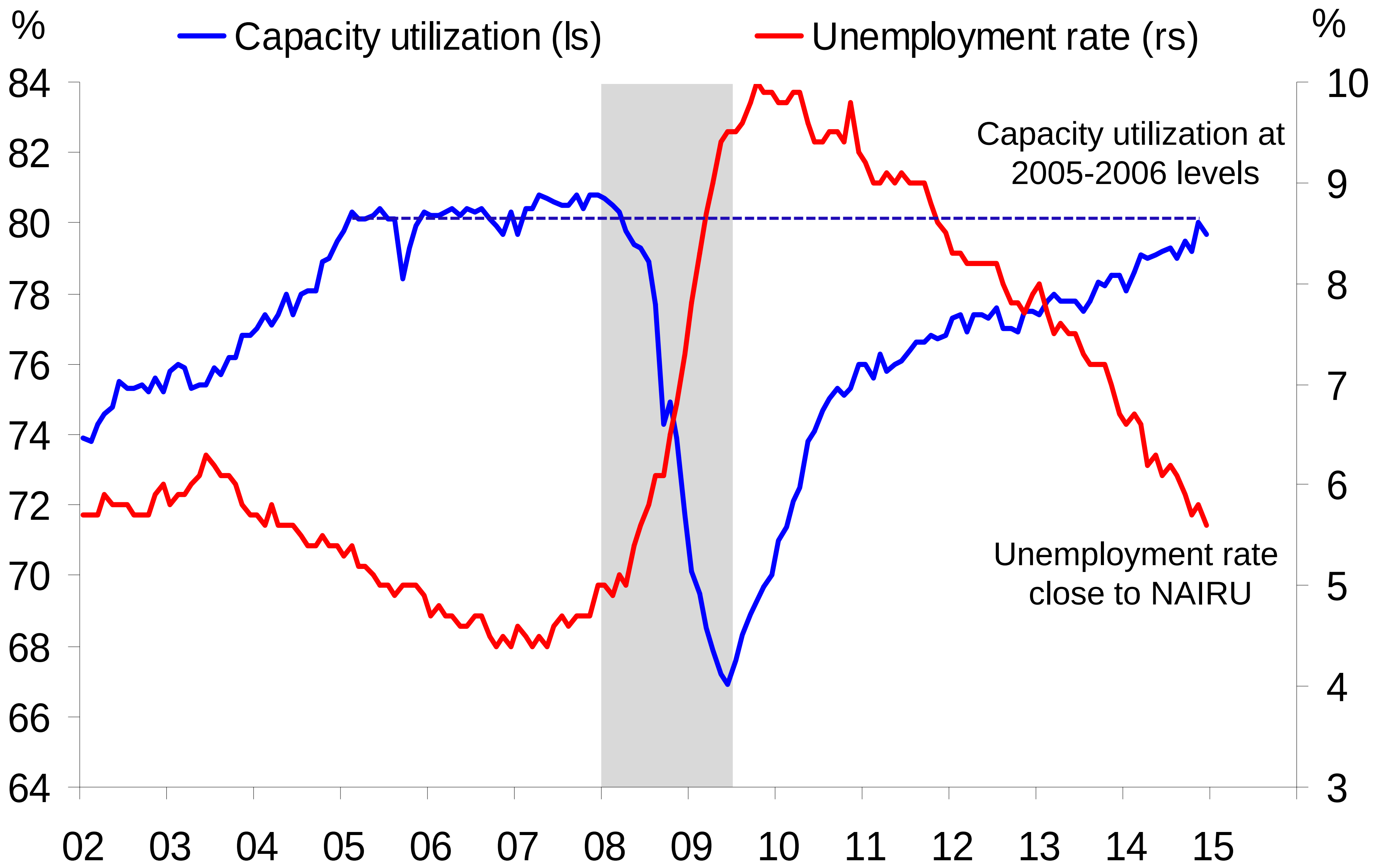
We are getting close to full capacity in the US economy



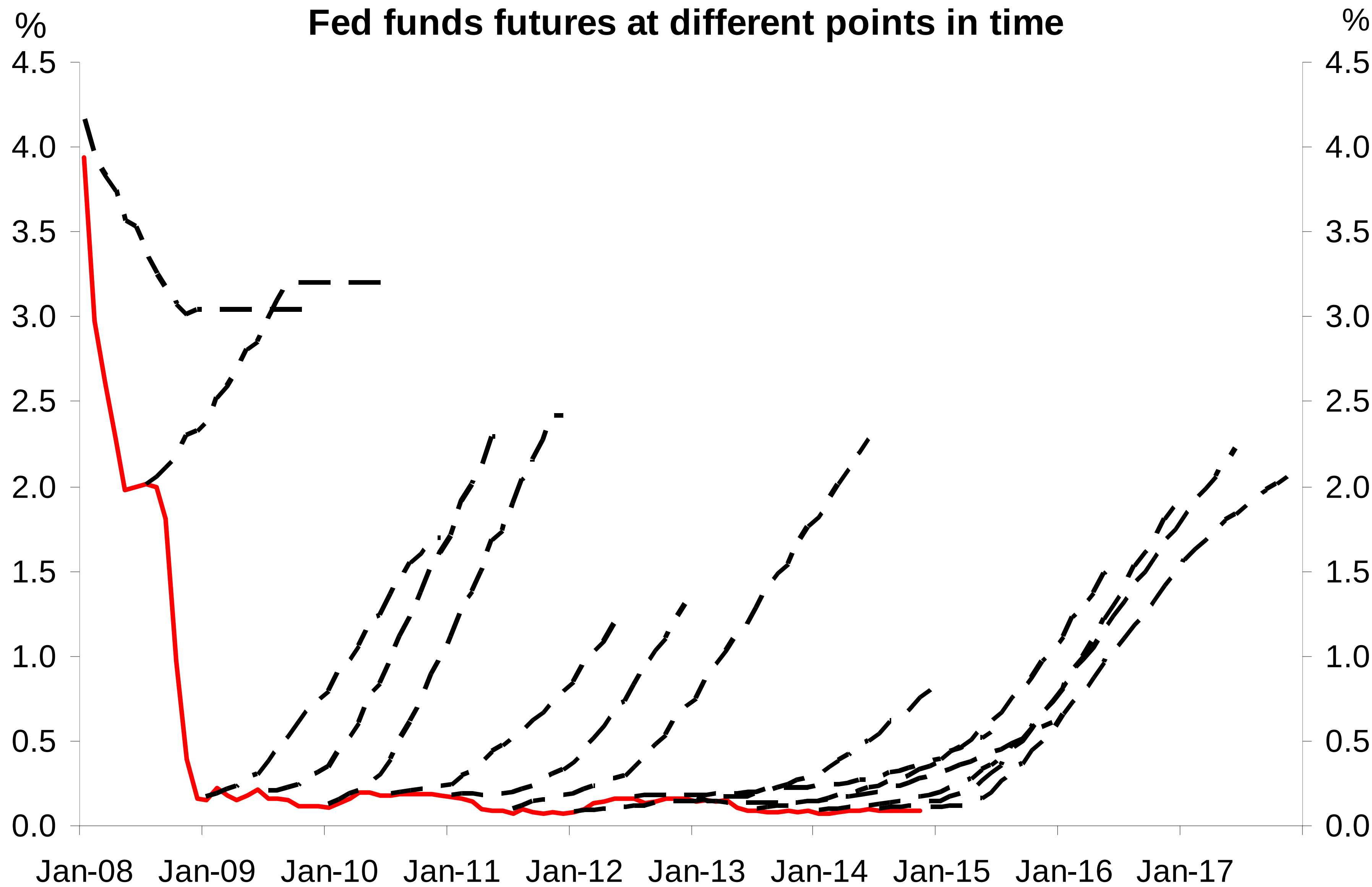
Source: DB Global Markets Research

The US economy is close to full capacity.
That's when you normally begin to see inflation



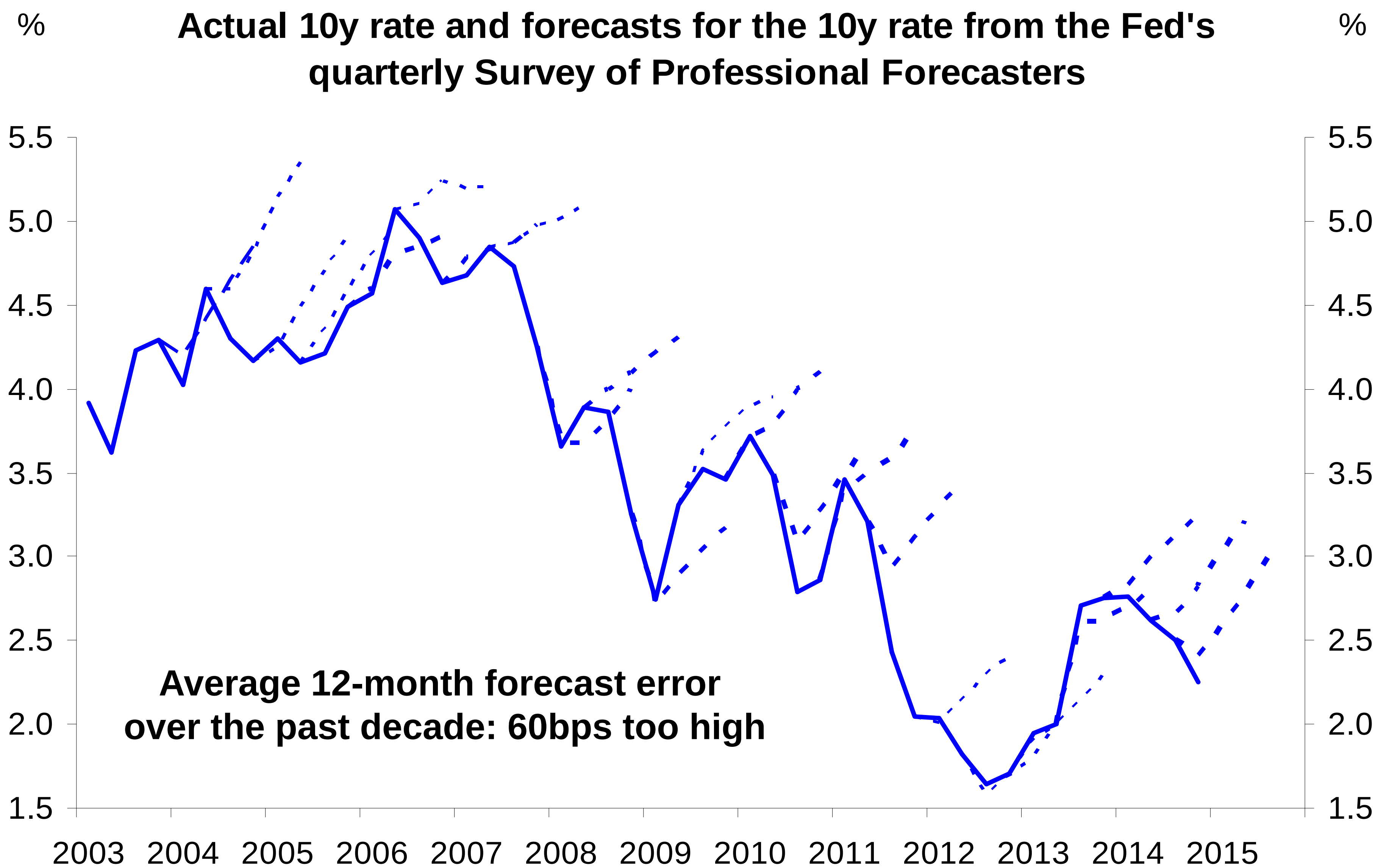
Source: Fed, BLS, Haver Analytics, DB Global Markets Research

Will 2015 be different?
The market has predicted rate hikes for the past five years



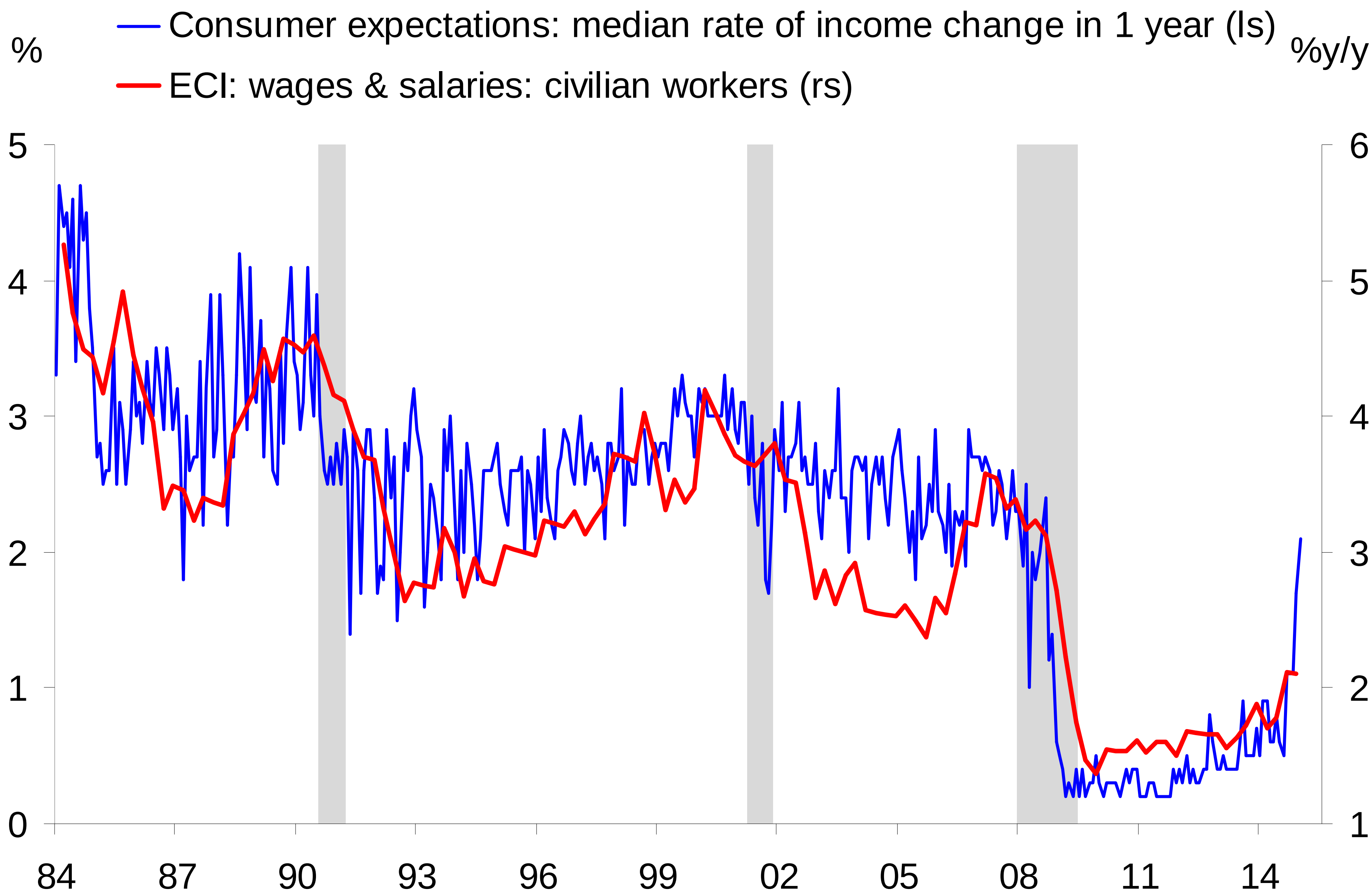
Source: FRB, Bloomberg Finance LP, DB Global Markets Research

Wall Street economists have been consistently wrong in their forecasts for the ten-year rate over the past decade



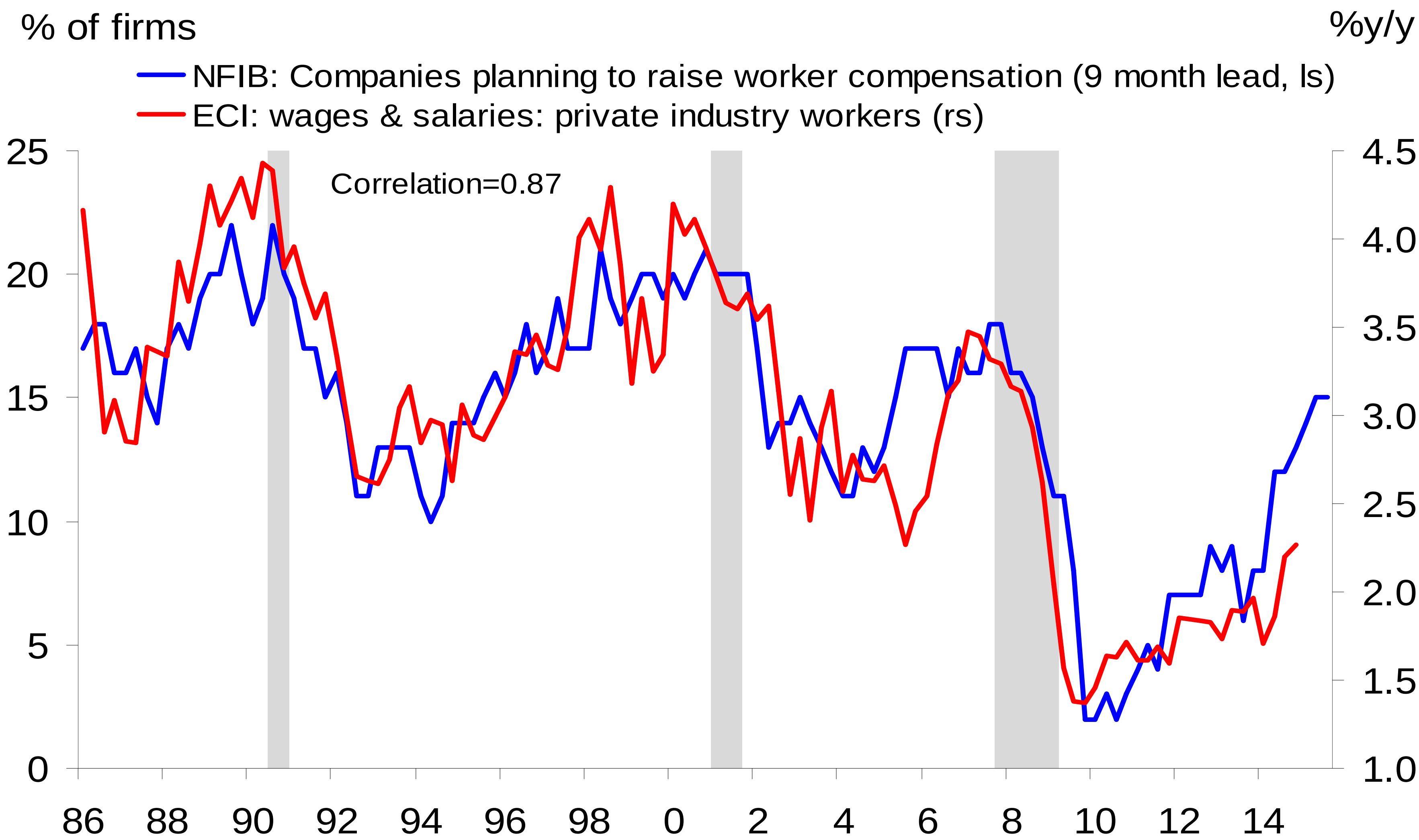
Source: FRB, FRBPHIL, Haver Analytics, DB Global Markets Research

Workers are expecting higher wages...



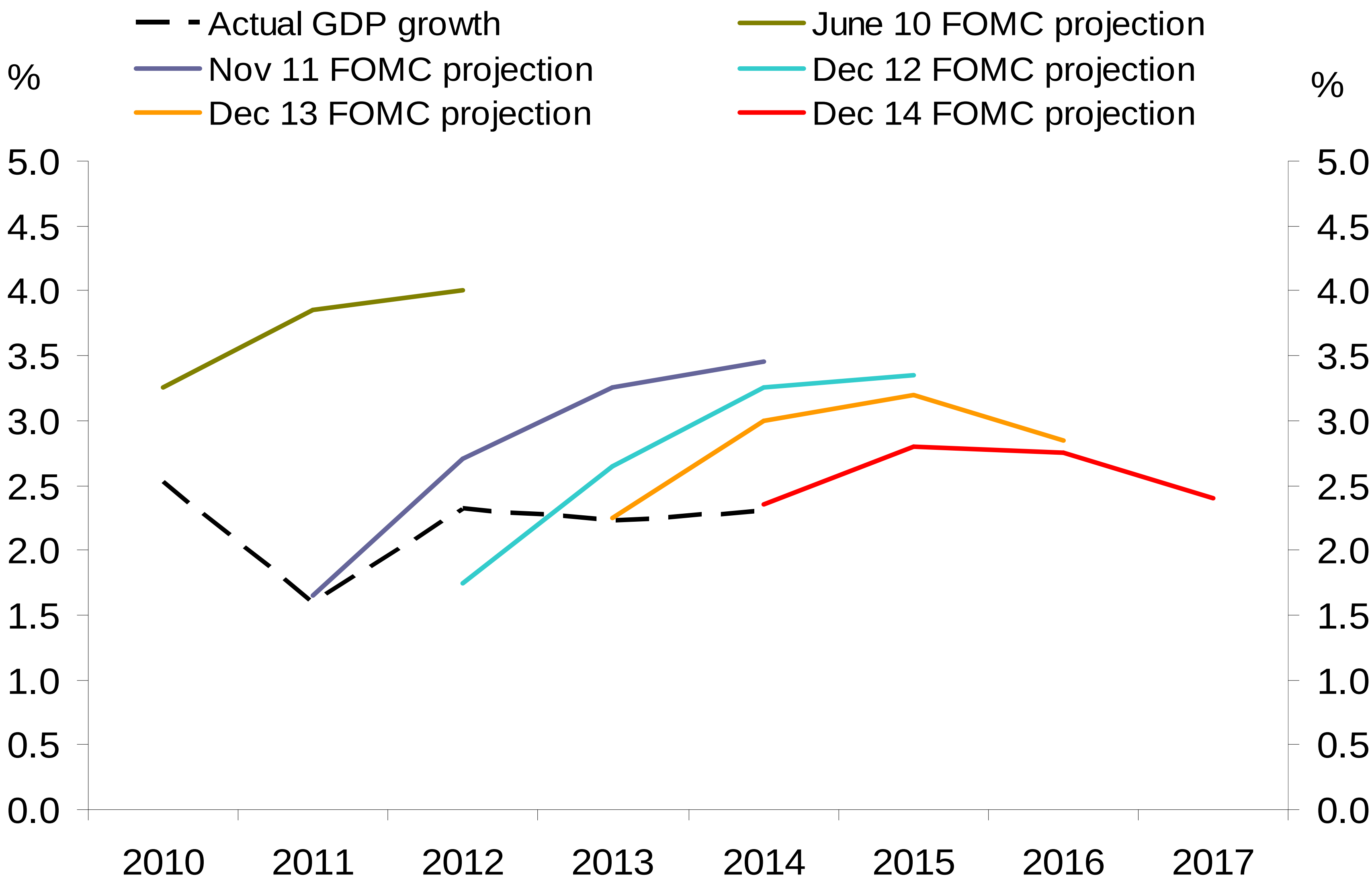
Source: BLS, UMICH, Haver Analytics, DB Global Markets Research

…and companies are planning to raise wages



Source: NFIB, BLS, Haver Analytics, DB Global Markets Research

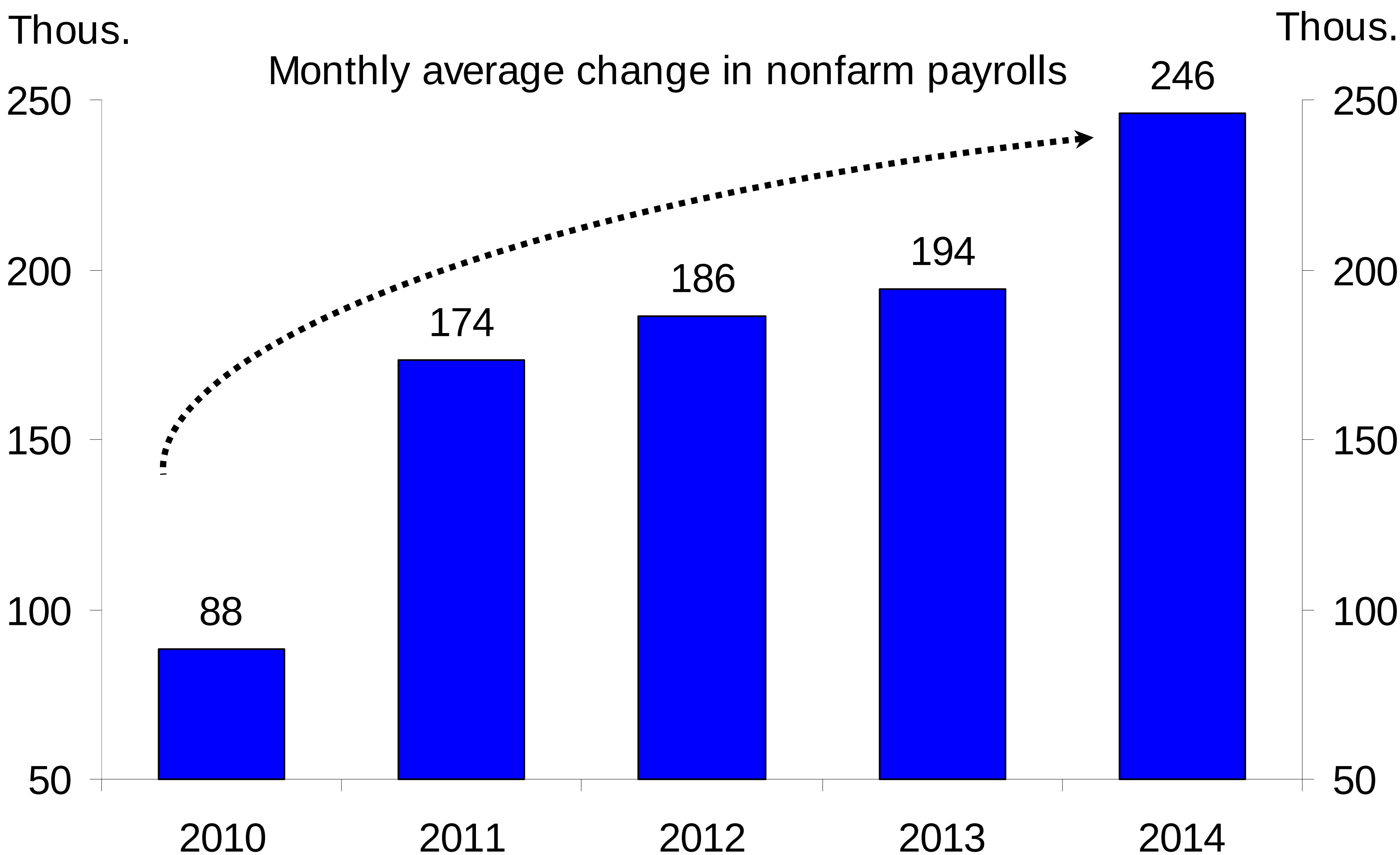
The FOMC has been too optimistic about the recovery



Note: FOMC forecasts are q4/q4 and actual GDP is annual data and the observation for 2014 is the latest consensus estimate.

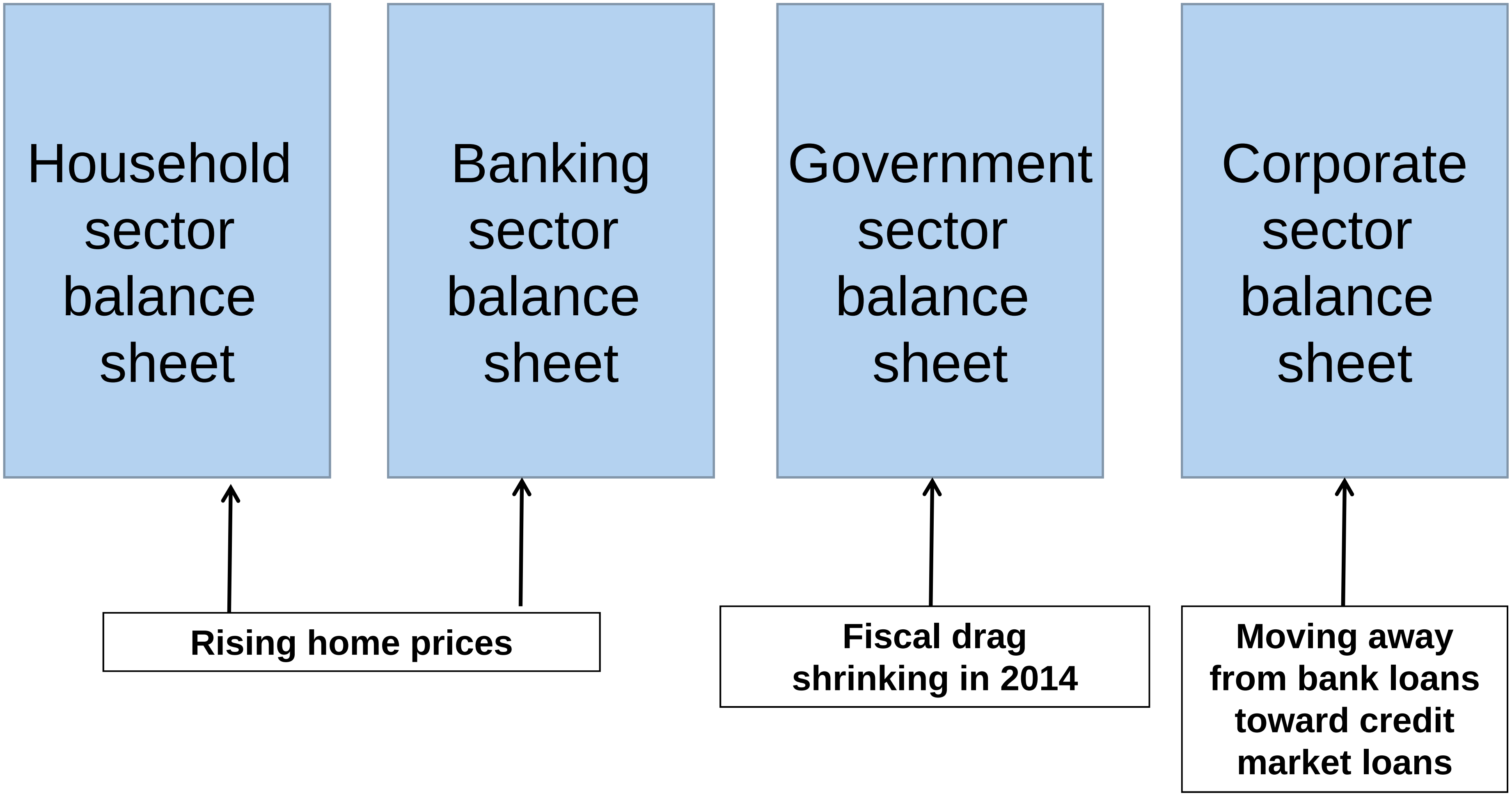
Source: FRB, BEA, DB Global Markets Research

Headwinds are fading and as a result employment growth is accelerating



Source: BLS, Haver Analytics, DB Global Markets Research

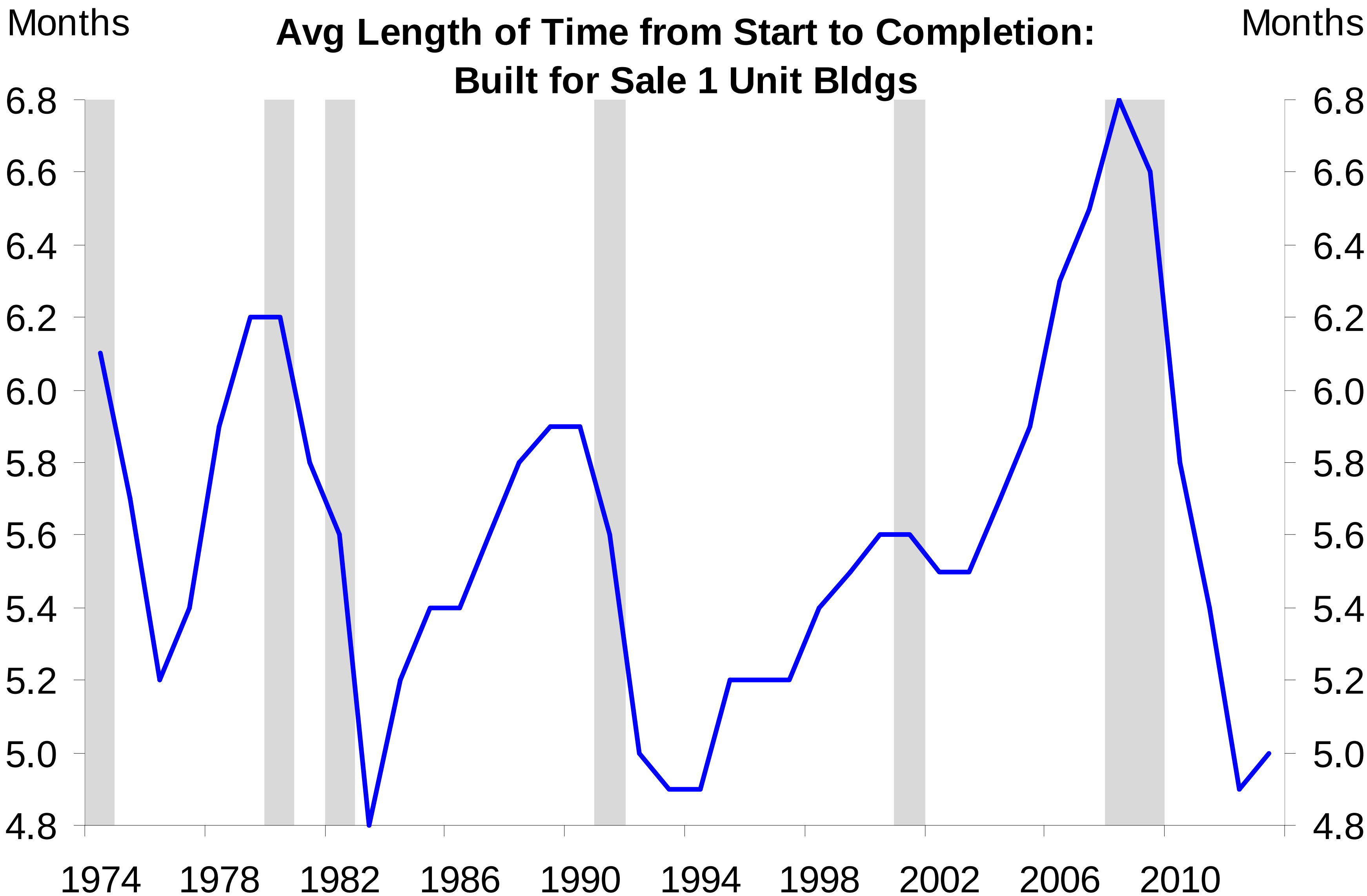
The ongoing housing recovery is healing household and banking sector balance sheets



Source: DB Global Markets Research

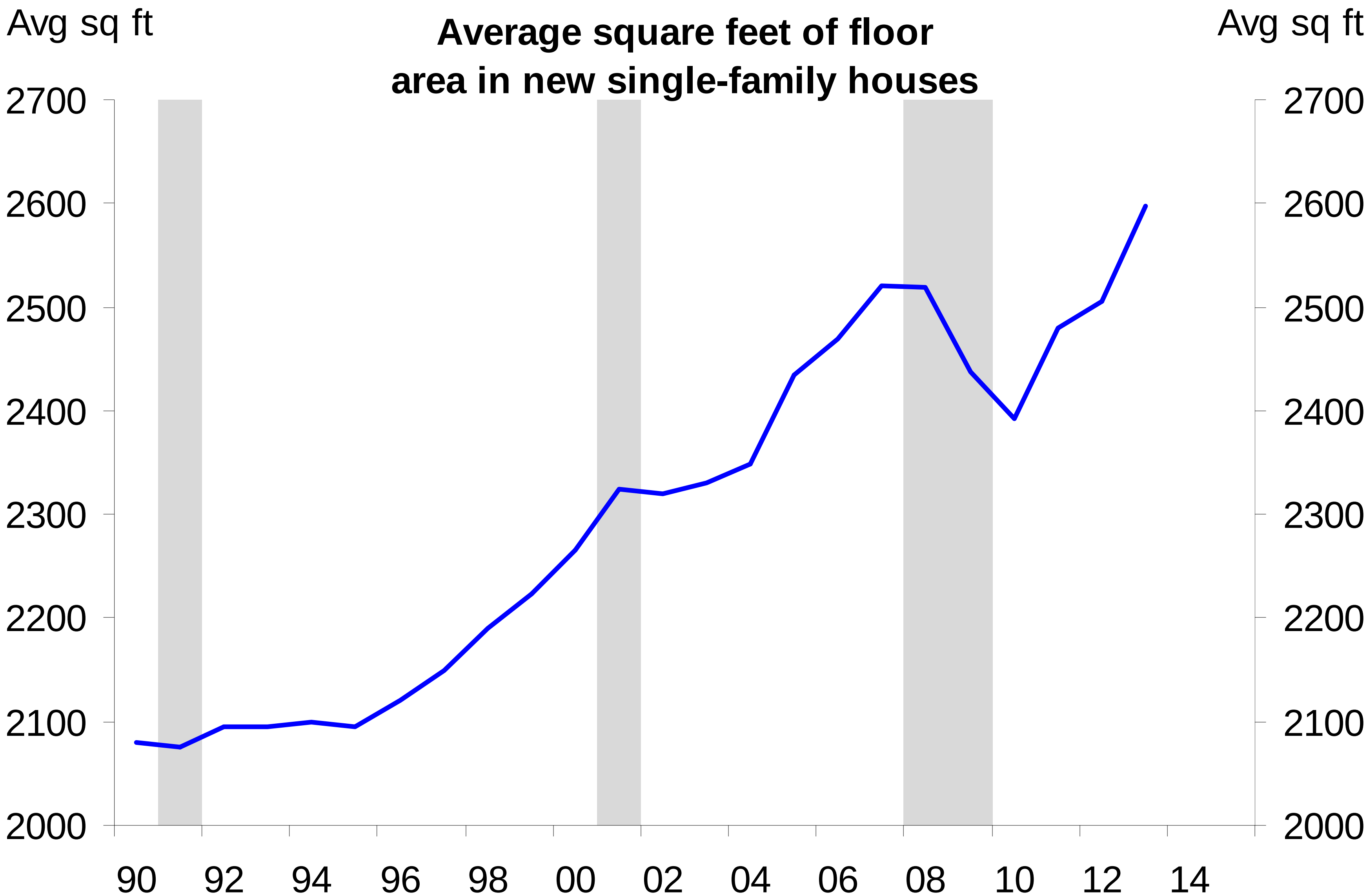
Headwinds are fading in the housing market

It takes five months to build a home, one month faster than in 2005-2006



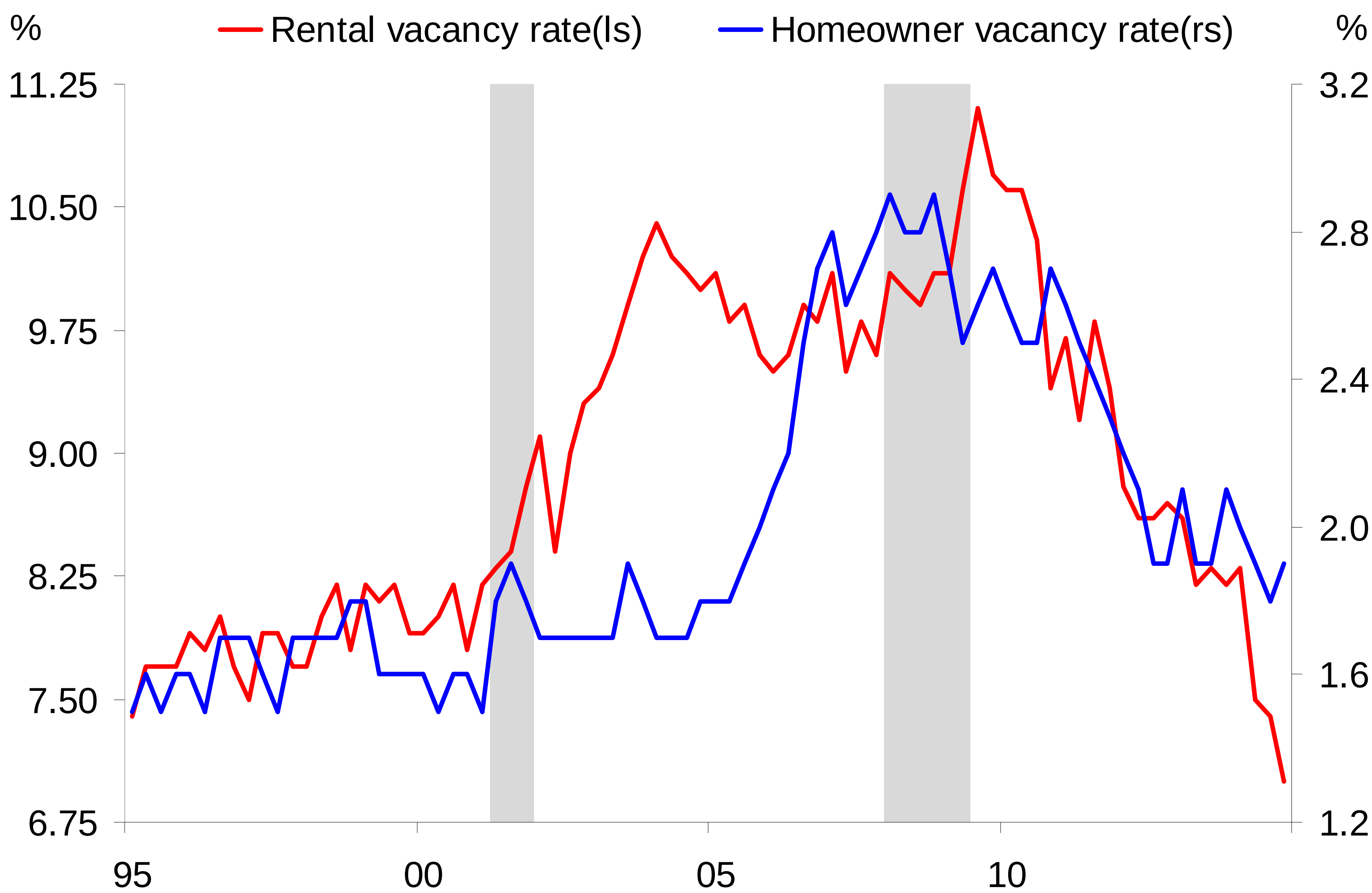
Source: Census, DB Global Markets Research

New single-family homes are bigger than in 2005-2007



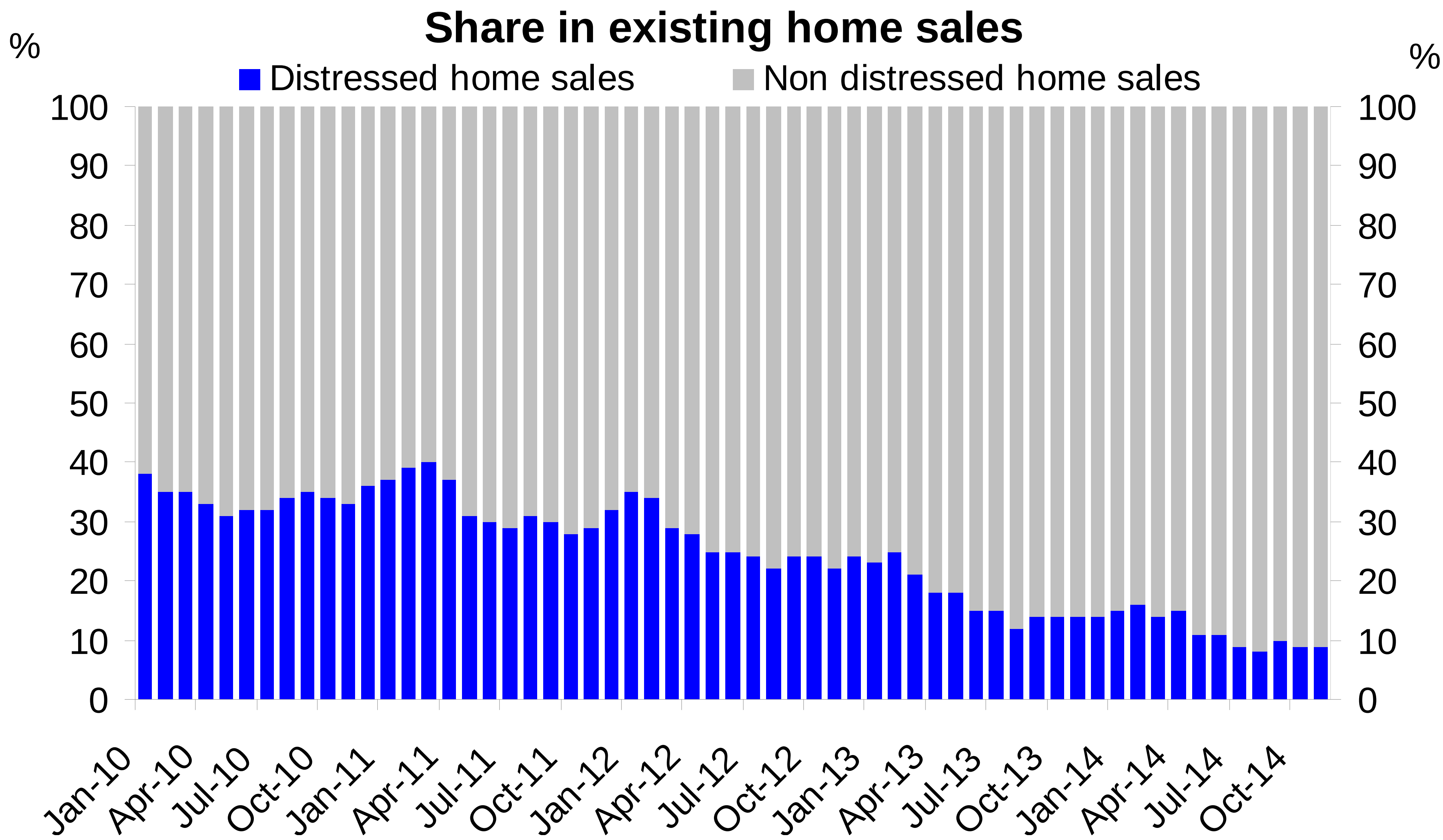
Source: Census, DB Global Markets Research

Housing supply back to normal. Accelerating employment growth will continue to support housing demand



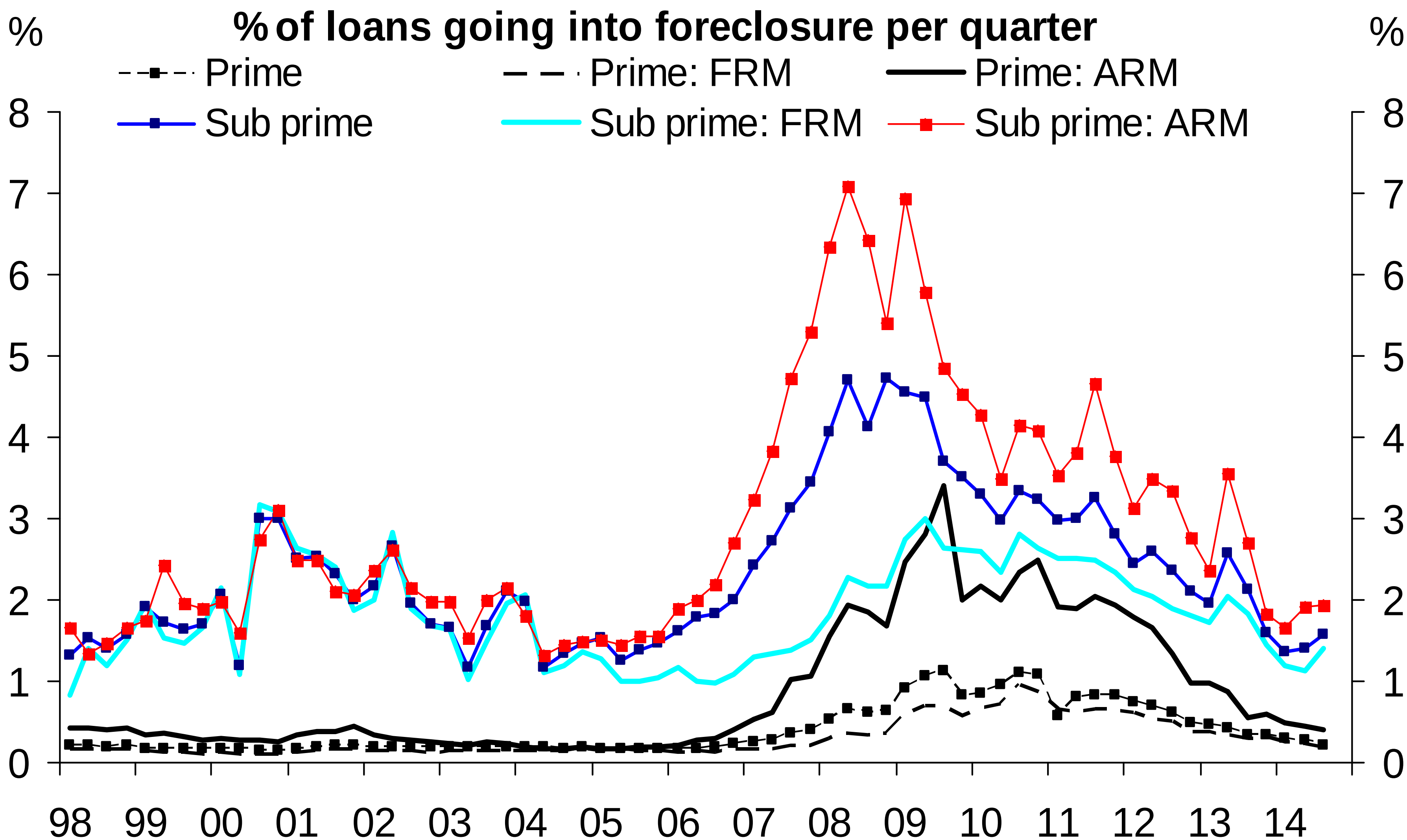
Note: A housing unit is vacant if no one is living in it at the time of the interview, unless its occupants are only temporarily absent. In addition, a vacant unit may be one which is entirely occupied by persons who have a usual residence elsewhere. Source: Census, Haver Analytics, DB Global Markets Research

Distressed home sales now 9% of all sales



Source: National Association of Realtors, DB Global Markets Research

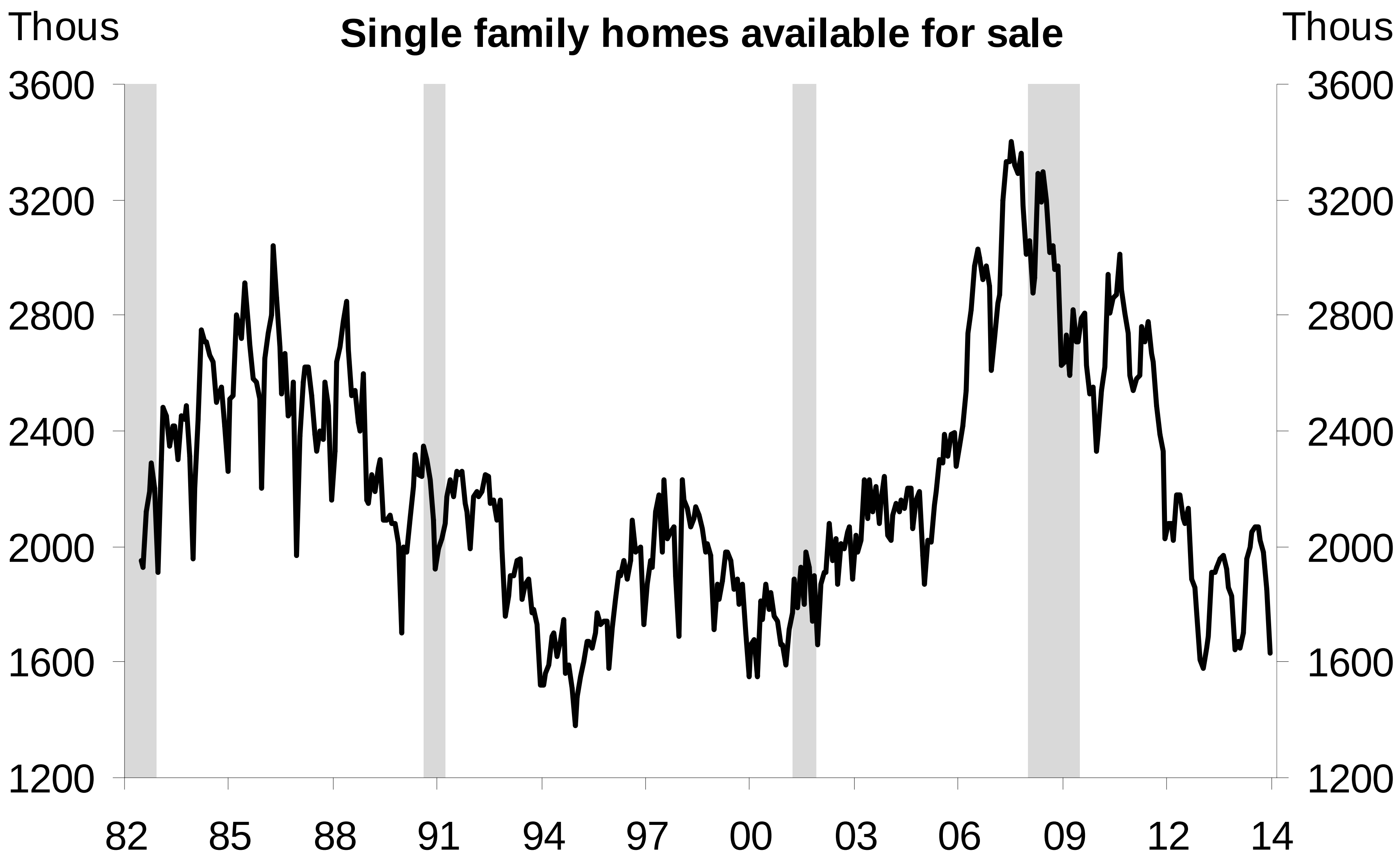
The % of loans going into foreclosure per quarter is at 2005-2006 levels



Note: ARM=Adjustable Rate Mortgage, FRM=Fixed Rate Mortgage

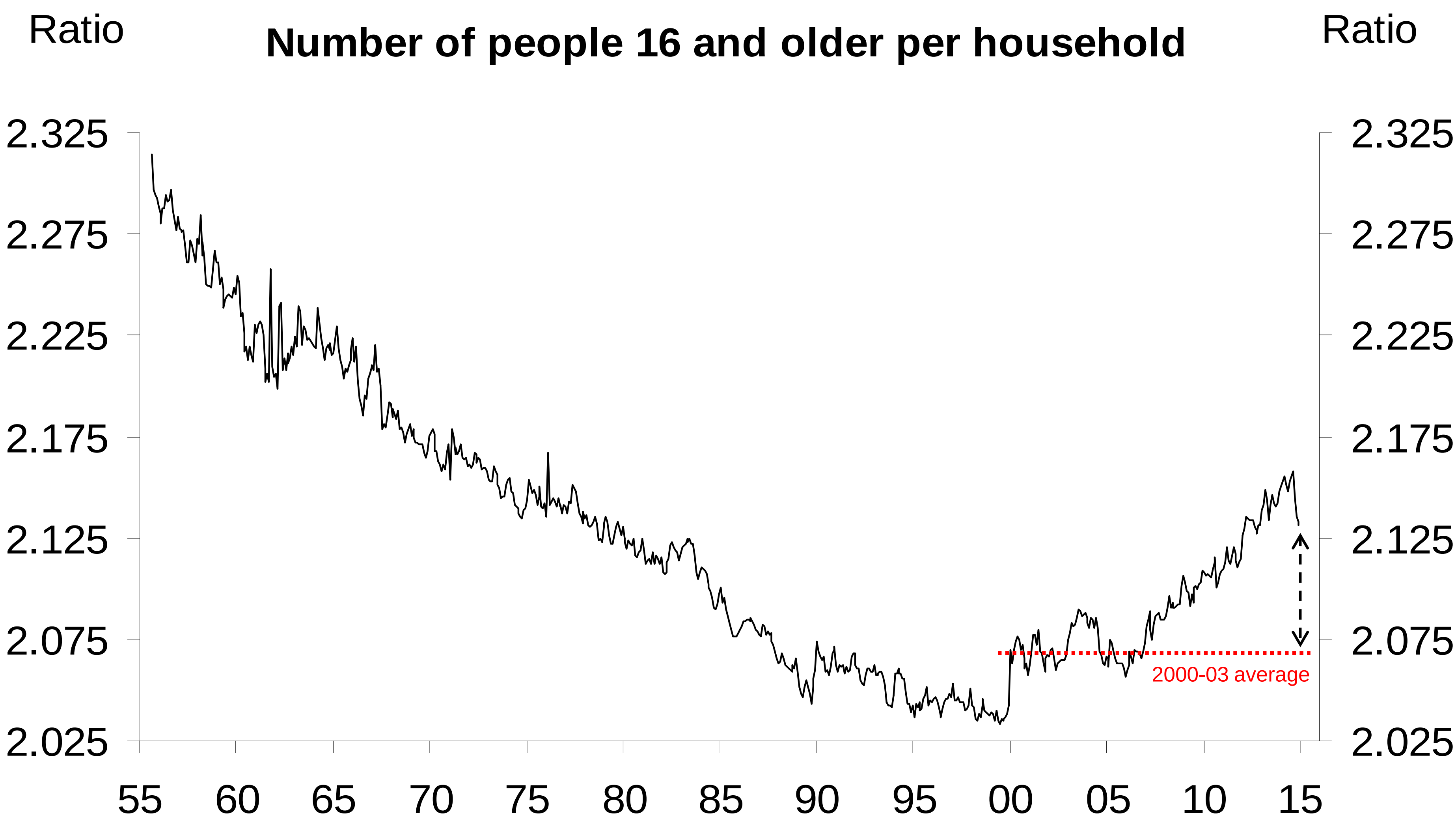
Source: MBA, Datastream, DB Global Markets Research

The number of homes for sale is low



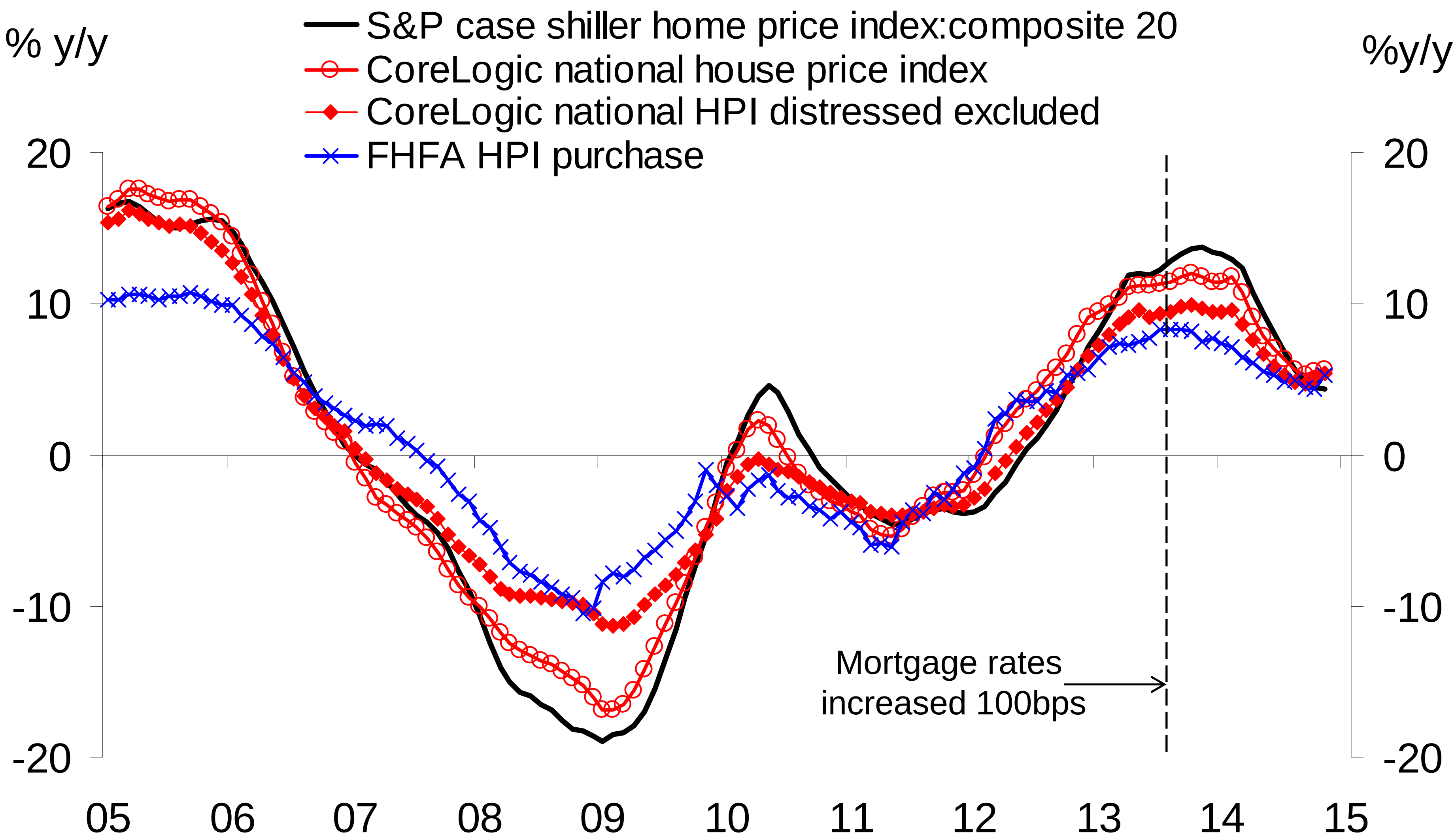
Source: NAR, Haver Analytics, DB Global Markets Research

The number of people per household coming down



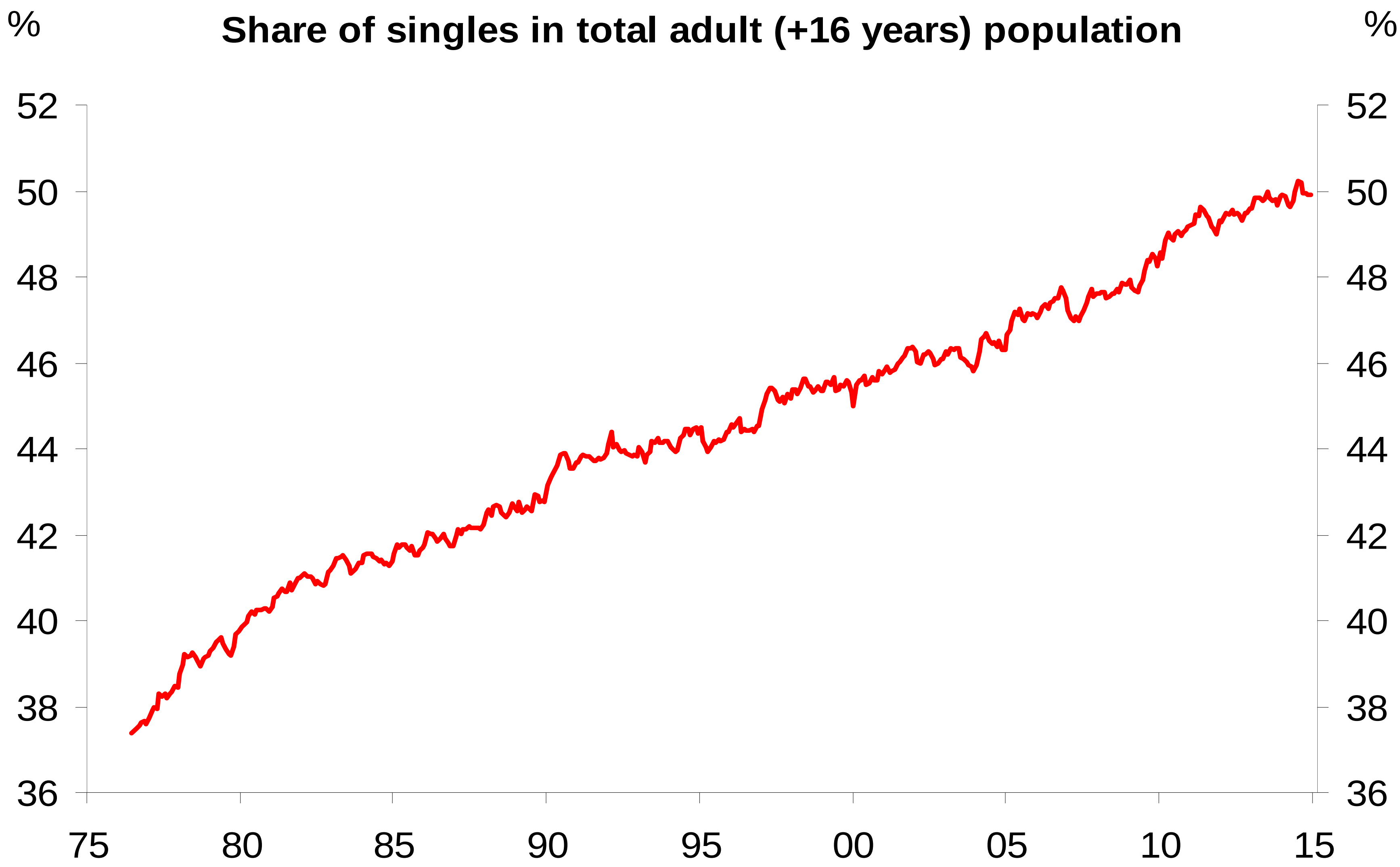
Source: Census, BLS, Haver Analytics, DB Global Markets Research

Home price appreciation moderating



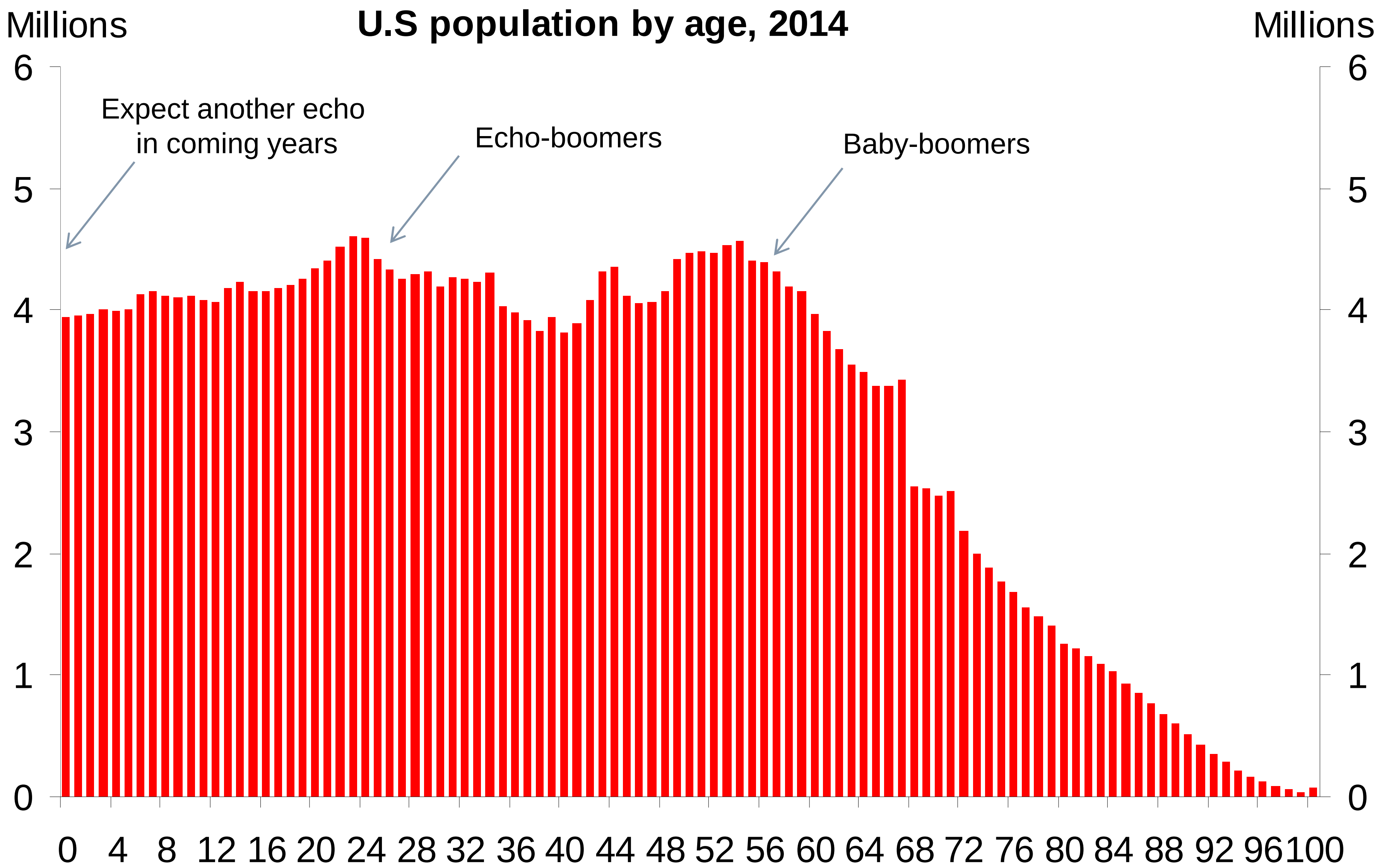
Source: S&P, CoreLogic, FHFA, Haver Analytics, DB Global Markets Research

50% of US adults are single



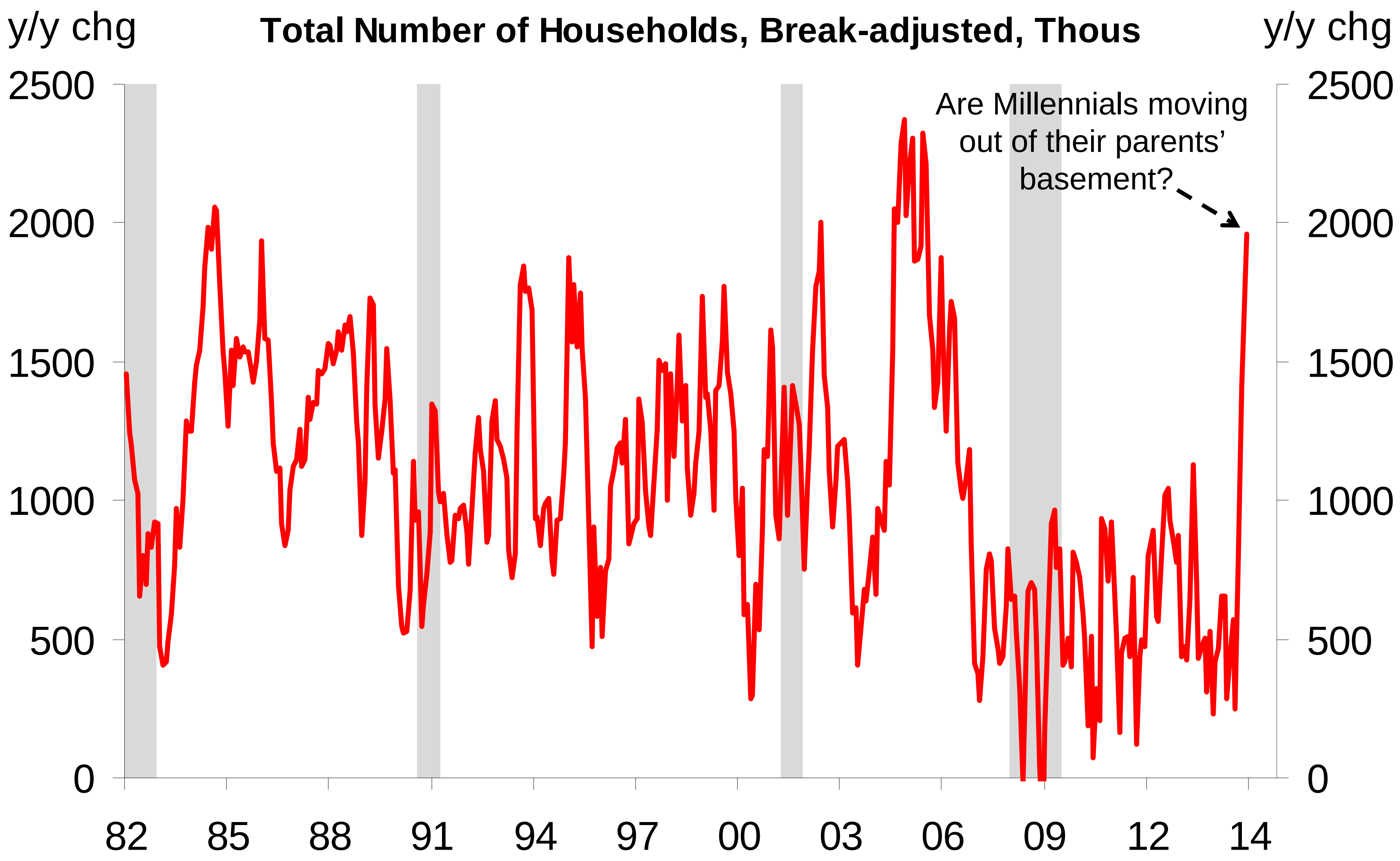
Source: BLS, Haver Analytics, DB Global Markets Research

There are 4.6mn 23-year olds in the US, more than any other age group



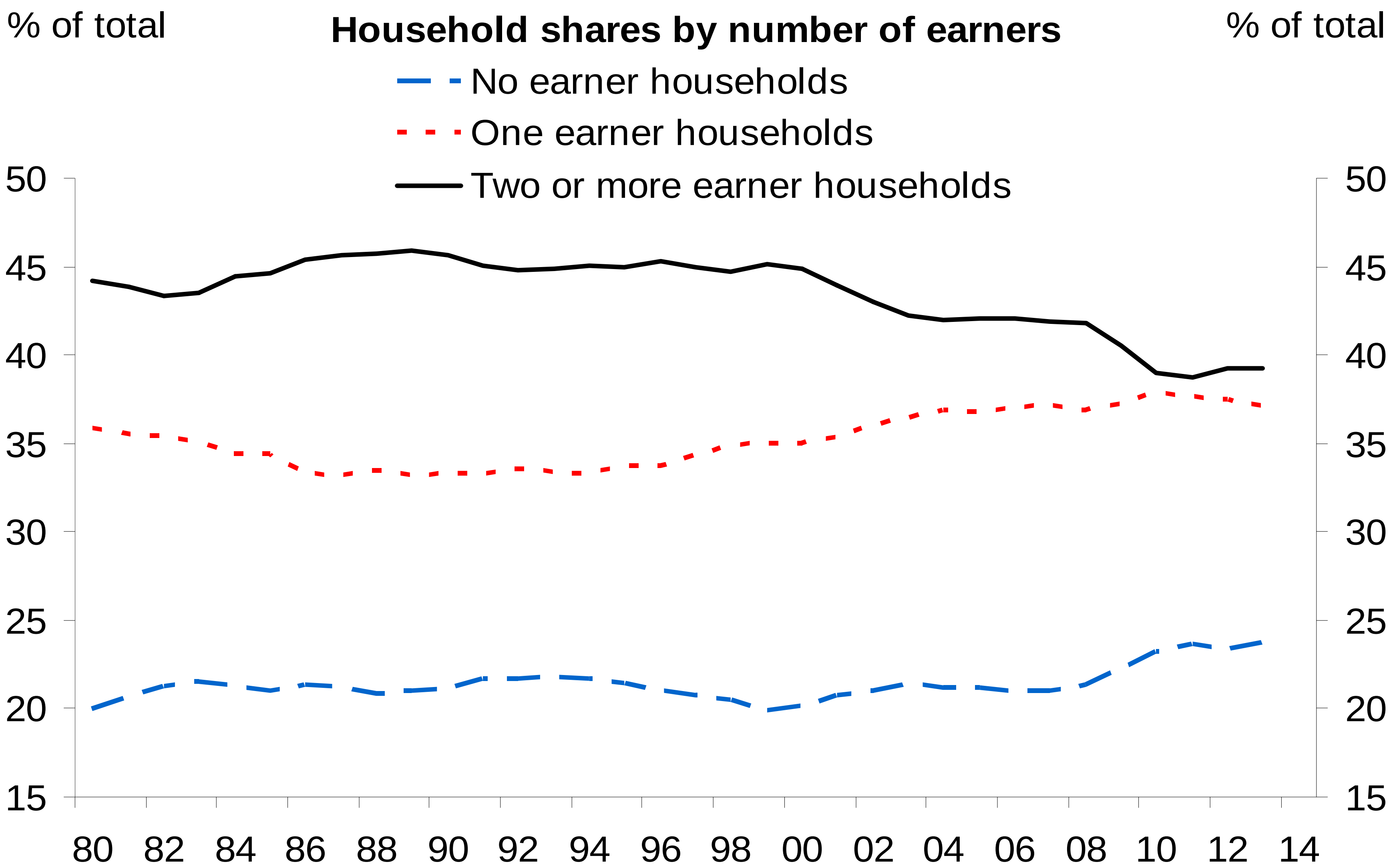
Source: Census, Haver Analytics, DB Global Markets Research

Household formation has increased dramatically in recent months



Source: Census, Haver Analytics, DB Global Markets Research

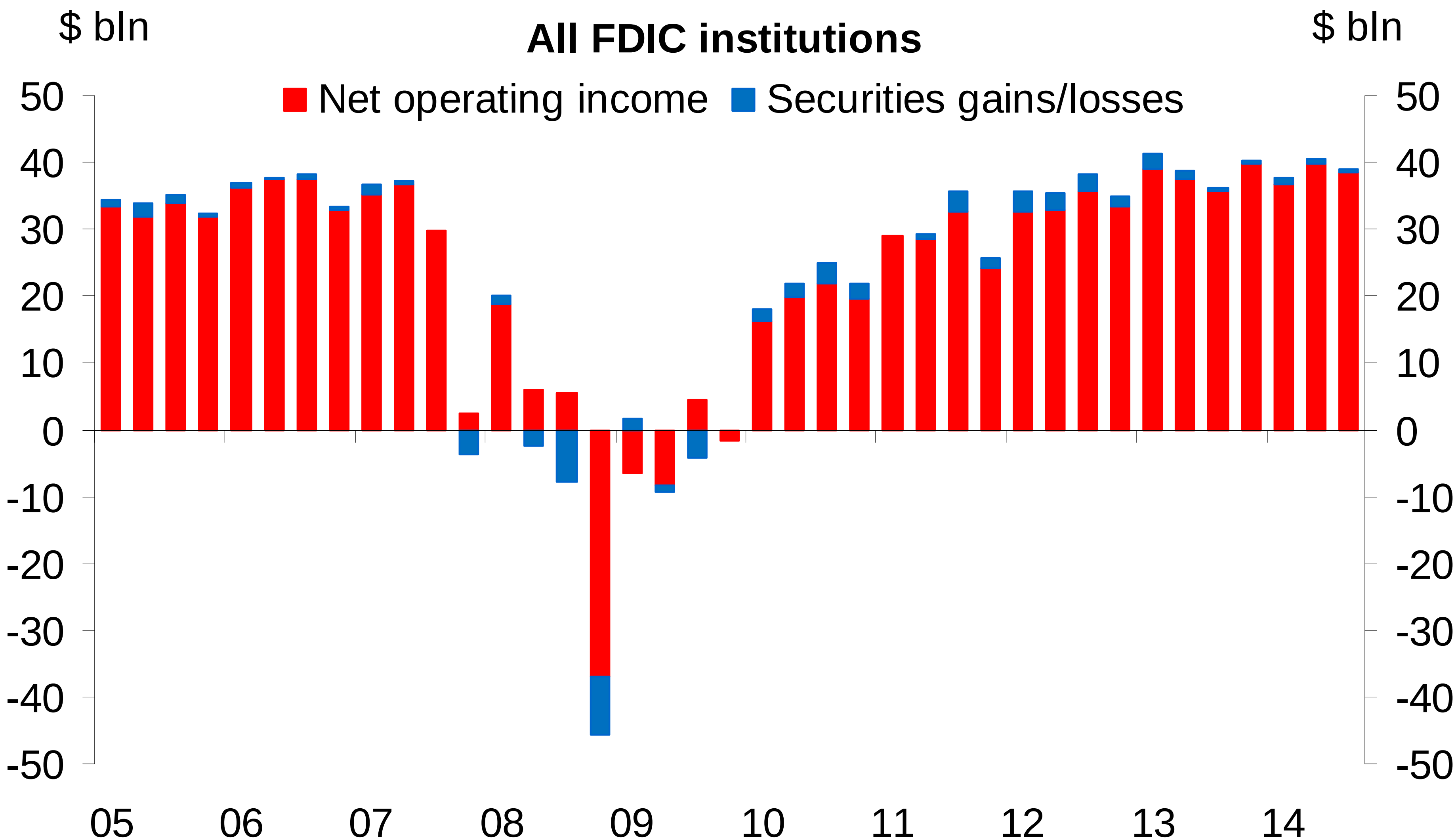
The composition of the "median household" today is very different from what it was in 1980



Source: Census, Haver Analytics, DB Global Markets Research

Headwinds are fading in the banking sector

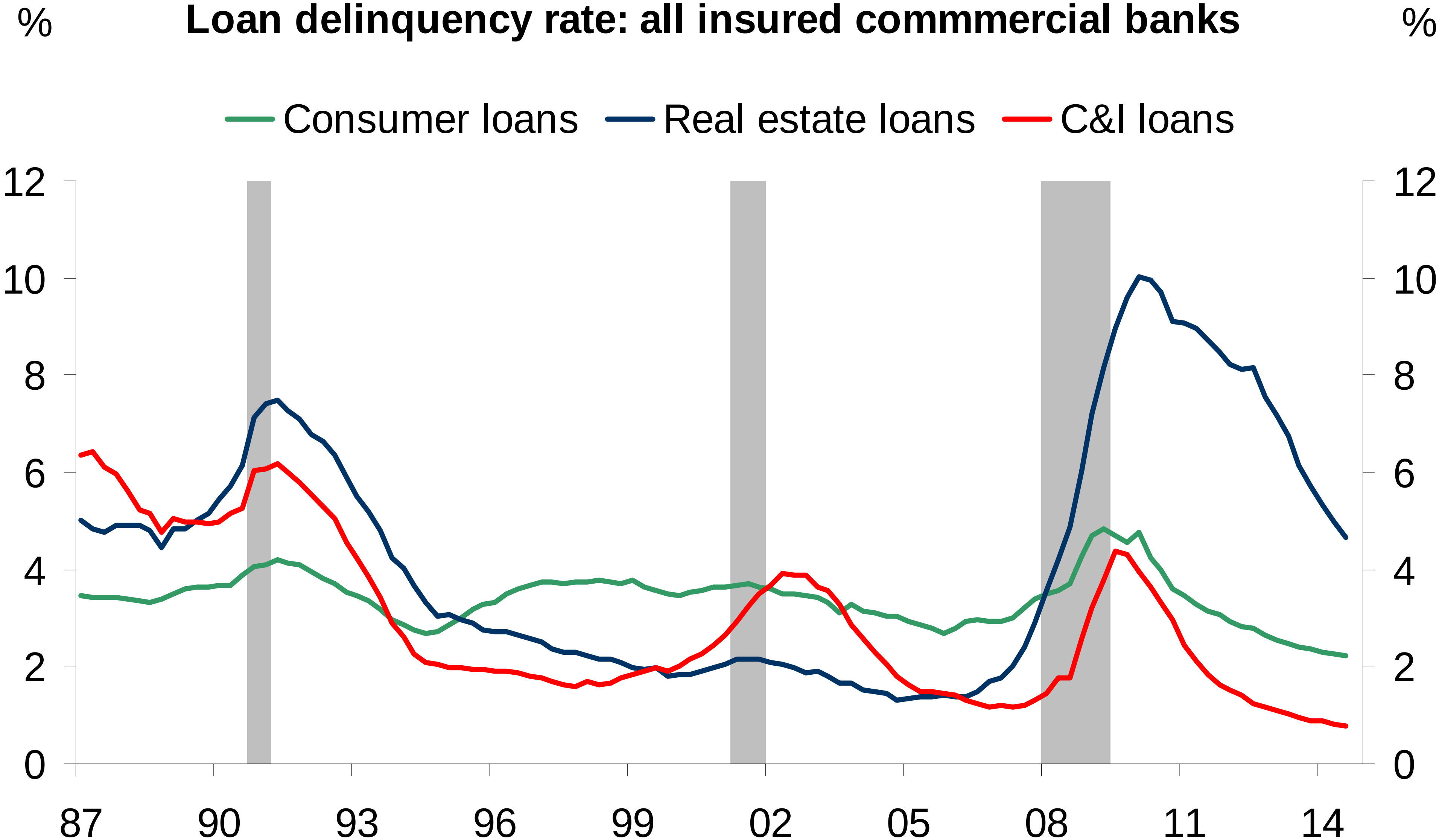
Banking sector quarterly net income currently at the same level as in 2005 and 2006



Source: FDIC, Haver Analytics, DB Global Markets Research

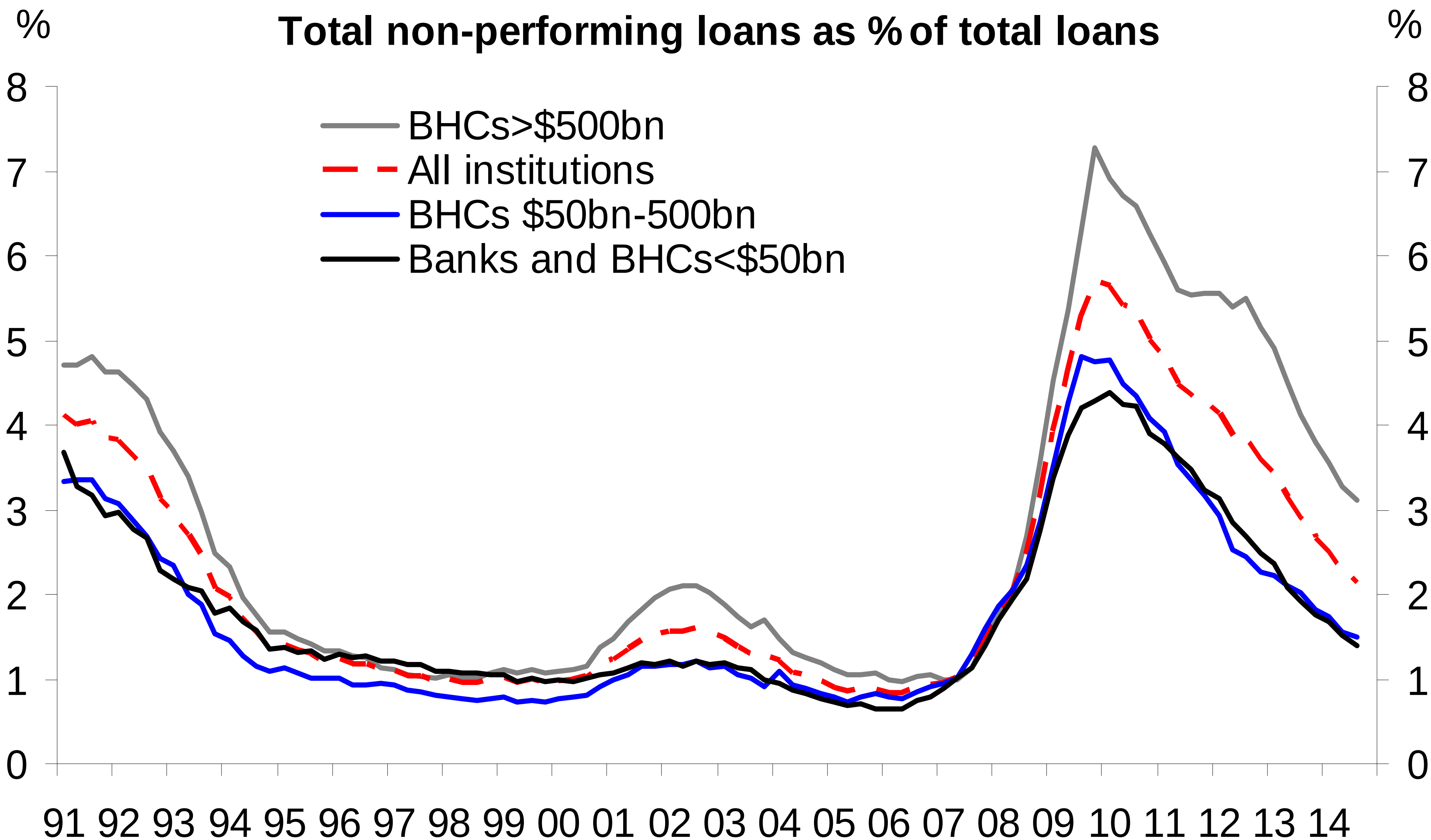
Delinquency rates coming down

Loan delinquency rate: all insured commmercial banks



Source: FRB, Haver Analytics, DB Global Markets Research

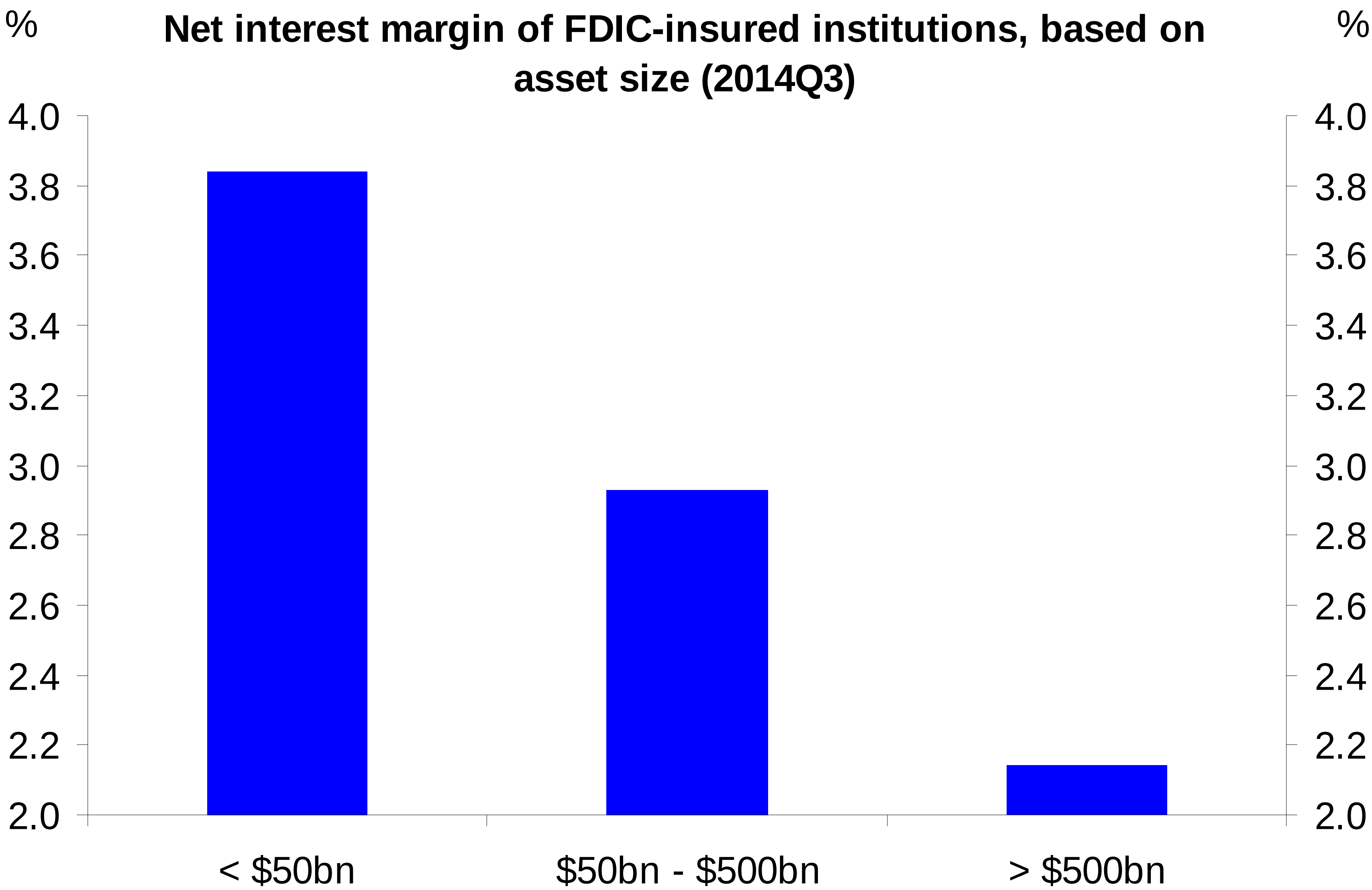
Balance sheet repair almost complete in small banks



Note: Non-performing loans include loans that are (1) 90 days or more past due and still accruing or (2) non-accrual.

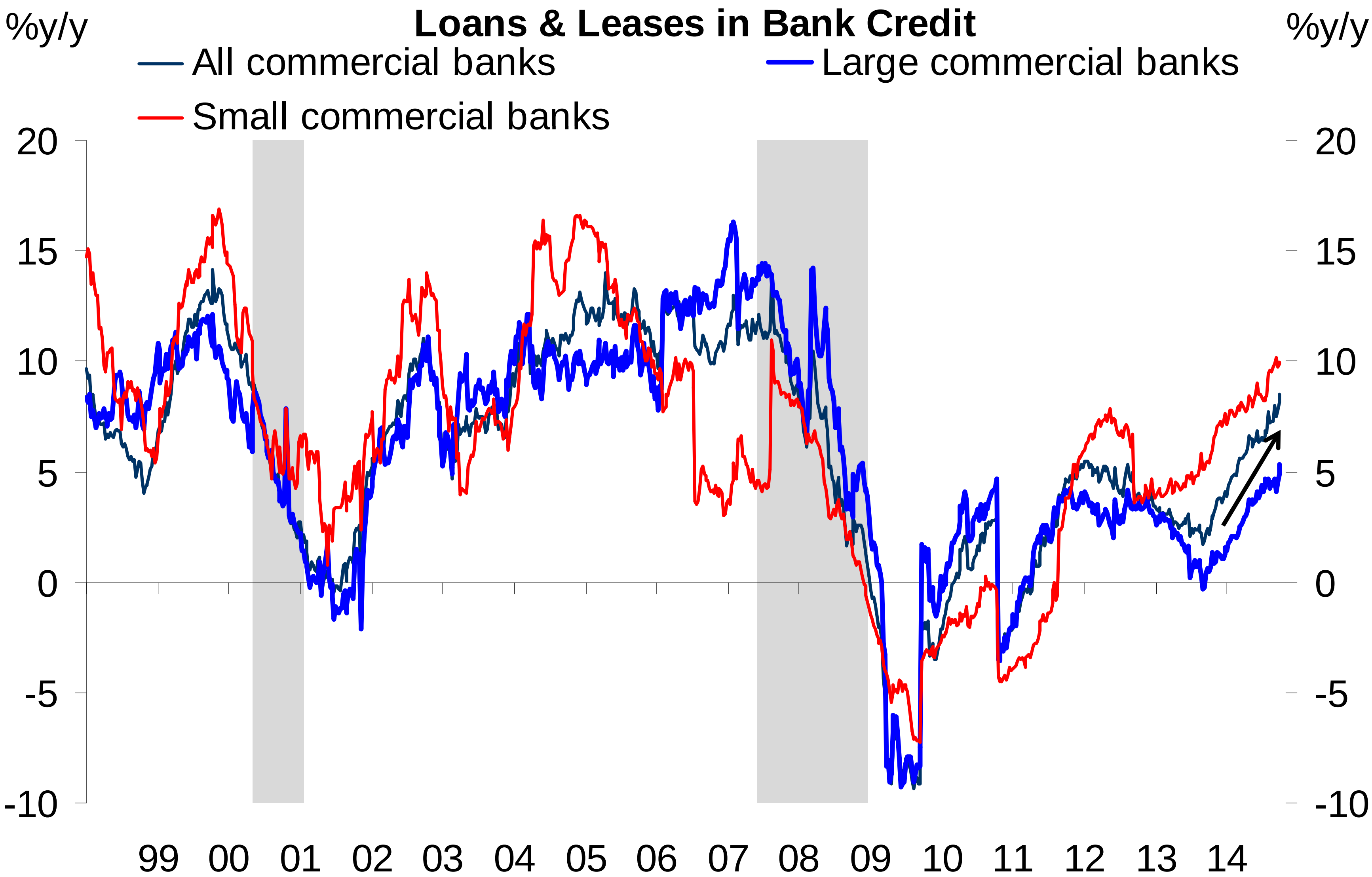
Source: FRBNY, DB Global Markets Research

Smaller banks have higher net interest margins



Source: FDIC, DB Global Markets Research

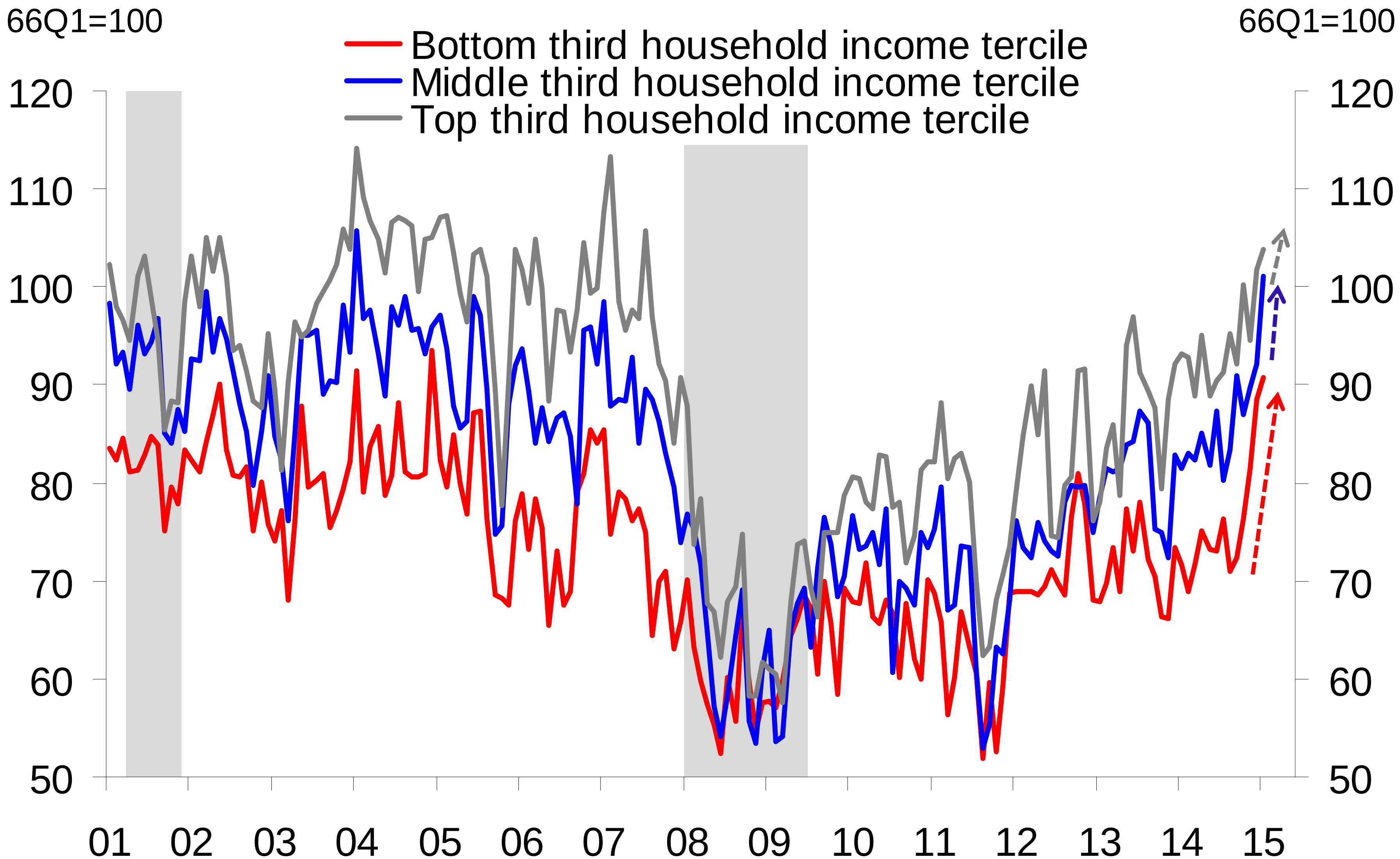
Credit growth continues to accelerate, driven by both small and large banks



Source: FRB, Haver Analytics, DB Global Markets Research

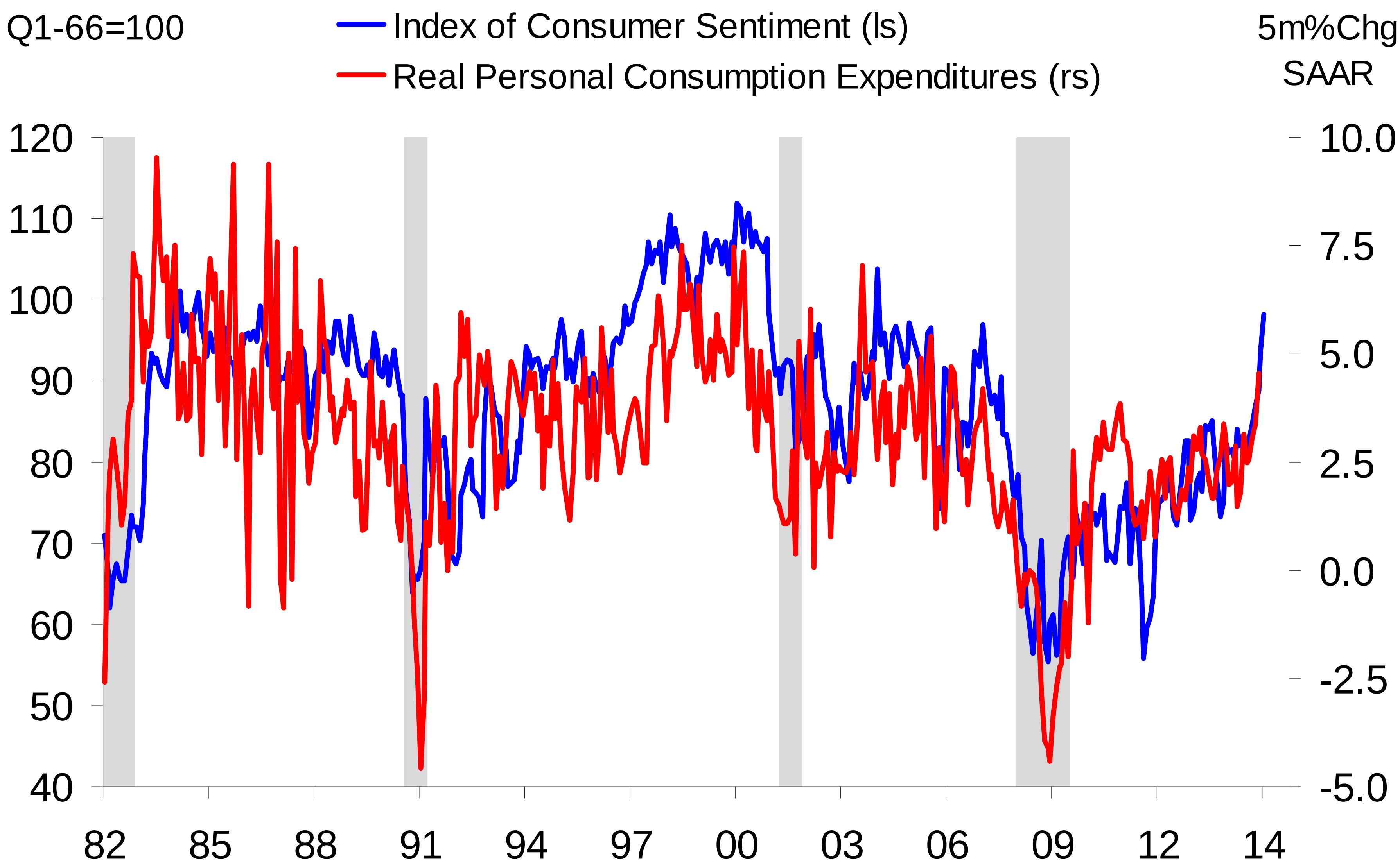
Lower energy prices

The effects of lower oil prices starting to show up: Consumer sentiment at the highest level since the crisis across income groups



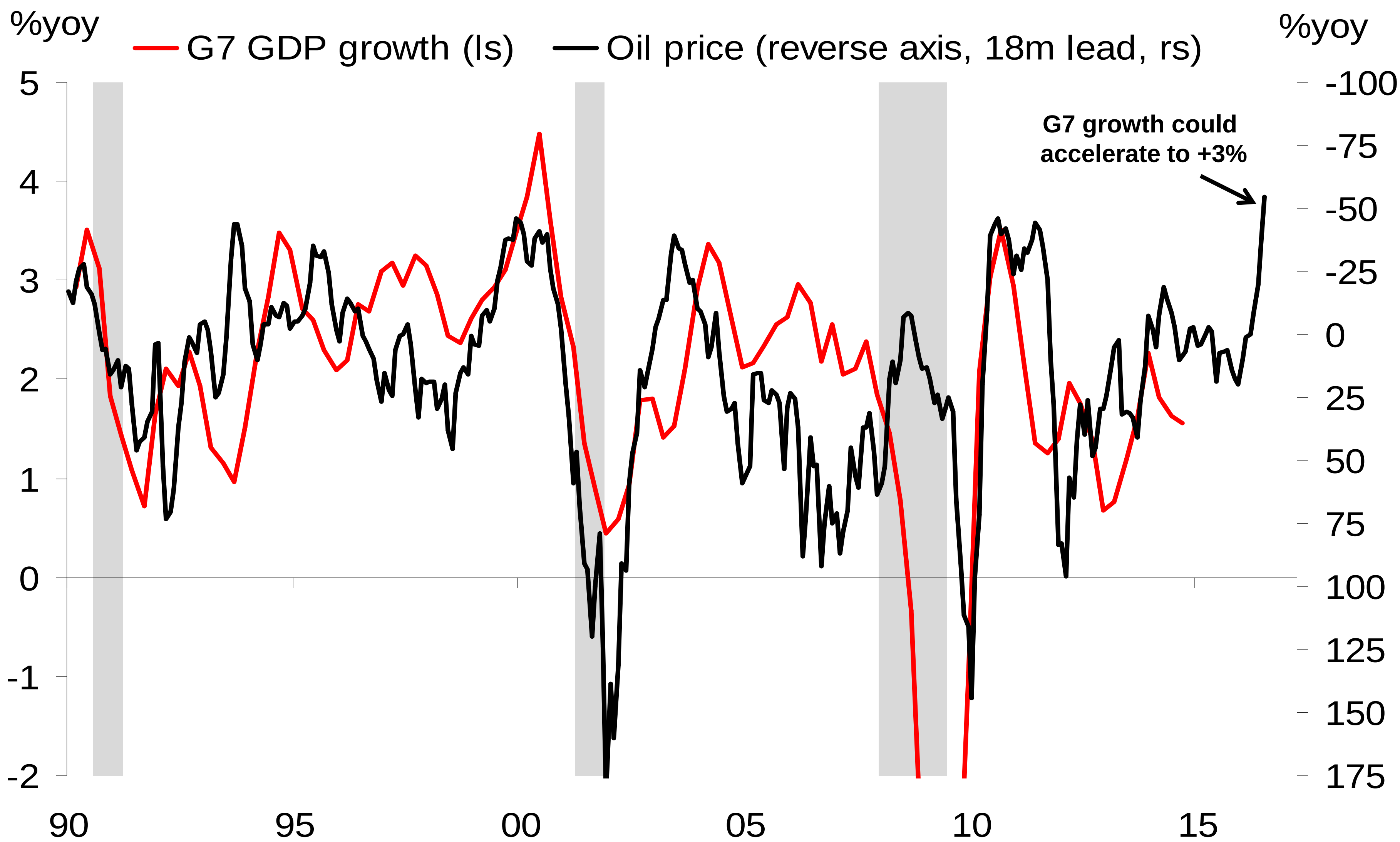
Source: UMichigan, Haver Analytics, DB Global Markets Research

Consumers benefiting from lower oil prices and accelerating job growth



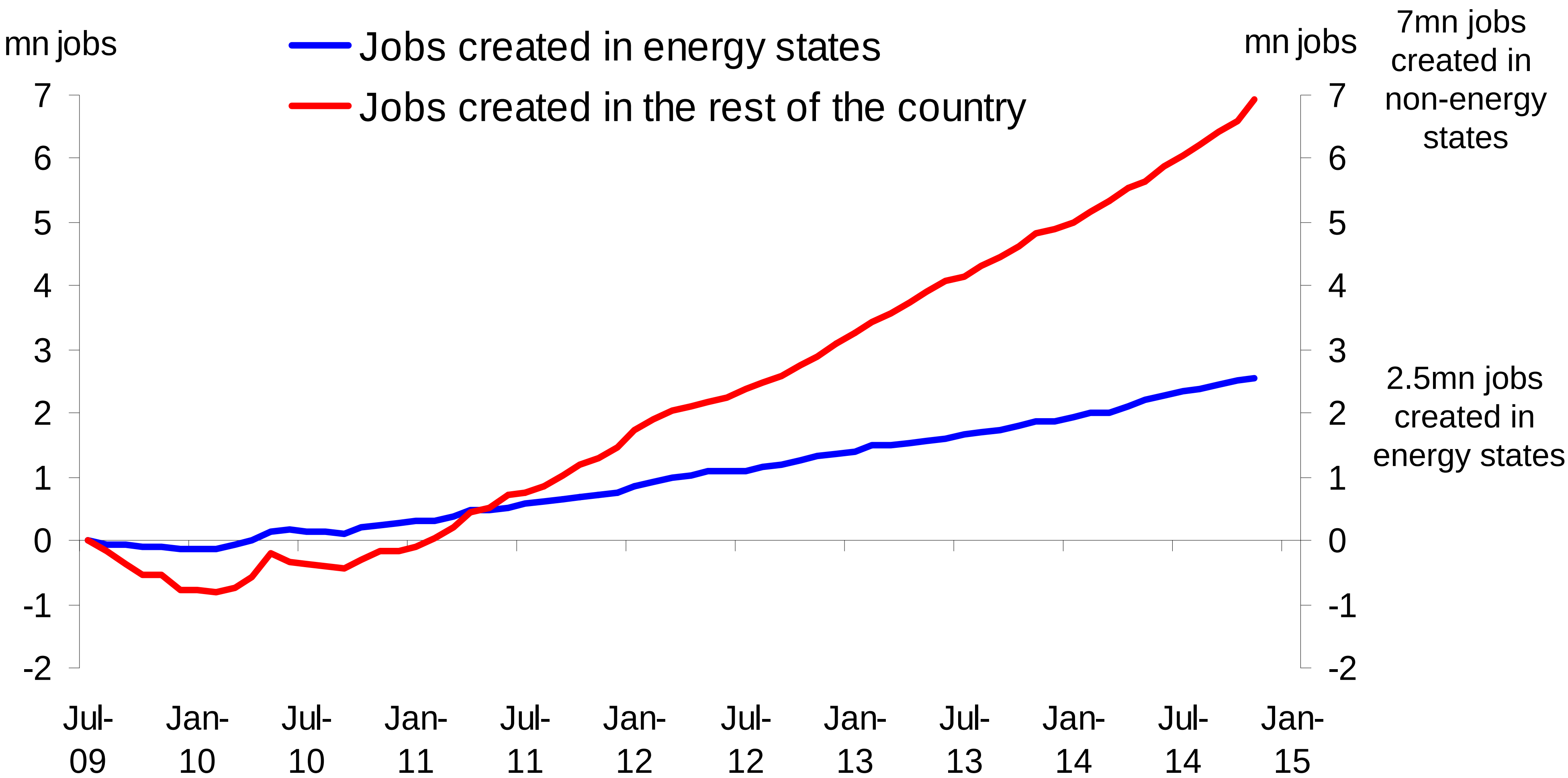
Note: We look at the 5-month change to analyze the period since oil prices started falling in June 2014.
Source: BEA, UMichigan, Haver Analytics, DB Global Markets Research

Oil prices down almost 50%: Markets underestimating the upside risk to growth in US, Japan, and Europe



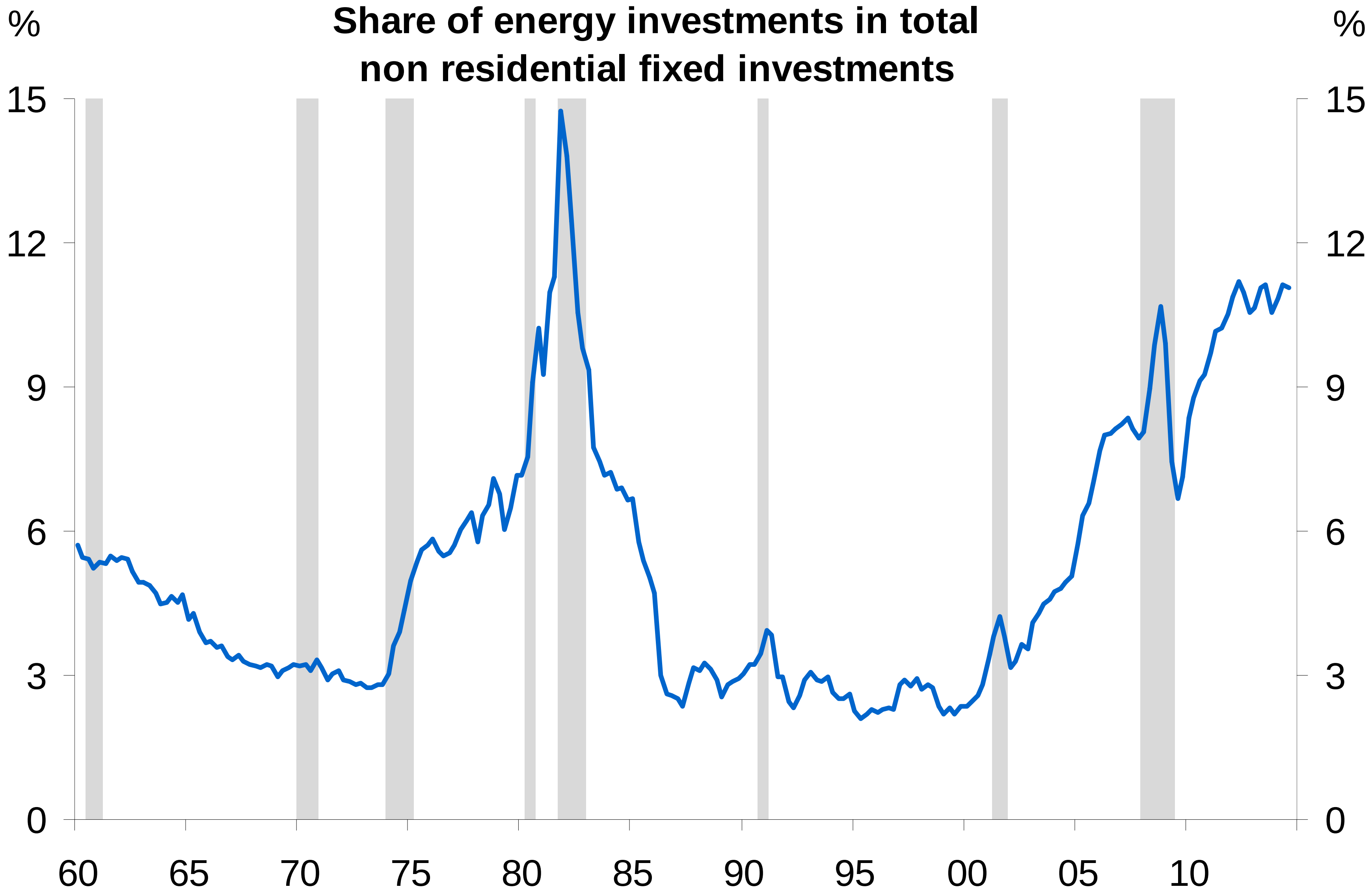
Note: Right scale is inverted. US recession shading shown. Source: EIA, OECD, Haver Analytics, DB Global Markets Research

No outsized contribution to this recovery by energy: The 12 energy states account for 20%-25% of the US economy and the energy states created around 25% of all jobs during this recovery



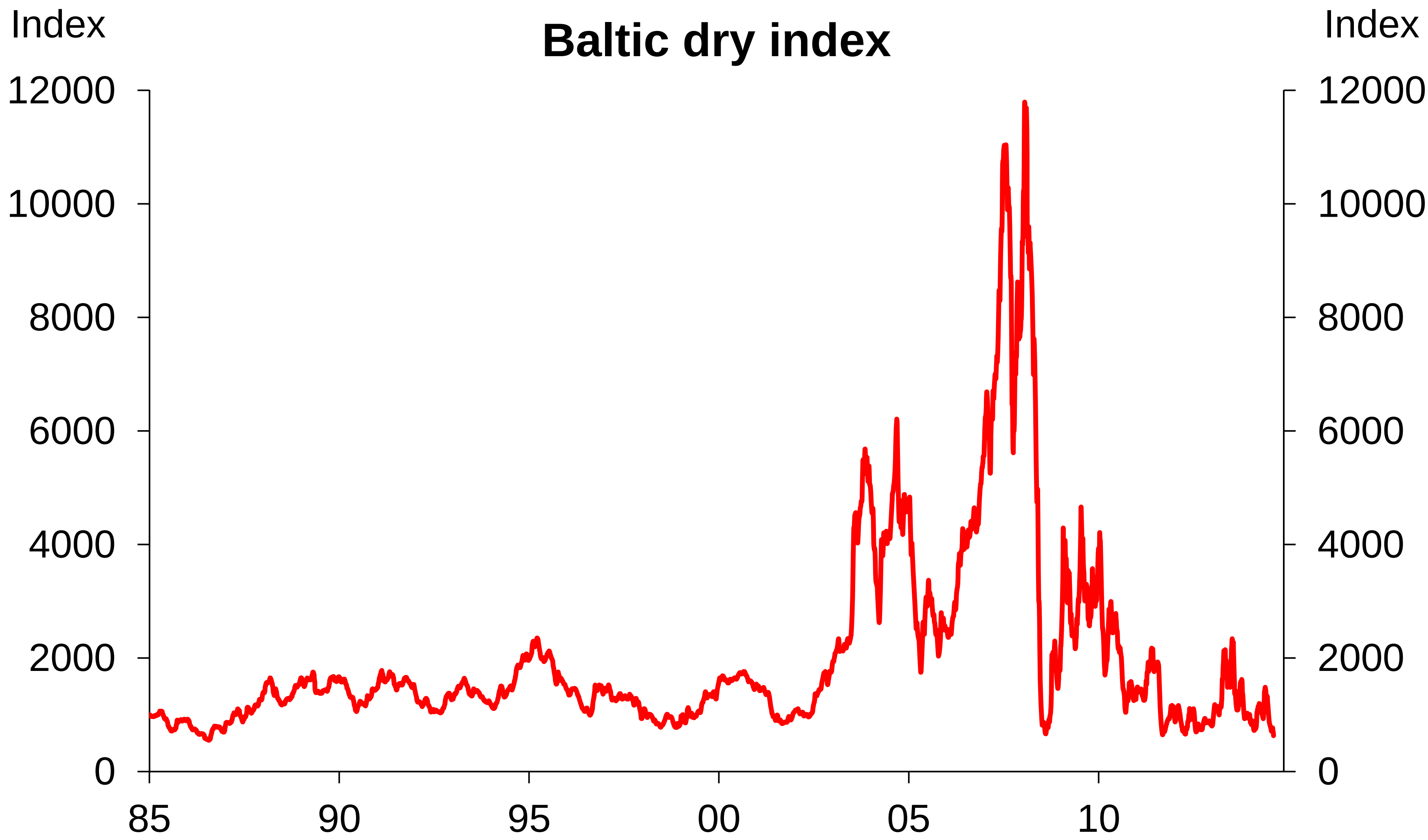
Note: The 12 energy states are: TX, ND, OK, LA, PA, WY, NM, CO, AR, UT, KS, and WV. Source: Bloomberg Finance, Deutsche Bank Research

Only a small share of capex goes to the energy sector



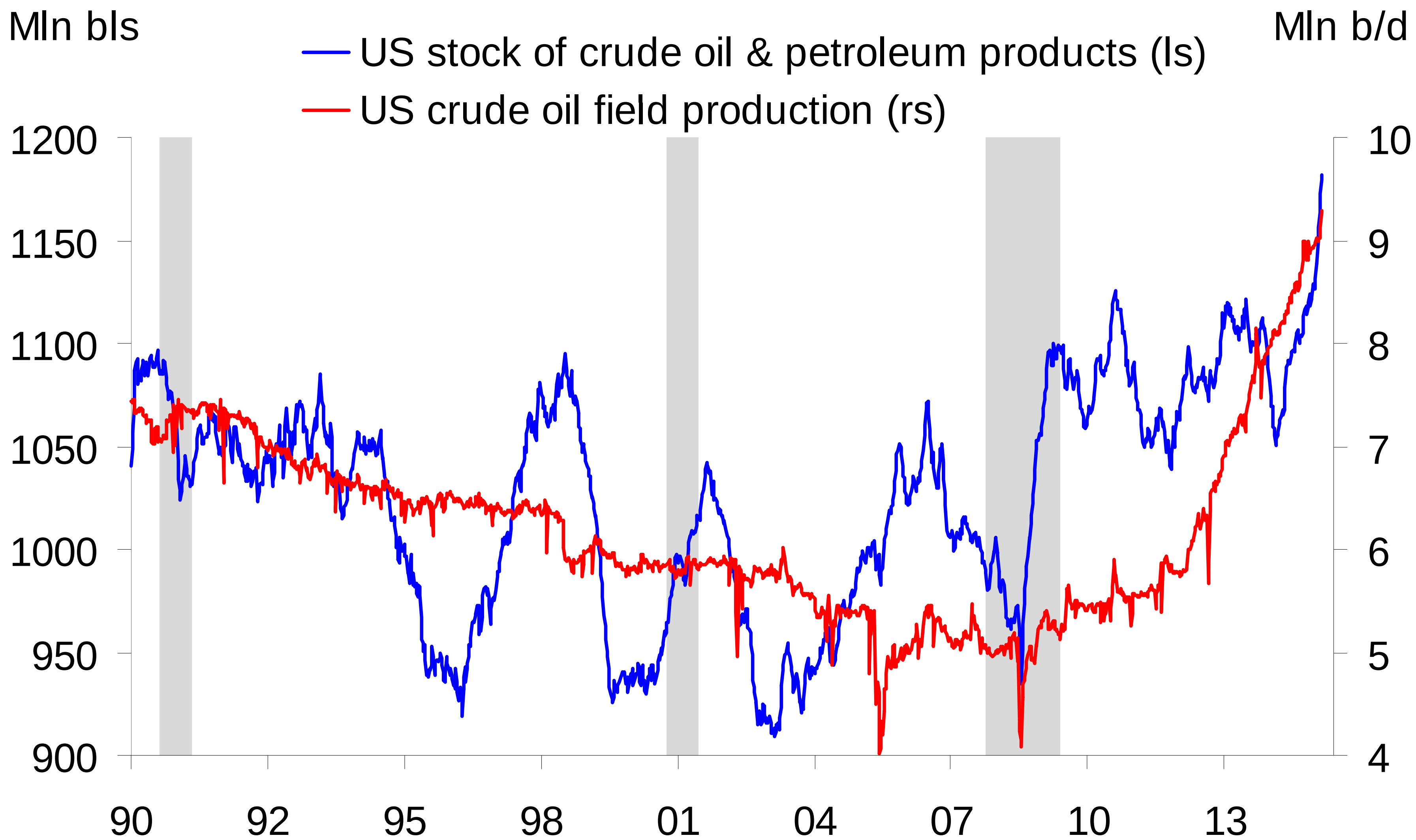
Source: BEA, Haver Analytics ,DB Global Markets Research

The Baltic Dry Index at very low levels



Source: BalticExchange, Bloomberg Finance LP, DB Global Markets Research

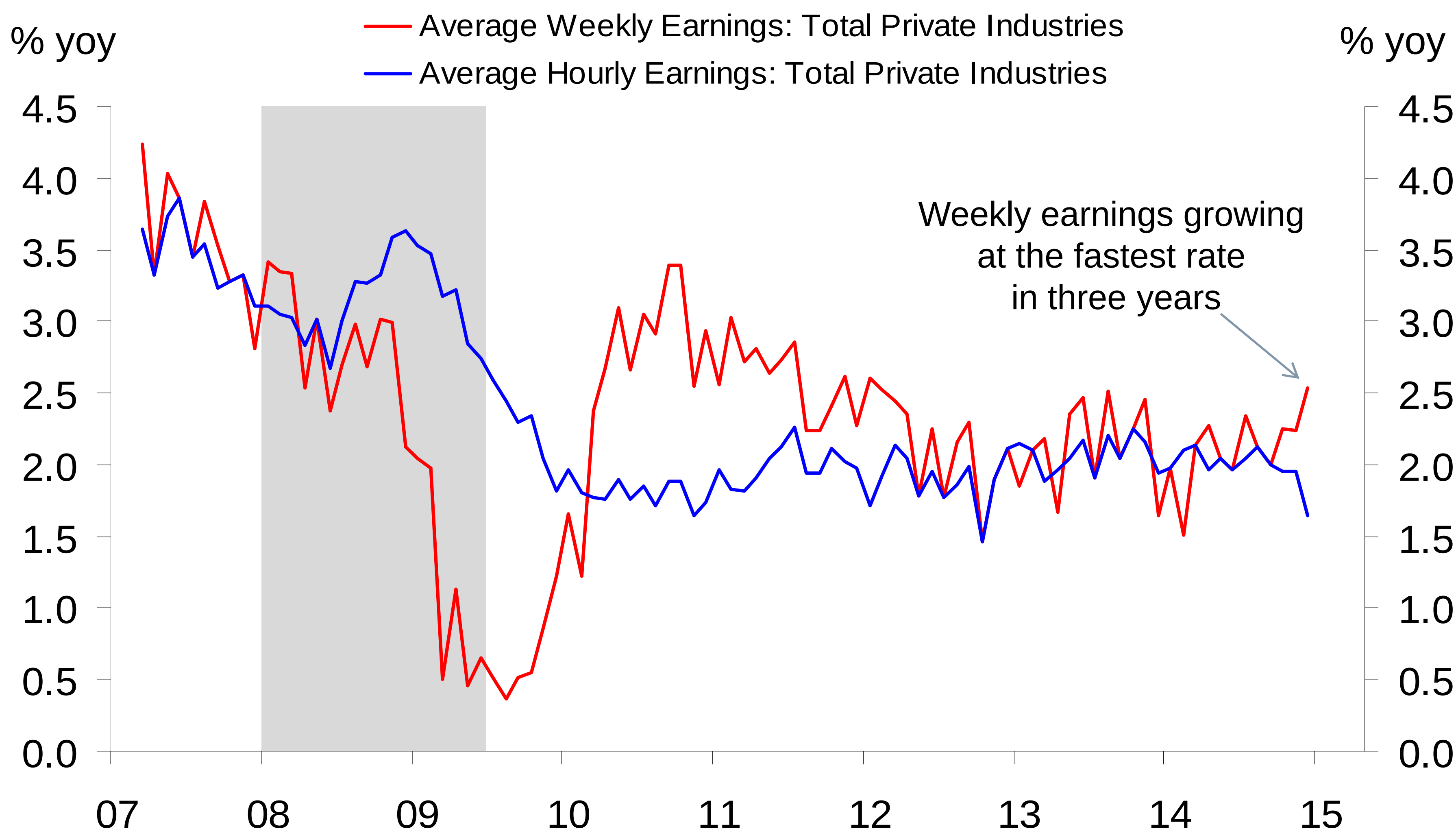
A lot of oil supply at the moment



Note: Stock excludes the strategic petroleum reserve. Source: EIA, Haver Analytics, DB Global Markets Research

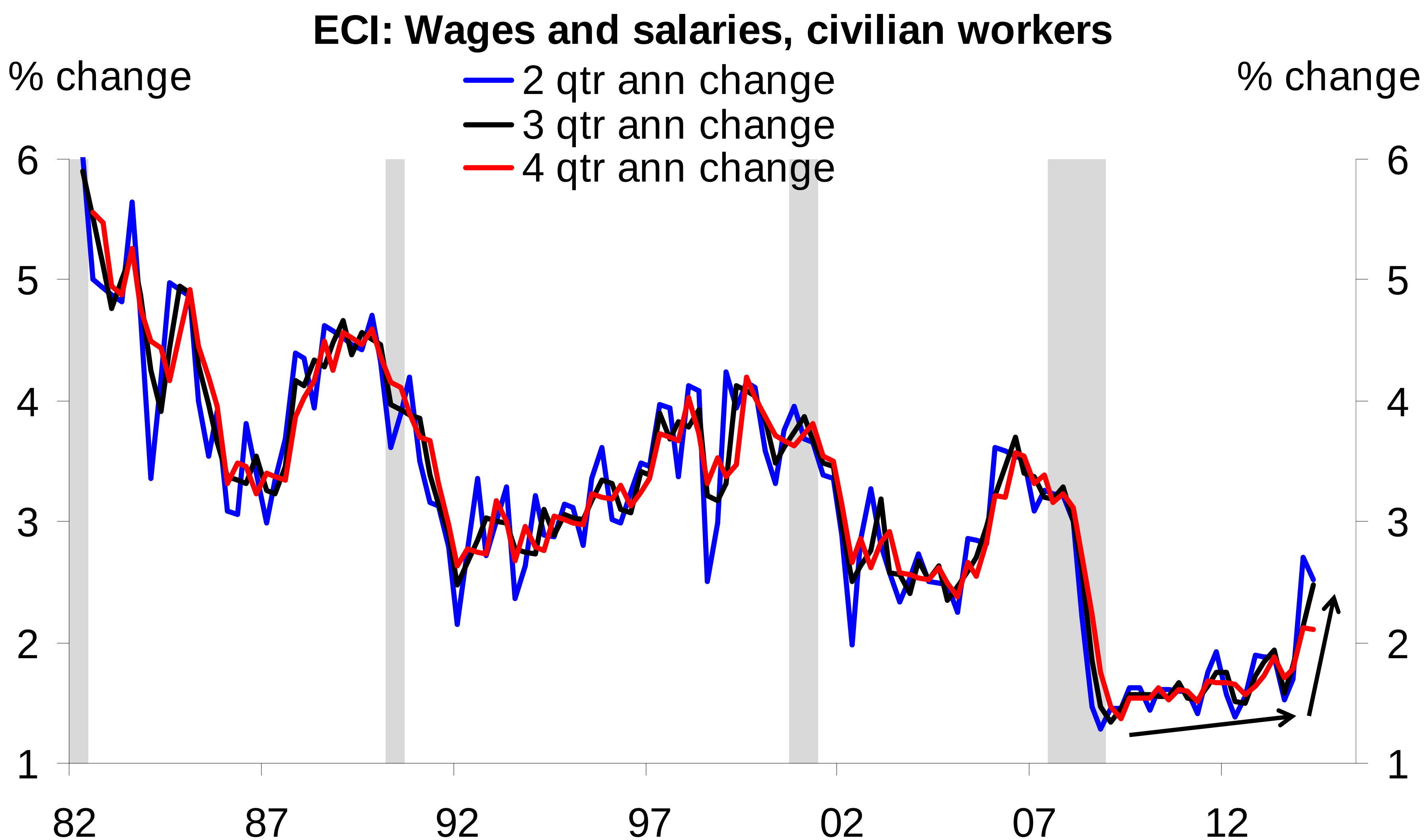
Labor markets tightening

Wage inflation decelerating and income growth accelerating: Hours worked was the problem in the December employment report



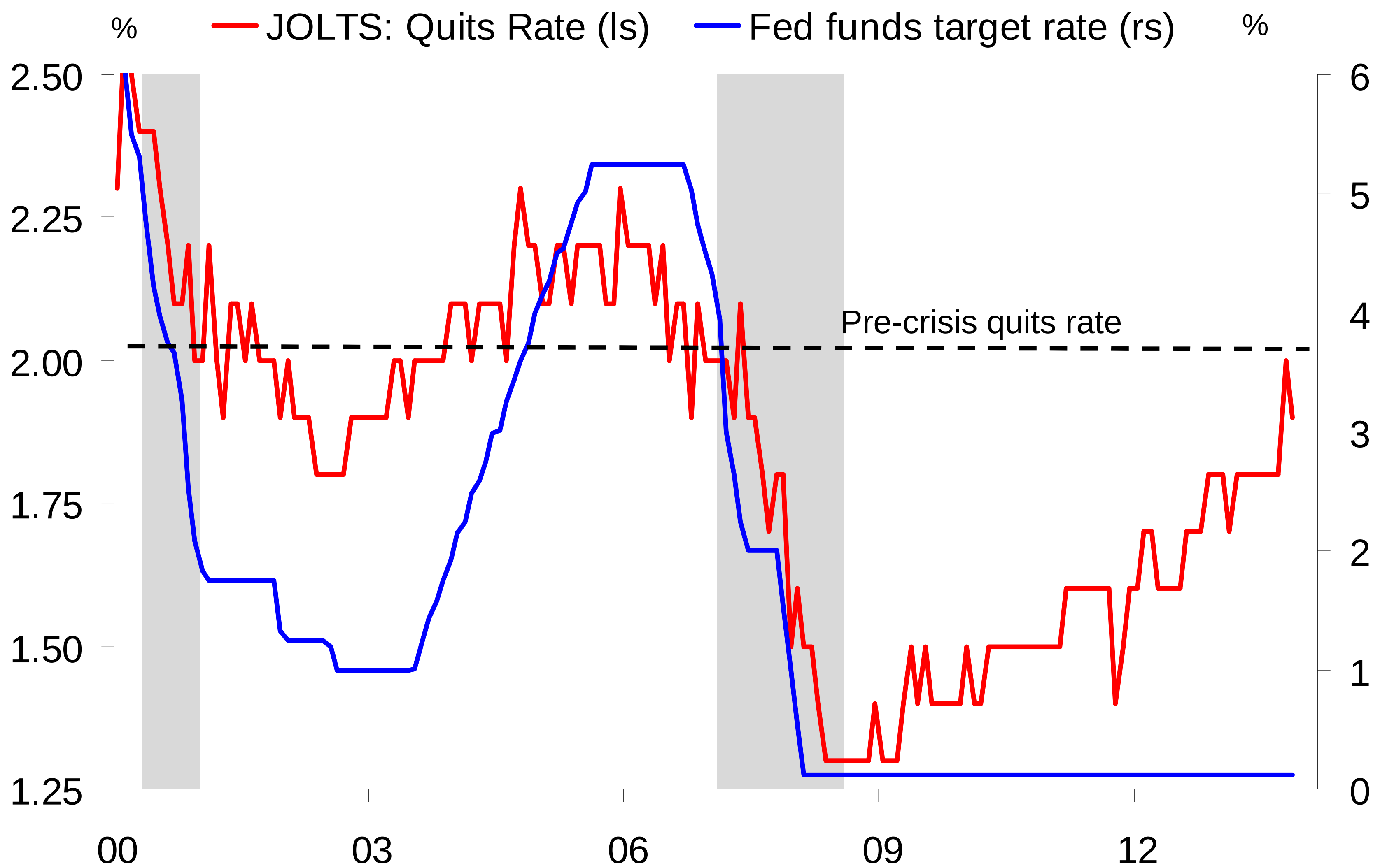
Source: BLS, Haver Analytics, DB Global Markets Research

The 2, 3, and 4 quarter change in ECI shows solid momentum in wages in recent quarters



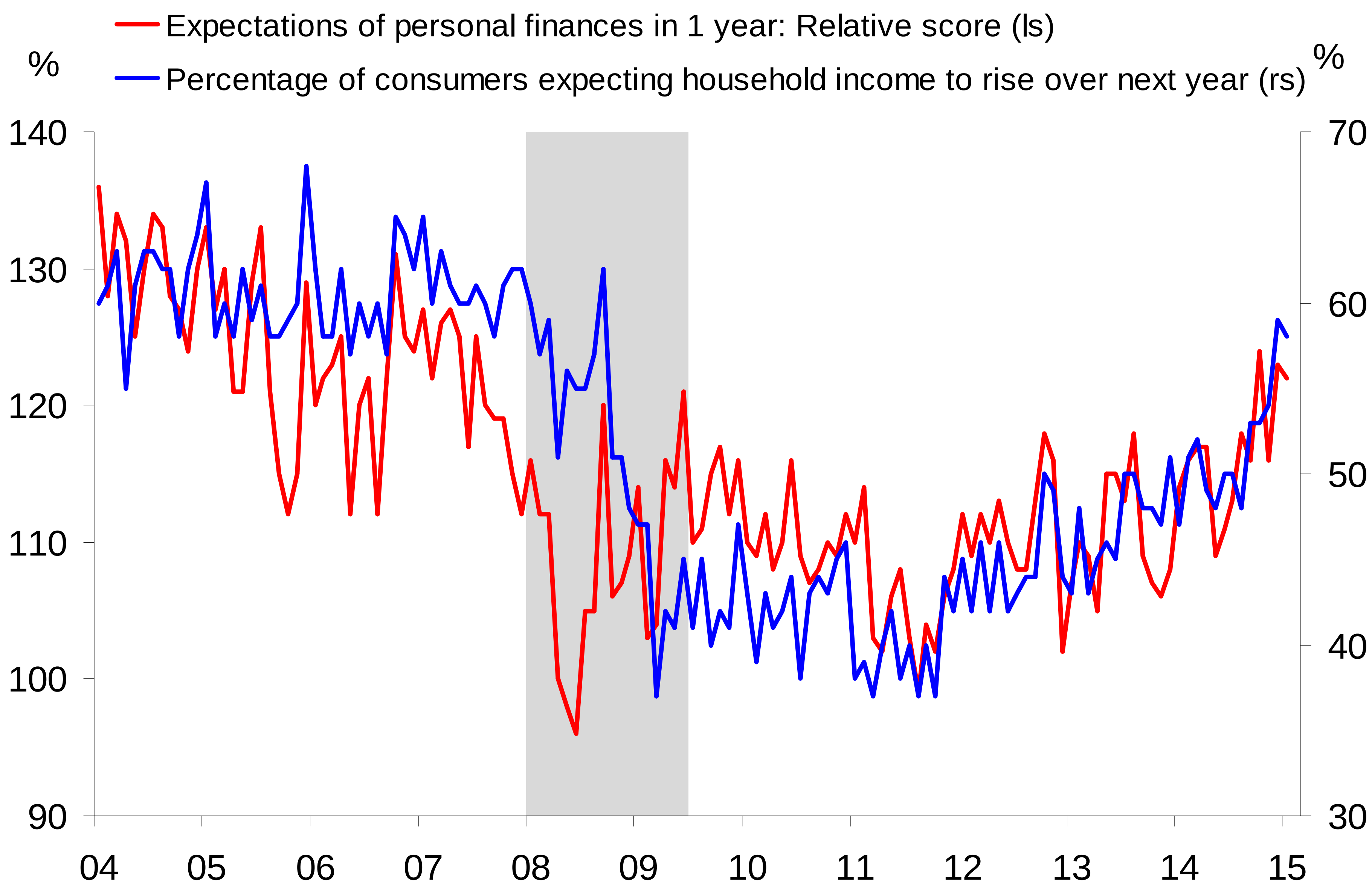
Source: BLS, Haver Analytics, DB Global Markets Research

People are voluntarily quitting jobs at a pre-crisis rate: It is time for the Fed to think about hiking rates



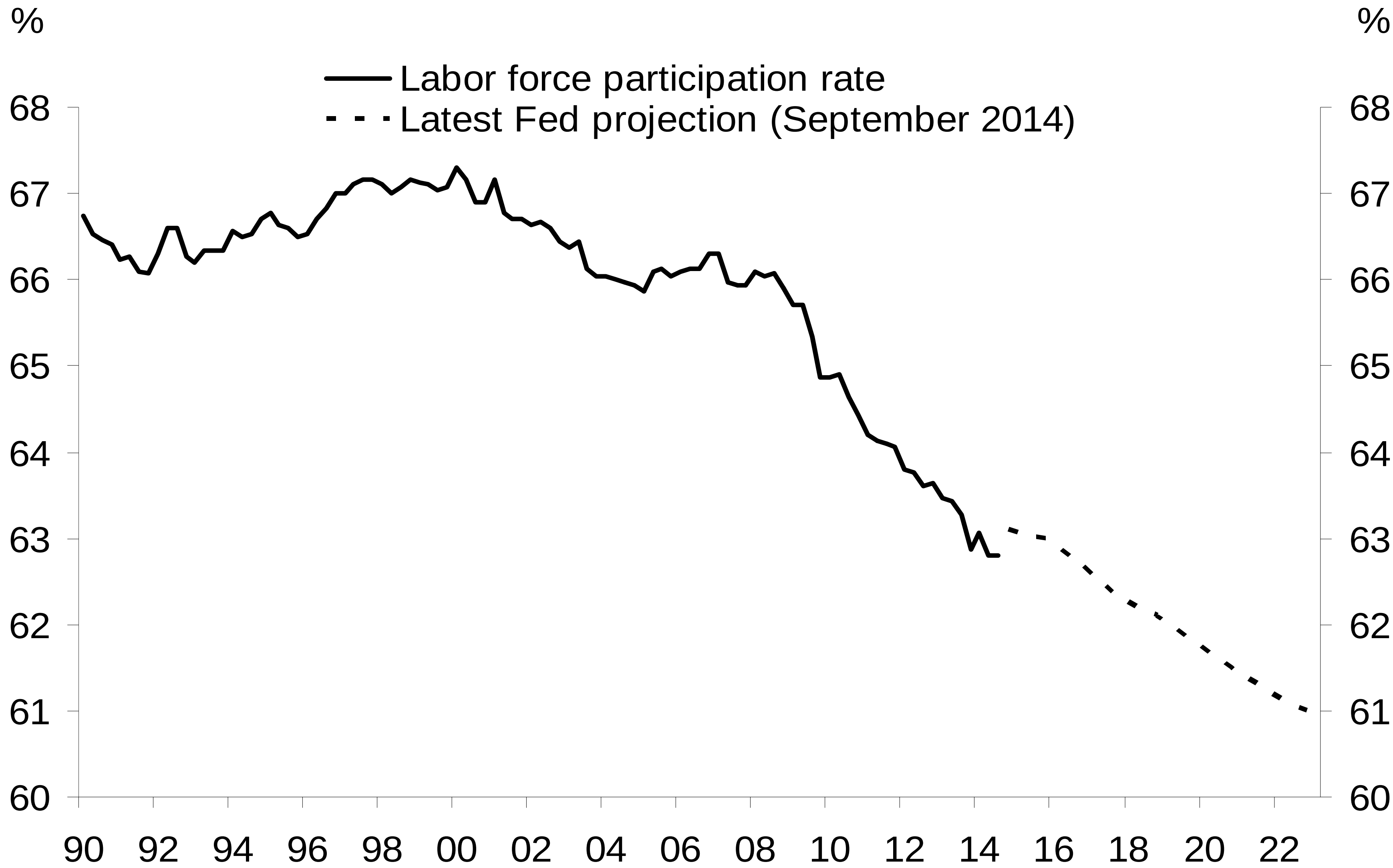
Source: BLS, FRB, DB Global Markets Research

Wage and income expectations at the highest levels in five years



Source: University of Michigan, Haver Analytics, DB Global Markets Research

Recent Fed work suggests that those who left the labor force are not coming back

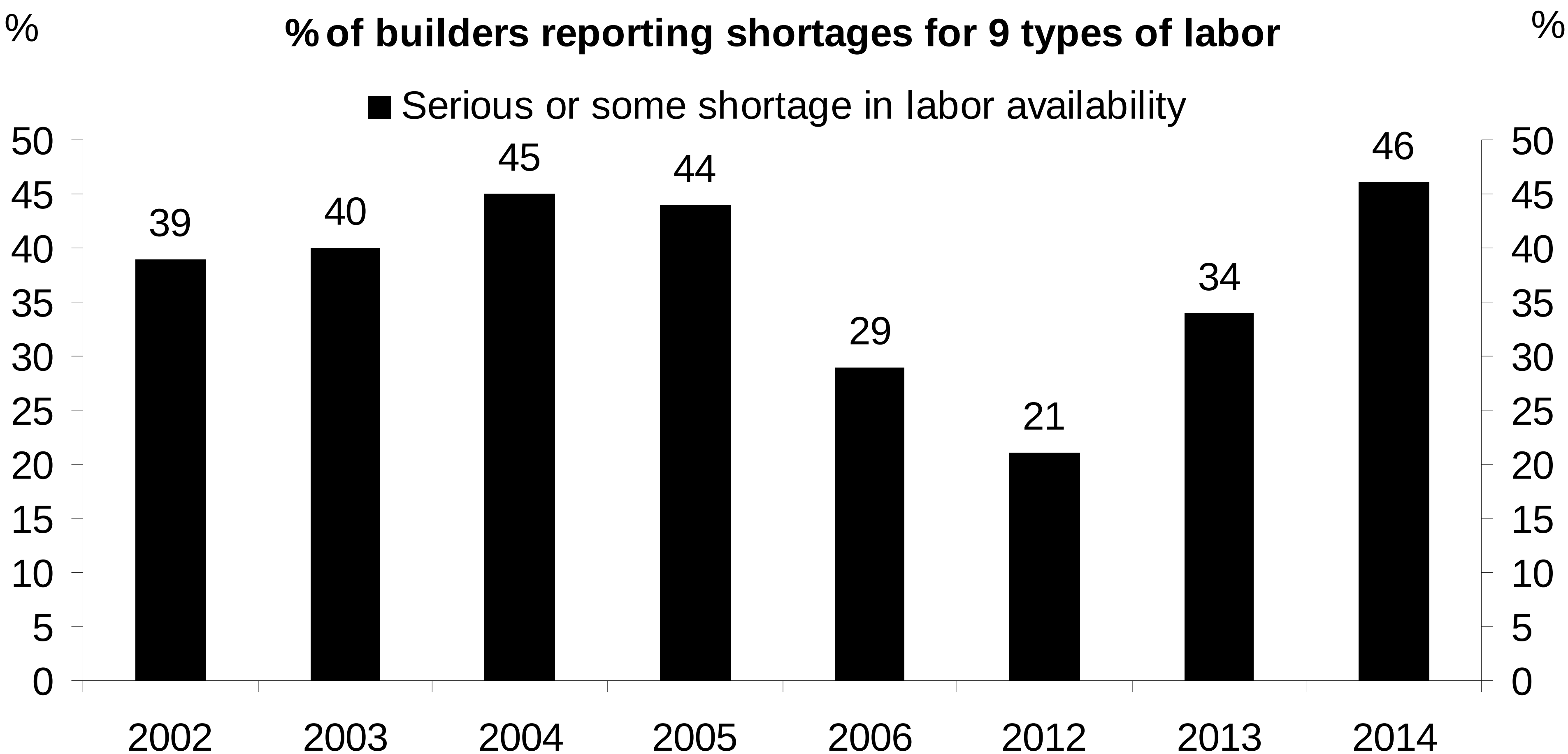


Source: Aaronson et al. "Labor Force Participation: Recent Developments and Future Prospects" (http://www.federalreserve.gov/pubs/feds/2014/201464/201464pap.pdf), BLS,Haver Analytics, DB Global Markets Research

Less slack in the labor market: Number of available people per job opening is back to its pre-crisis average

Source: BLS, JOLTS, Haver Analytics, DB Global Markets Research

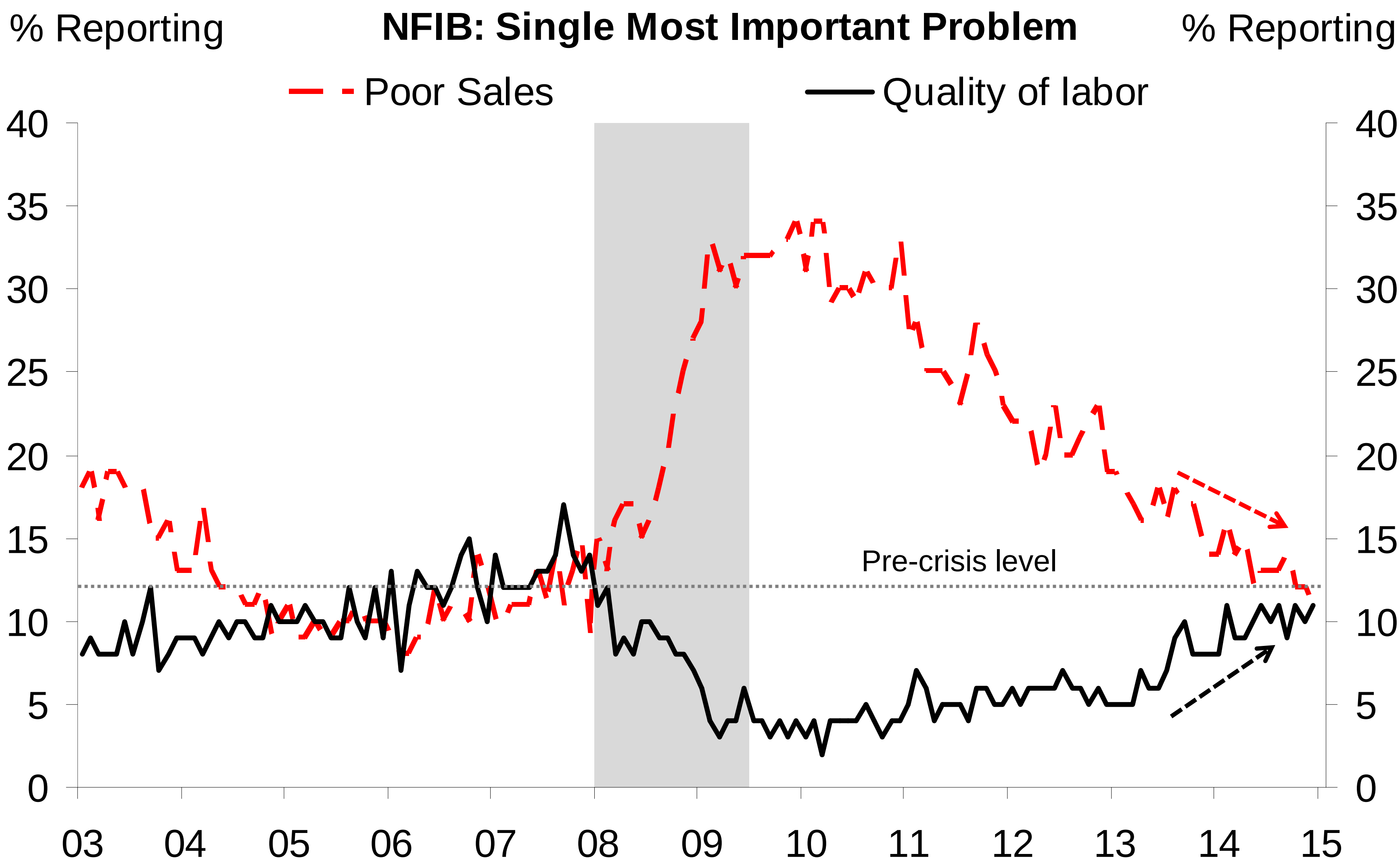
Labor shortage in construction worse than in 2005



In 2004 and 2005 when builders were surveyed more than once a year, results from july survey are shown. For 2014, GDP growth is reported for Q1 and unemployment rate are averaged for first 5 months, real non-residential construction for first 4 months (includes all construction except residential building, inflation adjusted using CPI). This information has been sourced from: http://www.nahb.org/generic.aspx?sectionID=734&genericContentID=231854&channelID=311

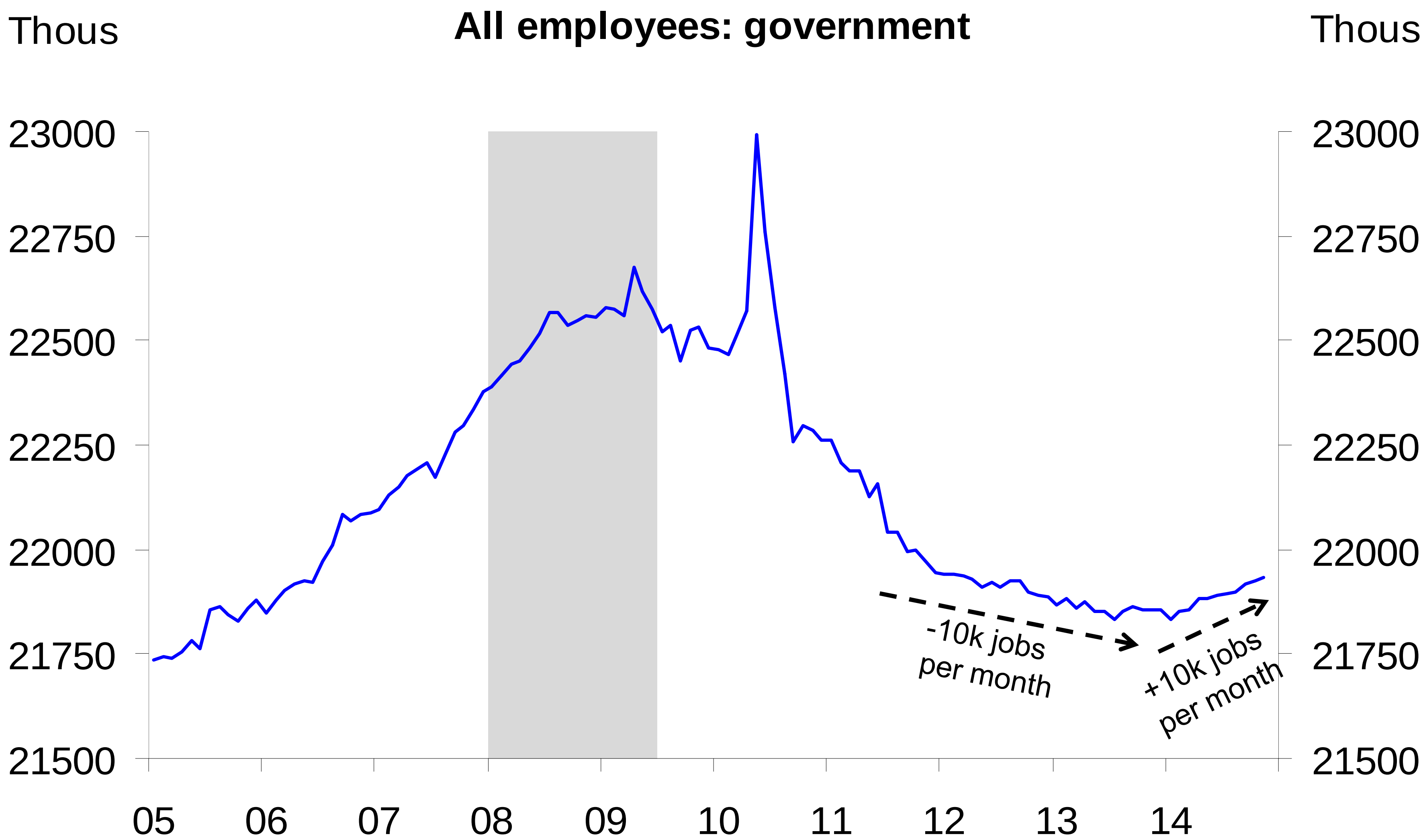
Source: NAHB, DB Global Markets Research

Businesses will soon worry more about tight labor markets than about sales and we are still far, far away from the neutral fed funds rate



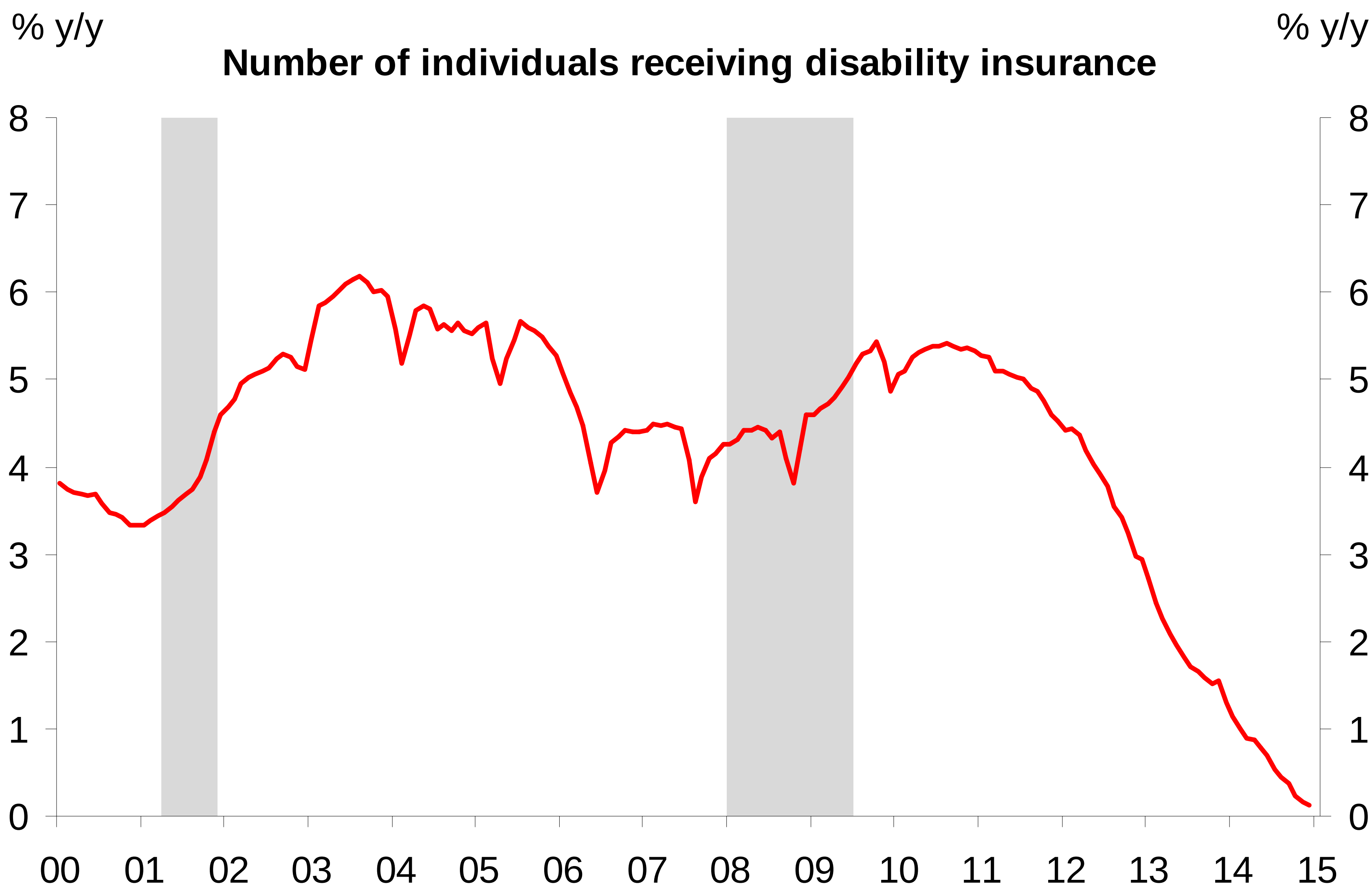
Source: NFIB, Haver Analytics, DB Global Markets Research

Fiscal headwinds are gone:
Instead of subtracting 10k jobs per month the government is now adding 10k jobs per month



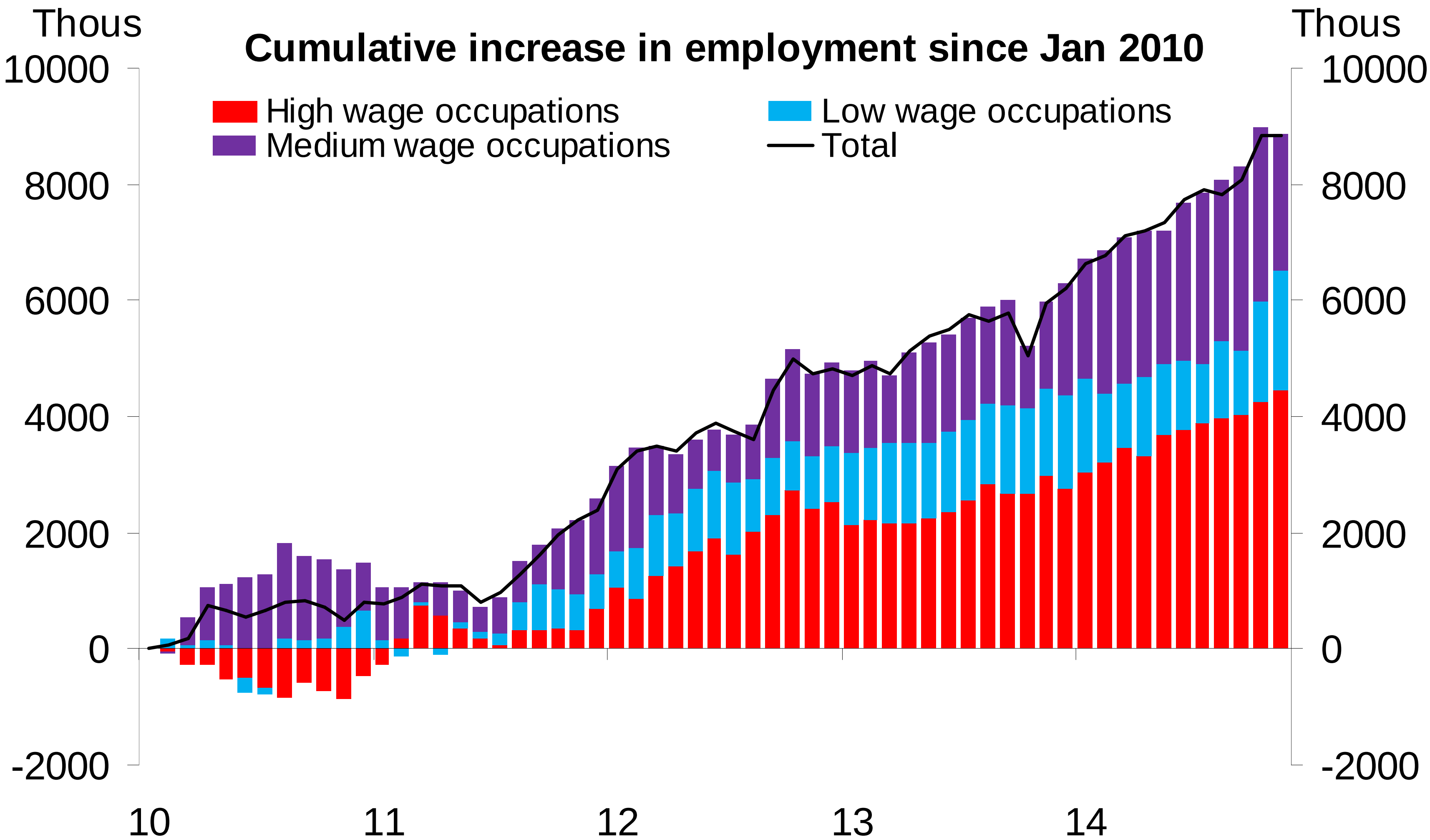
Source: BLS, DB Global Markets Research

Significant decline in disability insurance enrollment in recent years



Source: Social Security Administration, Haver Analytics, DB Global Markets Research

Most of the jobs created during this recovery are high-wage jobs

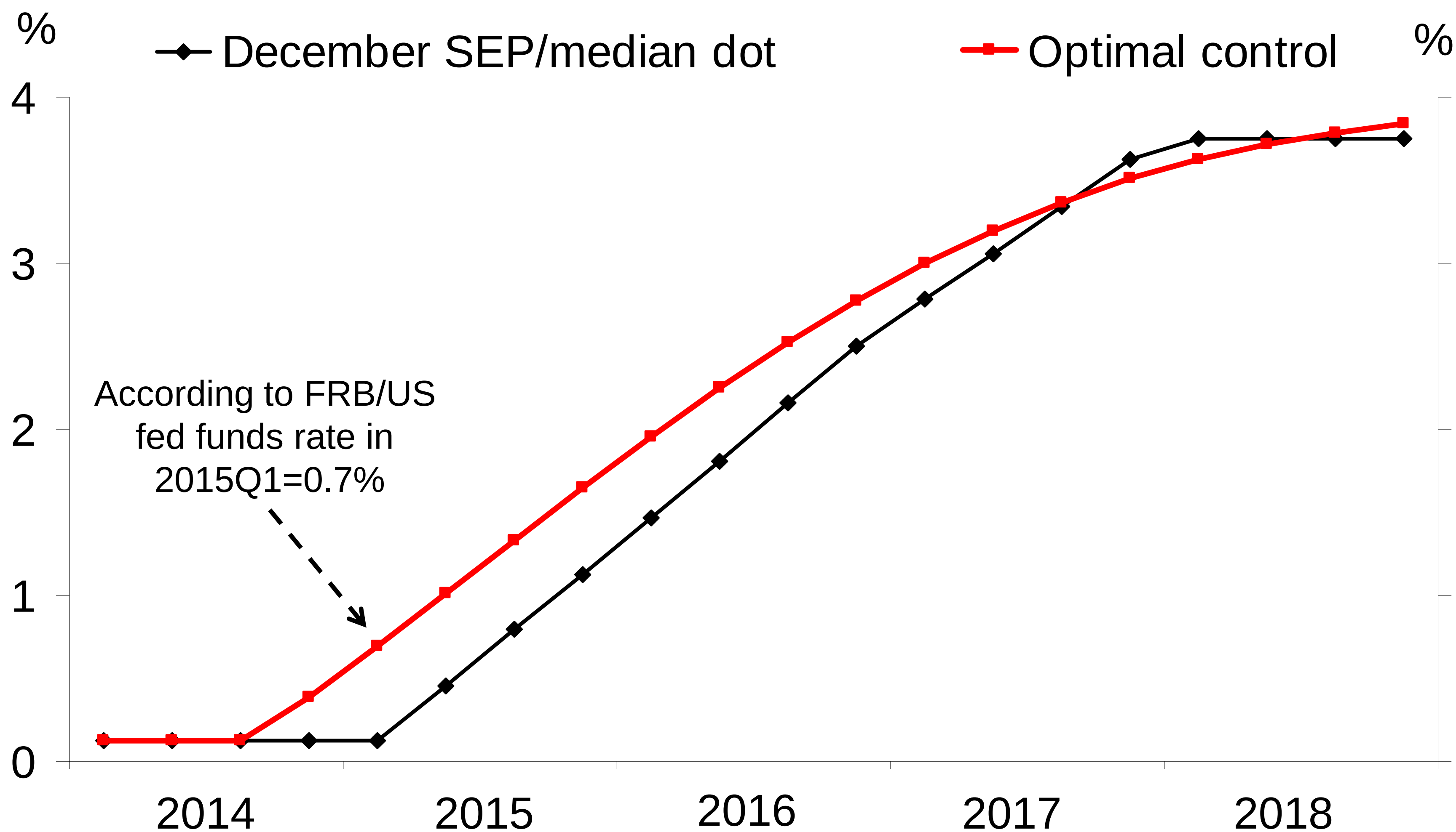


High wage occupational categories are management, professional and related occupations. Medium wage categories are sales and office occupations; construction and extraction occupations; installation, maintenance and repair occupations; and production/transportation and material moving occupations. Low wage occupations are service occupations and farming, fishing, and forestry.

Source: BLS, Haver Analytics, DB Global Markets Research

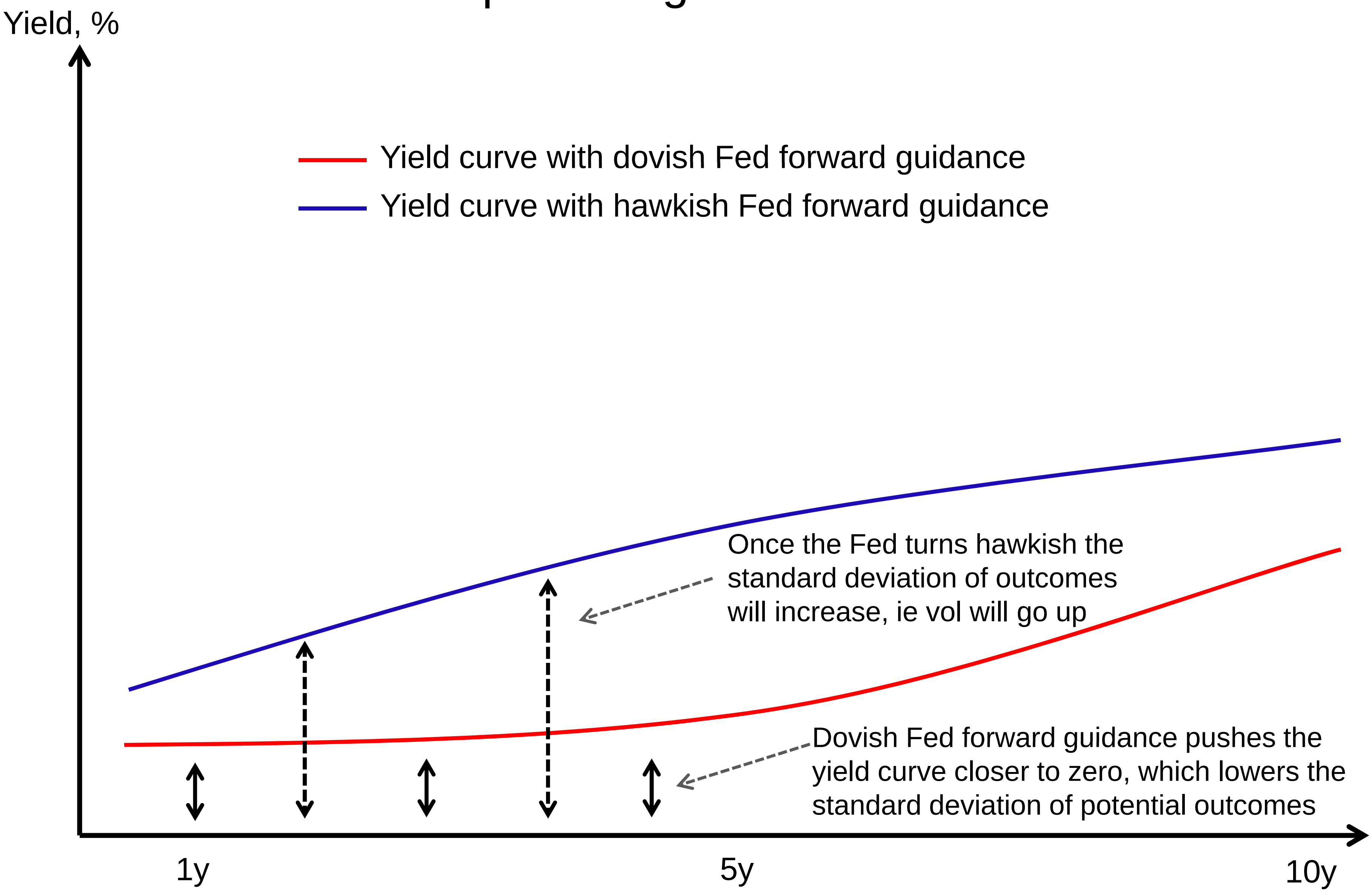
Is the Fed behind the curve?

Fed's optimal control framework suggests fed funds rate in 2015Q1 should be 0.7%



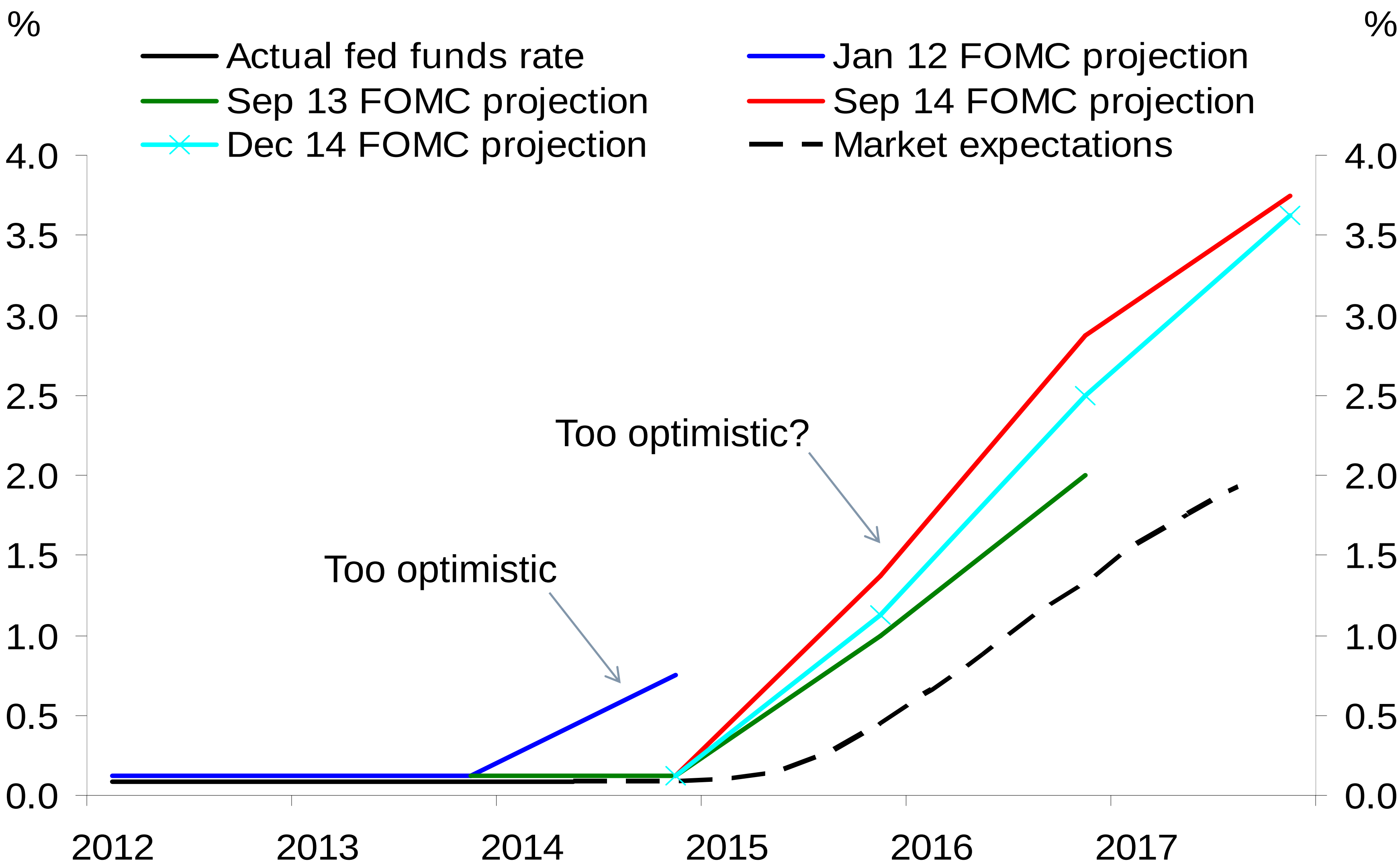
Sources: FRB/US, FOMC, Deutsche Bank Research

Vol will move up as we get closer to the first Fed hike



Source: DB Global Markets Research

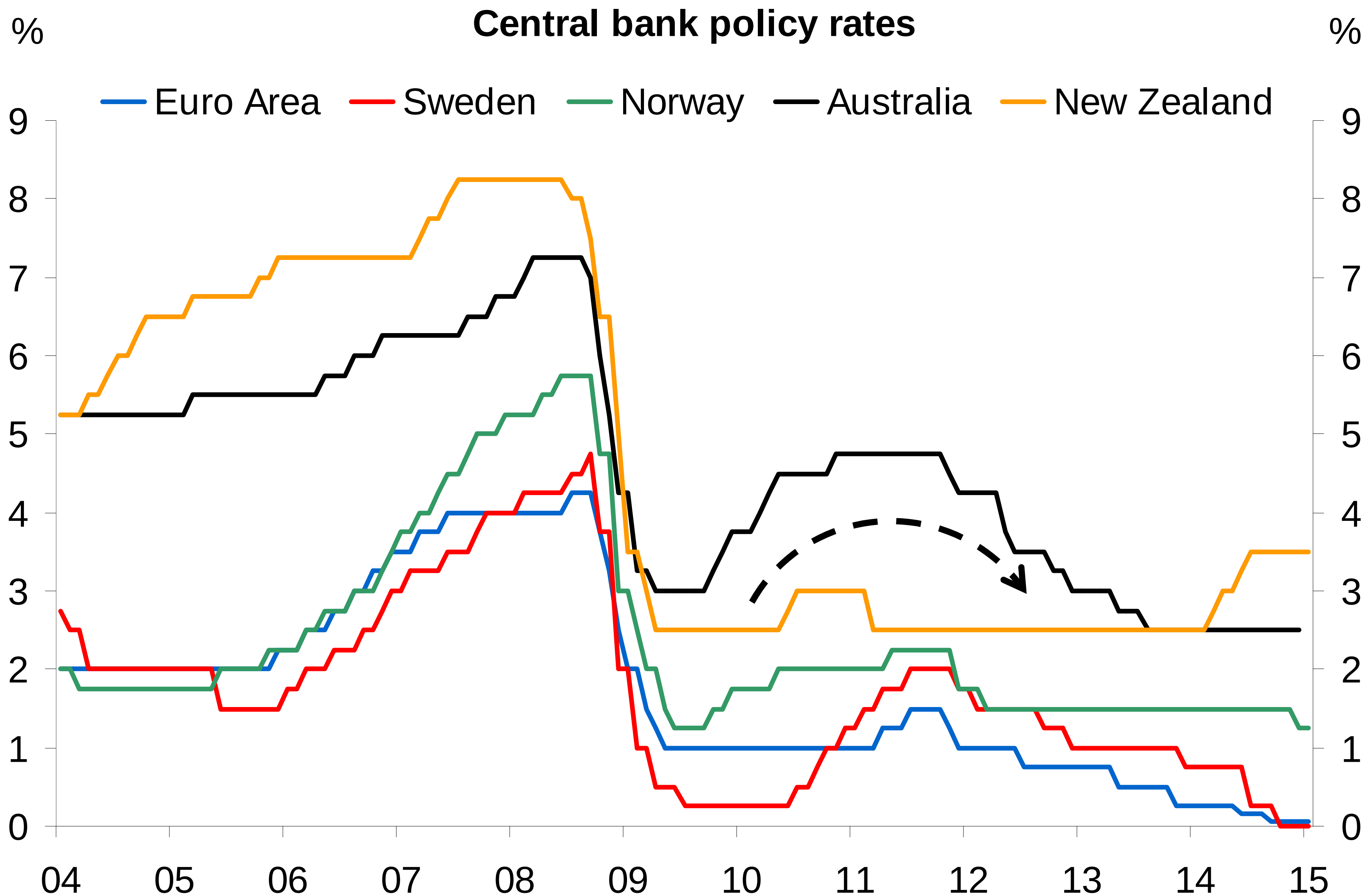
The FOMC has been too optimistic about the lift-off date. Will they get it right this time?



Note: Fed forecasts are the median value in the dot charts. The Fed only began publishing dot charts in 2012.

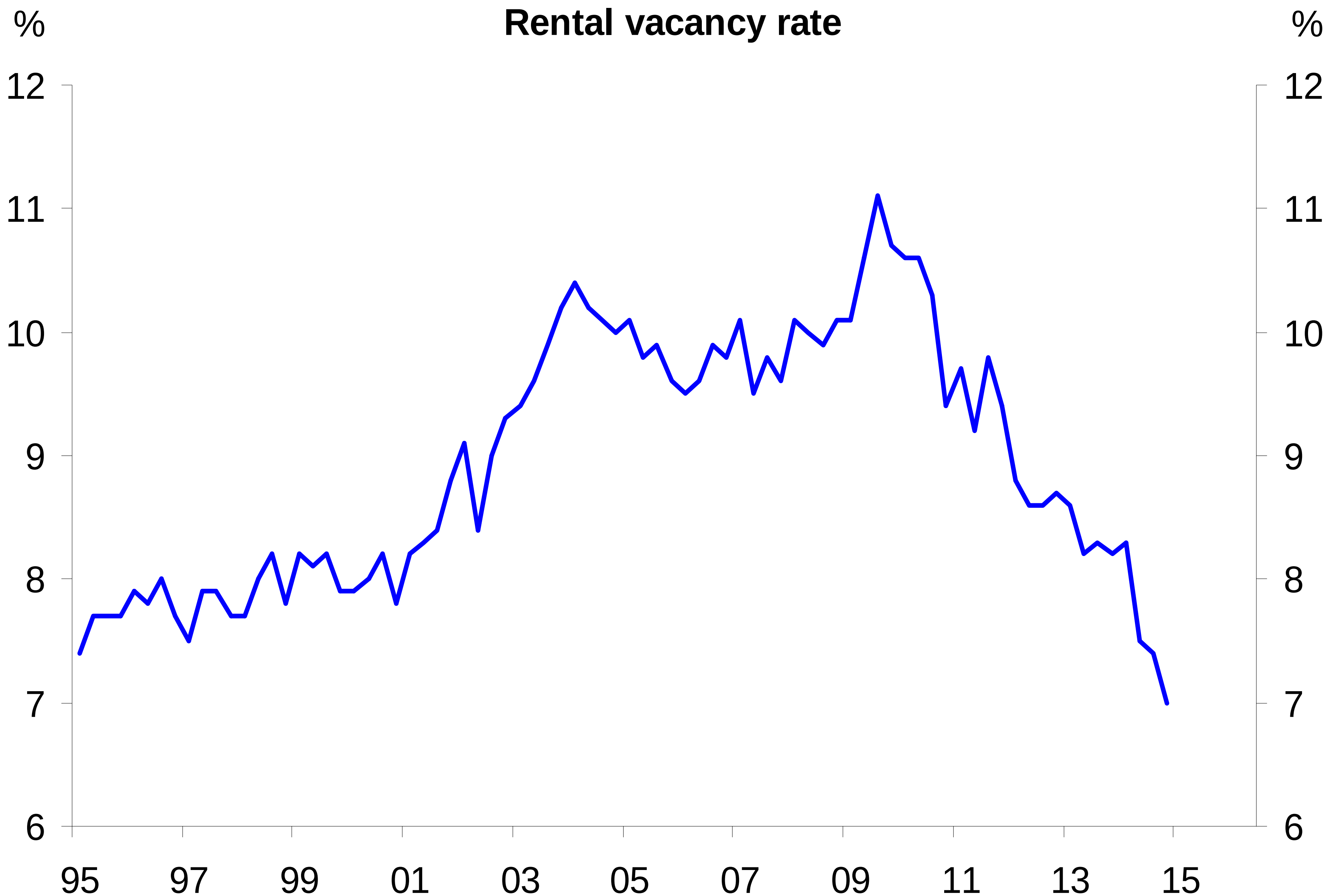
Source: FRB, FOMC, DB Global Markets Research

The FOMC doesn't want to repeat the policy mistakes made by these five central banks



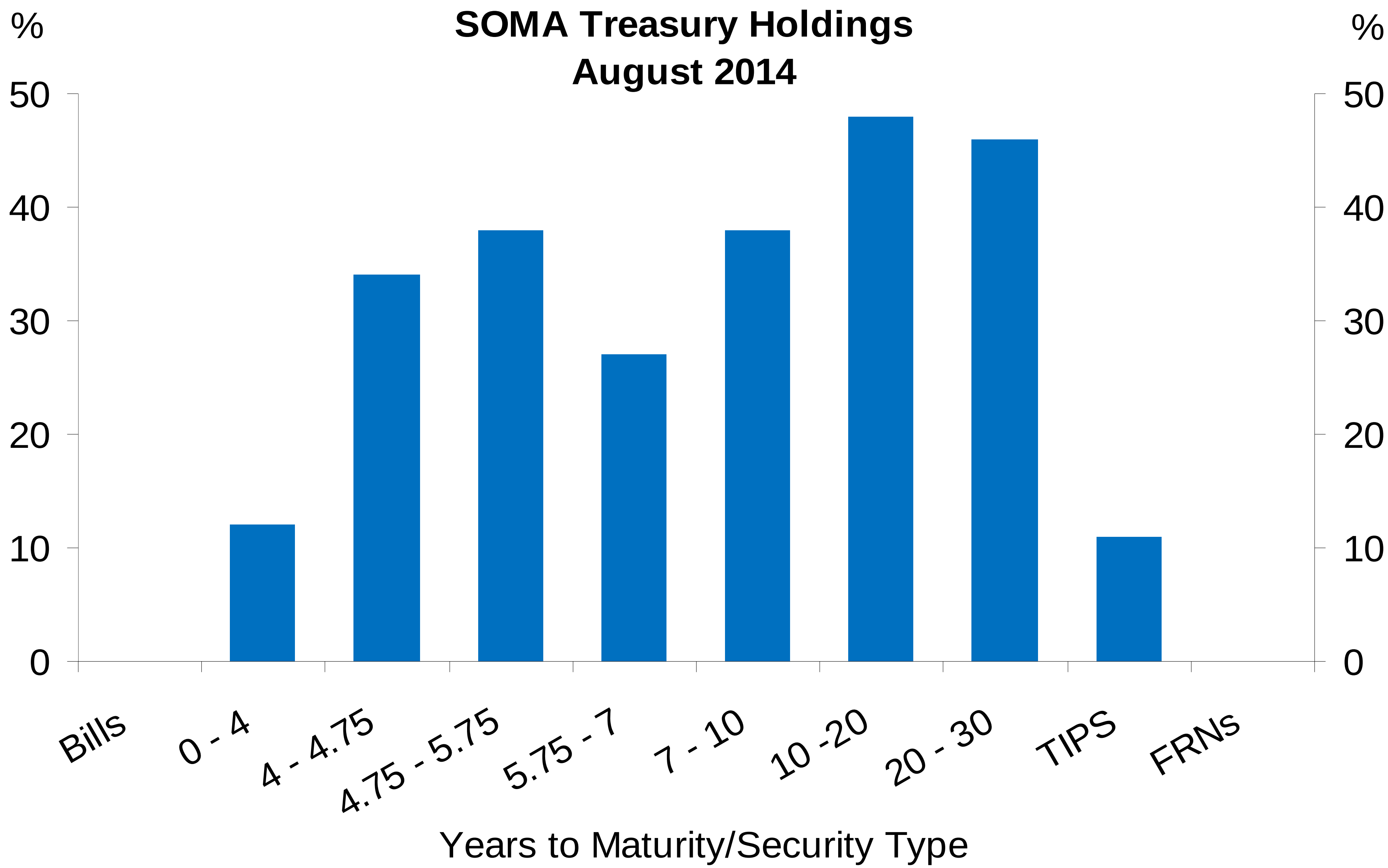
Source: ECB, SRB, NB, RBA, RBNZ, Haver Analytics, DB Global Markets Research

Tighter rental market will push up inflation



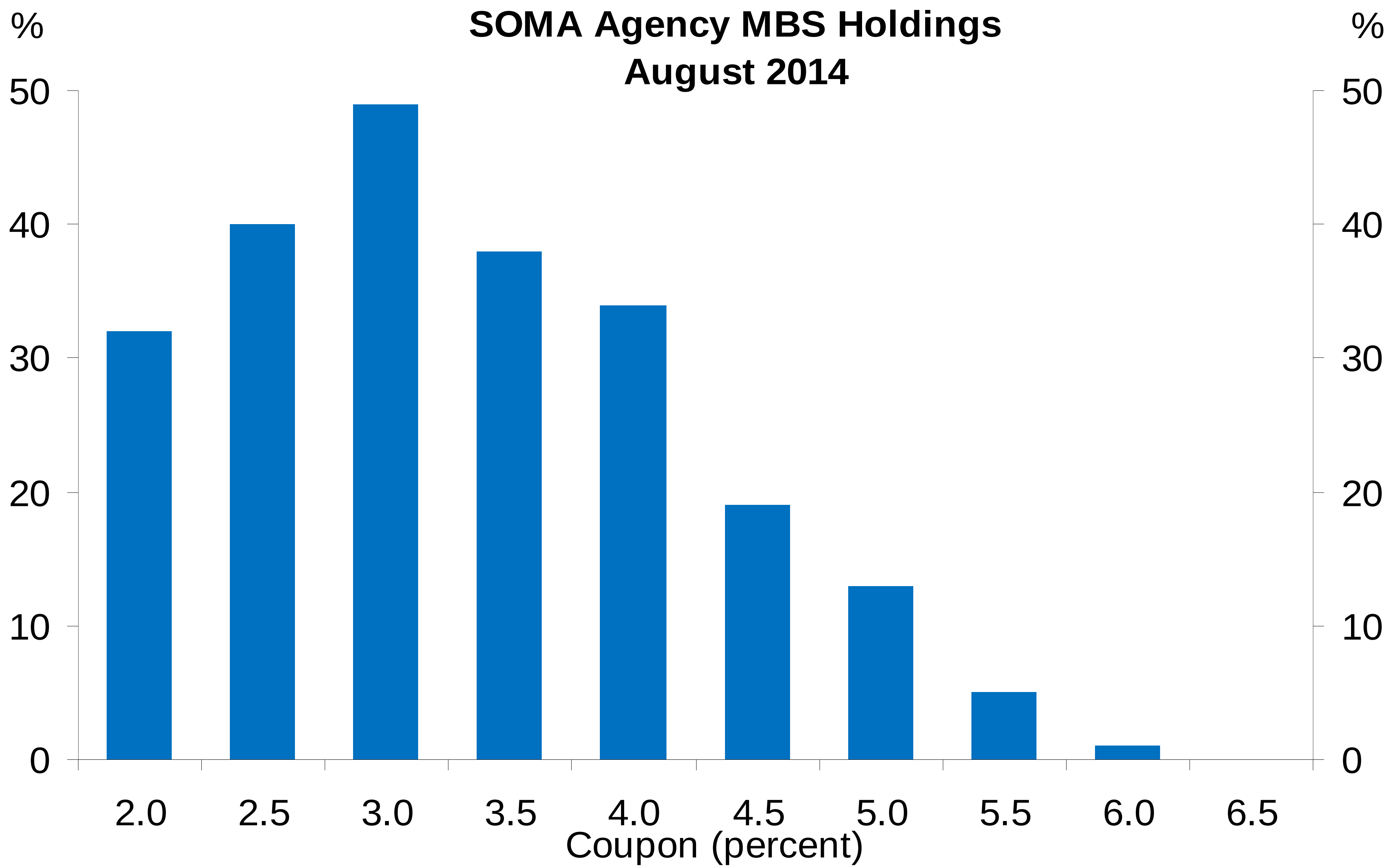
Source: Census, Haver Analytics, DB Global Markets Research

Fed holds 50% of 10y-20y Treasuries outstanding



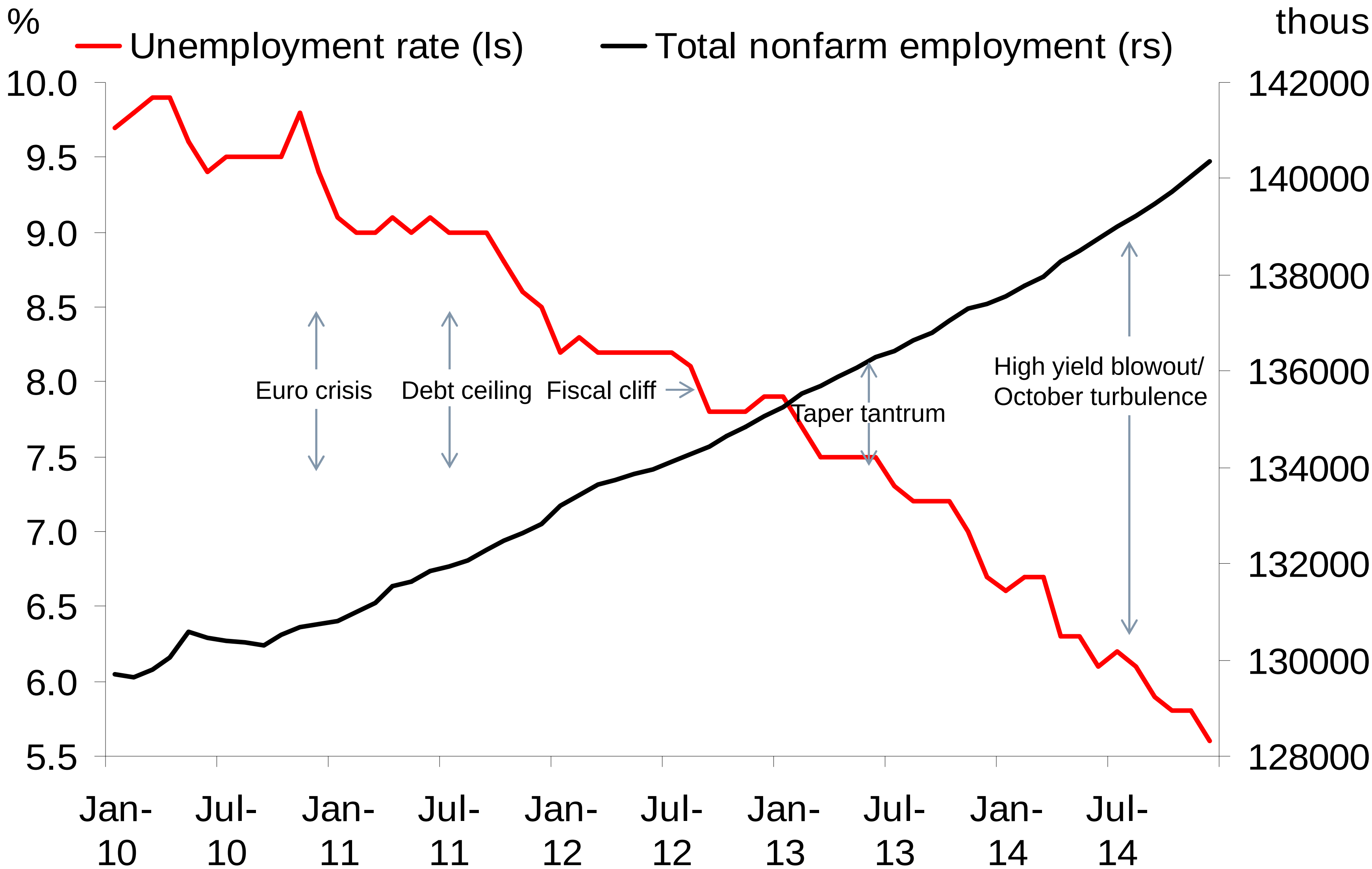
Source: FRBNY, DB Global Markets Research

MBS: Fed holds 50% of outstanding 3% coupons



Source: FRBNY, DB Global Markets Research

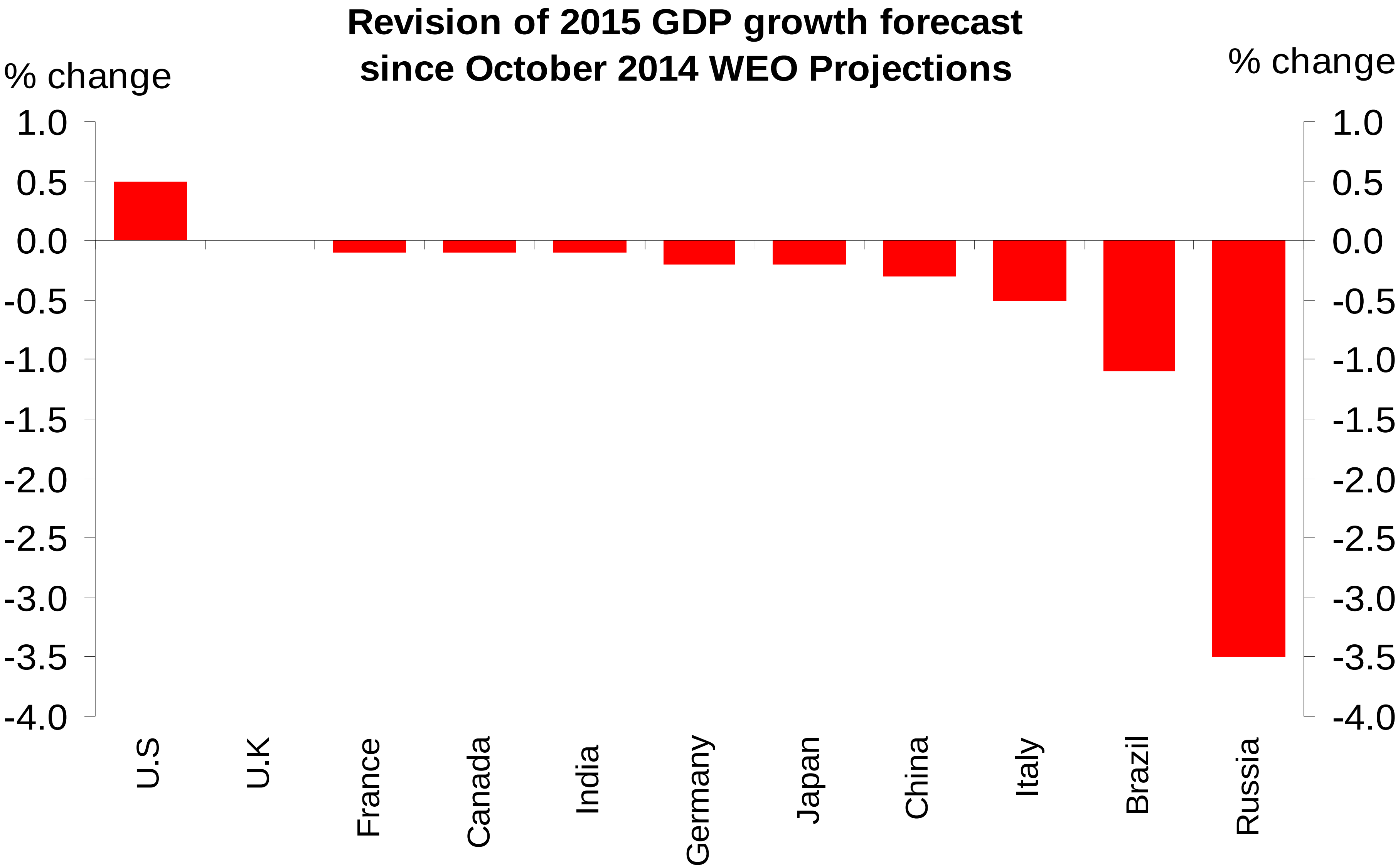
The Fed can easily begin to hike rates: The taper tantrum had no impact on the speed of the recovery



Source: BLS, BEA Haver Analytics, DB Global Markets Research

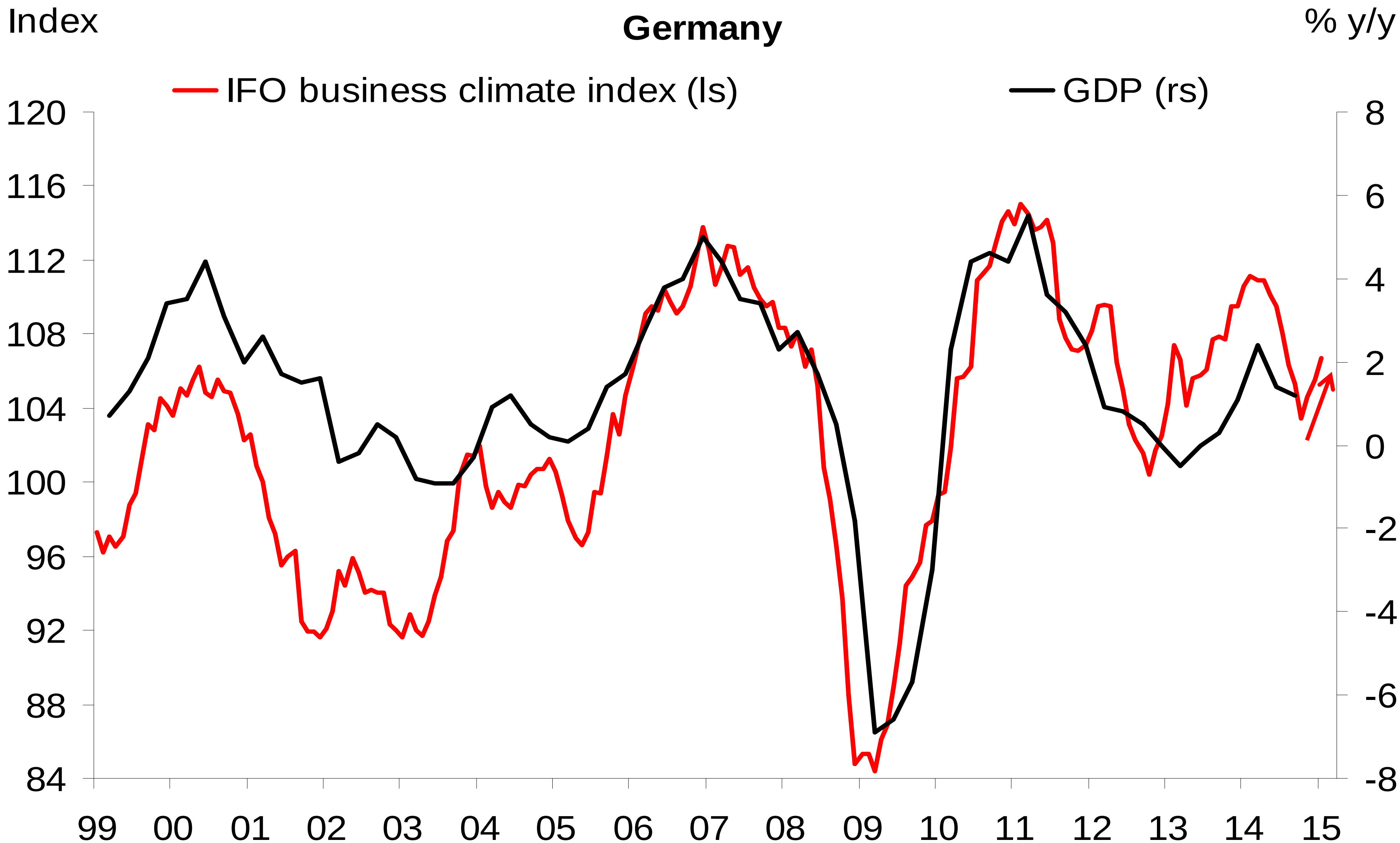
Europe, Japan, and China

IMF January 2015 WEO: US growth outlook revised up by 0.5%. The rest of G7 and BRIC revised down



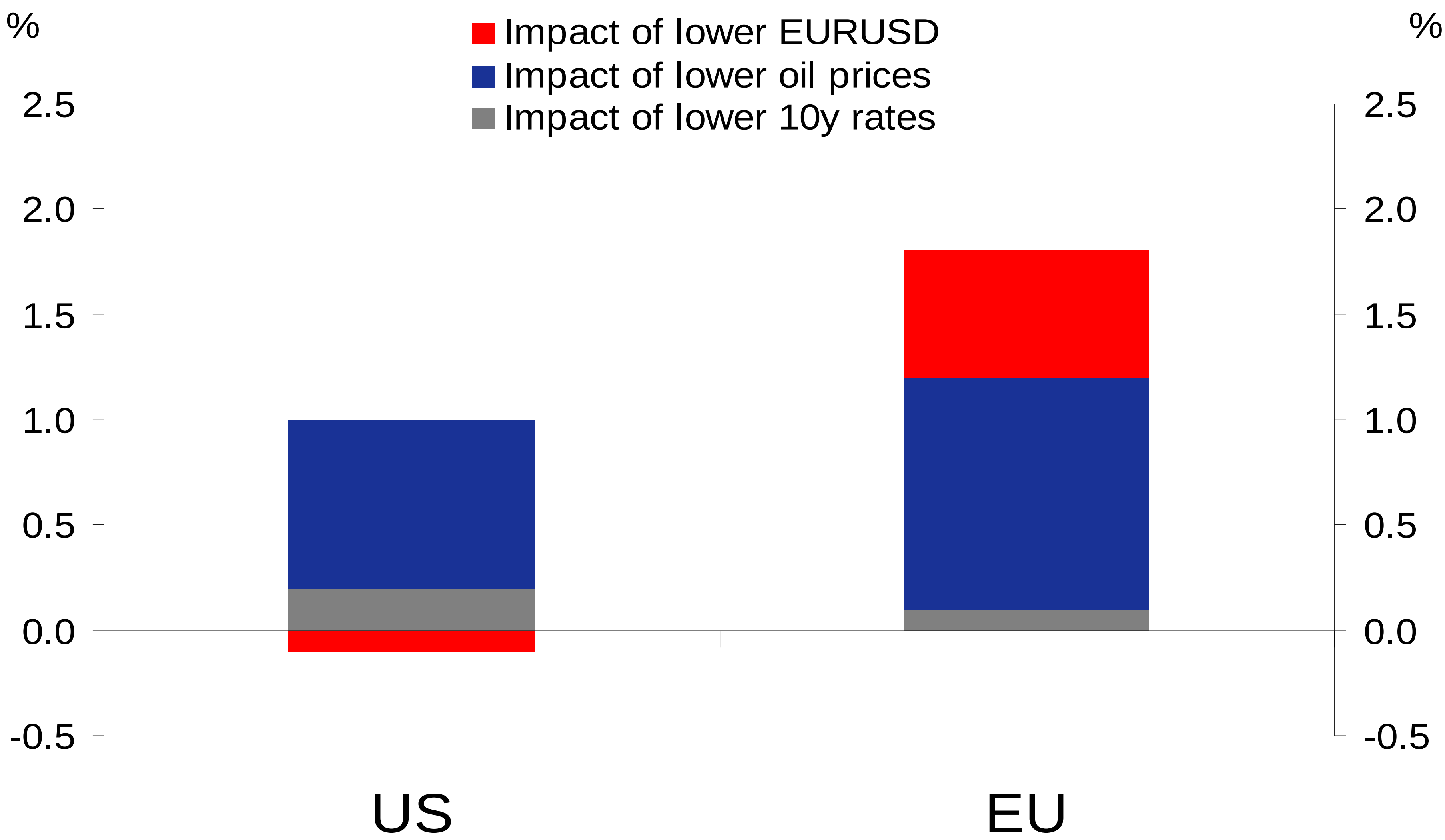
Source: IMF WEO, DB Global Markets Research

Europe: Are we already seeing the positive impact of lower oil, euro depreciation and lower long rates?



Source: IFO, Bundesbank, DB Global Markets Research

First-year GDP impact in US and EU of lower oil prices, lower EURUSD, and lower 10y rates



Source: IMF, OECD, DB Global Markets Research

A falling euro is good for European inflation. And it holds back inflation in the US

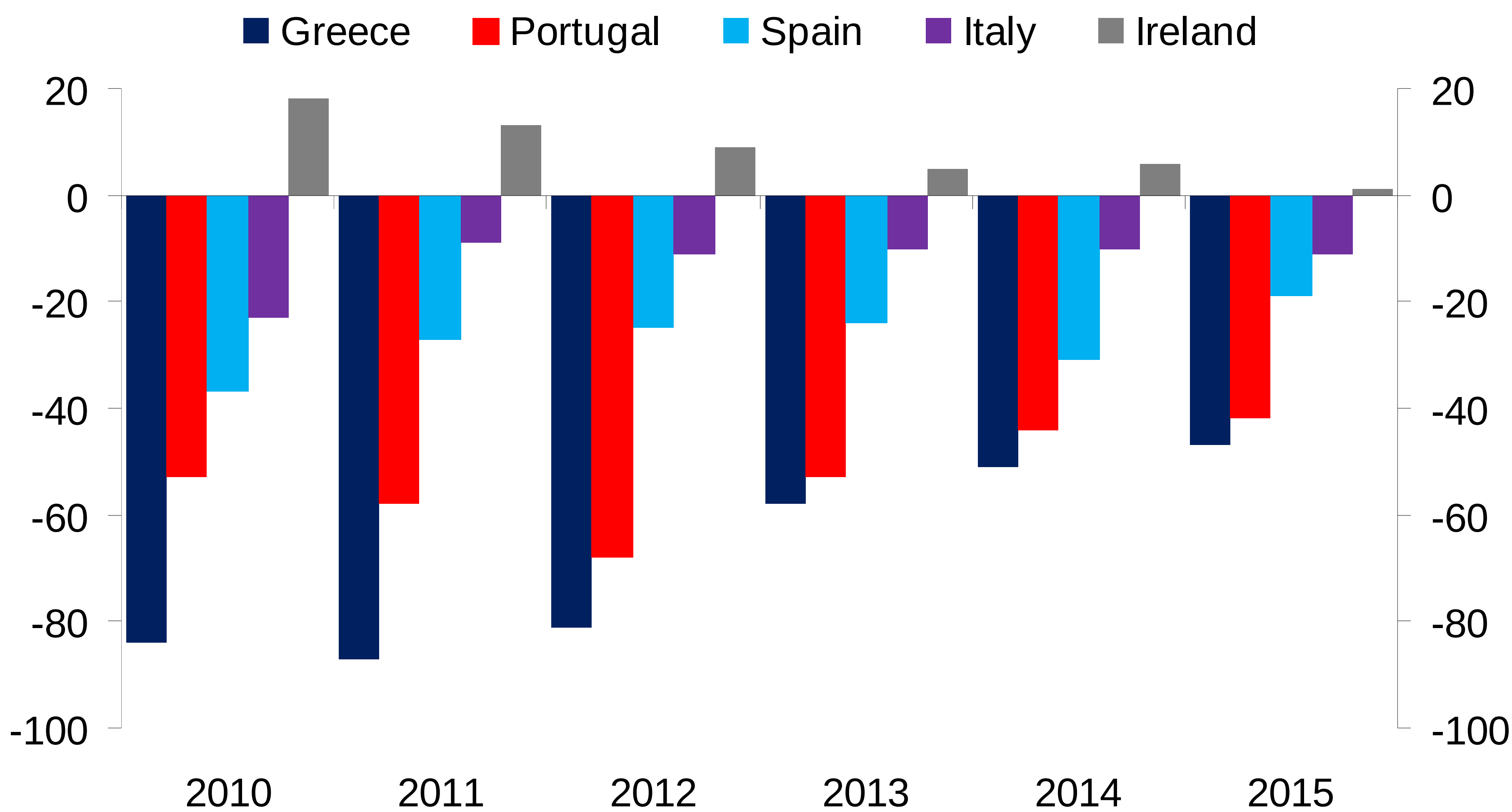
Effects of a ten percent euro depreciation

	Deviations from baseline, in percent		
Year	1	2	3
United States			
GDP Level	-0.1	-0.3	-0.2
Inflation (Consumer prices)	-0.3	-0.3	-0.4
Japan			
GDP Level	-0.2	-0.4	-0.5
Inflation (Consumer prices)	-0.1	-0.3	-0.4
European Union			
GDP Level	0.6	0.6	0.4
Inflation (Consumer prices)	0.4	0.4	0.7

Source: OECD, DB Global Markets Research

Markets underestimating the progress made in Europe

Difference in ranking between Germany and the periphery in the World Bank's survey of how easy or difficult it is to do business in different countries



For example: In 2010 Greece was 84 places behind Germany in the ranking, in 2015 the difference was 47

Source: World Bank Doing Business Survey, DB Global Markets Research

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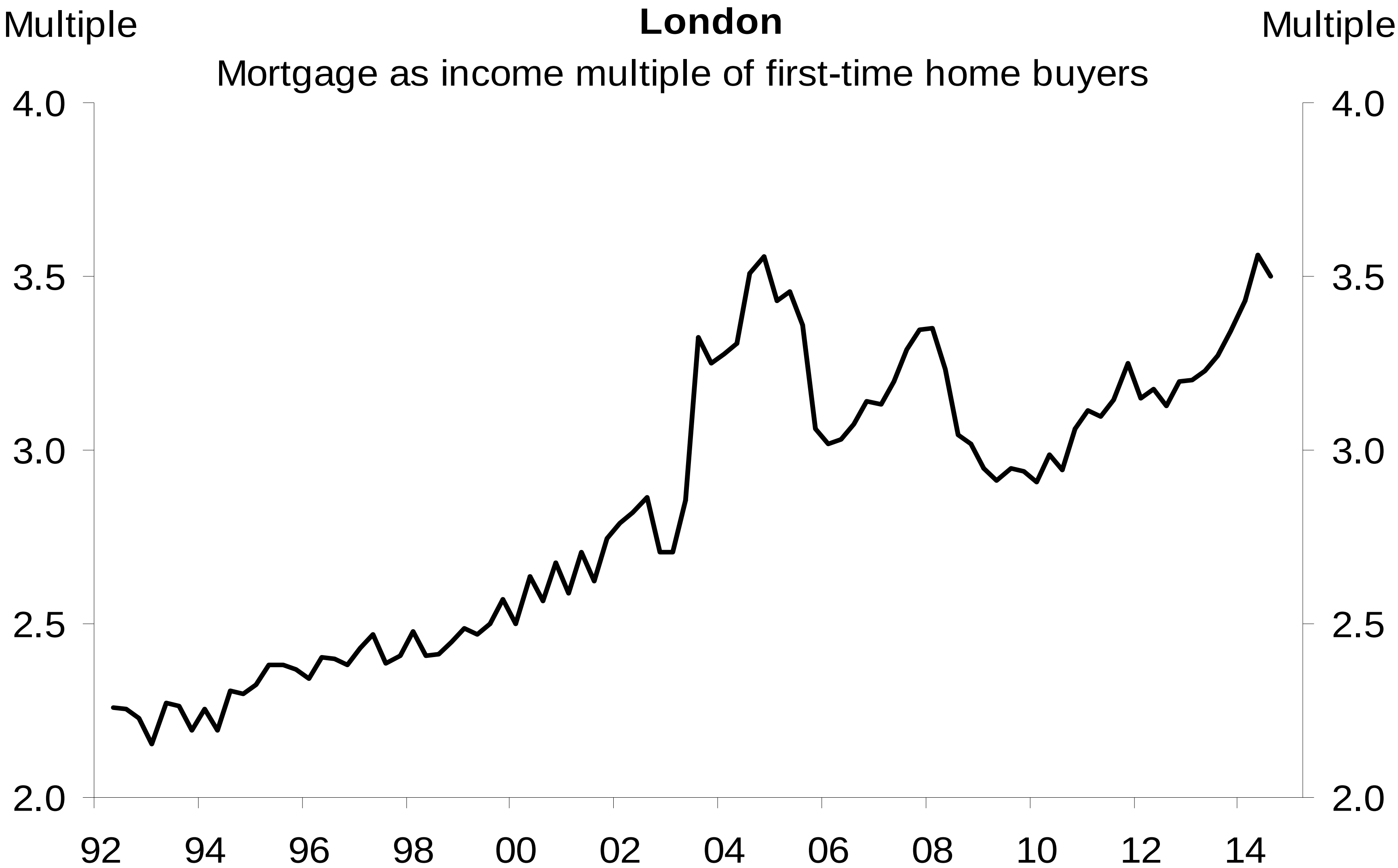
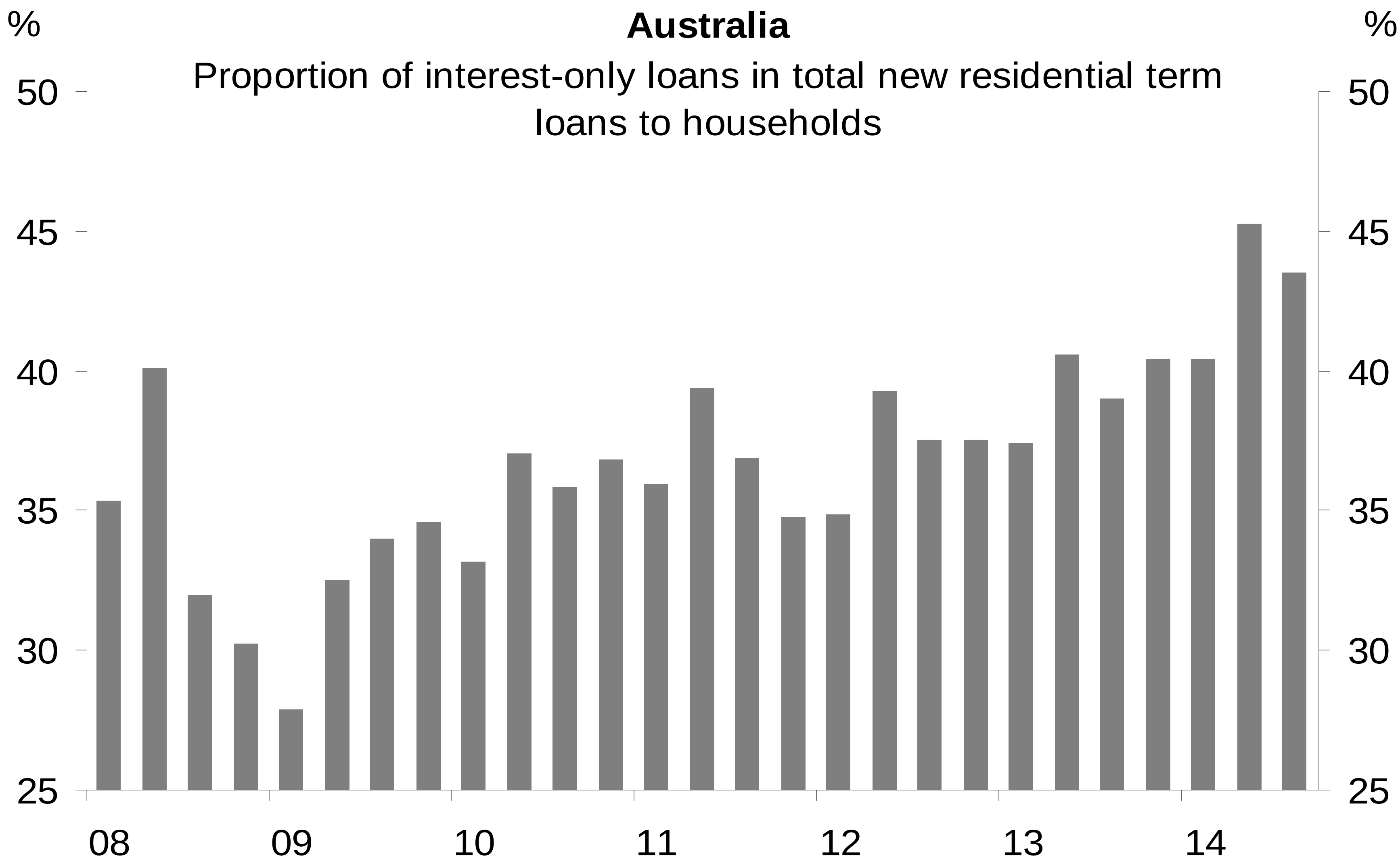
First time home buyers struggling in London



Source: ONS, Haver Analytics, DB Global Markets Research

Australian housing market in trouble



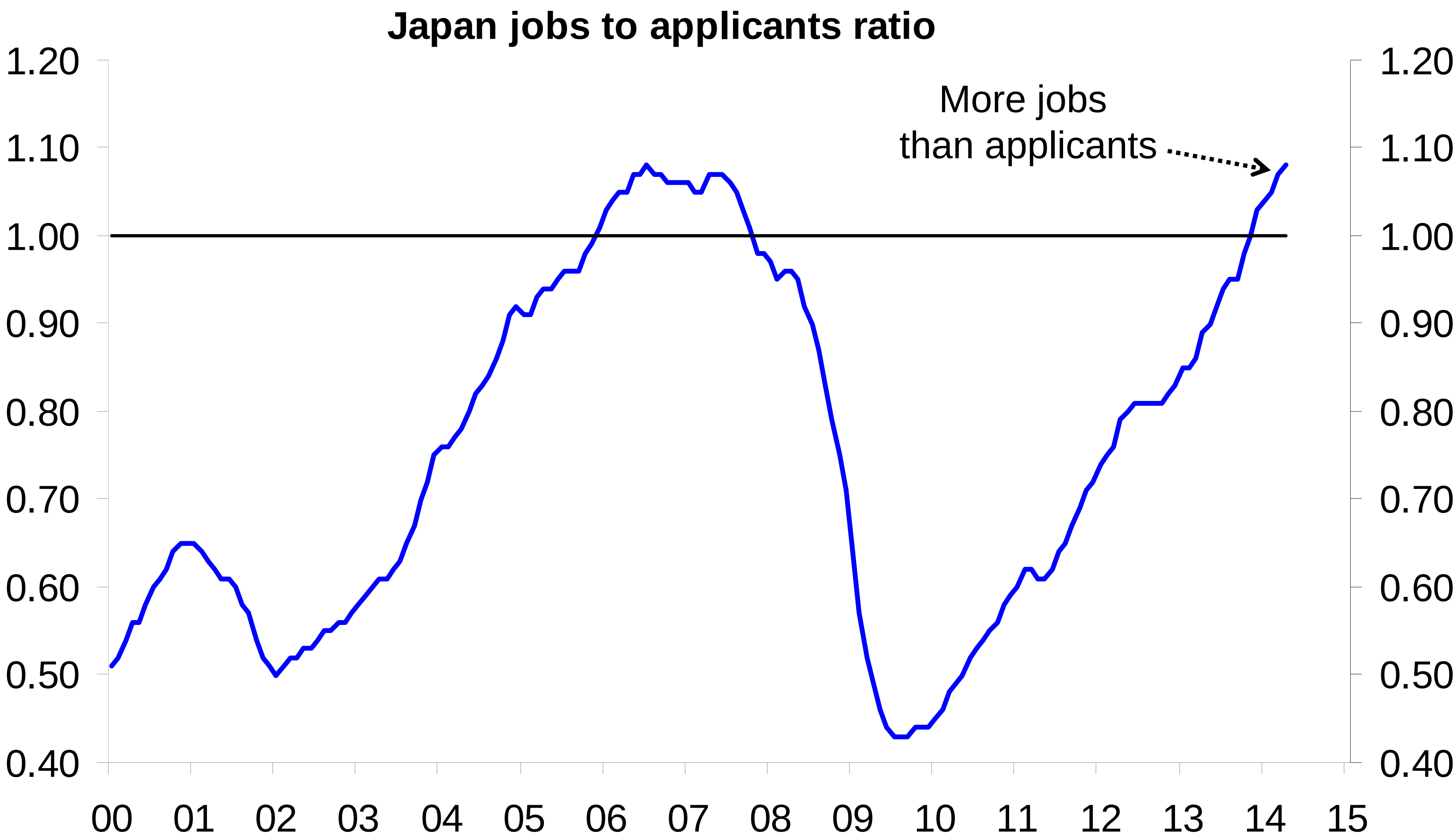
Source: APRA, DB Global Markets Research

How over/undervalued are home prices today relative to historical averages of home price/rent and home price/income?

Country	1) Home price/income (% above historical average)	2) Home price/rent (% above historical average)	Current average over/undervaluation of home prices (=average of column 1) and 2) (%)
Canada	25	91	63
New Zealand	30	82	56
Belgium	50	56	53
Australia	38	60	49
Norway	20	67	46
United Kingdom	28	47	38
Sweden	26	39	31
France	27	32	29
Finland	-4	42	19
Denmark	12	16	14
Spain	7	17	12
Ireland	0	22	11
Netherlands	15	3	10
Italy	3	-4	0
Switzerland	-7.4	1	-3
US	-13	3	-5
Germany	-14	-12	-13
Greece	-19	-17	-18
Korea	-39	3	-18
Japan	-43	-39	-41

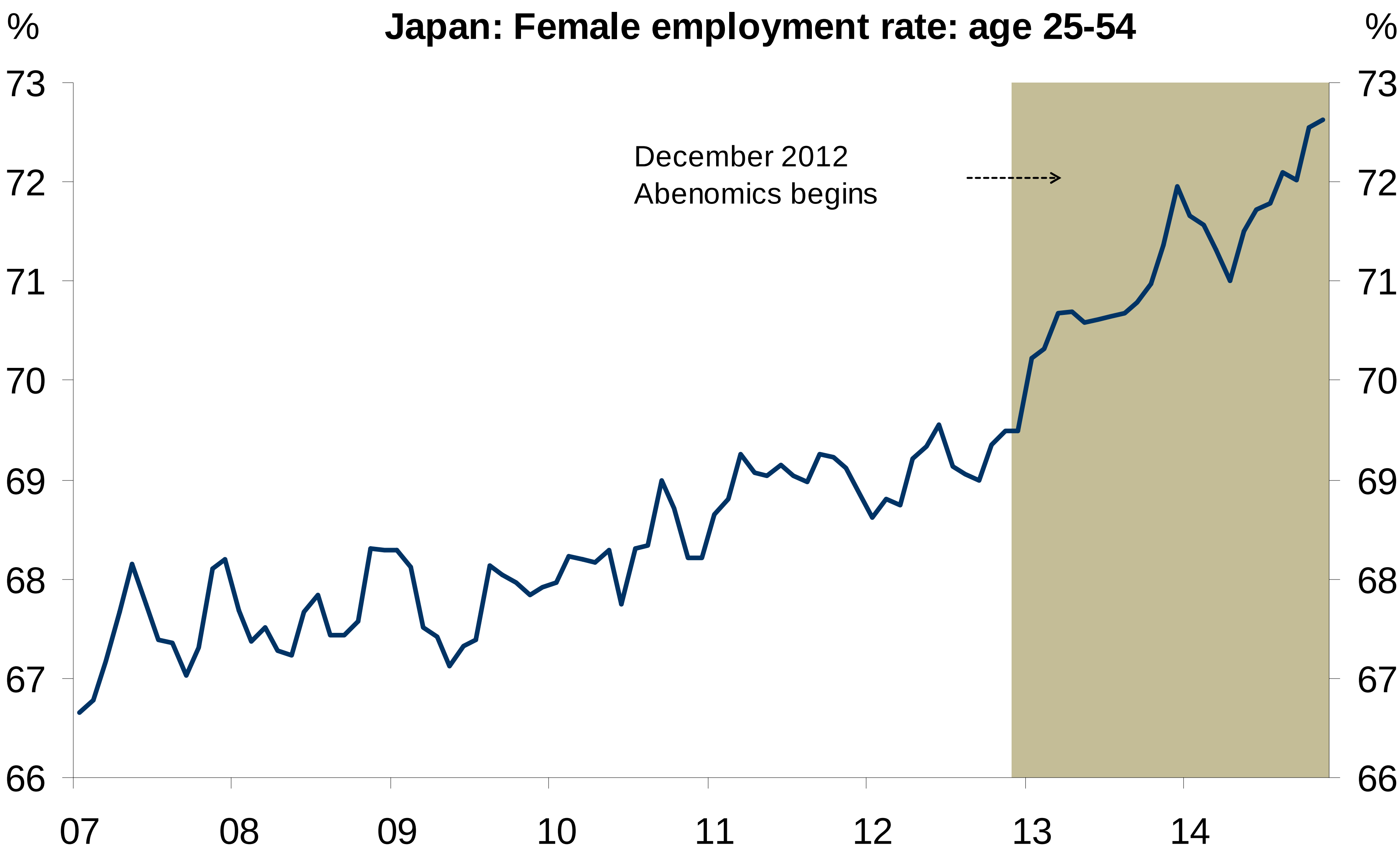
Source: OECD, DB Global Markets Research

Japanese labor market is tightening, this will lead to wage inflation



Source: Bloomberg Finance LP, DB Global Markets Research

Abenomics is working

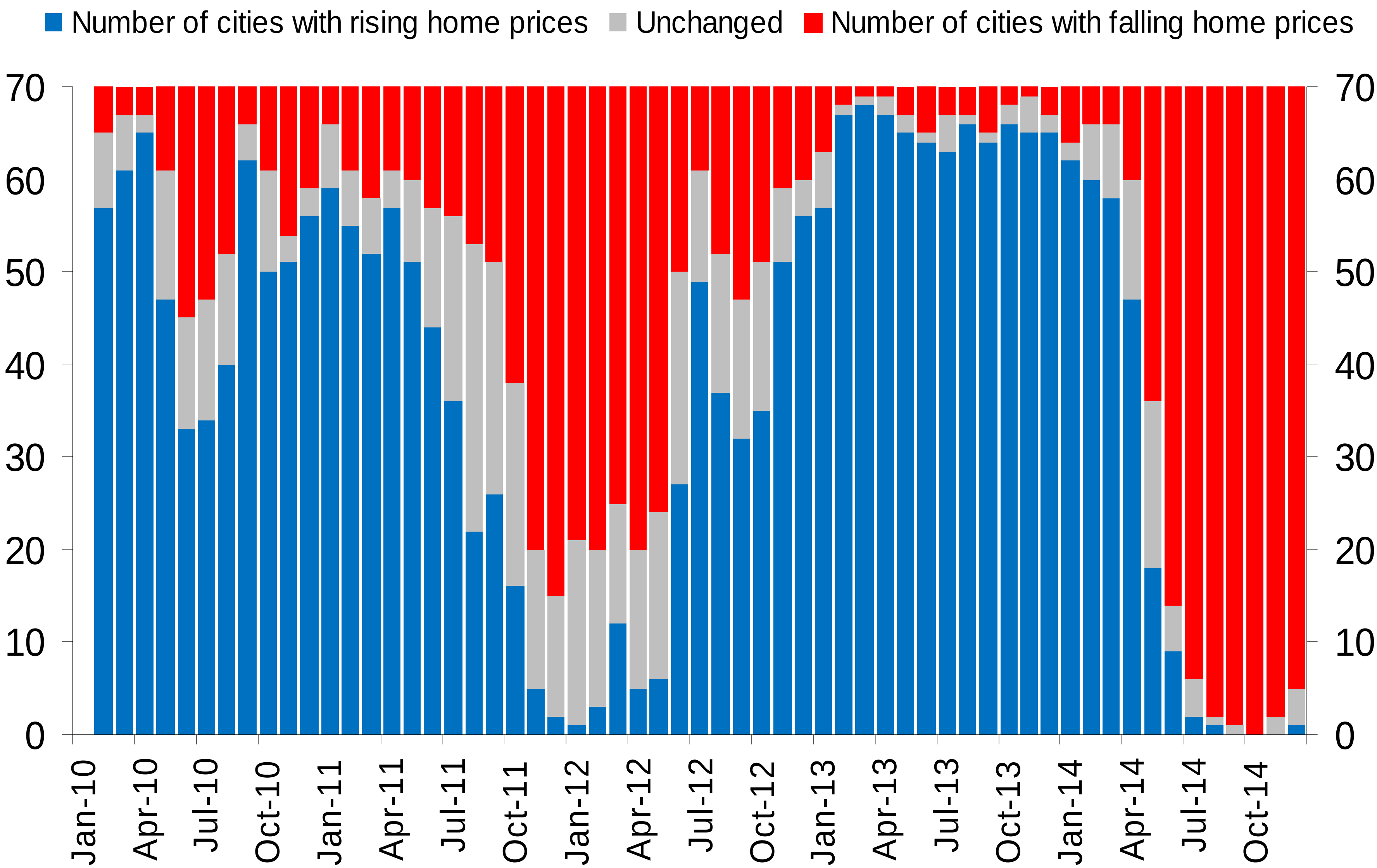


Source: OECD, Haver Analytics, DB Global Markets Research

Recent data from China is worrying

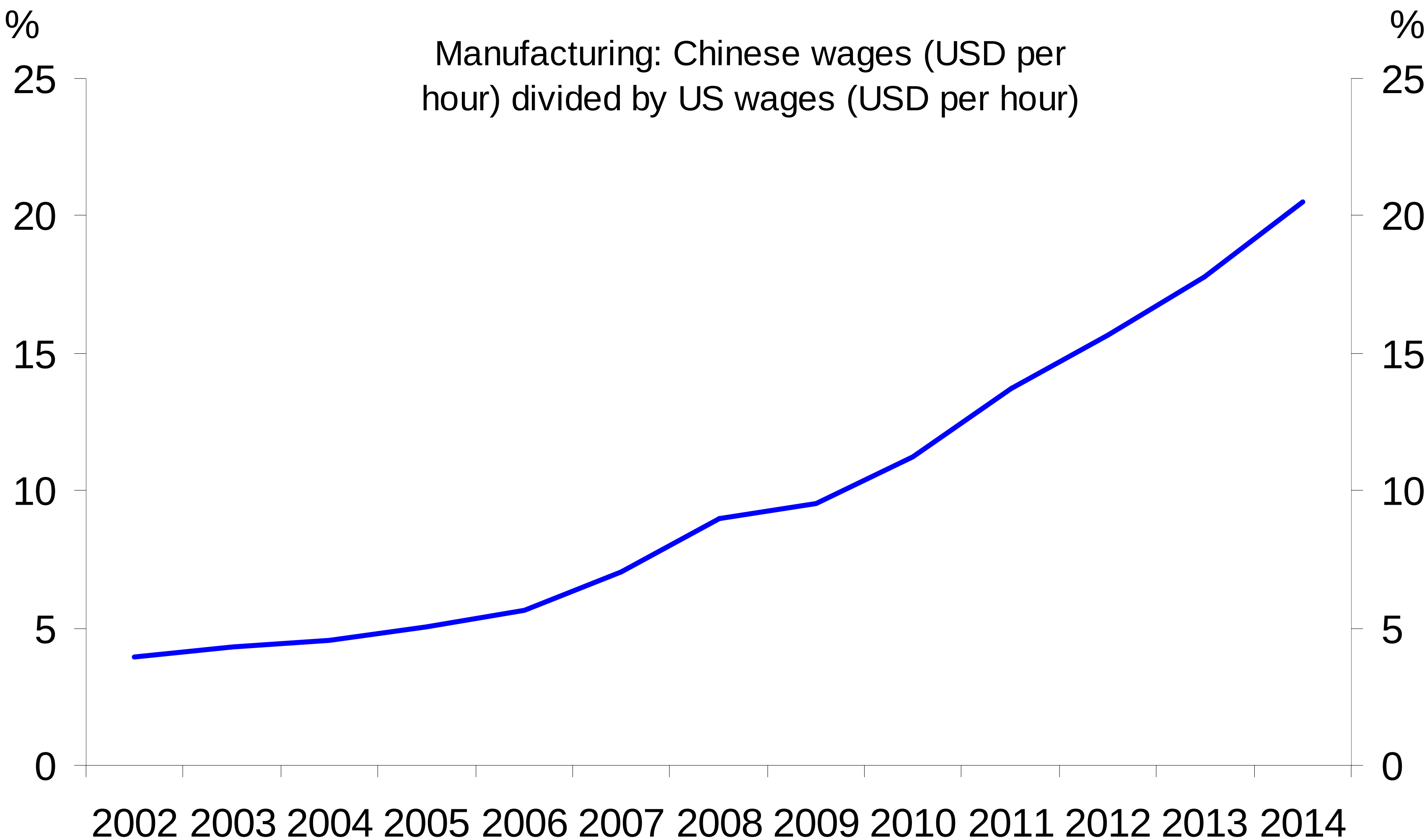
Source: CNBS, Haver Analytics, DB Global Markets Research

Home prices are falling in China



Note: Month over month changes. Source: CNBS, Haver Analytics, DB Global Markets Research

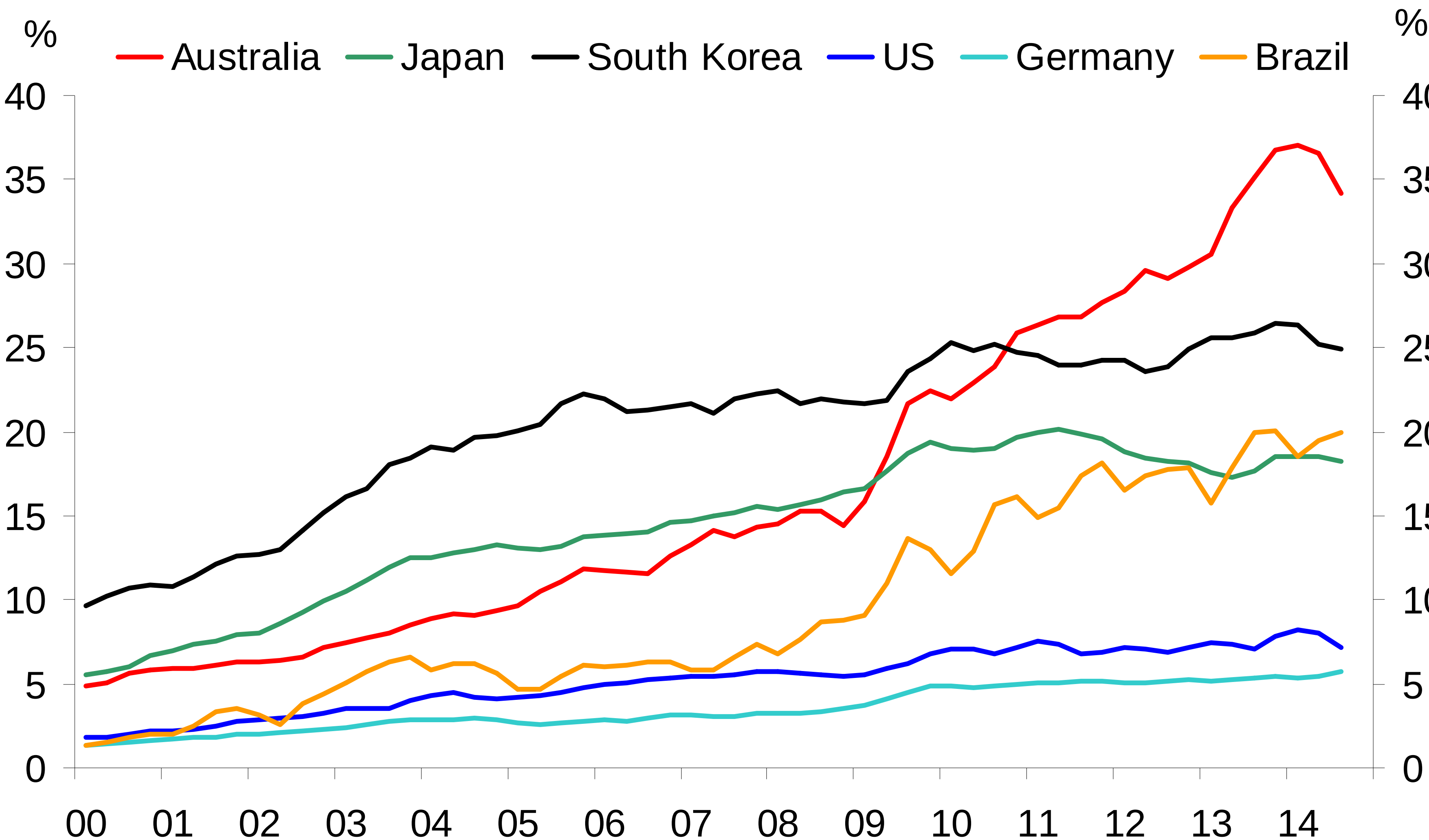
US more competitive: Chinese wages are 20% of US wages, up from 4% ten years ago



Sources: US: BLS: Average Hourly Earnings in manufacturing. China: BLS: International comparisons of hourly compensation costs. To get data for 2009 – 2013 we applied the growth rate of Average wage of employed persons in manufacturing, Chinese Ministry of Labor and Social Security multiplied by the CNY exchange rate . Data for 2014 assumes the same growth rate in wages as in 2013. DB Global Markets Research

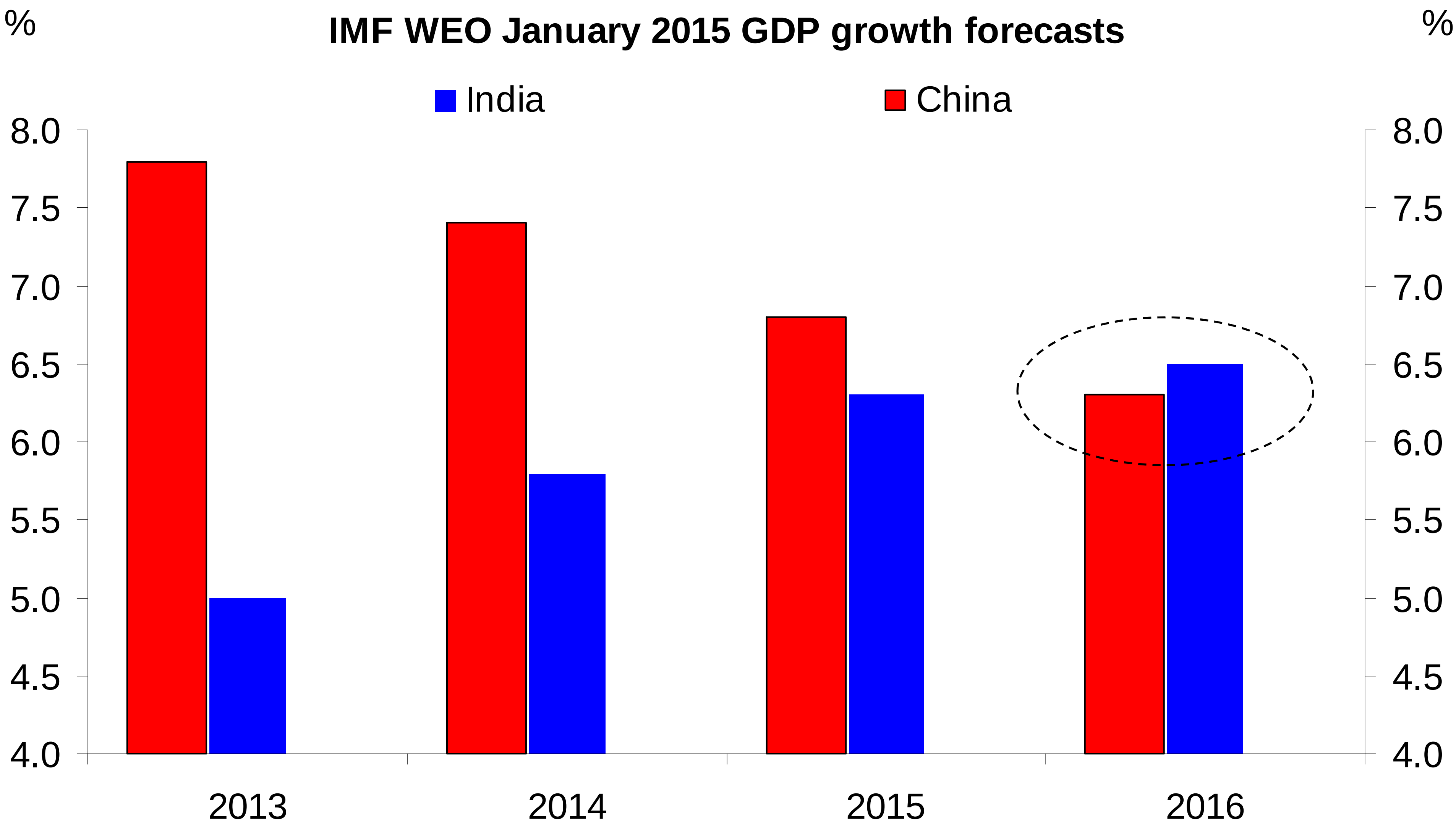
How will a slowdown in China impact the rest of the world?

Percent of total exports consumed by China



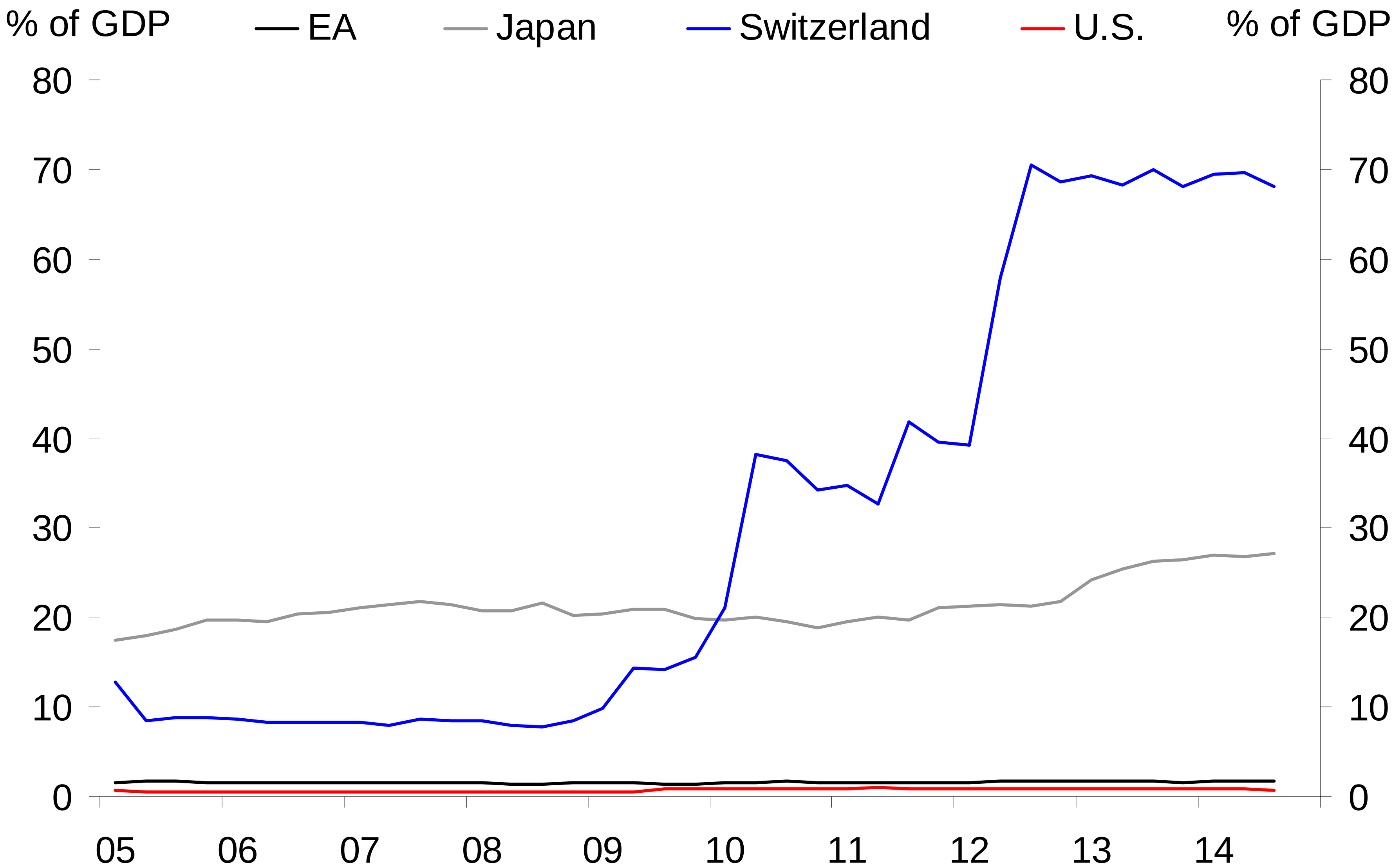
Source: IMF, Haver Analytics, DB Global Markets Research

Next year growth will be higher in India than in China



Source: IMF WEO, DB Global Markets Research

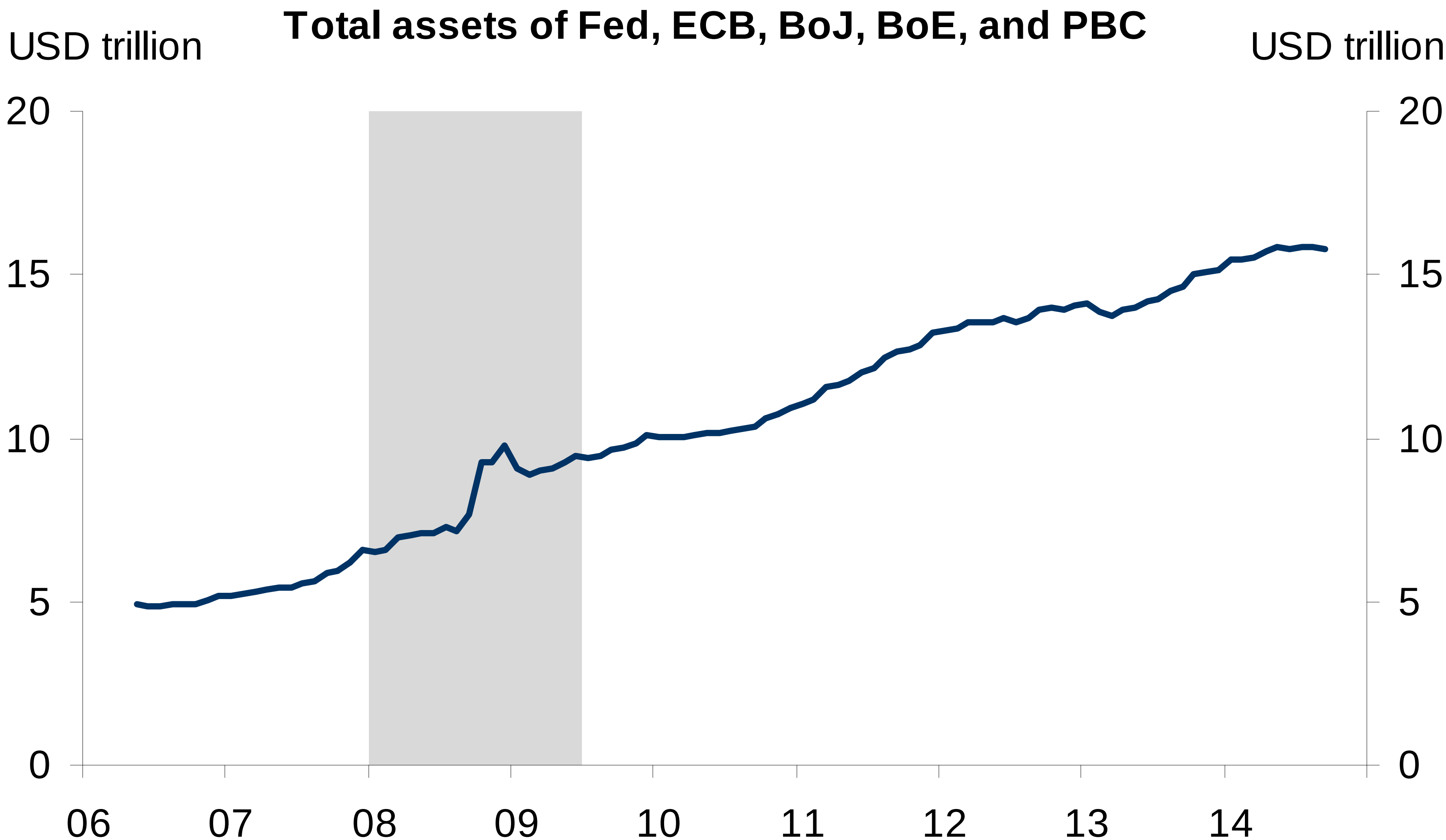
ECB and Fed have a lot of room for more QE if needed



Source: IMF, Country Sources, Haver Analytics, DB Global Markets Research

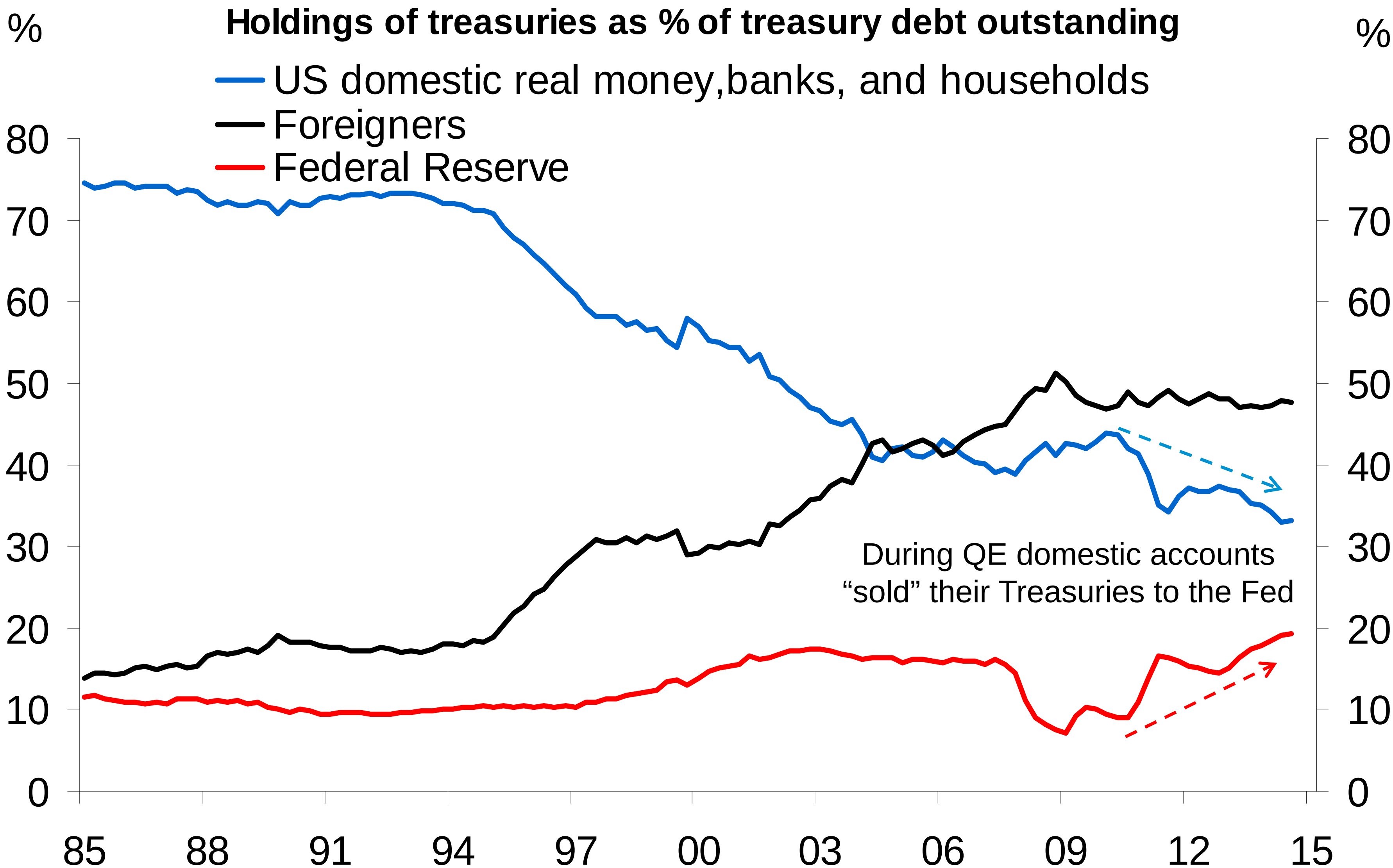
Recent Treasury flows

Central banks have printed more than $10trn dollars since the crisis began



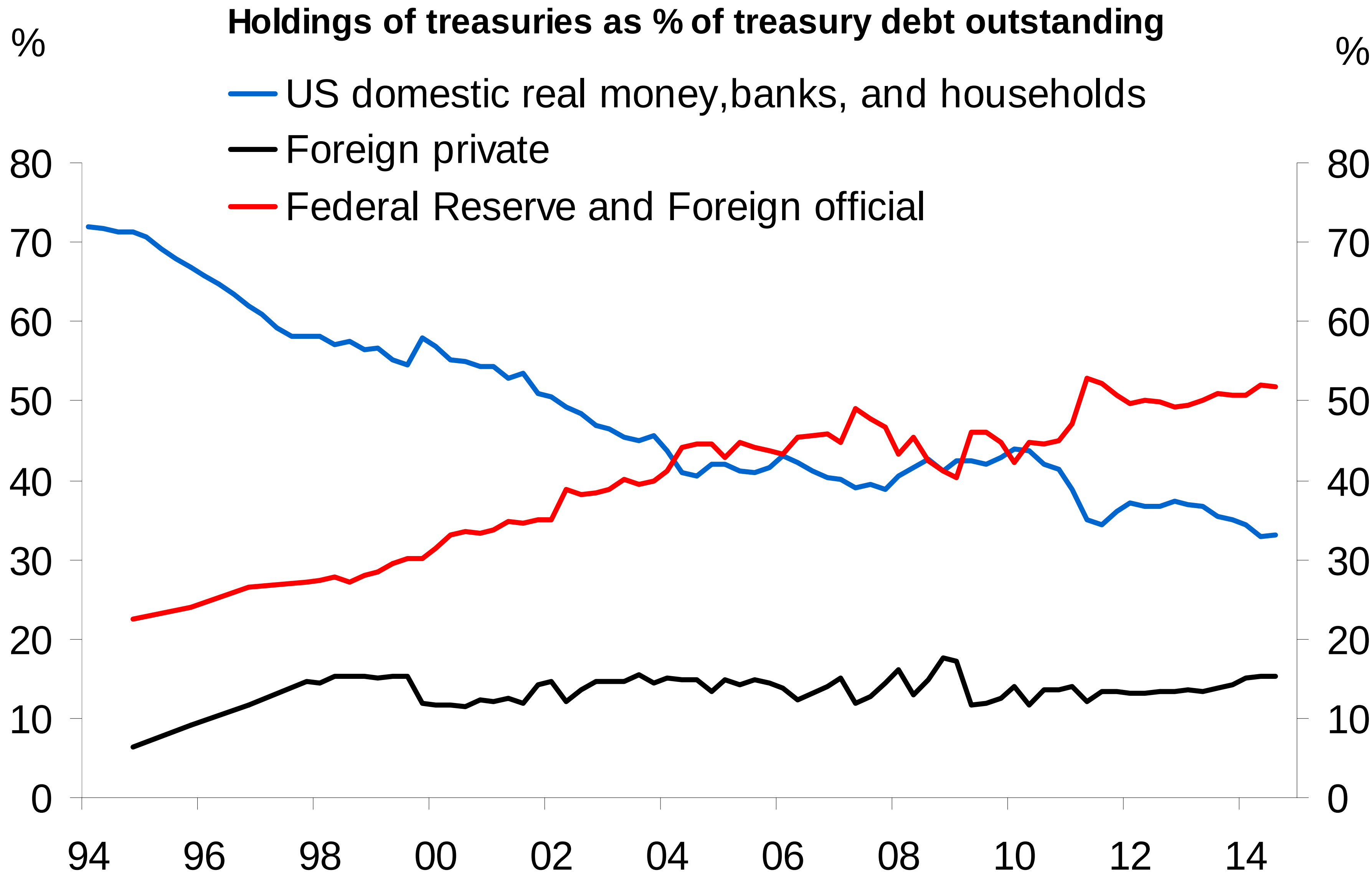
Source: BoE, FRB, BoJ, ECB, PBC, SAFE, Haver Analytics, Deutsche Bank Research

70% of Treasuries are held by foreigners and the Fed



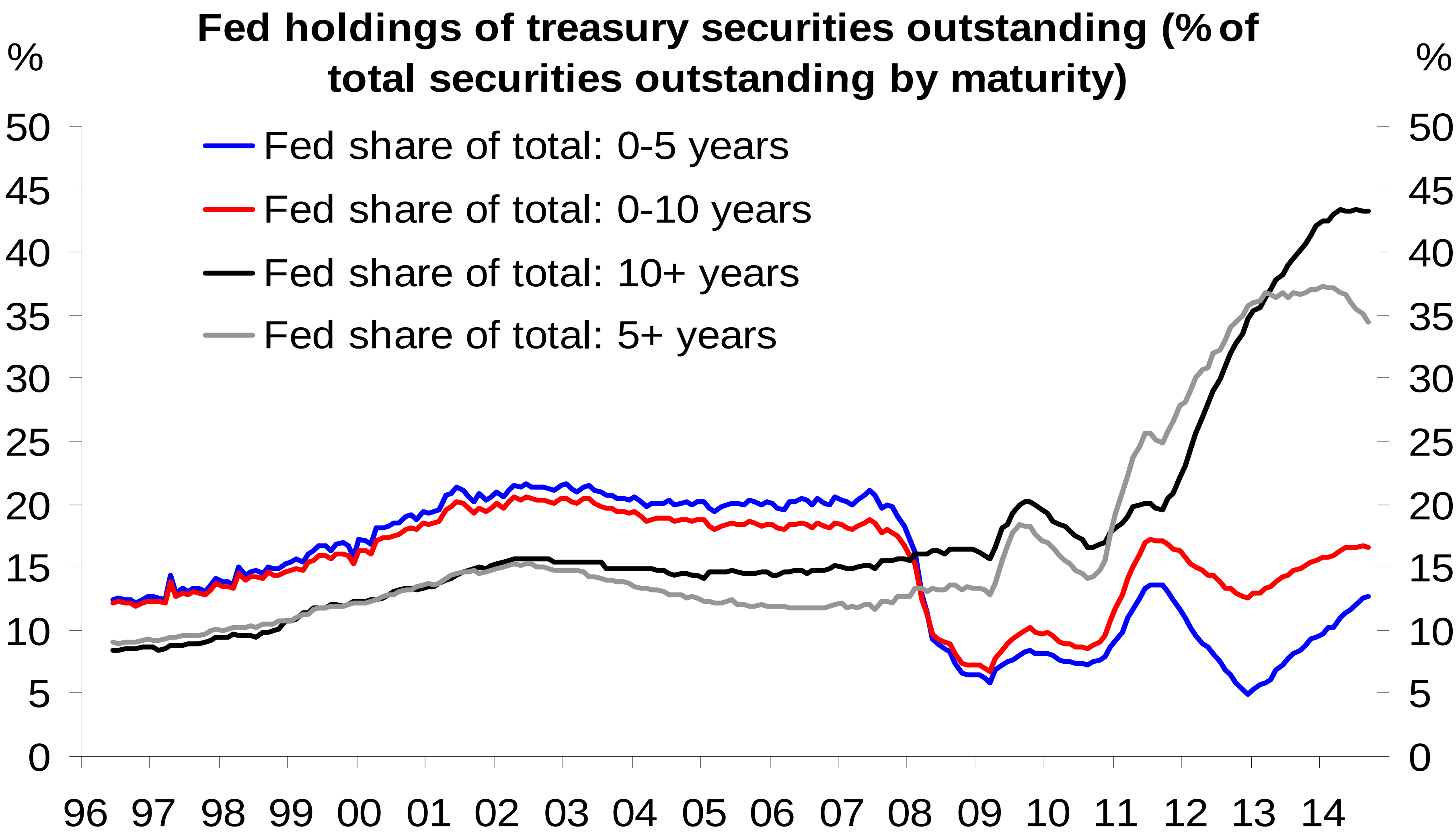
Source: FRB, Haver Analytics, DB Global Markets Research

Fed and foreign central banks hold 50% of Treasuries outstanding



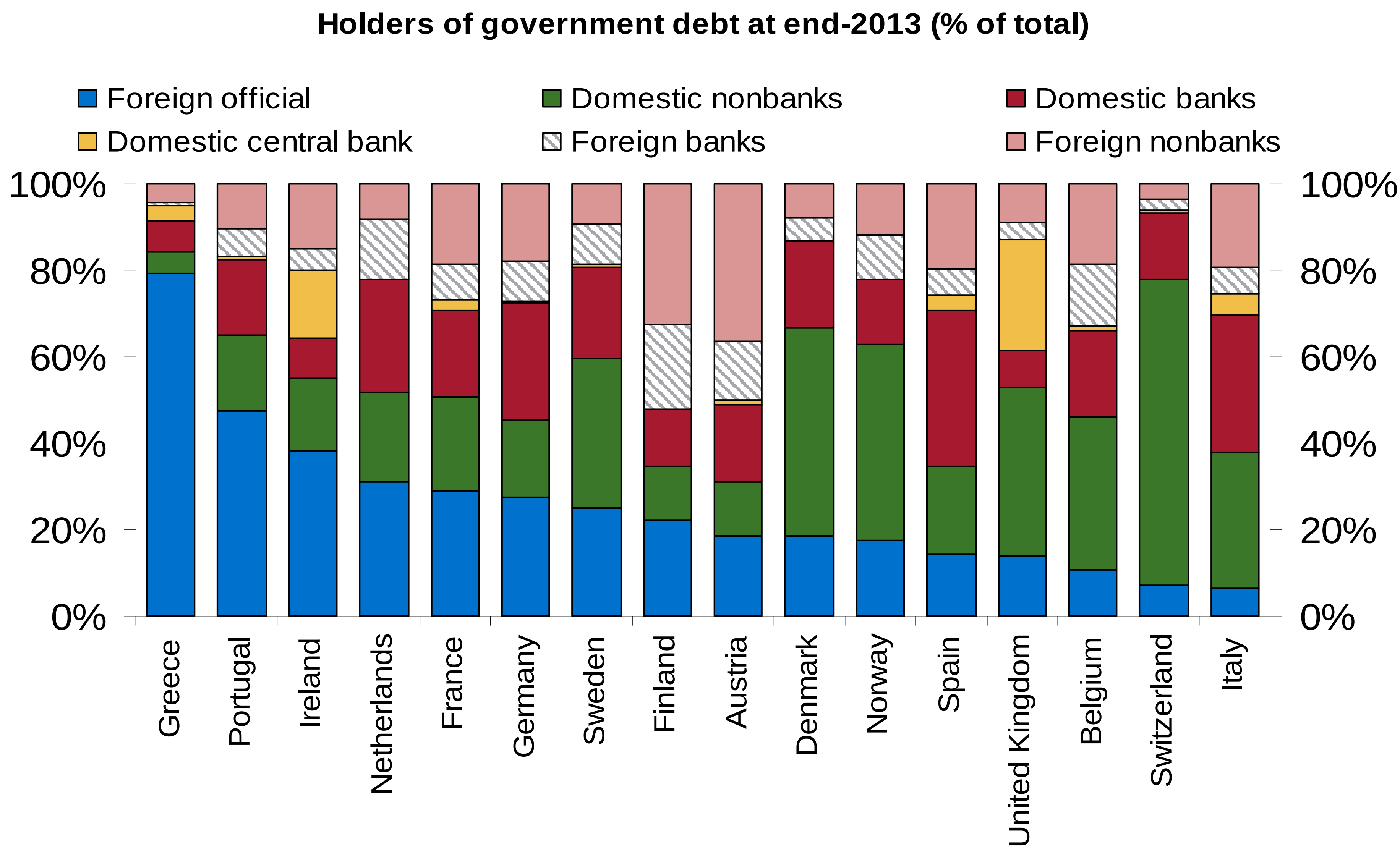
Source: FRB, US Treasury, Haver Analytics, DB Global Markets Research

The Fed holds +40% of long Treasuries



Source: FRB, Haver Analytics, DB Global Markets Research

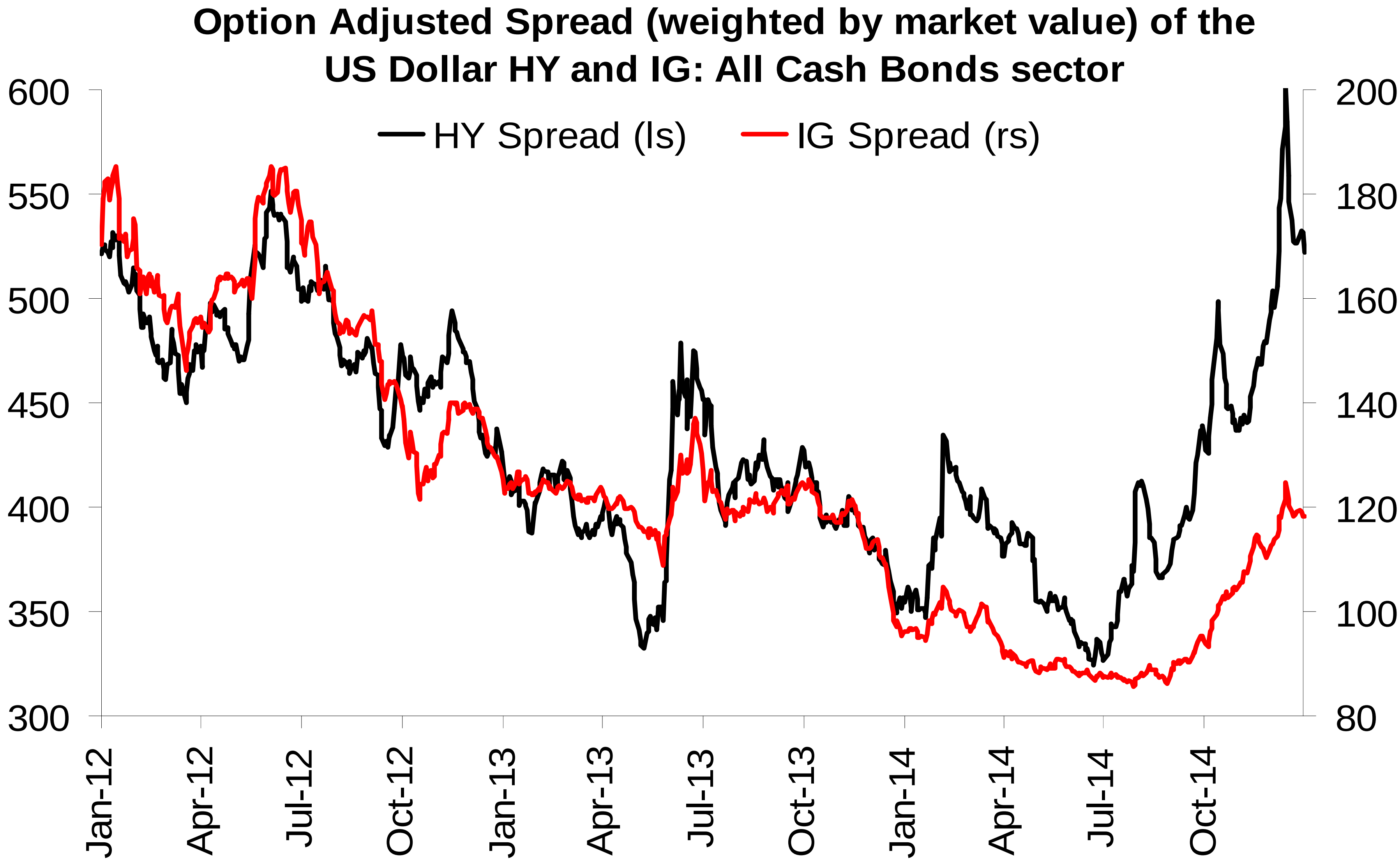
Who owns European government debt?



Source: Arslanalp and Tsuda (2014), DB Global Markets Research

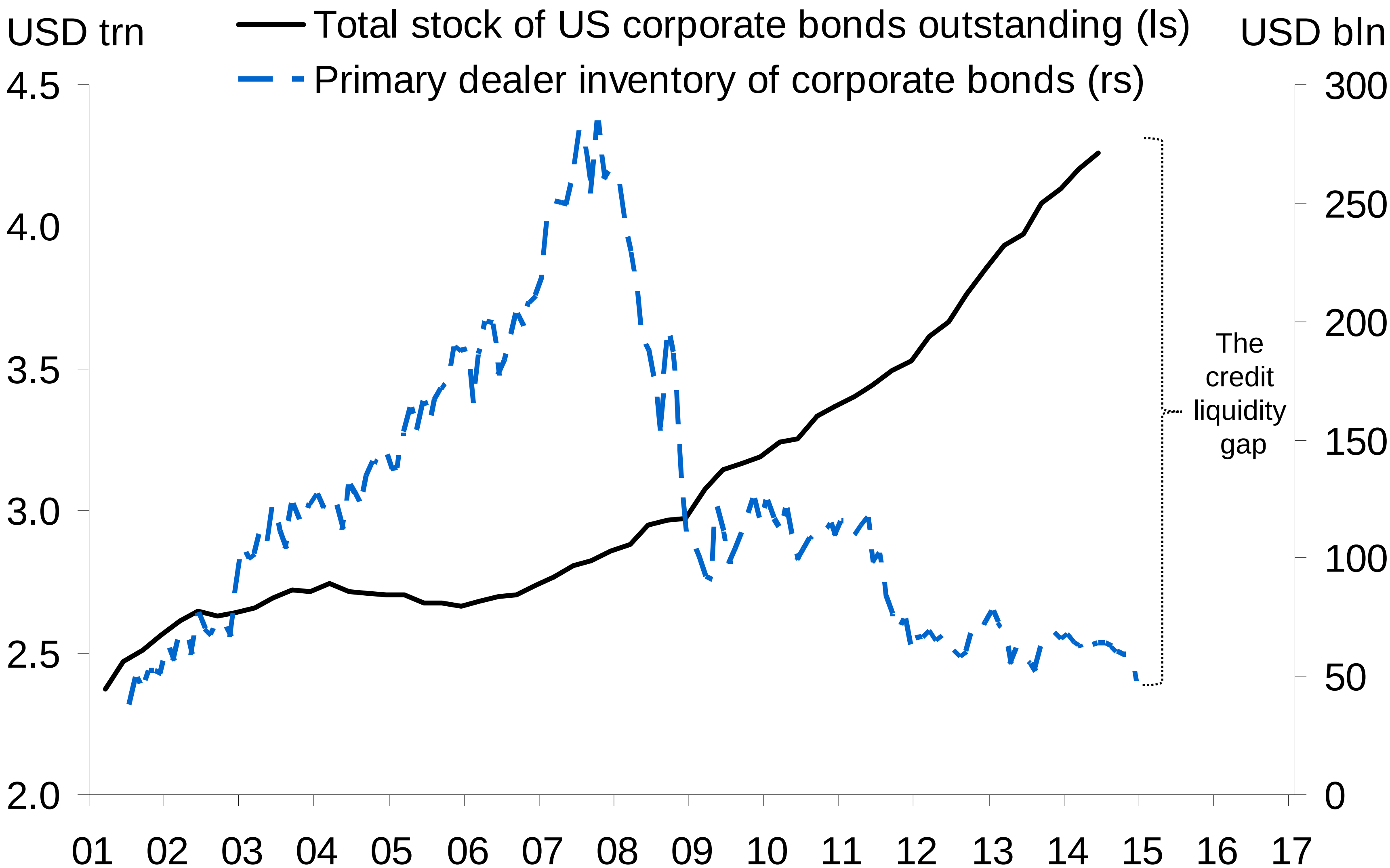
Investment Implications

Extreme positioning in HY and IG: Have HY spreads widened because of fear of coming Fed hikes?



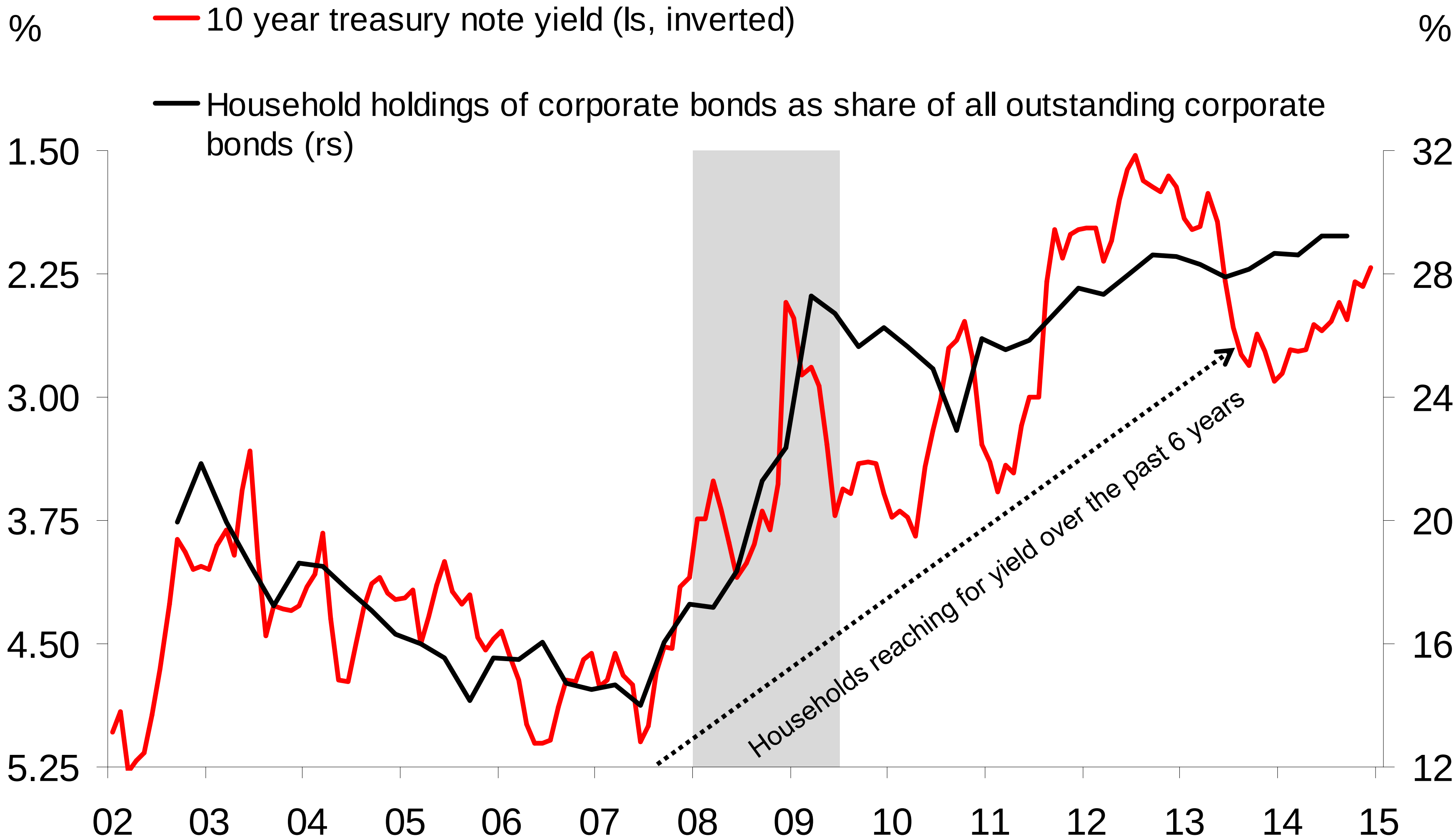
Source: Blomberg Finance LP, DB Global Markets Research

Primary dealer inventory of IG and high yield bonds currently 20% of what it was in 2007 – and the outstanding stock of corporate bonds has almost doubled since 2007



Source: FRB, Haver Analytics, DB Global Markets Research

Fed funds at zero sent households on a hunt for yield. Households now own 29% of IG and HY outstanding, up from 15% in 2006. Will they sell when the Fed turns hawkish later this year?



Note: Flow of funds data; household holdings is the sum of household direct holdings + ETF + Mutual funds

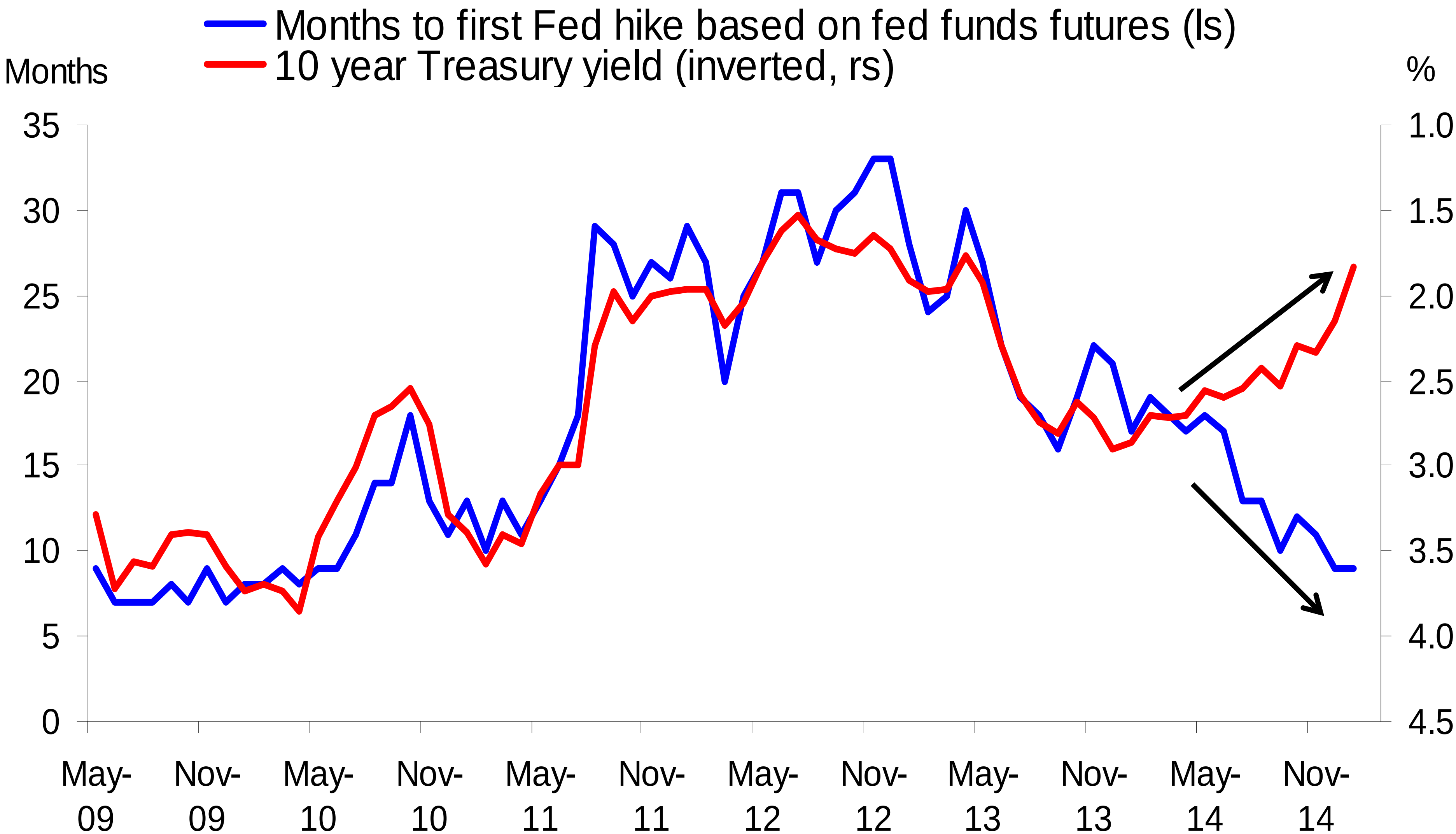
Source: FRB, Haver Analytics, DB Global Markets Research

The seven stories to the left will continue to be an important part of the narrative in rates markets

Forces pushing rates down	Forces pushing rates up
1. Foreign central bank buying of Treasuries to support EM competitiveness	1. Economic data is getting better and better
2. Geopolitical risk in Ukraine/Russia creates safe-haven demand for US rates	2. Fed about to turn hawkish
3. Slow growth in Europe makes US rates look attractive	
4. Secular stagnation has lowered the neutral fed funds rate	
5. Pension funds and insurance companies are selling equities and buying fixed income	
6. Banks buying US Treasuries to satisfy liquidity ratios.	
7. Exhaustion. Rates investors are tired of the bullish US economic outlook story. Many have unsuccessfully been betting on higher rates for the past 5 years.	

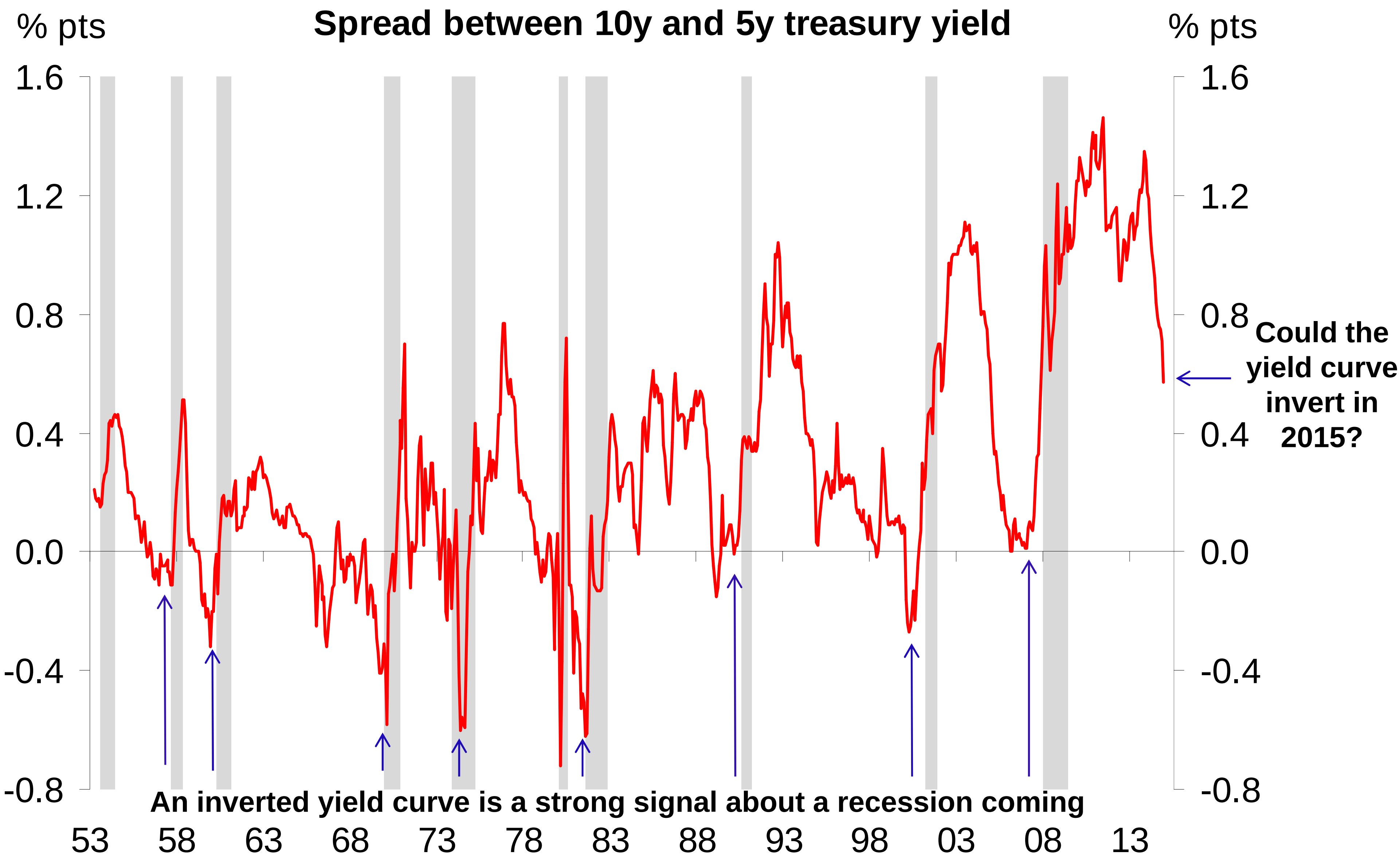
Source: DB Global Markets Research

US long term interest rates disconnected from Fed expectations



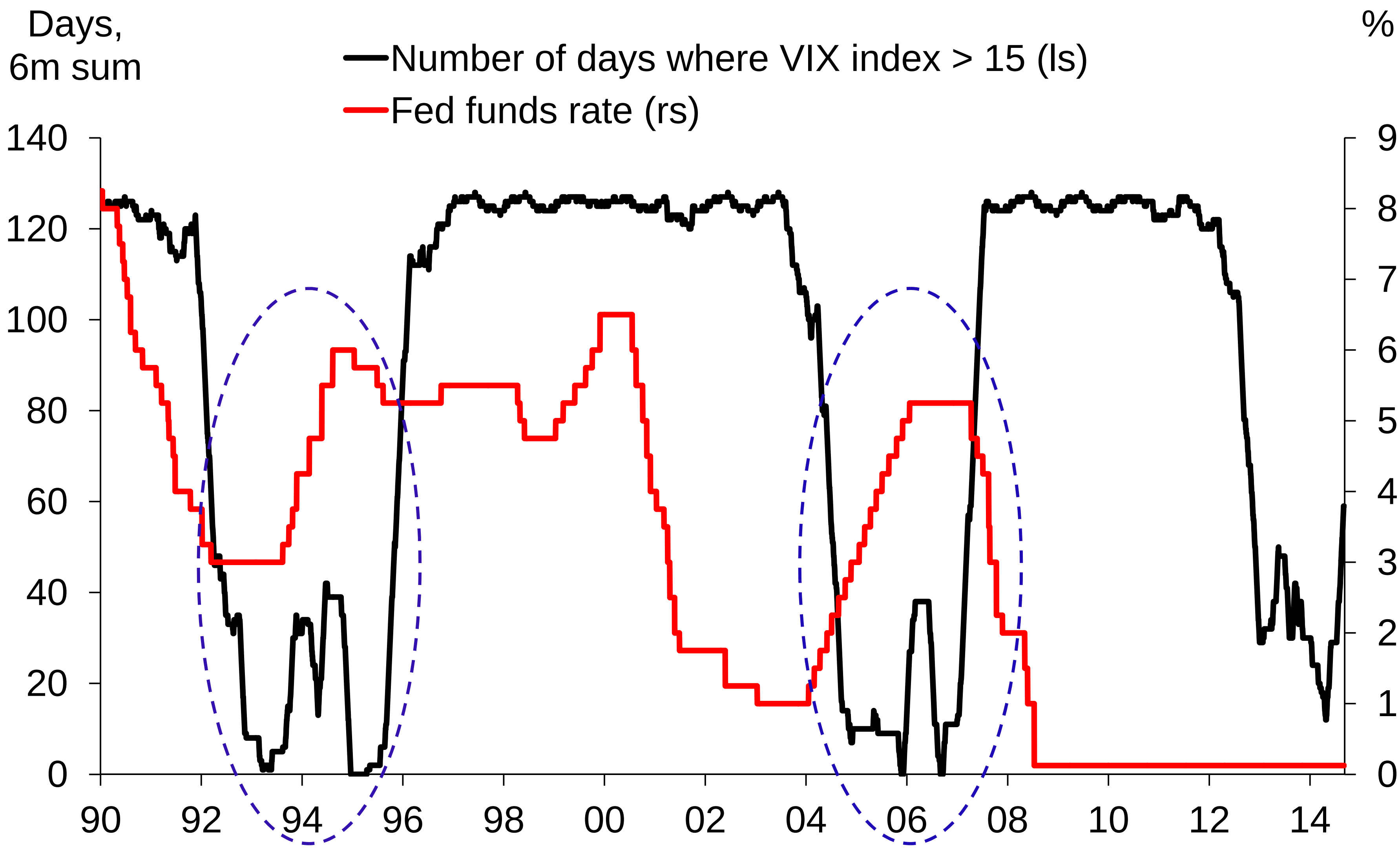
Source: Bloomberg Finance LP, Deutsche Bank Research

Will we see an inverted yield curve in 2015?
The yield curve is one of the best predictors of recessions



Source: FRB, Haver Analytics, DB Global Markets Research

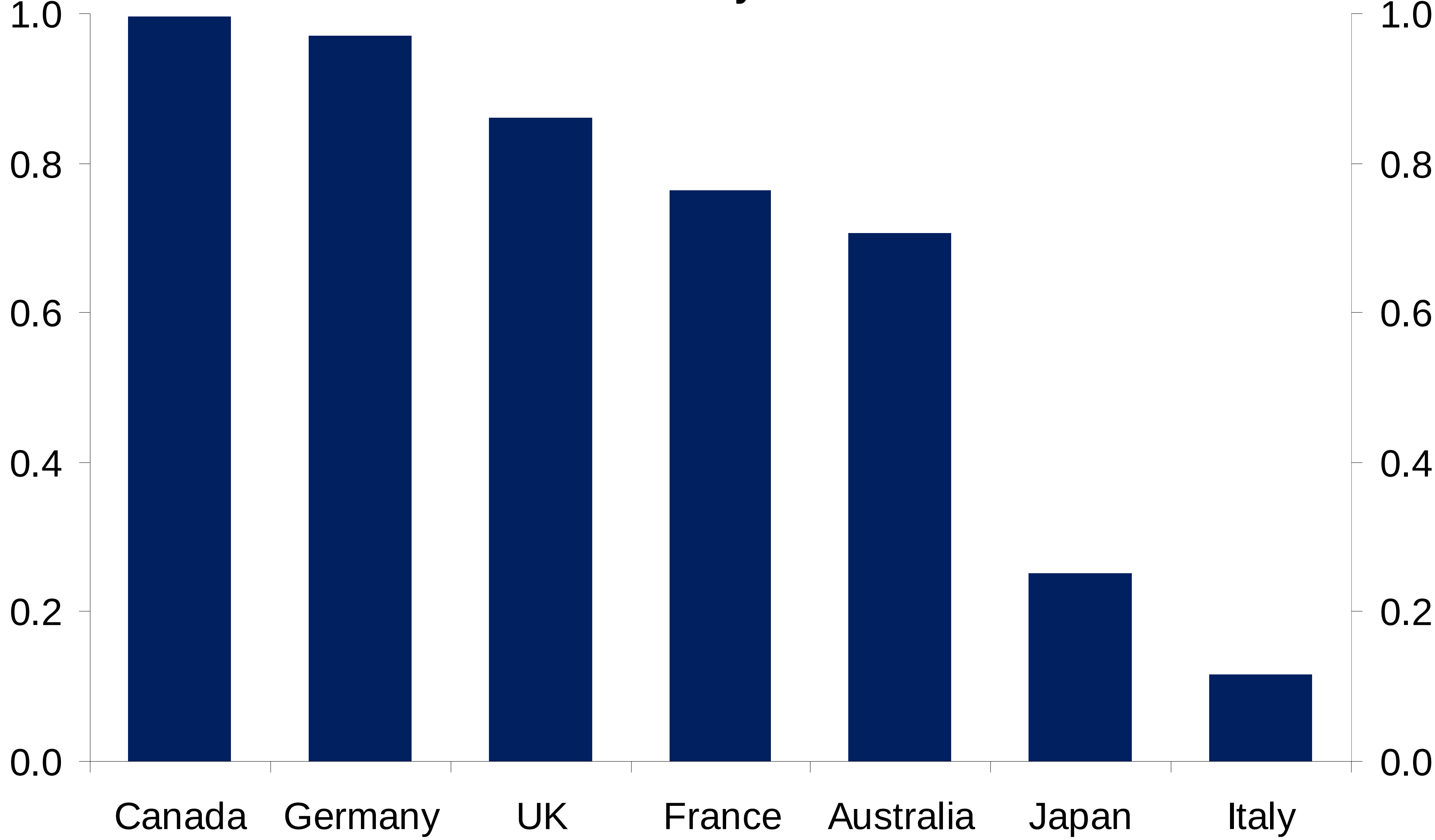
VIX is normally low during the Fed hiking cycle



Source: WSJ, FRB, Deutsche Bank Research

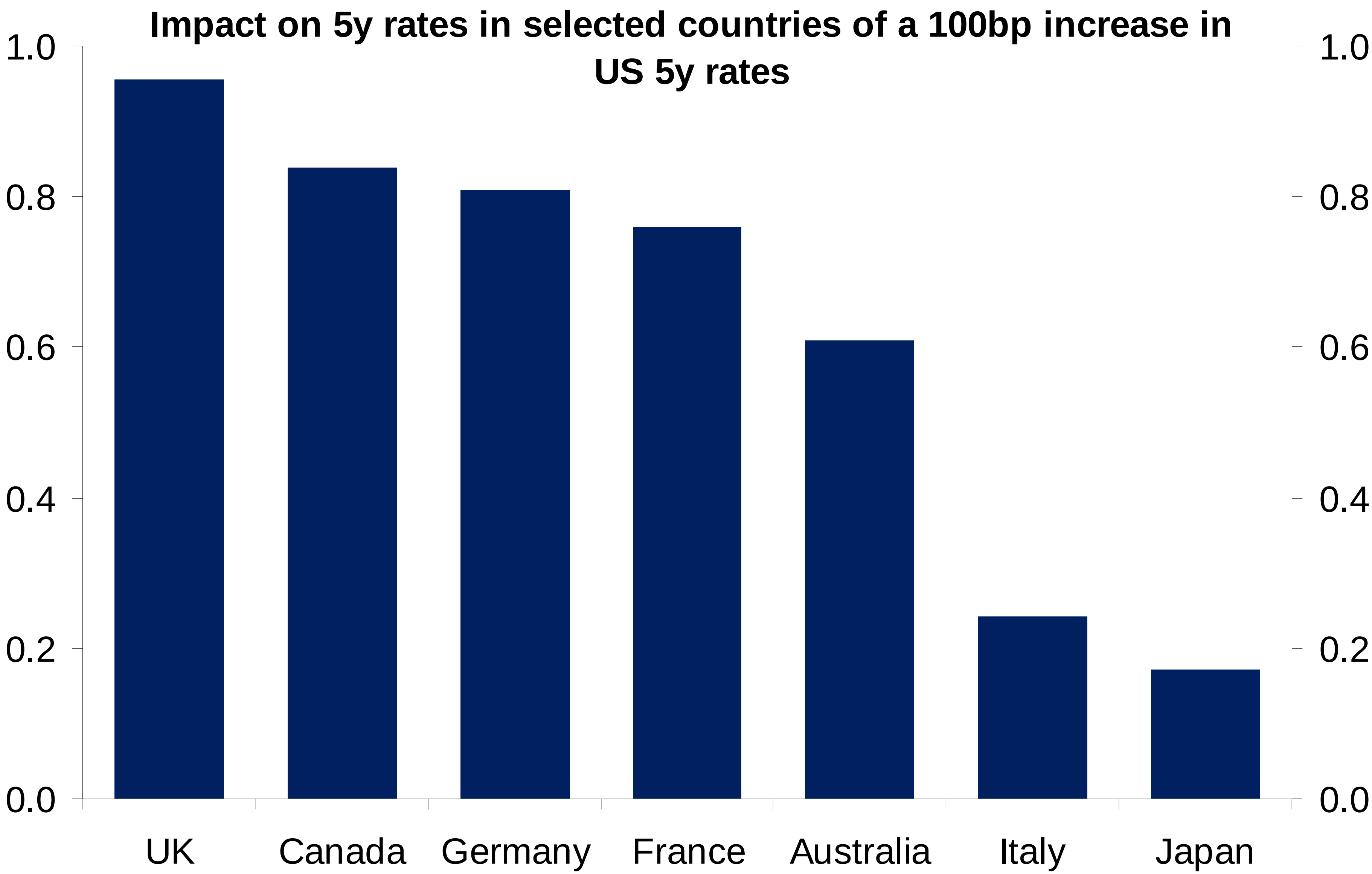
Higher rates in the US normally also pushes rates up in the rest of the world

Impact on 10y rates in selected countries of a 100bp increase in US 10y rates



Source: DB Global Markets Research

Higher rates in the US normally also pushes rates up in the rest of the world



Source: DB Global Markets Research

Investment implications summarized

Fed outlook **– Fed will hike later this year**	Fed will likely remove the word “patient” in April.
Bond markets **- Rates modestly higher in 2015**	Fundamentals suggest 10y rates are below fair value. As growth accelerates rates will move higher. But “tourists” leaving HY+IG will come back to rates and keep a lid on the uptrend.
Stock markets **- Better private sector balance sheets**	Corporate, household, and banking sector balance sheets continue to heal. This bodes well for equities.
FX **- USD up**	Stronger US recovery will mean Fed hiking sooner, which will mean higher USD
Commodities - **Downside risks**	Slowing Chinese construction growth likely to continue to put downward pressure on commodity prices. If commodity prices fall, Australia, Latam, and Canada likely to be hit.
Emerging markets **- Will benefit from US recovery**	Structural problems starting to appear in a number of emerging markets, including China.

Source: DB Global Markets Research

Rules of thumb for the US economy

Cumulative impact on GDP growth and unemployment rate after 1, 2, and 3 years

Experiment	Year 1	Year 2	Year 3
10% decline in the dollar			
GDP	0.4	1.6	2.5
Unemployment rate	-0.1	-0.4	-1.0
$10 increase in oil prices			
GDP	-0.2	-0.4	-0.2
Unemployment rate	0.1	0.2	0.1
20% increase in stock market			
GDP	0.4	0.8	1.0
Unemployment rate	-0.1	-0.3	-0.4

Note: Percent change from baseline. All experiments assuming constant real funds rate

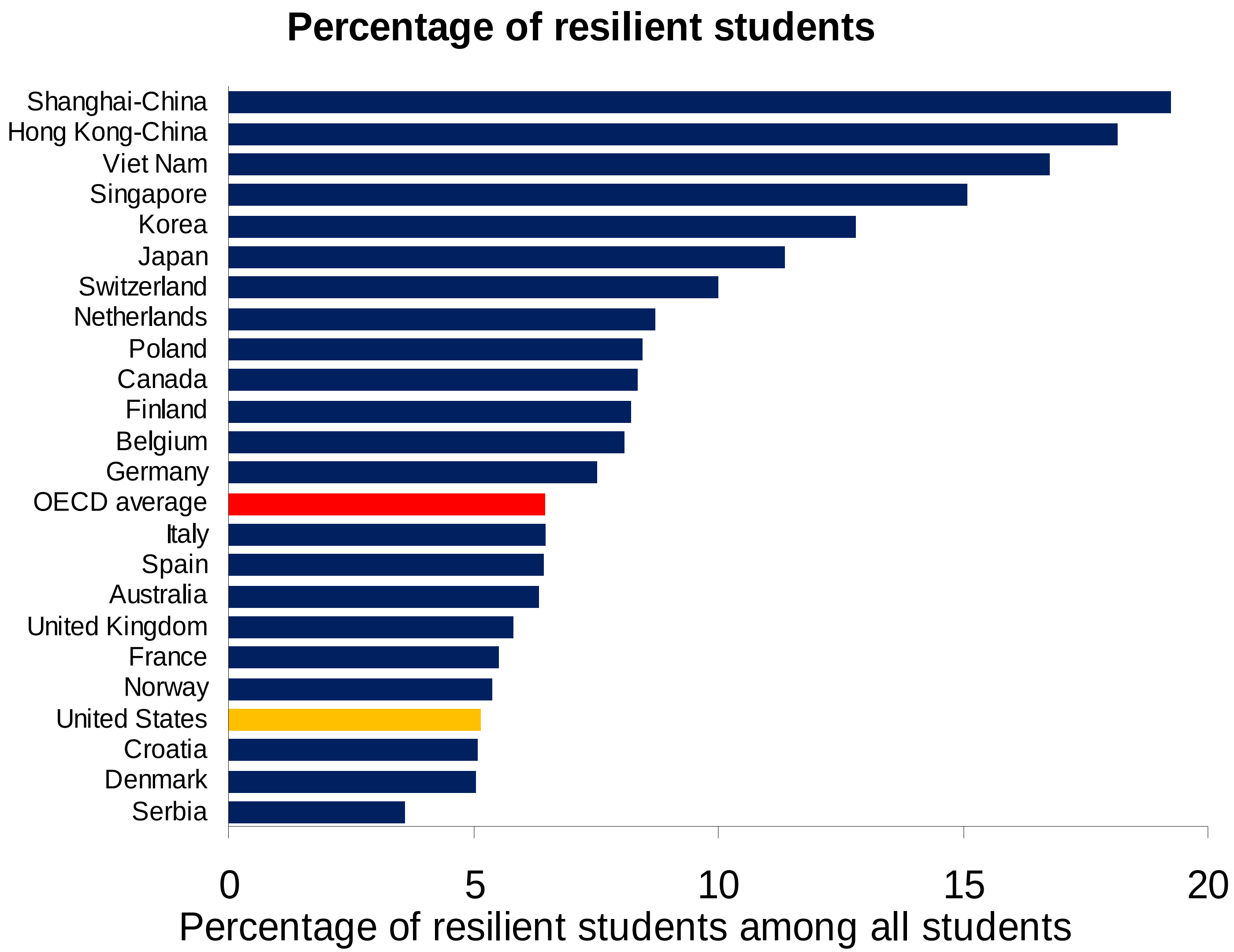
Source: Federal Reserve FRB/US Model, DB Global Markets Research

List of safe assets pre- and post-crisis

	USD billion 2007	2013
US Federal government debt held by the public	5136	12355
Held by the Federal Reserve	736	2484
Held by private investors	4401	9871
GSE obligations	2910	6200
Agency-and GSE-backed mortgage pools	4464	1,569
ABS Issuers	4515	1615
Agency-and GSE backed securities held by Fed	0	1547
Corporate bonds outstanding	3729	6435
German and French government debt	4518	6,452
Italian and Spanish government debt	2955	4,683
Total	**28226**	**40858**

Source: FRB, BdF, Bbk, ISTAT, BDE, Haver Analytics, DB Global Markets Research

Percentage of resilient students



Note: A student is classified as resilient if he or she in the bottom quarter of the *PISA index of economic, social and cultural status (ESCS) in the country* of assessment and performs in the top quarter of students among all countries, after accounting for socio-economic status. *Countries and economies are ranked in descending order of the percentage of resilient students.*

Source: OECD, PISA 2012 Database, Table II.2.7a., DB Global Markets Research

Torsten Slok, Ph.D.

- **Chief International Economist, Managing Director**
- **Deutsche Bank Securities, Inc.**

- Torsten Slok joined Deutsche Bank Securities in the fall of 2005.
- Mr. Slok's Economics team has been top-ranked by Institutional Investor in fixed income and equities for the past five years. Slok currently serves as a member of the Economic Club of New York
- Prior to joining the firm, Mr. Slok worked at the OECD in Paris in the Money and Finance Division and the Structural Policy Analysis Division. Before joining the OECD he worked for four years at the IMF in the Division responsible for writing the World Economic Outlook and the Division responsible for China, Hong Kong, and Mongolia.
- Mr. Slok studied at University of Copenhagen and Princeton University. He has published numerous journal articles and reviews on economics and policy analysis, including in Journal of International Economics, Journal of International Money and Finance, and The Econometric Journal.

Appendix 1

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