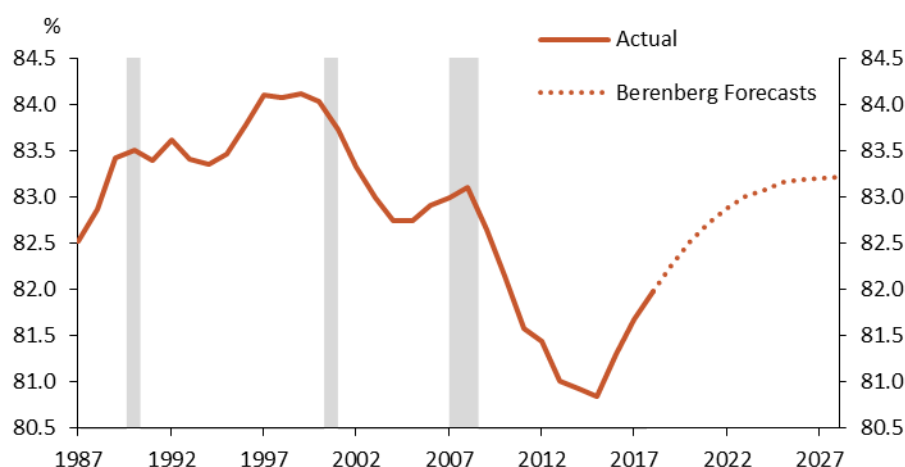


## Rising U.S. prime working-age labor participation

- In contrast to the Bureau of Labor Statistics’ (BLS) forecasts that the labor force participation rate (LFPR) would decline persistently, it has stabilized in a steady 62.7% - 63% range, driven by a larger-than-expected increase in the LFPR of prime working-age persons (age 25-54). In particular, the longer-run downward trend in the LFPR of prime working-age men has begun to reverse in recent years associated with strong gains in employment in middle-skilled and male-dominated occupations.
- This upward trend has very important implications. It suggests that the supply of labor is more elastic than is commonly presumed, so that the 4% unemployment rate is not an absolute constraint on employment. Associated, it explains why wage gains have remained constrained. The rise in the LFPR of prime working-age persons, if it continues, raises potential growth higher than is currently estimated.
- The re-entrance of people into the labor force and the types of jobs they are taking reveal the resilience of the U.S. economy that is undergoing sizable shifts fueled by technological innovations that are forcing changes in many industries.
- Based on our expectation that the LFPR will remain above official projections and modest improvement in productivity gains, we estimate potential growth in the intermediate term is roughly 2.3-2.4%. This is substantially higher than estimates from the Federal Reserve members (median: 1.8%) and the Congressional Budget Office (1.9%).
- We expect the Fed will eventually raise its estimates of potential growth and the natural rate of interest (so-called  $r^*$ ) and significantly lower its estimate of the natural rate of unemployment (so-called “full employment”).

**Chart 1: Labor Force Participation Rate for the Prime Working-Age (25-54 years) Cohort, Actual and Berenberg Forecasts**



Note: 2018 estimate is the average through August. Source: Bureau of Labor Statistics and Berenberg Capital Markets

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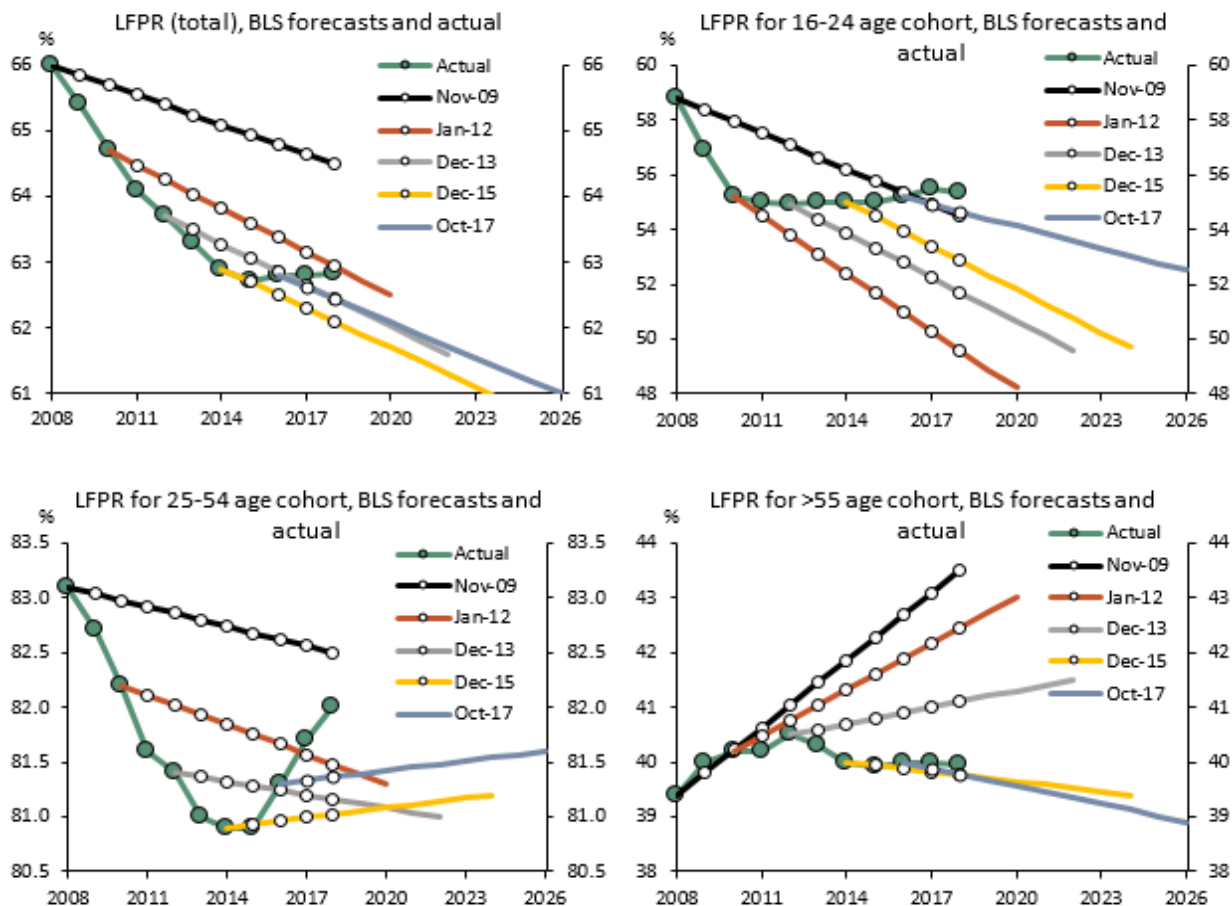
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Chart 2: Labor Force Participation Rates, Total and By Age, Actual and BLS Forecasts



Note: 2018 estimates are the averages through August. Source: Bureau of Labor Statistics and Berenberg Capital Markets

### The BLS’s inaccurate forecasts of labor force participation rates

Every two years, the BLS makes a 10-year forecast of the overall LFPR and of different age cohorts. Based on demographics, the BLS has projected material declines. As shown in Chart 2, with the exception of the LFPR for people over 55 years old, it has been wrong, and it has also been slow to adjust its forecasts to the trends of recent years. There is much more to the LFPR than just demographics, including structural trends in society, fiscal and social welfare policies, educational attainment, wage trends, and other factors that influence desires or abilities to work and the demand for labor.

Following the much larger-than-expected decline in the LFPR during the deep recession of 2008-2009, it continued to decline more than the BLS’s forecasts, particularly for prime working-age people (25-54 years). The sharp decline in the LFPR for younger people (16-24 and 25-54 years) was particularly perplexing and disturbing to policymakers and economists. **Beginning in 2015, the overall LFPR stopped declining, driven by sizable increases in the LFPR for those aged 25-54, but the BLS continued to forecast declines. In the last several years, the LFPR has outperformed the BLS’s forecasts for all age groups.**

Nevertheless, the LFPR remains well below its prior expansion peak. The BLS’s latest forecasts, made in October 2017, project the LFPR to continue to decline. **We expect the actual LFPR to continue to outperform the BLS’s forecast which will lead the BLS to eventually revise up its forecast.**

## Labor force participation and long-run growth

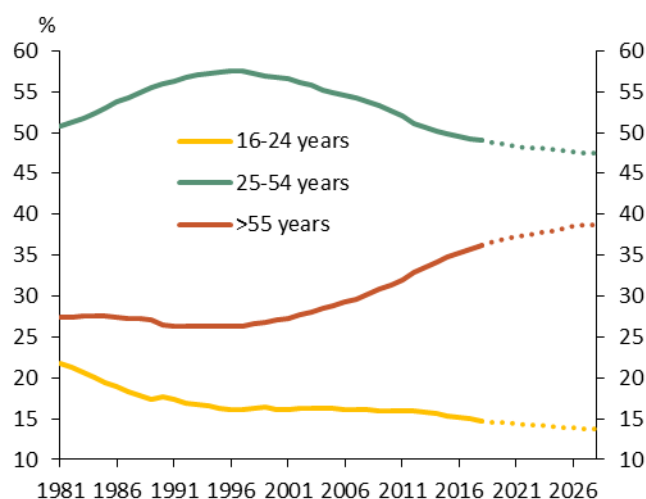
Estimates of potential real GDP growth are based on estimates of long-run growth in the labor force, labor productivity and total factor productivity. Estimates of potential growth have been revised down significantly since the 2008-2009 recession: the midpoint of the central tendency of Fed members' forecasts has declined from 2.6% to 1.9%. Most of the Fed's reduced estimates of potential growth stem from lower estimates of productivity (reflecting the actual weak trend in productivity and disappointing capital spending) while its estimates of labor force growth have been fairly stable, reflecting expectations of a declining LFPR.

Interestingly, the outperformance of real GDP growth in recent years has been attributable to the pickup in employment and the labor force as much as it has been to the pickup in productivity gains. At the same time, while economic growth has exceeded estimates of potential growth and the unemployment rate has been persistently below standard estimates of the natural rate of unemployment (so-called "full employment"), wage gains have remained below expectations based on standard estimates provided by the Phillips Curve. Obviously, estimates of potential growth and the LFPR significantly influence the Fed's monetary policy.

The BLS projects labor force growth to recede as the large "Baby Boomer" population retires. The >55 group accounted for 27% of the civilian non-institutional population in 2000, 31% in 2009, 36% in 2018, and is projected to account for 39% in 2028 (Charts 3 and 4). The rising share of aging population is expected to overwhelm the labor force participation of persons under 55.

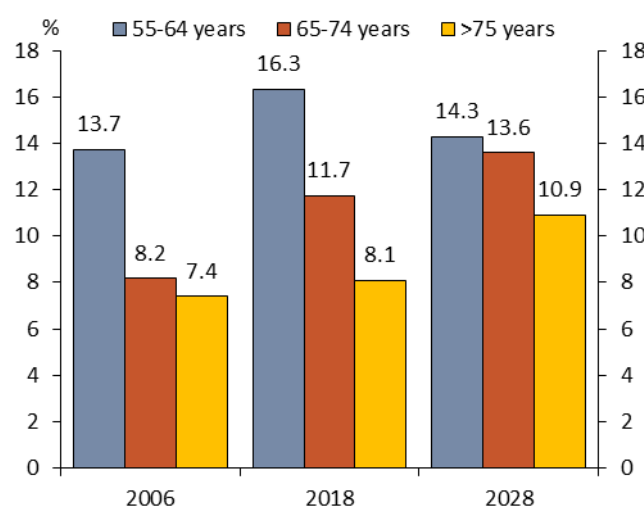
The prime working-age (25-54) group remains the largest and most critical cohort fueling the economy in terms of work effort, production and spending. Its share of the civilian non-institutional population has been declining since the 1990s, from 58% in 1996, to 53% in 2009 and 49% presently. It is projected to decline to 48% in 2028. The decline in the LFPR of this large cohort began in the early 2000s and was accentuated by the deep 2008-2009 recession. This makes its rebound since 2016 all the more striking.

Chart 3: Key Age Cohorts as Share of Total Civilian Non-institutional Population



Source: Census Bureau, Bureau of Labor Statistics and Berenberg Capital Markets

Chart 4: Older Cohorts as Share of Total Civilian Non-institutional Population



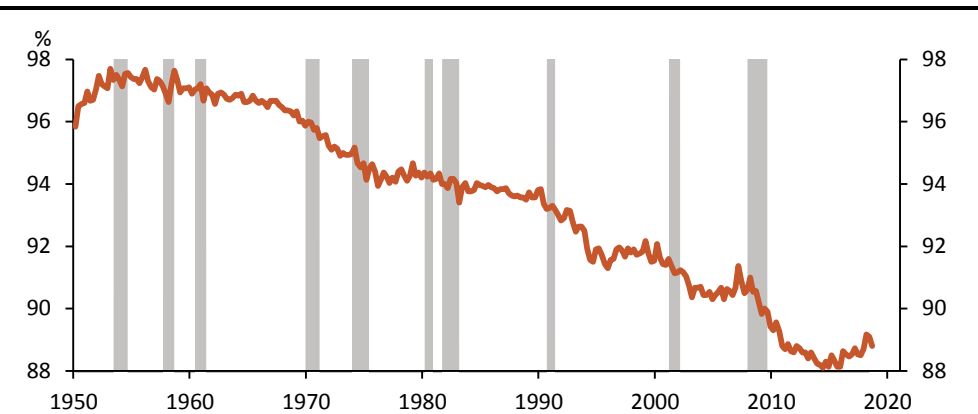
Source: Census Bureau, Bureau of Labor Statistics and Berenberg Capital Markets

## The long-term decline in LFPR for prime working-age men

The sharp fall in employment and the LFPR for prime working-age men during and immediately following the deep 2008-2009 recession accentuated its longer-term trend (Chart 5). This sharp decline is troubling and has drawn the attention of leading labor market researchers who have a variety of explanations. The key ones are:

1. Automation and new technologies have reduced the need for “middle-skilled” workers (routine, rules-based occupations); many of these workers do not have the qualifications required for “high-skilled” jobs and many are reluctant to work in “low-skilled” jobs. Globalization has also reduced demand for these workers in the U.S (Autor, 2010)<sup>1</sup>.
2. The U.S. economy has become more service-oriented; service-providing professions tend to attract more women and some men find these kinds of jobs less attractive (Katz, 2014).
3. The number of persons claiming disability and no longer able to work has increased dramatically. A large share of these individuals are in households that receive some kind of income support from the government, reducing their need to work or re-enter the labor force (Farren and Winship, 2018).
4. High incarceration rates have reduced businesses’ desire to hire persons with criminal records, and in some states these persons are legally prevented from obtaining certain jobs (Council of Economic Advisers, 2016).
5. Time spent in school has lengthened, reducing the share of the population available for work (Mankiw, 2018).
6. The LFPR has been lowered by drug addiction; research has found that labor force participation has fallen more in areas with higher opioid pain medication prescriptions (Krueger, 2018).
7. The social roles of men have evolved: more men have become “stay at home dads” while their wives work and support the household (Mercatus, 2018); the median age of first marriage has increased and a high share of young adults are living at home with their parents; and more have simply chosen leisure over work, influenced by the increased popularity and sophistication of video games and online gaming (Aguilar, Bills, Charles, Hurst, 2017).

**Chart 5: Labor Force Participation Rate for Prime Working-Age (25-54 years) Men**



Source: Bureau of Labor Statistics and Berenberg Capital Markets

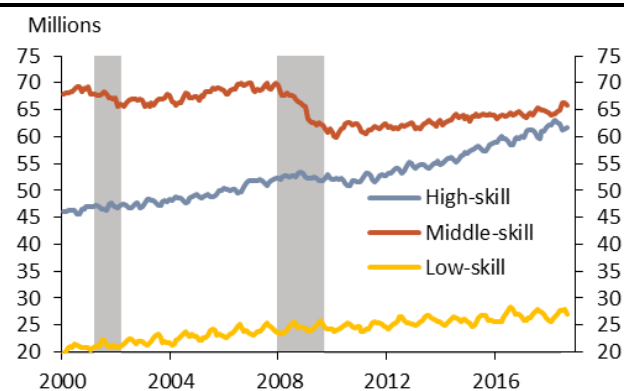
<sup>1</sup> According to David Autor, middle-skilled occupations involve “procedural, rule-based activities,” high-skilled occupations employ workers with “high levels of education and analytical capability,” and low-skilled occupations “require little in the way of formal education and are highly intensive in non-routine manual tasks.”

Prime working-age men are returning to the labor force, albeit slowly

Despite these explanations, the recent rise in the LFPR for prime working-age men is encouraging - it has increased to 89.1% this year from its 88.2% low in 2014. Along with the material strengthening of overall employment and economic growth, this increase in the LFPR for prime working-age men suggests that some of the earlier sharp decline was due to long-lagged cyclical factors. Now, the benefits of the shift in tax and regulatory policies are encouraging businesses to hire, and jobs that offer health insurance and other benefits are attractive to some who have been on the sidelines. It suggests that more prime age men will re-enter the work force.

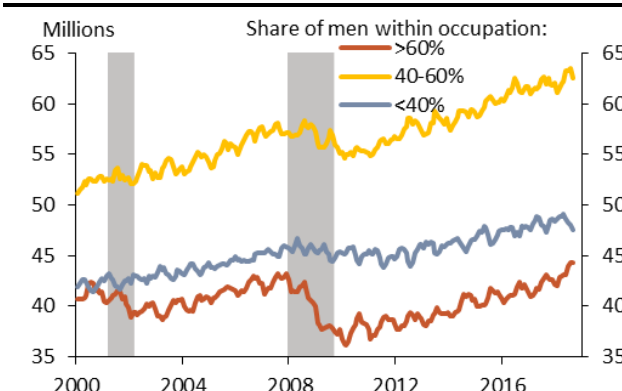
Chart 6 shows employment by occupation-type disaggregated by skill requirements (Autor, 2010) and Chart 7 shows the employment trend of occupations based on the share of men in the occupation. Charts 8 and 9 summarize the net job changes of these occupation breakdowns over the long period 2000-2018, since 2009 and since 2016, with the following key observations: 1) *the largest job increases since 2000 have occurred in high-skilled occupations and jobs in middle-skilled occupations have declined*, 2) *jobs in middle-skilled occupations were the hardest hit by the 2008-2009 recession*, 3) jobs in middle-skilled occupations have increased in this expansion, outpacing low-skilled, but are well below high skilled, 4) *the gap in job growth in high-skilled and middle-skilled occupations has narrowed significantly over the last two years*, 5) from 2009-2018 job gains have been the largest in occupations in which the share of male workers is 40%-60%, 6) *since 2016, jobs have grown the fastest in occupations in which over 60% of persons employed are men*. The last observation is consistent with the significant rebound in manufacturing and mining sectors following the industrial slump during 2014-mid 2016 and strong demand for construction and transportation workers.

**Chart 6: Employment By Type of Occupation**



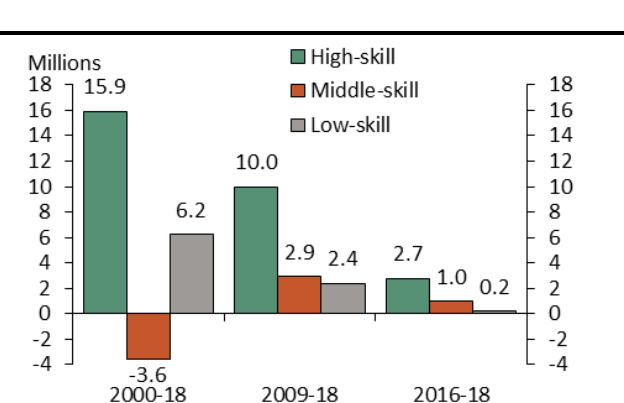
Source: Bureau of Labor Statistics and Berenberg Capital Markets

**Chart 7: Employment by Share of Men Within Occupation**



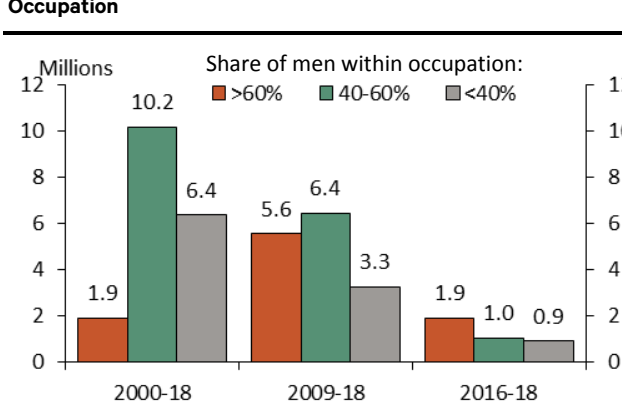
Source: Bureau of Labor Statistics and Berenberg Capital Markets

**Chart 8: Change in Employment By Type of Occupation**



Note: 2018 estimates are based on averages through August.  
Source: Bureau of Labor Statistics and Berenberg Capital Markets

**Chart 9: Change in Employment by Share of Men Within Occupation**



Note: 2018 estimates are based on averages through August.  
Source: Bureau of Labor Statistics and Berenberg Capital Markets

Tables 1 and 2 show these results in more detail. The consistently big job gainers include management, computer and mathematics, and health care practitioners and technical – all high-skilled. Among the middle-skilled occupations that have registered large job gains in recent years, transportation and material moving, and construction and extraction stand out. Occupations in which jobs have declined include sales, food preparation and serving related, and office and administrative support.

**These observations about net job changes by occupation and the marked pick-up in jobs for prime working-age men are consistent with anecdotal evidence in the job market.** Insufficient supply of qualified labor is the highest-ranking concern in surveys of small businesses. Strong demand for labor in construction, transportation and material-moving as well as in other middle-skilled occupations are generating bottlenecks in production and generating above-average wage increases. At the same time, weak job growth in many low-skilled occupations is clearly apparent.

**Table 1: Change in Employment By Type of Occupation (thousands)**

	2000-18 change		2009-18 change		2016-18 change	
	Level	%	Level	%	Level	%
<b>High-skill</b>	<b>15873</b>	<b>34</b>	<b>9956</b>	<b>19</b>	<b>2736</b>	<b>5</b>
Management	3741	26	2616	17	645	4
Computer & Mathematical	1803	54	1640	47	520	11
Healthcare Practitioner & Technical	3464	59	1629	21	407	5
Business & Financial Operations	2326	44	1514	25	73	1
Arts/Design/Entertainment/Sports/Media	767	29	705	26	332	11
Education, Training & Library	2019	28	622	7	302	3
Architecture & Engineering	257	9	505	18	139	4
Community & Social Services	746	39	327	14	56	2
Life, Physical & Social Science	288	23	211	16	172	13
Legal	462	32	188	11	91	5
<b>Middle-skill</b>	<b>-3597</b>	<b>-5</b>	<b>2914</b>	<b>5</b>	<b>958</b>	<b>1</b>
Transportation & Material-Moving	1294	15	1571	19	584	6
Production	-2911	-25	899	12	94	1
Construction & Extraction	618	8	799	11	309	4
Sales & Related	19	0	100	1	-107	-1
Installation, Maintenance & Repair	218	5	79	2	157	3
Office & Administrative Support	-2836	-14	-534	-3	-79	0
<b>Low-skill</b>	<b>6219</b>	<b>30</b>	<b>2397</b>	<b>10</b>	<b>184</b>	<b>1</b>
Personal Care & Service	1750	42	867	17	115	2
Food Preparation & Serving Related	1681	25	629	8	-180	-2
Building & Grounds Cleaning & Maintenance	905	18	472	9	17	0
Healthcare Support	1227	50	358	11	113	3
Protective Service	656	25	72	2	118	4
<b>Total</b>	<b>18494</b>	<b>14</b>	<b>15266</b>	<b>11</b>	<b>3878</b>	<b>3</b>

Note: 2018 estimates are based on averages through August.  
Source: Bureau of Labor Statistics and Berenberg Capital Markets

**Table 2: Change in Employment by Share of Men Within Occupation (thousands)**

	2000-18 change		2009-18 change		2016-18 change	
	Level	%	Level	%	Level	%
<b>Share of men within occupation</b>						
<b>&gt;60%</b>	<b>1934</b>	<b>5</b>	<b>5564</b>	<b>15</b>	<b>1921</b>	<b>5</b>
Construction & Extraction	618	8	799	11	309	4
Installation, Maintenance & Repair	218	5	79	2	157	3
Architecture & Engineering	257	9	505	18	139	4
Transportation & Material-Moving	1294	15	1571	19	584	6
Protective Service	656	25	72	2	118	4
Computer & Mathematical	1803	54	1640	47	520	11
Production	-2911	-25	899	12	94	1
<b>40-60%</b>	<b>10189</b>	<b>19</b>	<b>6434</b>	<b>11</b>	<b>1042</b>	<b>2</b>
Management	3741	26	2616	17	645	4
Building & Grounds Cleaning & Maintenance	905	18	472	9	17	0
Life, Physical & Social Science	288	23	211	16	172	13
Arts/Design/Entertainment/Sports/Media	767	29	705	26	332	11
Sales & Related	19	0	100	1	-107	-1
Legal	462	32	188	11	91	5
Business & Financial Operations	2326	44	1514	25	73	1
Food Preparation & Serving Related	1681	25	629	8	-180	-2
<b>&lt;40%</b>	<b>6371</b>	<b>15</b>	<b>3269</b>	<b>7</b>	<b>915</b>	<b>2</b>
Community & Social Services	746	39	327	14	56	2
Office & Administrative Support	-2836	-14	-534	-3	-79	0
Education, Training & Library	2019	28	622	7	302	3
Healthcare Practitioner & Technical	3464	59	1629	21	407	5
Personal Care & Service	1750	42	867	17	115	2
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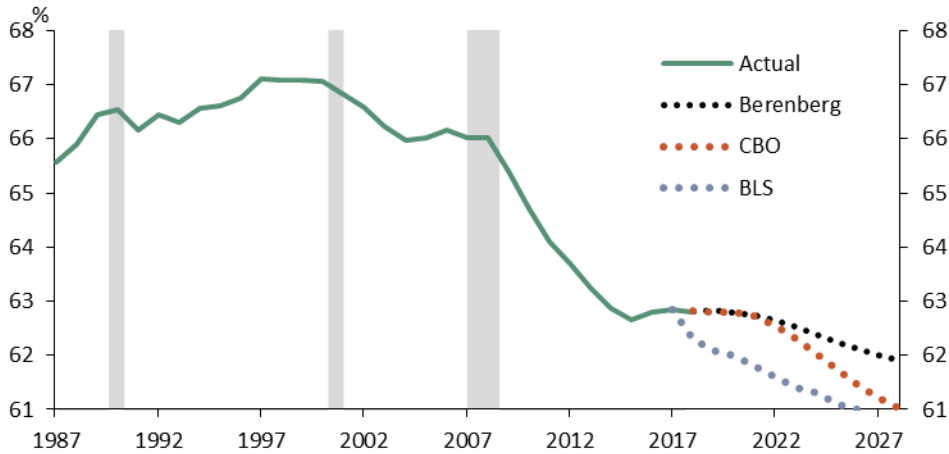
Note: 2018 estimates are based on averages through August.  
Source: Bureau of Labor Statistics and Berenberg Capital Markets

## The outlook for the LFPRs

**We expect the LFPR to remain near its recent range of 62.7 and 62.8% over the next four years (Chart 10), reflecting clear changing trends among age and gender cohorts. The LFPR for the prime working-age cohort (25-54) is expected to continue to rise and add significantly to the workforce and the LFPR for the younger 16-24 cohort is expected to rise modestly. However, this will be offset by a decline of older people in the workforce: the LFPR will drift down at the same time as the share of the total population over 55 grows (Charts 3-4).**



**Chart 10: Total Labor Force Participation Rate, Actual and Forecasts**



Note: 2018 estimate is average through August.

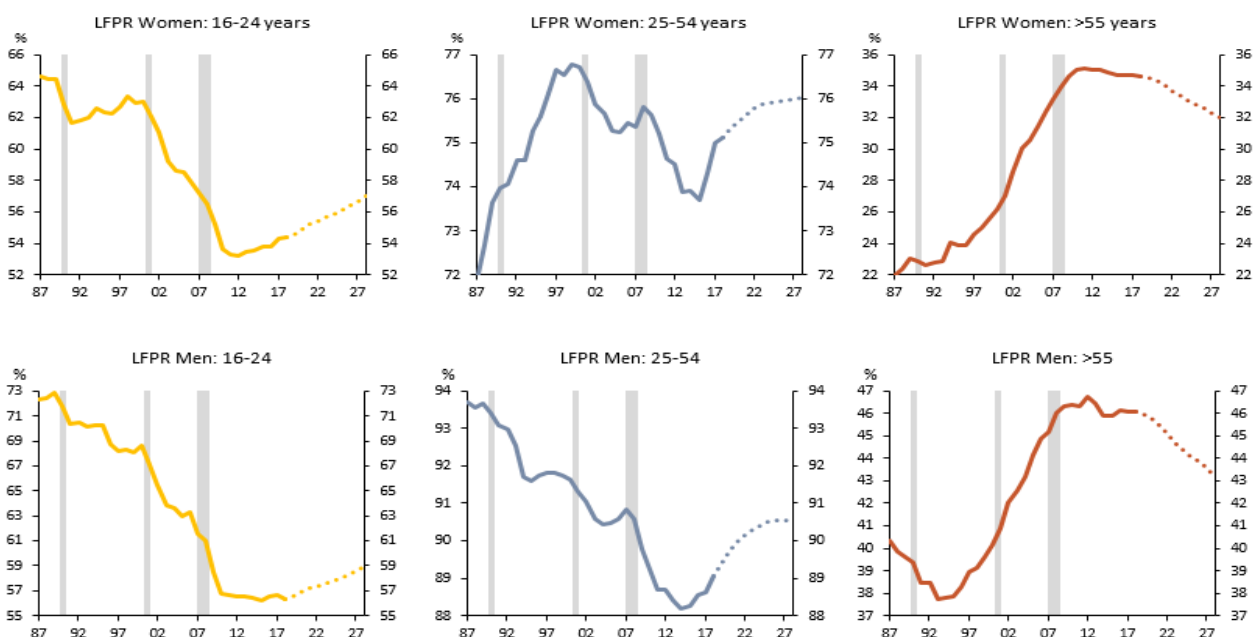
Source: Census Bureau, Bureau of Labor Statistics and Berenberg Capital Markets

Underlying this aggregate trend projection, we project the LFPR for women aged 16-24 and 25-54 will continue increasing modestly, while the LFPR for women over 55 will begin to decline as a larger share of this age cohort retire (Chart 11).

Similarly, we expect the LFPR for young men aged 16-24 to rise modestly, retracing only a small portion of its long decline, while the LFPR of prime working-age men (25-54) is projected to continue to rise. These positives will be partially offset by the eventual decline of men over 55 in the work force (Chart 11).

***Our hunch is that labor supply for the prime working-age male cohort is very elastic and participation for this group will be boosted by better economic growth, and continued strong labor demand in fields such as construction, and prospects for better wage growth.***

**Chart 11: Female and Male Labor Force Participation Rates, By Age Cohorts, Actual and Berenberg Projections**



Note: 2018 estimates are averages through August.

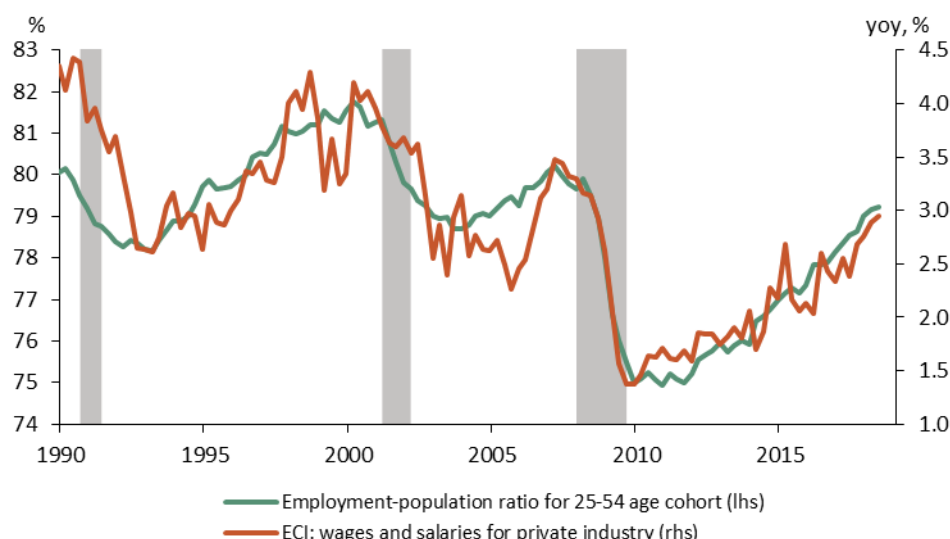
Source: Census Bureau, Bureau of Labor Statistics and Berenberg Capital Markets

## Implications of higher labor force growth

The most obvious implication of the higher-than-expected increase in the LFPR is more jobs and income, and a stronger economy. The re-entrance of people into the work force also suggests that the supply of labor is more elastic than is currently presumed. The standard notion is that the work force and economy are constrained by the natural rate of unemployment, which the Fed and others currently estimate to be 4.5%. The elastic supply of labor suggests that this is not a binding constraint. Employment continues to grow way faster than the amount of job growth that is presumed necessary to stabilize the unemployment rate.

Associated, as business demand for labor continues to increase, the more elastic supply of labor has constrained wage gains (see Chart 12 and [“Positive U.S. wage trends in detail”](#), April 10, 2018). Although wages have been rising faster than inflation, their softer-than-expected increases have persistently frustrated policymakers and others that had projected higher wages based on standard Phillips Curve models that presume standard projections of the LFPR.

**Chart 12: Employment-Population Ratio for 25-54 Age Cohort and ECI: Wages and Salaries for Private Industry**



Source: Bureau of Labor Statistics and Berenberg Capital Markets

Along with the recent pickup in productivity, the higher-than-expected rise in the labor force, if sustained, implies that sustainable potential growth is higher than currently forecast by the CBO and the Fed.

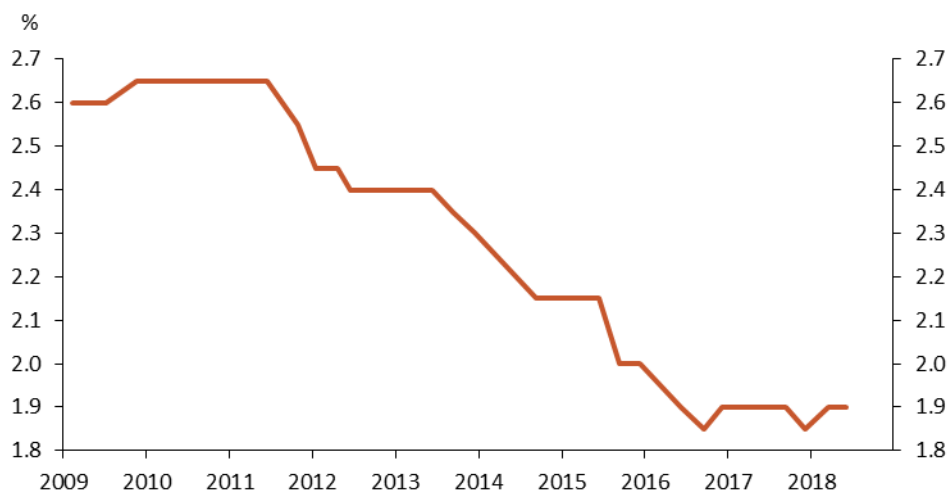
In 2017-2018, real GDP growth has significantly exceeded the Fed’s estimate of potential growth (Chart 13). While productivity gains have picked up, the unanticipated stabilization in the overall LFPR (as opposed to continued projected declines), and in particular the sizable rise in the LFPR for prime working-age workers has been a significant contributor.

The Fed acknowledges that the economy has strengthened and has revised up its real GDP growth forecasts for 2018 and 2019, but it has not changed its longer-run sustainable growth forecasts. We have been arguing that the shift towards easing burdensome regulations and some key provisions of the Tax Cuts and Jobs Act have lifted sustainable growth. Our estimate of potential growth under current laws is roughly 2.3%-2.4%. The compounding impact of this difference based on an \$18.5 trillion economy is sizable.

While the Fed tends to be slow to change such forecasts as it obtains sufficient confirming data, it obviously is very aware of changes in the economy.



**Chart 13: Evolution of FOMC Forecasts for Longer-Run Real GDP Growth (Midpoint of Central Tendency)**



Source: Federal Reserve Board, ALFRED, and Berenberg Capital Markets

Fed Chair Powell emphasized the uncertainties of forecasting structural variables in his recent speech at the Kansas City Fed’s Jackson Hole Monetary Policy Symposium (see [“Fed Chair Powell stresses gradualism due to uncertainty with estimates of key longer-run variables”](#), August 24, 2018). Powell gave examples of how inaccurate estimates of these unobservable variables led to inappropriate monetary policy in the 1960s and 1970s, while a realization of a positive productivity shock in the second half of the 1990s by Fed Chair Alan Greenspan resulted in appropriate policy.

Powell’s focus on longer-term forecasts and variables is wise and warranted, particularly in light of the Fed’s decidedly underwhelming track record in its short and intermediate term forecasts ([“The Fed’s Economic Forecasts, Uncertainties, and Monetary Policy”](#), March 12, 2018). In recent years, as the Fed revised down its estimate of real potential growth, it revised down its estimate of the inflation-adjusted natural rate of interest (so-called  $r^*$ ) even faster. The highly visible debate about what is the neutral Federal funds rate hinges critically on its estimate of  $r^*$ , highlighting the importance of the Fed’s estimate of potential growth.

Unofficially, the Fed seems to be open to the notion that potential growth may be higher than its current estimate. In his first semi-annual testimony to Congress, Chairman Powell stated that “some of the headwinds the U.S. economy faced in previous years have turned into tailwinds.” Other Fed members, including Federal Reserve Bank of St. Louis President, James Bullard, have acknowledged that sustainable growth may have risen. While we do not anticipate any quick change in the Fed’s longer-term forecast, we anticipate that eventually the Fed will raise its estimate of potential growth (and nudge up its estimate of  $r^*$ ) and lower its estimate of the longer-run unemployment rate. We expect that an upward revision in the estimated LFPR will be central to the change in the Fed’s forecast.

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**HEALTHCARE - MED. TECH/SERVICES**

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Paretohs Misra +1 646 949 9031

**SHIPPING & TRANSPORTATION**

Donald McLee +1 646 949 9026

**SOFTWARE & IT SERVICES**

Alexander Frankiewicz +1 646 949 9029

Gal Munda +1 646 949 9021

**EQUITY SALES**

**SALES**

Albert Aguiar +1 646 949 9218

Enrico DeMatt +1 646 949 9230

Kelleigh Faldi +1 617 292 8288

Ted Franchetti +1 646 949 9231

Shawna Giust +1 646 949 7216

Rich Harb +1 617 292 8228

Zubin Hubner +1 646 949 9202

Michael Kaye +1 646 949 9216

Jessica London +1 646 949 9203

Anthony Masucci +1 646 949 9217

Ryan McDonnell +1 646 949 9214

Emily Mouret +1 415 802 2525

Peter Nichols +1 646 949 9201

Kieran O'Sullivan +1 617 292 8292

Rodrigo Ortigao +1 646 949 9205

**CORPORATE ACCESS**

Olivia Lee +1 646 949 9207

Robert Meyers +1 646 949 9215

Panthea O'Connell +1 646 949 9208

**CRM**

LaJada Gonzales +1 646 949 9213

Monika Kwok +1 646 949 9212

Stephanie Rieben +1 646 949 9240

**EVENTS**

Laura Hawes +1 646 949 9209

**ECONOMICS**

Mickey Levy +1 646 949 9099

Roiana Reid +1 646 949 9098

**SALES TRADING**

Ronald Cestra +1 646 949 9104

Mark Corcoran +1 646 949 9105

Michael Haughey +1 646 949 9106

Christopher Kanian +1 646 949 9103

Lars Schwartzau +1 646 949 9101

Bob Spillane +1 646 949 9102



**JOH. BERENBERG, GOSSLER & CO. KG**

Internet [www.berenberg.com](http://www.berenberg.com)

E-mail: [firstname.lastname@berenberg.com](mailto:firstname.lastname@berenberg.com)

**EQUITY RESEARCH**

**AEROSPACE & DEFENCE**  
Ryan Booker +44 20 3753 3074  
Andrew Gollan +44 20 3207 7891  
Ross Law +44 20 3465 2692

**AUTOMOTIVES**  
Cristian Dirpes +44 20 3465 2721  
Alexander Haissl +44 20 3465 2749  
Viktorija Oushatova +44 20 3207 7890  
Fei Teng +44 20 3753 3049

**BANKS**  
Adam Barrass +44 20 3207 7923  
Stephanie Carter +44 20 3207 3106  
Michael Christodoulou +44 20 3207 7920  
Andrew Lowe +44 20 3465 2743  
Alex Medhurst +44 20 3753 3047  
Eoin Mullany +44 20 3207 7854  
Peter Richardson +44 20 3465 2681

**BEVERAGES**  
Javier Gonzalez Lastra +44 20 3465 2719  
Matt Reid +44 20 3465 2681

**BUSINESS SERVICES, LEISURE & TRANSPORT**  
Zaim Beekawa +44 20 3207 7855  
Tom Buriton +44 20 3207 7852  
Roberta Ciaccia +44 20 3207 7805  
Najet El Kassir +44 20 3207 7836  
William Fitzalan Howard +44 20 3465 2640  
Stuart Gordon +44 20 3207 7858  
Annabel Hay-Jahans +44 20 3465 2720  
Joel Spungin +44 20 3207 7867  
Adrian Yanoshik +44 20 3753 3073

**CAPITAL GOODS**  
Nicholas Housden +44 20 3753 3050  
Sebastian Kuenne +44 20 3207 7856  
Phillippe Lorrain +44 20 3207 7823  
Rizk Madi +44 20 3207 7806  
Jaroslaw Pominkiewicz +44 20 3753 3035  
Simon Toennesen +44 20 3207 7819  
Ethan Zhang +44 20 3465 2634

**EQUITY SALES**

**SPECIALIST SALES**  
**AEROSPACE & DEFENCE & CAPITAL GOODS**  
Cara Luciano +44 20 3753 3146

**AUTOS & TECHNOLOGY**  
Edward Wales +44 20 3207 7815

**BANKS, DIVERSIFIED FINANCIALS & INSURANCE**  
Calum Marris +44 20 3753 3040

**BUSINESS SERVICES, LEISURE & TRANSPORT**  
Rebecca Langley +44 20 3207 7930

**CONSUMER DISCRETIONARY**  
Victoria Maigrot +44 20 3753 3010

**CONSUMER STAPLES**  
Rammique Sroa +44 20 3753 3064

**MEDIA & TELECOMS**  
Jonathan Smith +44 20 3207 7842

**HEALTHCARE**  
David Hogg +44 20 3465 2628

**THEMATICS**  
Chris Armstrong +44 20 3207 7809

**SALES**  
**BENELUX**  
Miel Bakker +44 20 3207 7808  
Bram van Hijfte +44 20 3753 3000

**FRANCE**  
Alexandre Chevassus +33 1 5844 9512

**SALES TRADING**

**LONDON**  
Assia Adanouj +44 20 3753 3087  
Charles Beddow +44 20 3465 2691  
Mike Berry +44 20 3465 2755  
Joseph Chappell +44 20 3207 7885  
Stewart Cook +44 20 3465 2752  
Mark Edwards +44 20 3753 3004  
Tom Floyd +44 20 3753 3136  
Tristan Hedley +44 20 3753 3006  
Peter King +44 20 3753 3139  
Simon Messman +44 20 3465 2754  
A.J. Pulleyn +44 20 3465 2756  
Michael Schumacher +44 20 3753 3006  
Paul Somers +44 20 3465 2753

**CHEMICALS**  
Sebastian Bray +44 20 3753 3011  
Anthony Manning +44 20 3753 3092  
Rikin Patel +44 20 3753 3080

**DIVERSIFIED FINANCIALS**  
Chris Turner +44 20 3753 3019

**FOOD MANUFACTURING AND H&PC**  
Rosie Edwards +44 20 3207 7880  
Fintan Ryan +44 20 3465 2748  
James Targett +44 20 3207 7873

**FOOD RETAIL**  
Dusan Milosavljevic +44 20 3753 3123

**GENERAL MID CAP - DACH**  
Saravana Bala +44 20 3753 3043  
Martin Comtesse +44 20 3207 7878  
Charlotte Friedrichs +44 20 3753 3077  
Gustav Fröberg +44 20 3465 2655  
James Letten +44 20 3753 3176  
Alexander O'Donoghue +44 20 3207 7804  
Gerhard Orgonas +44 20 3465 2635  
Henrik Paganetty +44 20 3453 3140  
Benjamin Pfannes-Varrow +44 20 3465 2620

**GENERAL MID CAP - EU core**  
Beatrice Allen +44 20 3465 2662  
Christoph Greulich +44 20 3207 3119  
Andreas Markou +44 20 3753 3022  
Anna Patrice +44 20 3207 7863  
Trion Reid +44 20 3753 3113

**GENERAL MID CAP - UK**  
Joseph Barron +44 20 3207 7828  
Calum Battersby +44 20 3753 3118  
Robert Chantry +44 20 3207 7861  
Sam Cullen +44 20 3753 3183  
Ned Hammond +44 20 3753 3017  
Omar Ismail +44 20 3753 3102  
Anthony Plom +44 20 3207 7908  
Edward James +44 20 3207 7811  
Lush Mahendrarajah +44 20 3207 7896  
Benjamin May +44 20 3465 2667

**FRANCE (cont'd)**  
Dalila Farigoule +33 1 5844 9510  
Kevin Nor +33 1 5844 9505  
Guillaume Viret +33 1 5844 9507

**SCANDINAVIA**  
Mikko Vanhala +44 20 3207 7818  
Marco Weiss +49 40 350 60 719

**UK**  
James Burt +44 20 3207 7807  
Fabian De Smet +44 20 3207 7810  
Marta De-Sousa Fialho +44 20 3753 3098  
Jules Emmet +44 20 3753 3260  
Katie Ferry +44 20 3753 3041  
Robert Floyd +44 20 3753 3018  
David Franklin +44 20 3465 2747  
Karl Hancock +44 20 3207 7803  
Sean Heath +44 20 3465 2742  
Stuart Holt +44 20 3465 2646  
James Hunt +44 20 3753 3007  
James McRae +44 20 3753 3036  
David Mortlock +44 20 3207 7850  
Eleni Papoula +44 20 3465 2741  
Bhavin Patel +44 20 3207 7926  
Kushal Patel +44 20 3753 3038  
Richard Payman +44 20 3207 7825

**PARIS**  
Vincent Klein +33 1 58 44 95 09  
Antonio Scuotto +33 1 58 44 95 03

**GENERAL MID CAP - UK (cont'd)**  
Eoghan Reid +44 20 3753 3055  
Owen Shirley +44 20 3465 2731  
Donald Tait +44 20 3753 3031  
Sean Thapar +44 20 3465 2657

**GENERAL RETAIL**  
Thomas Davies +44 20 3753 3104  
Michelle Wilson +44 20 3465 2663

**HEALTHCARE**  
Scott Bardo +44 20 3207 7869  
Alistair Campbell +44 20 3207 7876  
Klara Fernandes +44 20 3465 2718  
Tom Jones +44 20 3207 7877  
Joseph Lockey +44 20 3465 2730  
Samantha Osborne +44 20 3207 7882  
Michael Ruzic-Gauthier +44 20 3753 3128  
Laura Sutcliffe +44 20 3465 2669  
Charles Weston +44 20 3465 2746

**INSURANCE**  
Charles Bendit +44 20 3465 2729  
Trevor Moss +44 20 3207 7893  
Emanuele Musio +44 20 3207 7916  
Iain Pearce +44 20 3465 2665  
Philip Ross +44 20 3465 2726

**LUXURY GOODS**  
Mariana Horn +44 20 3753 3044  
Lauren Molyneux +44 20 3207 7892  
Zuzanna Puszc +44 20 3207 7812

**MEDIA**  
Robert Berg +44 20 3465 2680  
Keisi Hysa +44 20 3207 7817  
Laura Janssens +44 20 3465 2639  
Alastair Reid +44 20 3207 7841  
Sarah Simon +44 20 3207 7830

**METALS & MINING**  
Charlie Clark +44 20 3207 3133  
Richard Hatch +44 20 3753 3070  
Laurent Kimman +44 20 3465 2675  
Michael Stoner +44 20 3465 2643

**UK (cont'd)**  
Christopher Pyle +44 20 3753 3076  
Adam Robertson +44 20 3753 3095  
Joanna Sanders +44 20 3207 7925  
Mark Sheridan +44 20 3207 7802  
George Simbert +44 20 3207 7911  
Alexander Wace +44 20 3465 2670  
Paul Walker +44 20 3465 2632

**GERMANY**  
Michael Brauburger +49 69 91 30 90 741  
Nina Buechs +49 69 91 30 90 735  
André Grosskurth +49 69 91 30 90 734  
Joerg Wenzel +49 69 91 30 90 743

**SWITZERLAND, AUSTRIA & ITALY**  
Duncan Downes +41 22 317 1062  
Andrea Ferrari +41 44 283 2020  
Gianni Lavigna +41 44 283 2038  
Jamie Nettleton +41 44 283 2026  
Yeannie Rath +41 44 283 2029  
Mirco Tieppo +41 44 293 2024

**COO Office**  
Greg Swallow +44 20 3207 7833  
Fenella Neill +44 20 3207 7868

**EQUITY TRADING**

**HAMBURG**  
David Hohn +49 40 350 60 761  
Gregor Labahn +49 40 350 60 571  
Lennart Pleus +49 40 350 60 596  
Marvin Schweden +49 40 350 60 576  
Omar Sharif +49 40 350 60 563  
Philipp Wiechmann +49 40 350 60 346  
Christoffer Winter +49 40 350 60 559

**LONDON**  
Christopher Brown +44 20 3753 3085  
Edward Burlison-Rush +44 20 3753 3005  
Richard Kenny +44 20 3753 3083  
Chris McKeand +44 20 3207 7938  
Ross Tobias +44 20 3753 3137  
Robert Towers +44 20 3753 3262

**OIL & GAS**  
Henry Tarr +44 20 3207 7877

**REAL ESTATE**  
Kai Klose +44 20 3207 7888

**TECHNOLOGY**  
Josep Bori +44 20 3753 3058  
Georgios Kertsoz +44 20 3465 2715  
Tej Sthankiya +44 20 3753 3099  
Tammy Qiu +44 20 3465 2673

**TELECOMMUNICATIONS**  
David Burns +44 20 3753 3059  
Nicolas Didio +44 20 3753 3091  
Usman Ghazi +44 20 3207 7824  
Laura Janssens +44 20 3465 2639  
Carl Murdock-Smith +44 20 3207 7918

**THEMATIC RESEARCH**  
Nick Anderson +44 20 3207 7838  
Oyvind Bjerke +44 20 3753 3082  
Steven Bowen +44 20 3753 3057  
Asad Farid +44 20 3207 7932  
Robert Lamb +44 20 3465 2623  
Paul Marsch +44 20 3207 7857  
Salha Shariff +44 20 3753 3097

**TOBACCO**  
Jonathan Leinster +44 20 3465 2645

**UTILITIES**  
Oliver Brown +44 20 3207 7922  
Andrew Fisher +44 20 3207 7937  
Lawson Steele +44 20 3207 7887

**ECONOMICS**  
Florian Hense +44 20 3207 7859  
Carsten Hesse +44 20 3753 3001  
Kallum Pickering +44 20 3465 2672  
Holger Schmieding +44 20 3207 7889

**CRM**  
Laura Cooper +44 20 3753 3065  
Jessica Jarmyn +44 20 3465 2696  
Madeleine Lockwood +44 20 3753 3110  
Vikram Nayyar +44 20 3465 2730  
Rita Pilar +44 20 3753 3066

**CORPORATE ACCESS**  
Lindsay Arnold +44 20 3207 7821  
Robyn Gowers +44 20 3753 3109  
Dipti Jethwani +44 20 3207 7936  
Ross Mackay +44 20 3207 7866  
Stella Siggins +44 20 3465 2638  
Lucy Stevens +44 20 3753 3060  
Abbie Stewart +44 20 3753 3054

**EVENTS**  
Charlotte David +44 20 3207 7832  
Suzy Khan +44 20 3207 7915  
Natalie Meech +44 20 3207 7831  
Eleanor Metcalfe +44 20 3207 7834  
Rebecca Mikowski +44 20 3207 7822  
Sarah Weyman +44 20 3207 7801

**ELECTRONIC TRADING**  
Jonas Doehler +44 40 350 60 391  
Matthias Führer +49 40 350 60 597  
Sven Kramer +49 40 350 60 347  
Matthias Schuster +44 40 350 60 463