

SPECIAL REPORT

TD Economics



March 28, 2017

FOR U.S. ECONOMIC GROWTH, TWO PERCENT IS THE NEW THREE PERCENT

Highlights

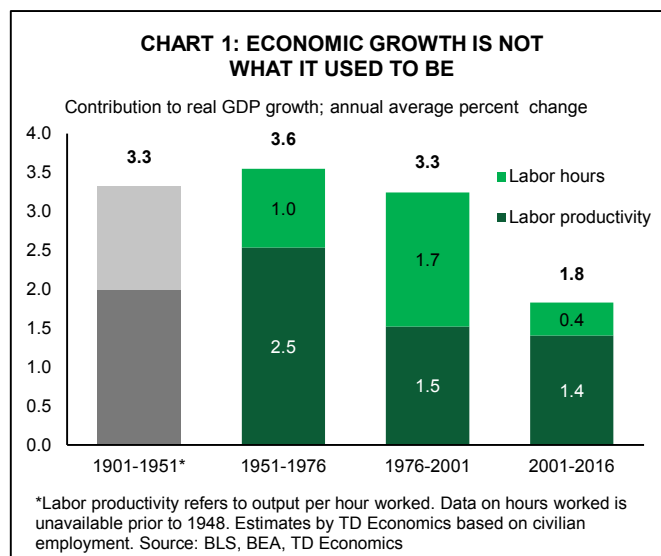
- Over the twentieth century, the American economy grew at an annual rate above 3%. Growth in the twenty-first century has been noticeably slower, averaging less than 2% annually.
- This is likely to continue. We expect economic growth slightly above 2% over the next two years. Our long-term growth outlook has real GDP growth of 1.9% in 2021.
- Even with slower economic growth, the labor market has made strides over the last several years. With above-trend job growth over the next two years, the labor market will finally repair the damage caused by the Great Recession.
- With the economy at full employment, workers will become increasingly harder to come by. As baby boomers leave the workforce for retirement, growth in total labor hours is set to slow to just 0.5%, roughly a percentage point less than in the twentieth century. This explains the majority of the expected slowdown in economic growth.
- The saving grace for the economy could be labor productivity. We expect faster productivity growth, enough to offset the slowdown in hours, but achieving economic growth north of 3% would require a return to a pace of technological innovation seen in a few unique periods of U.S. history.

Over the twentieth century, the U.S. economy grew at an annual average rate north of 3%. Business cycles came and went, but this rate was a good bet for where economic growth would land on average over the longer-term (Chart 1).

Given this long history, a common question we hear from clients is why our forecasts for economic growth do not return to this long-run average. We anticipate economic growth of slightly over 2% over the next two years. Our long-term growth outlook has real GDP growth of 1.9% in 2021.

The slowdown in growth relative to its historical pattern is primarily due to demographics. America's population is aging, with an increasing share of the population moving out of the labor force, and into retirement. In the absence of policies that would mitigate this trend, labor force growth will slow considerably from its historical average rate.

The saving grace for the economy could be labor productivity. Some of its recent slowdown was a hangover from the financial crisis. As 2008 fades further into the past, our forecast calls for faster productivity growth relative to the meagre trend over the past several years. However, achieving economic growth sustainably north of 3% would require a return to a rate of technological advance seen only in a few unique periods of U.S. history.



As labor market slack diminishes, workers are harder to come by

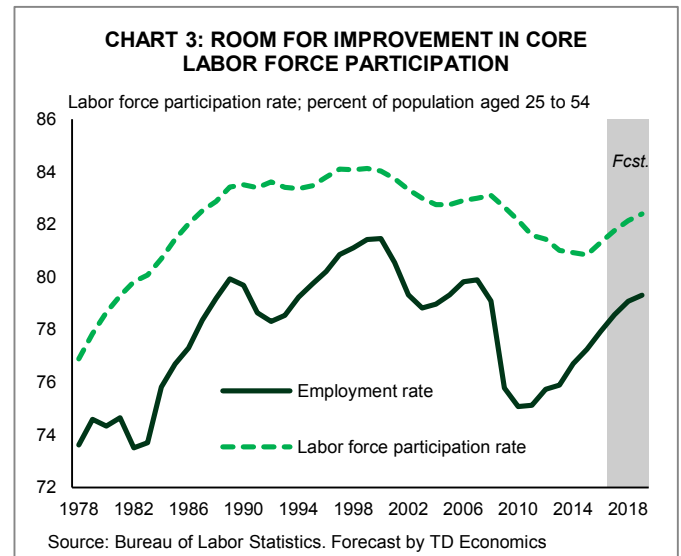
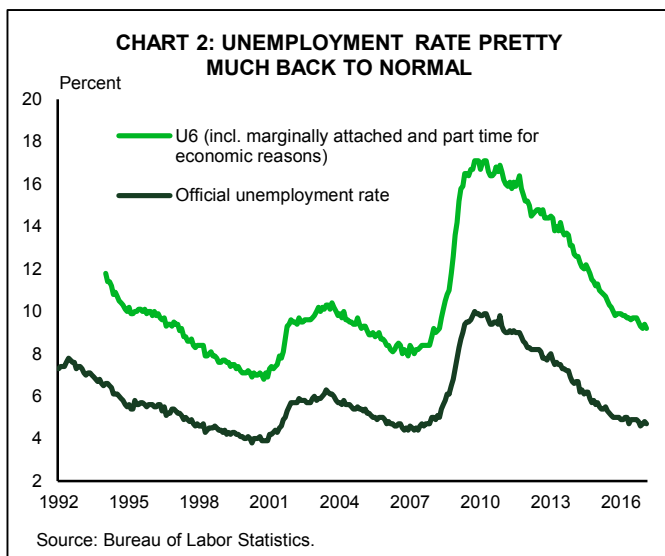
Put simply, the economy’s ability to grow depends on how many worker hours it can add, and how much more productive they can become.¹ Let’s consider each in turn.

The supply of workers is dependent on a few factors: first, the stage of the economic cycle – there are more people available to work following a recession, and fewer once unemployment has normalized; second, the inclination of people to participate in the labor market and age structure of the population – people in their thirties are more likely to be employed or actively search for work than people in their seventies.

In terms of the stage of the economic cycle, the unemployment rate has fallen from a peak of 10% to 4.7%. This is roughly considered normal, and about the prevailing rate prior to the recession (Chart 2).² However, in the current environment, the unemployment rate may not be the best measure of labor market slack. The magnitude of the recession and longer duration of unemployment appears to have led some people to give up actively searching for work and thus cease to be counted as part of the labor market.

As the labor market has tightened, the duration of unemployment has moved lower and wage growth pushed higher. This has led some of these people to make their way back into the labor market. From its trough in late 2015, the labor force participation rate of core working-aged people (25 to 54) has risen 1.1 percentage points. The increase implies an additional 1.2 million people joined the labor force.

This is likely to continue. We expect over one million people to join the labor force over the next two years, with



the majority of these between the ages of 25 and 54.

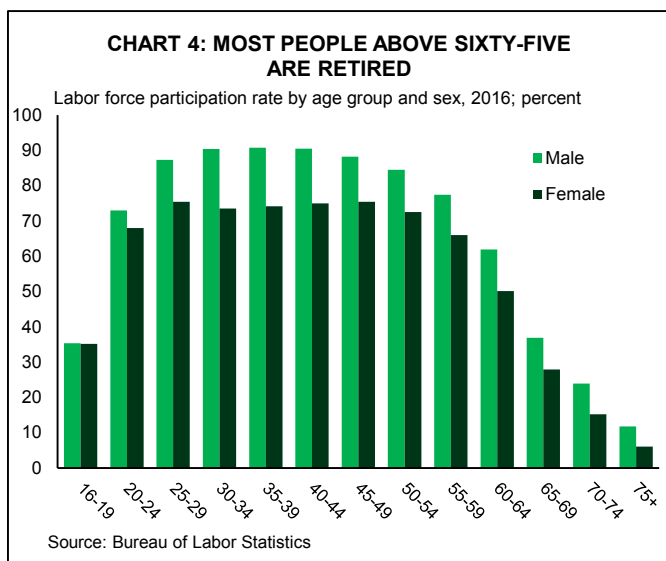
With job growth expected to run at an average annual rate of 1.3% over the next two years (roughly 160k jobs a month), the employment to population rate of core working age people (25 to 54) will move toward its pre-recession level (Chart 3). In short, our forecast anticipates that any remaining slack in the labor market will be eliminated over the next two years. And, even with this view, real GDP growth is still expected to track near the 2% mark.

Everybody’s working for retirement

At full employment, labor force growth will depend on the growth in the adult population and the labor force participation rate. Participation in the labor market shows a clear life cycle. While there are some teenagers in the workforce, people tend to join the workforce in force in their early twenties and to start leaving the workforce in their late fifties. The older people get, the more likely they are to have left the labor market and be blissfully enjoying retirement (Chart 4, next page).

Population aging is not something that will hit the labor market sometime in the future. It has been a potent force weighing on growth in the labor force over the past several years, masked only by the depth of the recession and recovery. Since 2012, the civilian population under the age of 55 has grown less than 0.2% annually. Meanwhile, the population over 55 has grown at an average rate of 3.0%.

Offsetting some of the impact of population aging has been an increased propensity of older cohorts to remain engaged in the labor force. However, this phenomenon is swamped by the wave of baby boomers moving further away



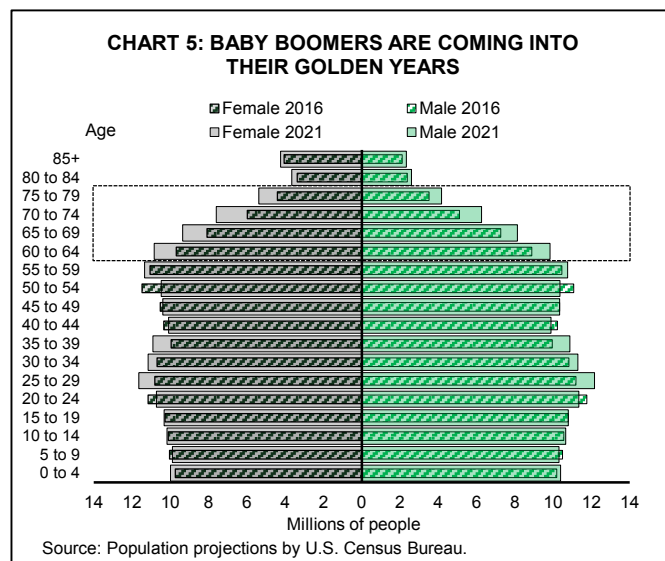
from their prime working years. Splitting the population into five-year age groups, the fastest growing segment of the population over the next year is people between the ages of 70 to 74. In five years, it will be people 75 to 79 (Chart 5). Over the last decade, the participation rate of 70 to 74 year olds has risen roughly two percentage points from 17% to 19% – much lower than the 32% of 65 to 69 year olds who participate in the labor market. Even as more septuagenarians remain in the labor market, a convergence to the participation rates of younger cohorts appears far-fetched.³

Male participation has been in steady decline

We can't lay all of blame for slowing labor force growth on the Great Recession and population aging. The participation rate of core working-age males (25 to 54) has been falling for decades. In the 1950s, nearly the entire population of men (98%) in their prime-working years (25 to 54) were engaged in the labor market. Since then, the core male participation rate has fallen steadily and is down 10 percentage points to its current 88% (Chart 6).

The long-term decline in labor force participation appears to be largely due to structural factors. In particular, changes in the structure of the economy have reduced the demand for and earning potential of lower-educated males.⁴ Men without post-secondary education have seen the steepest dip in participation.⁵

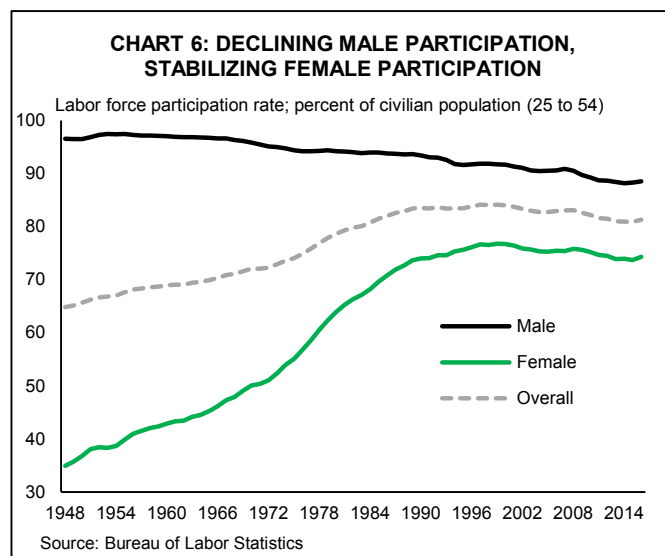
Policies that raise the skills and/or earnings of low-skilled workers (through such things as earned income tax credits) could help to address this challenge. America clearly has room to improve. Its male participation rate is the third lowest among OECD countries. Nonetheless, in



the absence of policy changes, the long-term nature of the decline limits the extent of the anticipated cyclical rebound in the aggregate labor force.

Female entry into the workforce was a major driver of 20th century labor force growth

Male labor force participation rates have been in long-run decline, but female participation rates rose substantially from the 1960s through the 1980s. In 1950, just 37% of prime age women participated in the labor force. By 1980, this had risen to 62%, and by 2000, it had risen to a peak of 77% (Chart 6). Rising female labor force participation was responsible for all of the increase in the overall participation rate through this time period. Without rising female participation, the labor force would have grown about 40% slower over the course of the twentieth century.⁶



However, female labor force participation flat-lined in the early 1990s. This levelling out has occurred for both older and younger cohorts of women. Since 2000, the core female participation rate has performed similarly to the male rate, with both falling roughly four percentage points before recovering modestly over the past year.

Still, like male labor force participation, female attachment to the workforce is low relative to other countries, although for different reasons. Relatively more generous childcare tax benefits and parental leave policies in other advanced economies have contributed to higher female labor force participation rates. While other countries have generally been increasing public support for parental leave, the U.S. is alone in having no statutory paid leave program.⁷

More young people in school means fewer in the workforce

A final distinguishable group to experience a decline in labor force participation that pre-dated the recession is young people – teenagers and people in their early twenties. Fortunately, this appears to be due in part to increased time devoted to schooling and rising college enrollment rates. The increased educational attainment of younger people should offset the decline in labor force participation, leading to increased attachment and better labor market outcomes later in life.

Strong demographic headwind is the main reason to expect slower economic growth

The bottom line is that even while some cyclical rebound in participation is likely, it is fighting against powerful long-term trends that are limiting its scale. Population aging is

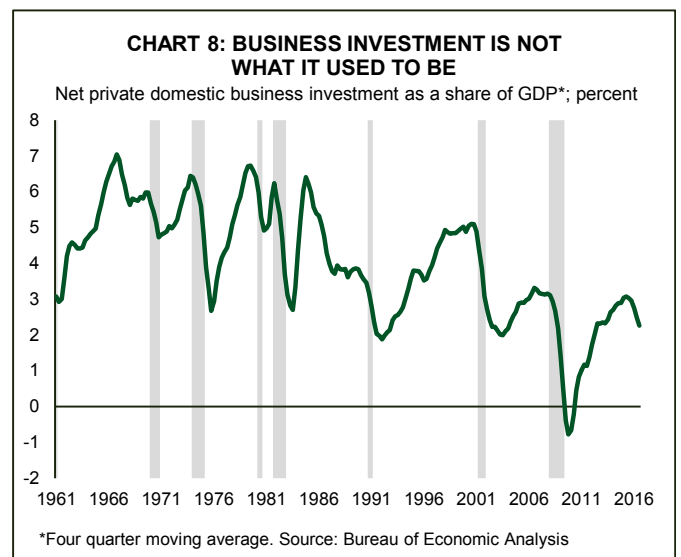
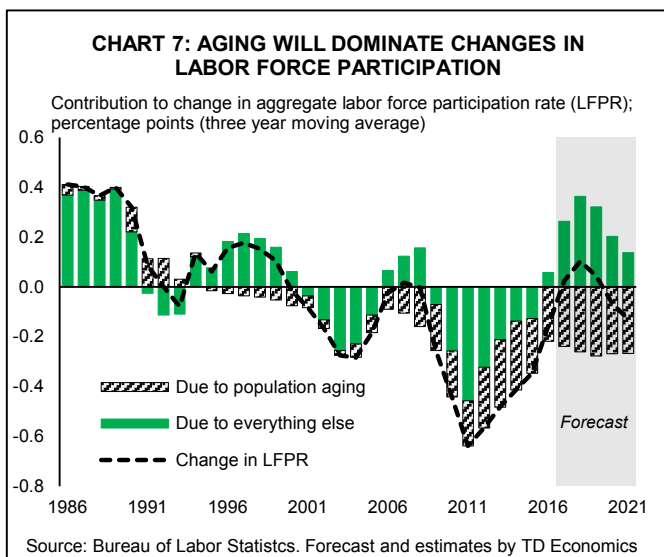
taking place faster than the increase in labor force attachment among older cohorts (Chart 7). As a result, we expect labor force growth to slow to 0.6% by 2021.

What is more, the tendency of people to work part-time increases as retirement approaches. Therefore, total labor hours worked is likely to be modestly slower than labor force growth, running at roughly 0.5% a year. This compares to average annual growth of 1.4% through the second half of the twentieth century and explains the vast majority of the anticipated slowdown in economic growth.⁸

Higher investment will raise productivity growth, but slowly

The aging of the baby-boom generation is a potent force, but at least one that is relatively easy to predict. Productivity growth is less foreseeable. In fact, productivity has been one of the more disappointing elements of the economic outlook over the past several years. When we consider the accuracy of our projections since the Great Recession, we (and other forecasters) have had a relatively good record of predicting job growth and improving unemployment. The bigger forecast misses have been on the rate of labor productivity growth.

There are two factors behind the decline in labor force productivity. As discussed in a previous report (see [Business Investment is Ripe for a Rebound](#)), part of the problem is disappointing investment growth. The pace of investment relative to economic growth began to slow noticeably in the early part of the twenty-first century (Chart 8). The Great Recession worsened the trend, and the recovery since has not remedied the situation. With the decline in oil prices and rise in the U.S. dollar, investment spending turned south



again in 2016.

Our baseline forecast anticipates a rebound in investment spending over the next year. As investment rises, it should lead to increases in the level of productive capital available per worker.² This “capital deepening,” as it is known in economist lingo, should contribute positively to economic growth – reversing the trend of the past several years. However, this is a slow moving train. The pullback in investment over the past year creates a lower starting point and higher hurdle for capital deepening to contribute to economic growth. All told, we need several continuous years of higher investment growth to materially raise labor productivity. This is possible, especially if policy is supportive, but one must weigh the upside potential against the downside risks to investment, which we take up in the following sections.

Gains in educational attainment through the twentieth century are unlikely to be repeated

Besides investment in structures and machinery, an equally important form of investment is in education or human capital. The increased educational attainment of Americans over the first half of the twentieth century, and in particular, the rise in the percent of people who completed high school, was an important contributor to gains in labor productivity. Levels of educational attainment began to plateau in the 1970s and, while college enrollment has continued to rise, the pace of gains have been slower since (Chart 9).¹⁰

A slowing in the rate of educational attainment means that human capital development is likely to contribute less to labor productivity than it did previously. According to

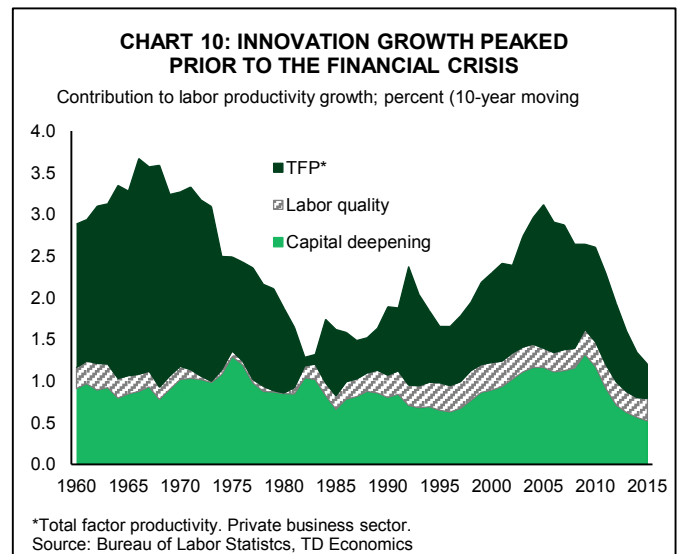
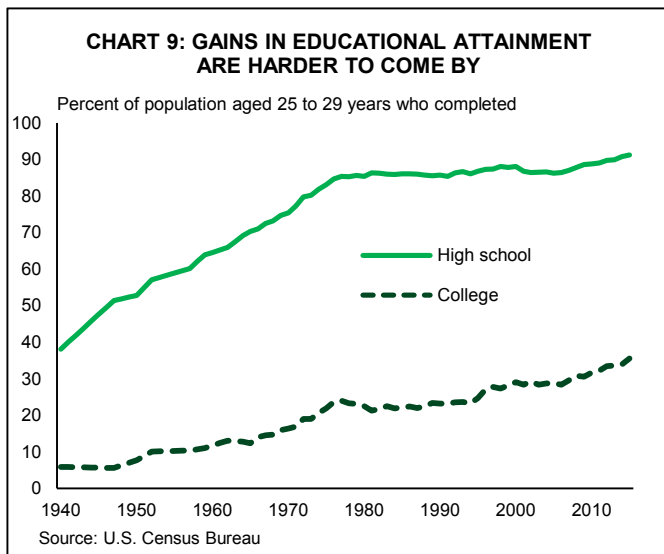
estimates by John Fernald, the contribution to GDP growth from labor quality is likely to be half of what it was historically, falling from 0.4 percentage points to 0.2 percentage points.¹¹

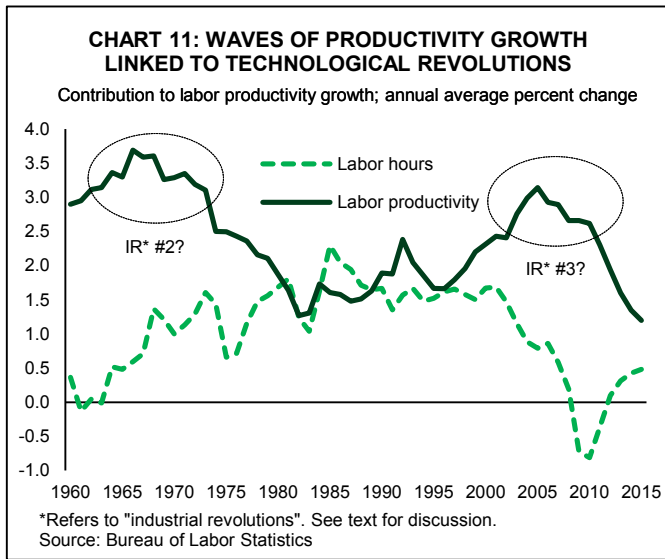
Waiting for the next digital revolution

An equally significant contributor to slowing labor productivity is a measured slowdown in the rate of innovation (or technological change) in the economy. Over the long term, the main source of increases in living standards is changes in what economists call total factor productivity (or TFP). Once accounting for improvements in labor quality (as per above), TFP measures changes in economic activity that are not derived from additional labor or capital and encompasses both technological change as well as improvements in processes and practices that raise economic output.

TFP growth weakened over the last decade (Chart 10). Like the slowdown in investment, the slowdown pre-dated the financial crisis. The causes of the decline in global innovation is a source of debate among economists. Some economists, such as Robert Gordon argue that the slowdown in productivity is due to waning gains from a few distinct technological revolutions. The surge of productivity growth in the late-1990s and early-2000s reflected the peak diffusion of technologies that ultimately began with the computer revolution of the 1960s. Prior to that, the wave of productivity growth in the 1950s through early 1970s reflected the peak gains from the diffusion of technological advances in the late 19th century, including the invention of electricity and the thermal combustion engine.¹²

According to this view, each wave of innovation associated with past technological revolution has been shorter than





the previous one as additional technological advances fail to match the revolutionary nature of the previous one. For example, the invention of the internet and smart phones, while ground-breaking, had a smaller impact on living standards than the invention and diffusion of electricity and internal combustion engines (Chart 11).

Others economists, such as Erik Brynjolfsson and Andrew McAfee argue that it is just a matter of time before the innovations of the digital age diffuse more widely into the economy and leads productivity growth to accelerate.¹³ According to their thinking, we are still at the beginning of a new machine age that will fundamentally change the nature of work, with computers and robots taking on not only routine tasks, but also cognitively complex tasks that have to-date been the sole domain of humans.

More than a technology story?

Other explanations for the slowdown in productivity are a decline in new business formations and failures. Since new and growing firms tend to be highly productive and failing firms less productive, the decline in business turnover is a plausible cause of the slowdown. This may itself be a function of population aging. People are more likely to start new businesses when they are in their early-thirties, and less likely as they approach retirement. Moreover, the type of business people start earlier in their careers is likely to be different and potentially more growth-oriented than those started at the twilight of their careers.¹⁴

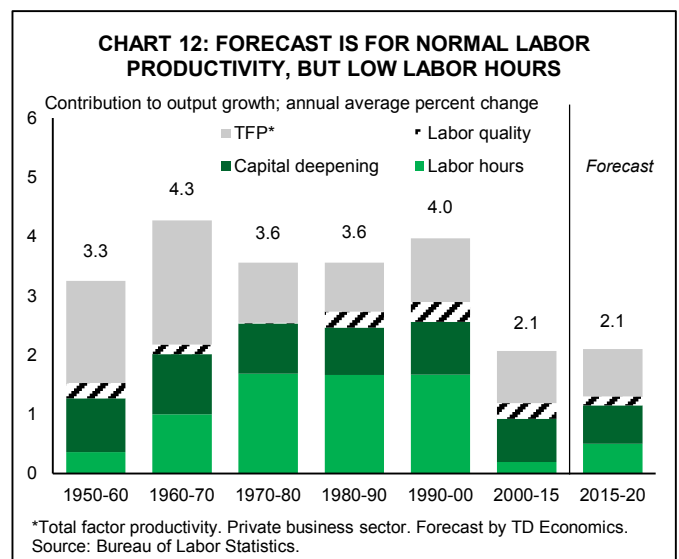
Another explanation for the slowdown in productivity growth is a potential breakdown in the diffusion of innovation from the most productive companies to the rest. Ac-

ording to the OECD, productivity growth among elite firms does not appear to have slowed, but it may not be getting to the rest of the economy. Gaps between elite firms and others appear to have widened, especially within service industries.¹⁵ To the extent that this is the case, removing barriers to the transmission of information, knowledge, and technology from firms at the frontier and others could help to raise productivity growth.

Adding it all up

Putting it together, our forecast for medium-term real GDP growth just shy of 2% is based on productivity growth accelerating sufficiently to offset the expected slowdown in hours worked. We expect output per hour in the business sector to accelerate from an estimated 0.3% rate in 2016 to around 1.6%. This is consistent with an investment rebound that will see growth in capital services grow faster than labor. Capital deepening explains close to half of the rise in productivity. The remaining comes from TFP growth. This rate of TFP growth is consistent with historical rates from the 1970s to early 1990s excluding the exceptional period of the late 1990s and early 2000s. In other words, it is a normal, but not extraordinary rate of technological change.

This adds up to business sector growth of modestly above 2% (Chart 12). Since GDP tends to grow slower than the business sector, largely reflecting slower growth in government, GDP growth is likely to be somewhat lower. Based on the historical growth gaps, this is consistent with real GDP growth of just below 2.0%. While low relative to its own history, this is still relatively high compared to other advanced economies with aging populations. Similar exercises for Japan and Europe yield economic growth under 1%.



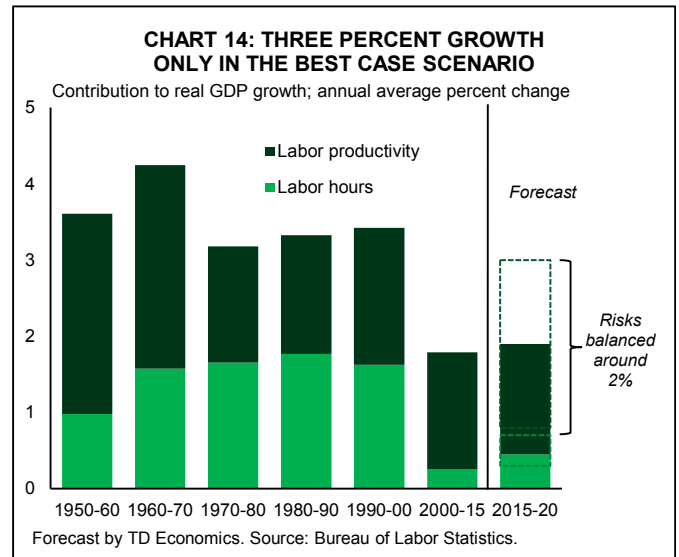
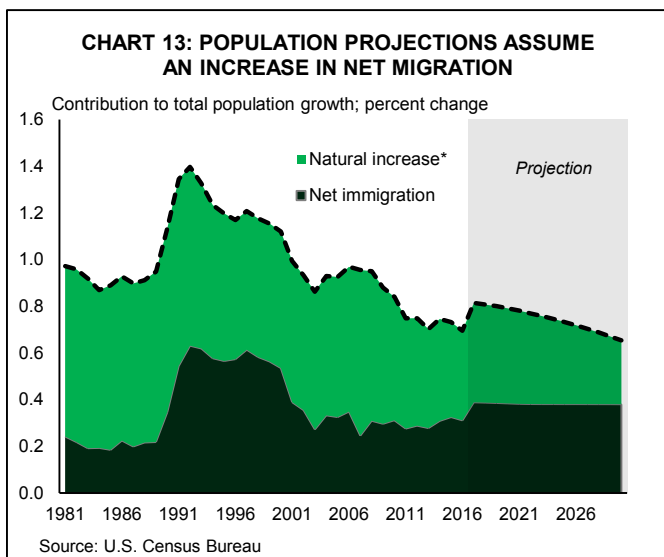
Upside and downside risks

Our forecast is balanced around upside and downside risks. On the downside, a smaller near-term rebound in core labor force participation rates would imply a swifter slowdown in labor force and employment growth. Over the longer-term, we expect the participation rates of older Americans to continue the recent trend of modest increases. Should this flatten out or reverse, labor force growth would come in slower than anticipated.

Just as important, labor force growth assumptions are based on population projections from the Census Bureau that build in assumptions about international immigration. These projections assume a pickup in migration relative to current levels of roughly one-third (Chart 13). Should net-migration remain at its average over the past five years, it would reduce population growth by 0.1 percentage points. Given the relatively younger age profile of immigrants, labor force growth would likely be even slower. A further slowing in immigration flows would present additional downside risk to these estimates.

In terms of productivity, disappointment on the investment front would result in a slower rate of capital deepening and limit the anticipated rebound in productivity growth. Similarly, should the barriers to the diffusion of technological change that have characterized the last several years remain in place, TFP growth could continue to disappoint expectations. Overall labor productivity has averaged just 0.5% annually over the past five years. Should this remain in place, economic growth would be a full percentage point lower than our baseline expectation.

On the upside, policies that help to close the gap with



other advanced economies in labor force participation of prime-aged men and women relative to other advanced economies could result in faster labor force growth. America has seen policy move in the direction of supporting incentives to work in the past. Increases in the earned income tax credit are one example. Policies that raise the level of education and skills of working Americans could help to raise the quality of labor closer to levels seen over the course of the twentieth century.

Lastly, policies that raise the level of immigration may stem some of the expected slowdown in labor force growth, however, moving the dial would require much higher levels of migration relative to the recent past. Doubling the Census Bureau's assumptions on the rate of net migration would add 0.4 percentage points to population growth. This appears unlikely in the current political environment.

There are two sources of upside risk to productivity growth. The first is a return to a more historically normal investment environment. Raising the contribution of capital deepening to economic growth back to its average in post-war twentieth century, would add an additional 0.5 percentage points to economic growth. In all likelihood, such an increase in investment would require both supportive policies, and an acceleration in the rate of technological change globally. This is the second source of upside risk.

Predicting the next innovation wave is very difficult and even when they do show up; economists are often late at recognizing them. Should innovations such as driverless cars, machine learning, and other forms of automation become more widespread, measured innovation growth would come in much faster. This is the best hope to pushing eco-

nomic growth above 3%. However, as we have seen in past waves of innovation-led productivity growth, this may not last forever, and gains could slow once these technological advances have diffused through the economy.

Investors cannot ignore the new growth paradigm

Slower economic growth has broad implications for financial markets. As the Federal Reserve continues to normalize its policy rate, a key determining factor is the neutral policy rate that is neither stimulative nor restrictive to economic activity and inflation. With slower trend growth, the Fed's neutral policy rate will remain lower than it has been historically. The median estimate of the neutral (or long-term) policy rate among members of the Federal Open Market Committee (FOMC) is 3.0%. Prior to the financial crisis in 2007, the federal funds rate was set at 5.25%.

However, by the same token, slower potential economic growth means the Fed must react sooner to signs that the economy is growing faster than this rate. An economy

growing just north of 2.0% may not seem like it is absorbing much slack, but as long as trend growth is lower than this, it likely is.

Naturally, slower trend growth also implies permanently lower longer-term rates. Long-term yields incorporate investors' expectations for future short-term rates as well as a premium for holding long-term bonds. Slow global growth, low inflation and years of quantitative easing by global central banks have pushed down term-premia over the past several years, but these should begin to normalize alongside interest rate policy. Still, with lower short-term rates, our long-term forecast for the 10-year yield tops out at 3.45%, well below the 5% that it averaged over the ten years prior to the financial crisis.

For equity markets, the rate of economic growth will form the basis for future profit growth and therefore growth in equity values. Given that stock prices appear to have largely priced in the lower interest rate environment, gains going forward are likely to be harder to come by.

*James Marple, Senior Economist & Director
416-982-2557*

ENDNOTES

- 1 Output may be increased by adding more workers or by existing workers putting in more hours. Over the longer-term, the trend has been toward shorter (rather than longer) work weeks, but this has stabilized in recent decades. Labor productivity refers to output per labor hour worked. [Return to text](#)
- 2 The natural rate of unemployment may also be impacted by the age structure of the population. Since older cohorts have lower unemployment rates than younger cohorts, a smaller share of young people in the population may imply a lower structural unemployment rate. [Return to text](#)
- 3 The Bureau of Labor Statistics publically available information sums all people above the age of seventy-five in one group whose combined participation rate is 8.5%. [Return to text](#)
- 4 Other contributing factors to falling male participation include rising incarceration rates (despite falling overall crime rates) and rising disability insurance claims. Both of these have been shown to decrease the likelihood of people re-joining the labor market following periods outside of it. For additional discussion see <https://www.brookings.edu/blog/social-mobility-memos/2017/02/03/what-we-know-and-dont-know-about-the-declining-labor-force-participation-rate/> [Return to text](#)
- 5 Black Sandra, Jason Furman, Emma Rackstraw, and Nirupama Rao (2016). “[The Long-term Decline in US Prime-age Male Labour Force Participation](#)” <http://voxeu.org/article/long-term-decline-us-prime-age-male-labour-force-participation-and-policies-address-it> VoxEU.org [Return to text](#)
- 6 Growing at an annual average rate of 1.0%, instead of 1.4%. To the extent that the rise in female labor force participation is substitution for male participation (for example within a household) this would overstate the difference. However, less than a quarter of prime-age men who are not in the labor market have a working spouse, and that rate has declined over time (see [reference in 5 above](#)). [Return to text](#)
- 7 Thévenon, O. (2013), “[Drivers of Female Labour Force Participation in the OECD](#)”, OECD Social, Employment and Migration Working Papers, No. 145, OECD Publishing, Paris. <http://dx.doi.org/10.1787/5k46civrngms6-en> [Return to text](#)
- 8 The Bureau of Labor Statistics publishes data on total labor hours worked beginning in 1948. [Return to text](#)
- 9 Capital deepening requires investment to rise above the rate of depreciation in the stock of capital (including structures, machinery, etc.) and growth in labor hours worked. [Return to text](#)
- 10 Ryan, Camille L. and Kurt Bauman (2016). “[Educational Attainment in the United States: 2015](#)” United States Census Bureau P20-578 <https://www.census.gov/content/dam/Census/library/publications/2016/demo/p20-578.pdf> [Return to text](#)
- 11 Fernald, John (2016). “[What is the New Normal for U.S. Growth?](#)” Federal Reserve Board of San Francisco Economic Letter. <http://www.frbsf.org/economic-research/publications/economic-letter/2016/october/new-normal-for-gdp-growth/> [Return to text](#)
- 12 Gordon, Robert J. (2012). “[Is U.S. Economic Growth Over?: Faltering Innovation Faces the Six Headwinds](#)” Centre for Economic Policy Research Policy Insight No. 63 http://www.cepr.org/sites/default/files/policy_insights/PolicyInsight63.pdf [Return to text](#)
- 13 Brynjolfsson, E. (2014). *The second machine age: Work, progress, and prosperity in a time of brilliant technologies* (First Edition.). New York: W. W. Norton & Company. [Return to text](#)
- 14 Levesque, Moren and Maria Minniti (2006). “[The Effect of Aging on Entrepreneurial Behavior](#)” Journal of Business Venturing, Volume 21, Issue 2, March 2006, Pages 177-194 [Return to text](#)
- 15 OECD (2015), *The Future of Productivity*, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264248533-en> [Return to text](#)

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