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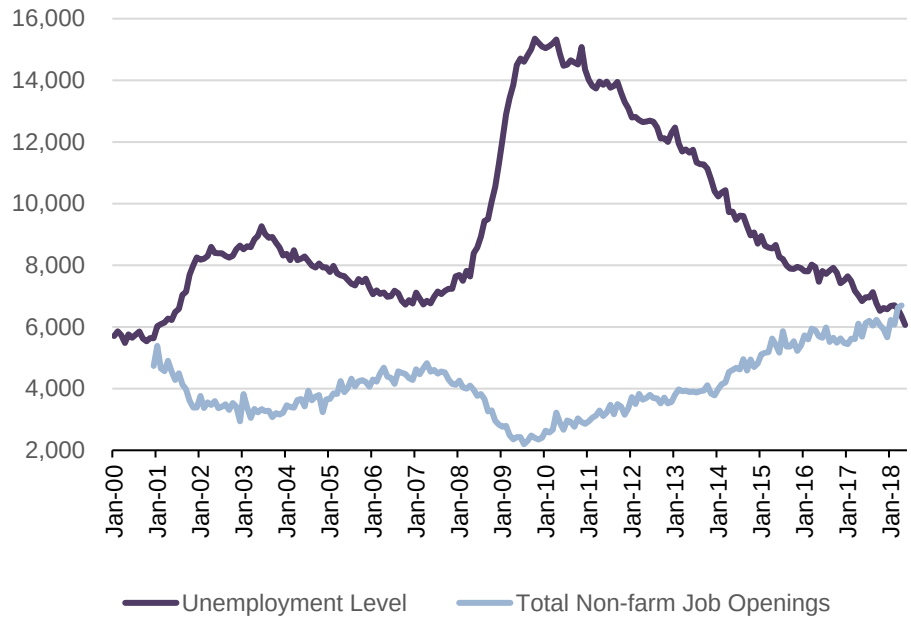
The Future of Work and Implications for the Yield Curve

By Maria Vassalou, Ph.D. and Thomas Cooley, Ph.D.

By all standard indicators the labor market in the U.S. is doing very well. For several years, we have been creating jobs at a brisk rate of nearly 200,000 per month. The unemployment rate fell to record low of 3.75% earlier this year, although it bounced back to 4% in June. The most recent Job Openings and Labor Turnover Survey (JOLTS) shows a record number of vacancies—the highest since the survey started. Moreover, the ratio of vacancies to unemployed workers is at a record high as Figure 1 illustrates:

FIGURE 1: VACANCIES AND UNEMPLOYMENT



Source: BLS

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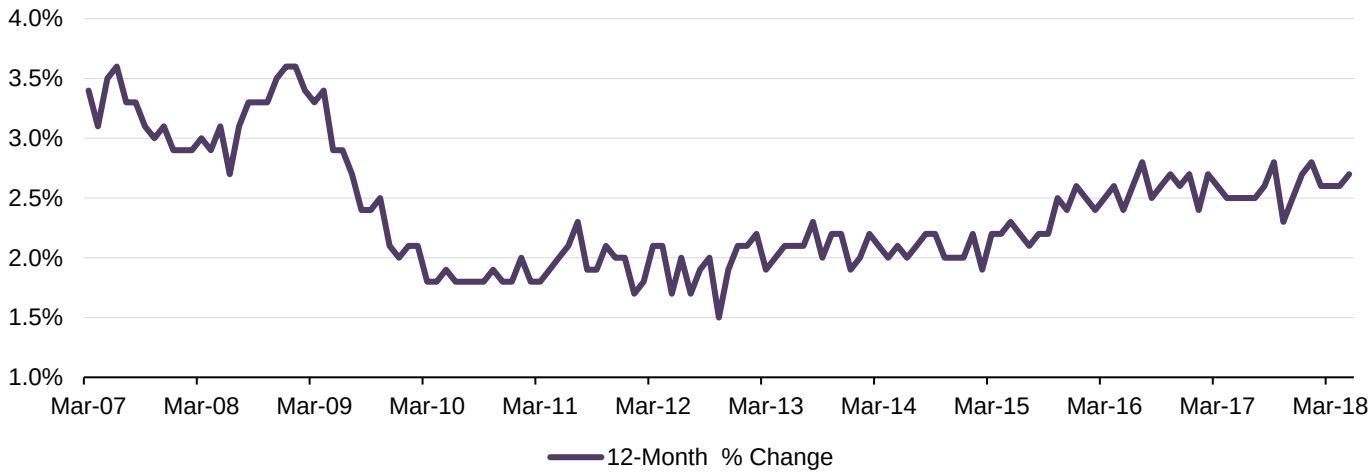
The labor market appears very tight and historically such a tight market would have led to rising wages as employers bid up the wages of available workers and labor unions gain increased bargaining power. Labor market conditions are closely watched by the Fed for signs of rising wages and thus inflation. One major reason why the Fed has been slow to raise rates is that the labor market tightness has not shown up in wages. Despite the large gains in employment we have witnessed, ten years after the financial crisis, Average Hourly Earnings have only recently reached an annualized increase of 2.7% and they have been stabilized around that level since 2016, as Figure 2 shows.

FIGURE 2: AVERAGE HOURLY EARNINGS



Source: BLS

What is holding back wage increases and causing the Fed to adopt the very cautious approach that it seemingly has? We think the answer lies mainly in three underlying trends in the labor market each of which is a source of serious concern:

i. a decline in labor force participation, especially by prime age males;

ii. the increasing pace of automation and the use of robots in both services and manufacturing in the U.S.; and

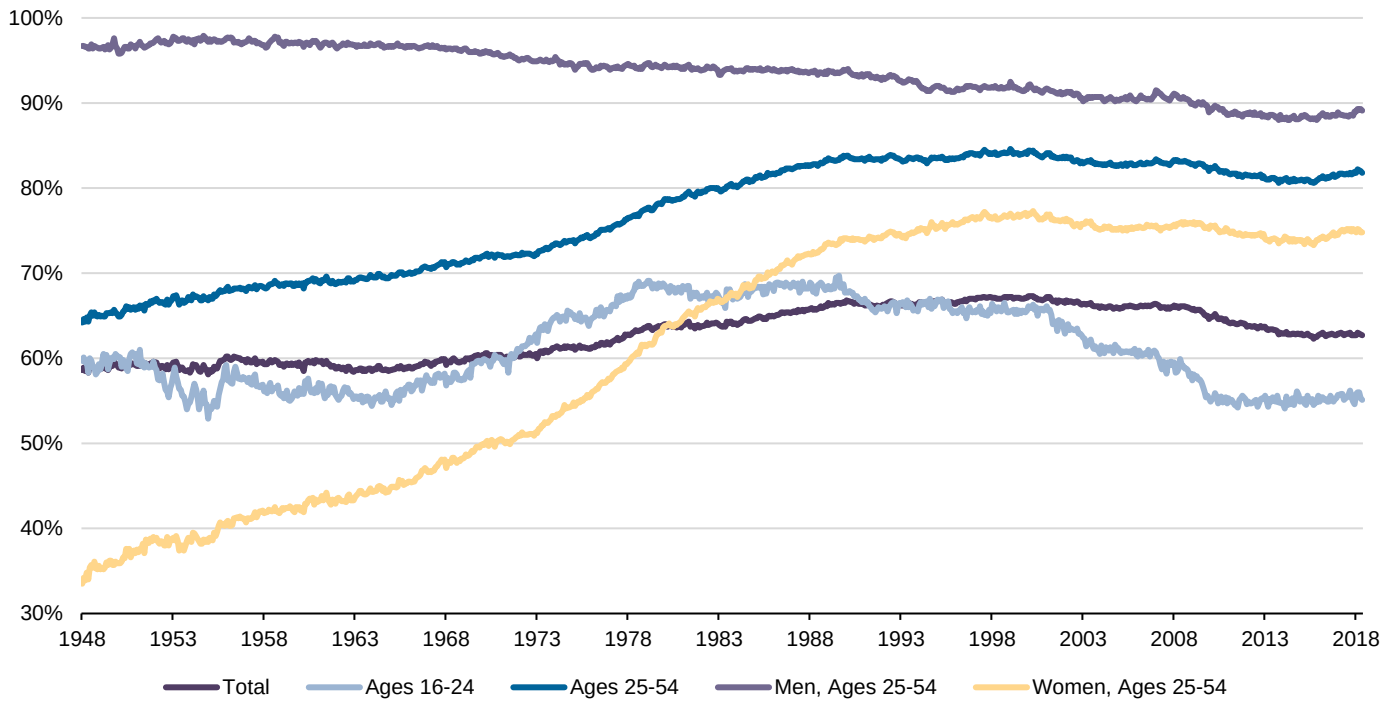
iii. a disturbing marked decrease in life expectancy for prime age males, reversing a decades long trend.

It is not obvious that these issues are connected but it also is not obvious that they are not. In the rest of this note, we talk about them in turn and draw implications for long-term and short-term interest rates and, therefore, monetary policy decisions going forward.

Labor Force Participation

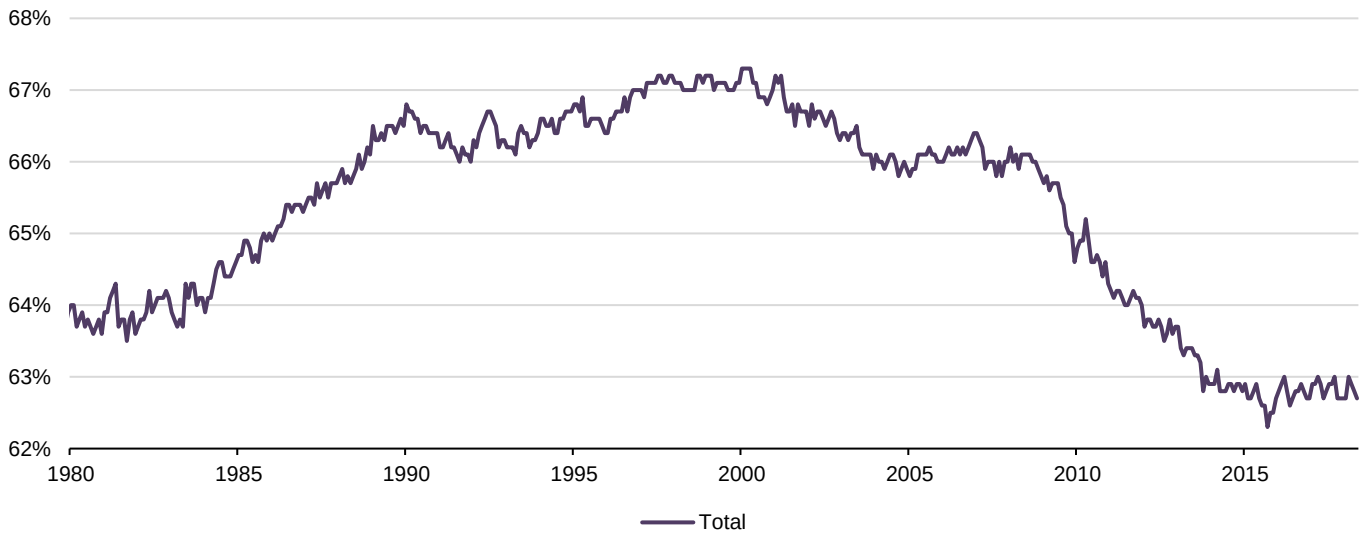
It is well understood that focusing on the unemployment rate to measure slack in the economy is flawed. The unemployment rate is based on the household survey, which asks participants if they have searched for work in the most recent four weeks. It does not account for people who are not actively looking for work, that is, for people who are not in the labor force. One important change in our economy that is driving recent data is a decline in labor force participation especially among prime age males (see Figure 3). As Figure 4 shows, labor force participation in the U.S. is now at a near 40 year low:

FIGURE 3: LABOR FORCE PARTICIPATION RATES BY AGE GROUP AND GENDER



Source: BLS

FIGURE 4: TOTAL LABOR FORCE PARTICIPATION RATE



Source: BLS

The Rise of the Machines

Several years ago two researchers, Carl Benedikt Frey and Michael Osborne from Oxford University, published a research paper that delivered a sobering assessment of the impact of technology on employment.[1] They used a data intensive methodology to look at 702 detailed occupations and ask how vulnerable they were to automation or computerization. They concluded that as much as 47% of U.S. employment is at risk. Their findings also made it quite clear that the probability of jobs being automated is negatively related to educational attainment and wages. McKinsey and Co. estimate that 45% of jobs are vulnerable.[2] The changes in the nature of work have been evident for quite a while. It is commonplace to find more and more jobs that consist of routine, well-defined procedures being replaced by sophisticated algorithms and machines. And there has been a widely documented shift in employment from moderately well-paid manufacturing jobs into lower wage service sector jobs.[3]

The characteristics of employment have changed. There is increasing demand for workers in high-income cognitive jobs and low income manual labor but a distinct hollowing out of employment (formerly moderately high income) in routine or repetitive jobs. The signs of this are everywhere. Trips to a branch bank or a pharmacy these days are more likely to result in a transaction with a machine and smart software than previously, and that pattern is repeated throughout the economy. Not long ago the list of tasks not susceptible to automation would have included driving a car or truck in traffic. Now the race to perfect autonomous vehicles is proceeding at a breakneck pace with all the major auto manufacturers and technology companies competing to develop the technology. Advances in robotics have opened many tasks to machines that can perform them with greater precision than humans.

The McKinsey Global Institute estimates that technological skills, both basic and advanced will be in much greater demand in the future. They estimated that the demand for physical and manual skills, as well as basic cognitive skills, will both decrease by about 15% while the demand for higher cognitive skills, social and emotional skills, and higher technological skills will increase substantially. The nature of work is likely to change dramatically. It is estimated that the time spent using advanced technological skills, including but not limited to digital skills, will increase by 50% in the U.S. and 40% in Europe.

The Impact of Robots on Employment

Daron Acemoglu and Pascual Restrepo (2017), in a striking piece of research, have constructed a model that attempts to get to this question.[4] They use U.S. experience between 1993 and 2007 and they focus on industrial robots. These robots have already deeply impacted the labor market and are expected to transform it in the future. Between 1993 and 2007, the stock of industrial robots in use in the U.S. increased fourfold. This amounts to one robot for every thousand workers. In Europe, they increased by 1.6 robots per one thousand workers.

The details of the modeling exercise are beyond the scope of this note, but we can easily summarize their main conclusions. In an aggressive scenario, if we assumed the world stock of robots quadrupled by 2025, it

[1] Carl Benedikt Frey and Michael Osborne, "The Future of Employment", Working Paper, Oxford Martin School, September 2013.
[2] McKinsey Global Institute, "Jobs Lost, Jobs Gained, Work Force Transitions in a Time of Automation," Report, December 2017.
[3] See, Vassalou, Maria and John Donaldson, "How Digital Technology is Displacing Both Labor and Capital", PWP Global Macro Insights, September 2016.
[4] Acemoglu, Daron and Pascual Restrepo, "Robots and Jobs: Evidence from U.S. Labor Markets," Working Paper March 2017.

would lead to 0.96-1.76 percentage decline in the employment population ratio in the U.S. That would correspond to 20-34 million jobs lost—a dramatic development.

While unfavorable trade dynamics have resulted in lost jobs in a number of industries, automation and the industrial adoption of advanced technologies are highly significant to the state of the U.S. labor market. Furthermore, it's not just a manufacturing story. The adoption of advanced technologies has affected employment conditions in a number of other industries—from restaurants and retail to construction, finance, law, and even accounting.

Automation could be both a problem and a solution for job creation in the economic future. We argue that a better way to look at the effects of automation may be to understand how jobs may evolve with technological progress and what education and (re)training may help employees succeed in a future where they work side-by-side with colleagues that are made of nuts and bolts or computer code, rather than flesh and blood. The evidence indicates that a well-educated U.S. workforce is not just good for today's workers and their children but also for the economy's potential long-term growth rate. The evidence also suggests that workers will need higher levels of cognitive thinking as well as technical and digital skills.

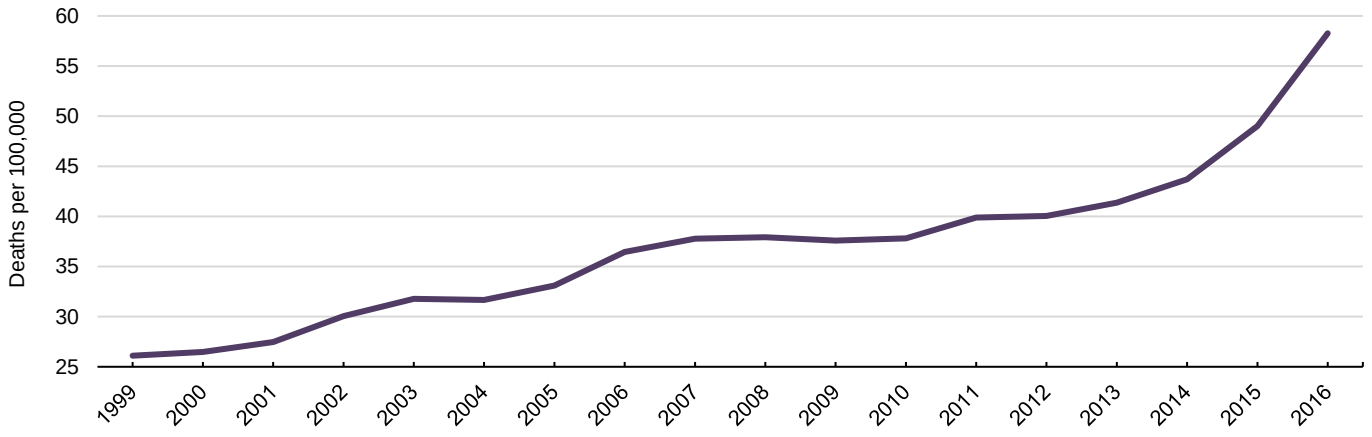
Declining Life Expectancy

Recent research by Anne Case and Angus Deaton of Princeton[5] University has documented a startling rise in mortality in the U.S. among prime age males (see Figure 5). This is extraordinary considering the decades of significant increases in life expectancy we have experienced in the U.S. in the 20th century. The major causes of increased mortality are deaths due to suicide, drug and alcohol poisoning, liver disease and other illnesses related to drug and alcohol abuse and obesity-related deaths. Case and Deaton label this increased mortality "Deaths of Despair."

Is there a link between the jobs lost to automation and this declining life expectancy? Not an obvious one but perhaps a suggestive one. We know that some of the most compelling discussions of the fate of working class workers point to the long term decline in opportunities rooted in the steady deterioration in job opportunities for those with less education. As technical change and globalization reduced the quantity and quality of opportunity in the labor market for those with no more than a high school degree, a number of things happened that have been documented in extensive literature. The real wages of those with only a high school degree declined, and the college premium increased. Those caught in this bind moved to lower paying jobs in the service sector or dropped out of the labor force all together.

[5] Anne Case and Angus Deaton. "Mortality and morbidity in the 21st century", Brookings Papers on Economic Activity, March 2017.

FIGURE 5: DRUG, ALCOHOL AND SUICIDE MORTALITY RATES (MEN, AGES 25-54)



Source: CDC

Implications for Long-Term Interest Rates

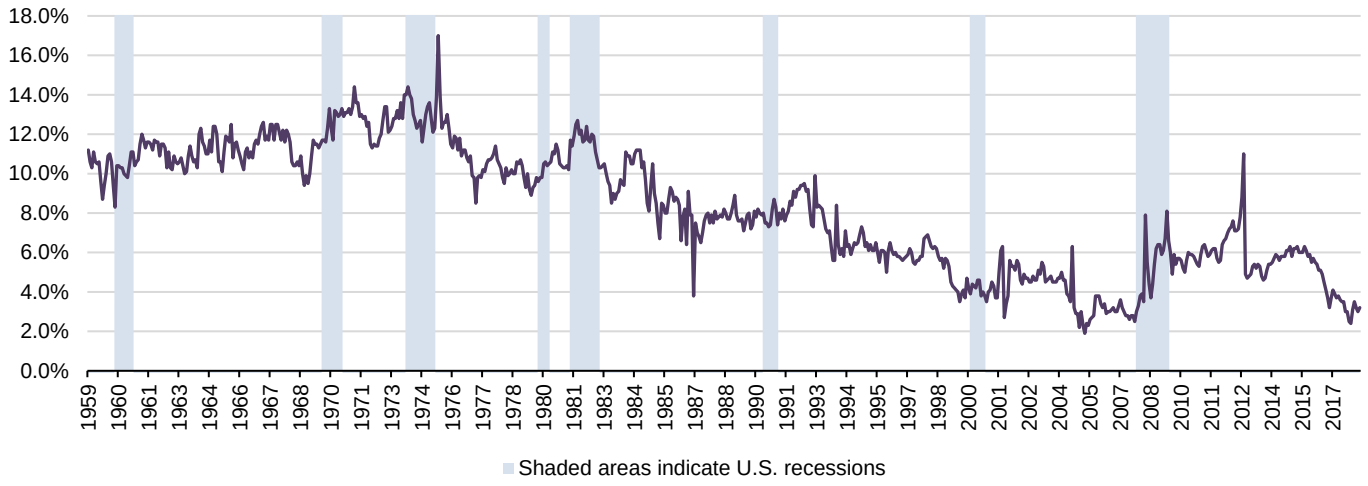
The labor force trends we discussed in this note have important implications for the level of long-term interest rates. As a result of these developments in the labor market, average wage growth is likely to remain low and around the levels it has been in recent years. The recent payroll report for June confirms this view. Despite a healthy increase in employment by 213,000, the average hourly earnings (AHE) declined to 0.2% per month in June from 0.3% in May. Furthermore, the year-to-year increase in AHE remains at only 2.7%. These observations do not imply that wage pressures will not be observed at any segment of the labor market. Quite to the contrary. Certain skill sets and expertise may command high returns to human capital but we expect that such effects will be canceled out by suppressed wages in the majority of the labor force for the reasons discussed earlier.

To the extent that wage pressures remain subdued, inflation is unlikely to accelerate significantly in a sustained way. This implies that the term premiums and the inflation risk premium in particular, will remain low. Commodity prices, concerns about trade wars or other political events may result in a transitory boost in inflation but the labor force trends we describe here are likely to remain the drivers of the long-term trend in inflation dynamics. Therefore, investors are bound to require low compensation for the uncertainty related to future bond returns as it relates to changes in inflation. In the absence of a material deterioration in the credit worthiness of U.S., this will keep long-term yields low.

Implications for Short-Term Interest Rates

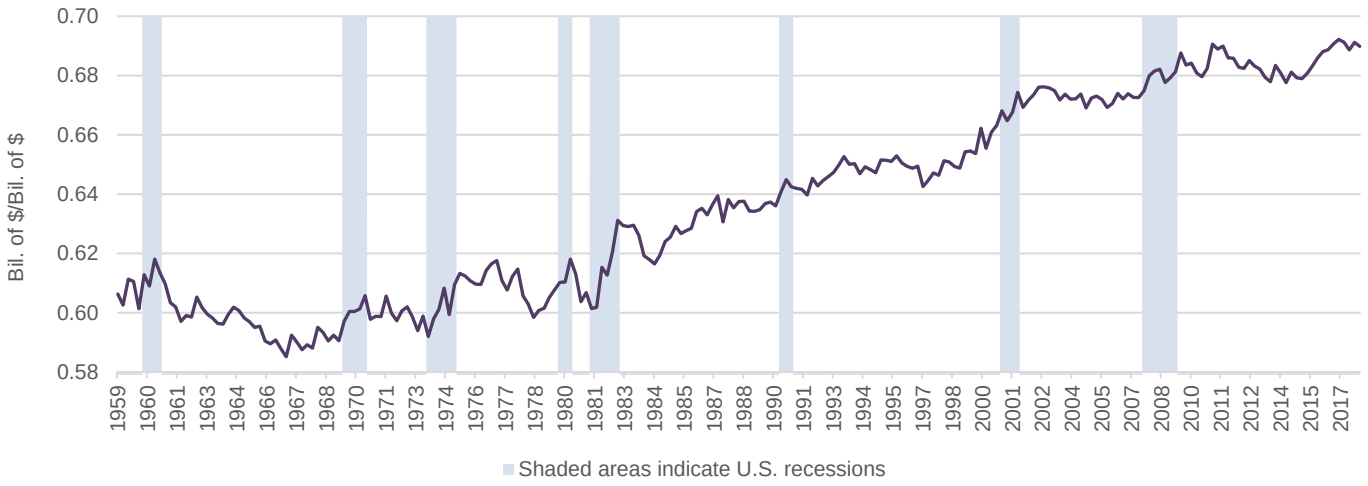
Suppressed wage gains, coupled with the decline in labor force participation and the observed increase in income inequality has another profound effect for the economy. For consumption to stay at current levels, and therefore support economic growth, consumers have to maintain increased leverage. That means they need to borrow to finance their consumption. Indeed, as Figure 6 shows, U.S. consumers' savings as a percentage of their disposable income have been declining over time. At the same time, consumption levels have remained at stable levels post the financial crisis (see Figure 7), whereas household debt balances are at historical highs and rising (see Figures 8 and 9). The above observations imply that households finance their consumption partly through dis-saving and borrowing.

FIGURE 6: PERSONAL SAVINGS RATE



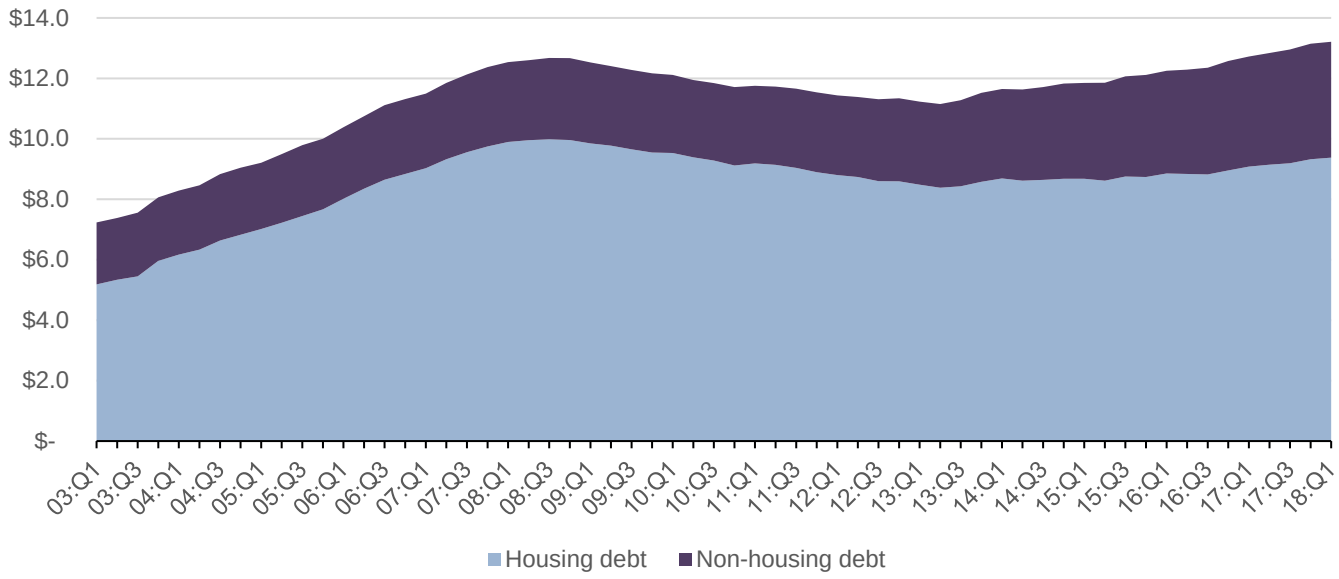
Source: U.S. Bureau of Economic Analysis

FIGURE 7: PERSONAL CONSUMPTION EXPENDITURES/GROSS DOMESTIC PRODUCT



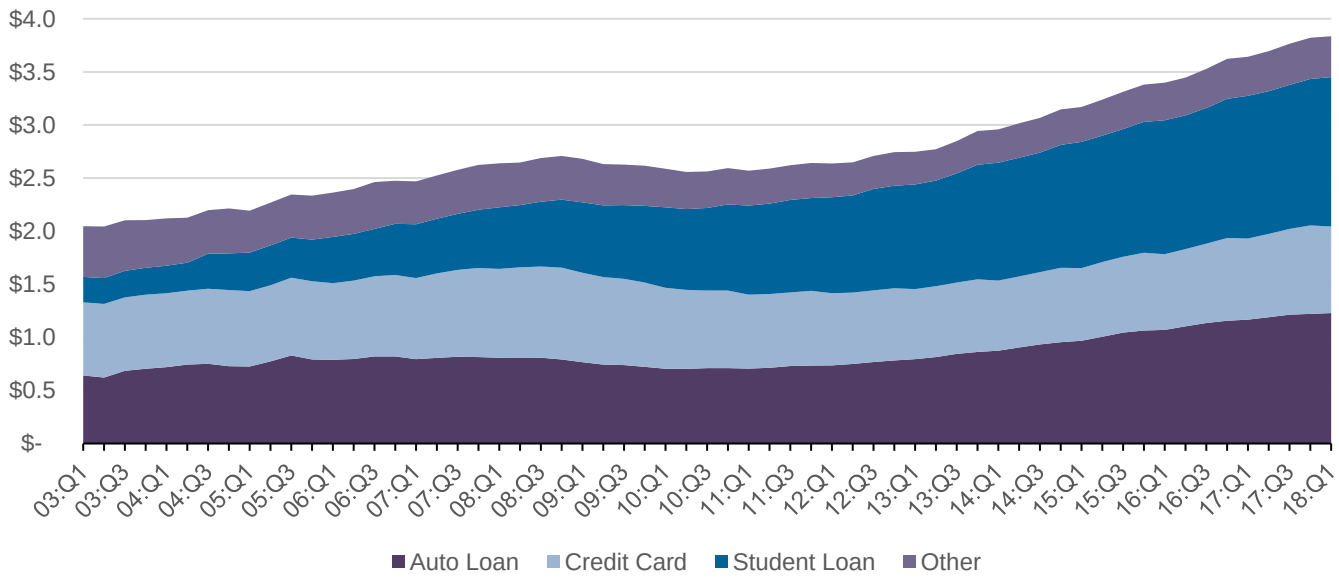
Source: U.S. Bureau of Economic Analysis

FIGURE 8: TOTAL DEBT BALANCE ($T)



Source: New York Fed Consumer Credit Panel/Equifax

FIGURE 9: NON-HOUSING DEBT BALANCE ($T)



Source: New York Fed Consumer Credit Panel/Equifax

If short-term interest rates rise significantly, the ability of households to service their debt and maintain their consumption levels will be hampered. Furthermore, increased short-term interest rates will increase the opportunity cost of dis-saving, which is the other mechanism through which they finance consumption. A material decrease in consumption levels or increase in defaults would likely lead to an economic recession.

In other words, short-term interest rates have to remain relatively low for consumers to be able to maintain their consumption levels and support growth. The implication appears to be that in a world of low wages and increased income inequality that may be further exacerbated by the proliferation of automation, households need to be able to maintain higher levels of debt than in the past in order to support their current consumption levels. For that to happen, short-term interest rates have to stay low.

A Flat Yield Curve is Here to Stay

In our increasingly digitized and automated economy, the underlying inflationary pressures are likely to stay subdued, anchoring the long end of the yield curve at low levels given the decreased need for investors to require a sizeable term premium. At the same time, the increased reliance of households on debt to finance their consumption necessitates that short-term interest rates remain relatively low in order to avoid a forced deleverage and therefore a sizeable contraction in consumption levels. With consumption accounting for 70% of U.S. GDP growth, a marked reduction in consumption can easily plunge the economy into a recession. We therefore expect the Fed to remain cautious in raising interest rates significantly from current levels. Even after monetary policy is fully normalized, we expect the yield curve to be flatter than during previous expansions as a result of the reduced size of the term premium.

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Maria Vassalou is Partner and Portfolio Manager for the PWP Global Macro strategy. Dr. Vassalou joined Perella Weinberg Partners from MIO Partners, a subsidiary of McKinsey & Company, where as a Portfolio Manager she managed a similar global macro investment strategy in a dedicated legal entity, and as Head of Asset Allocation she provided counsel on allocation for liquid assets within MIO's portfolio. Prior to joining MIO, Dr. Vassalou was a Global Macro Portfolio Manager at SAC Capital Advisors, LP. She joined SAC from Soros Fund Management where she was responsible for global quantitative research, as well as the development and management of global quantitative trading strategies. Prior to her career in asset management, Dr. Vassalou was an Associate Professor of Finance at Columbia Business School which she joined in 1995 and where she established many of the investment principles she employs today. Dr. Vassalou is a Past President of the European Finance Association and was the Chair of the 2008 European Finance Association Meetings. She has also served as a Research Affiliate of the Centre for Economic Policy Research (CEPR) in London for many years and is a past member of the Academic Advisory Board of the Vienna-based Guttmann Center of Competence in Portfolio Management. Her research focus has been on the interrelation of the macro-economy and financial markets with applications in hedge fund strategies. A frequent speaker to both academic and practitioner-oriented seminars and conferences, Dr. Vassalou has published in leading academic journals, such as the Journal of Finance, Journal of Financial Economics, Journal of Financial and Quantitative Analysis, Journal of Business, Journal of International Money and Finance, and the Journal of Economic Dynamics and Control. While she was on the faculty of Columbia University, she also served as a consultant to many premier hedge funds and asset management institutions in the U.S. and Europe. Dr. Vassalou received a Bachelor of Arts in Economics from the University of Athens and she holds a Ph.D. in Financial Economics from London Business School.

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