FRBSF Economic Letter

2018-13 | May 21, 2018 | Research from the Federal Reserve Bank of San Francisco

The Future Fortunes of R-star: Are They Really Rising?

John C. Williams

In the current economic environment, it's important to distinguish between the strong economic conditions and the key longer-run drivers underpinning interest rates. Three factors—demographics, productivity growth, and the demand for safe assets—all point to the natural rate of interest, known as r-star, remaining low for quite some time. The following is adapted from a speech by the president and CEO of the Federal Reserve Bank of San Francisco to the Economic Club of Minnesota in Minneapolis on May 15.

I know that the Economic Club of Minnesota regularly hosts Fed presidents, so you're no strangers to speeches on interest rates and monetary policy. I'm going to take advantage of that fact and take a step back. Today I'm going to talk about where I see interest rates going, not just over the next few months, but over the next several years, and discuss the economic fundamentals driving the changes taking place.

One of the key factors that influences my thinking on monetary policy is something called r-star. Today I *hope* you'll indulge me while I describe what r-star is, where it's headed, and how that affects the direction of interest rates.

R-star and the new normal

So what is this r-star I keep referring to, and why is it so important when it comes to thinking about interest rates?

R-star is what economists call the natural rate of interest; it's the real interest rate expected to prevail when the economy is at full strength. While a central bank like the Fed sets short-term interest rates, r-star is a result of longer-term economic factors beyond the influence of central banks and monetary policy. Consistent with this definition, my discussion will focus on the longer-term r-star that will prevail over the next decade, in contrast to a shorter-run concept that may fluctuate from year to year depending on economic developments.

Such is my fascination with interest rates, that r-star is an area I've researched extensively. If by the end of this speech you share just a tenth of my passion for r-star, I'll feel like I've done my job!

My own view is that r-star today is around 0.5%. Assuming inflation is running at our goal of 2%, that means the typical, or normal short-term interest rate is 2.5%. For comparison, the median longer-run value of the federal funds rate in the Federal Open Market Committee's (FOMC's) most recent economic projections is 2.875% (Board of Governors 2018b). When put into a historical context, r-star stands at an incredibly low level—in fact, a full 2 percentage points below what a normal interest rate looked like just 20 years ago. This trend is not unique to the United States: Averaging across Canada, the euro area, Japan, and the United

Kingdom, a measure of global r-star is a bit below 0.5% (Holston, Laubach, and Williams 2017 and Fujiwara et al. 2016).

R-star matters a great deal, because it anchors where short-term interest rates will tend to be in the future. In a world of low r-star, policymakers, banks, businesses, and households all need to plan for lower interest rates than they've experienced in decades past.

Recently some economists and central bankers have pointed to signs that the fortunes of r-star are set to rise. I wish I could join in this optimism, but I don't yet see convincing evidence of such a shift. The longer-run drivers still point to a "new normal" of a low r-star and relatively low interest rates.

What drives the fortunes of r-star?

I've already mentioned that r-star is driven by longer-run structural factors, beyond the influence of central banks. But what are those factors, and how do they influence the fortunes of r-star?

Three key global developments have caused r-star to come down in a number of developed economies over the past two decades: changes in demographics, a slowdown in productivity growth, and heightened demand for safe assets (Williams 2016, 2017).

Changes in demographics affect r-star on a number of levels. We are living longer: Over the past three decades, life expectancy in developed economies has risen by nearly five years and is expected to keep rising (United Nations 2017). When people expect to live longer, they tend to save more for retirement, and this increased saving puts downward pressure on interest rates (Carvalho, Ferrero, and Nechio 2016 and Gagnon, Johannsen, and Lopez-Salido 2016).

Despite the fact that we're living longer, labor force growth in the United States has actually slowed, largely due to baby boomers retiring and a lower fertility rate. In fact, the labor force is forecast to grow just ½% per year over the next decade, well below past trends (Congressional Budget Office 2018). Fewer people joining the labor force means fewer people working, producing, and consuming things, which leads to slower growth and less investment, which in turn drives r-star down.

The same thing is true of productivity growth, which has also slowed compared with earlier decades (Fernald 2016). In the 1990s and early 2000s, the explosion of the internet and computing power led to annual productivity gains averaging 2 to 3%. Productivity gains since the recession have generally hovered around 1%. I have a sneaking suspicion it's because we're using all that technology to play Candy Crush, instead of increasing productivity! But I don't have the data to back that up.

In all seriousness, productivity growth is influenced by technological innovation, which is notoriously hard to predict. In my home state of California, the world appears to be reinvented every week, but if we look at data from the Organisation for Economic Co-operation and Development, there's no indication that we can expect a leap in productivity growth on an international scale. While I can *hope* we're on the brink of another game-changing invention like the internet, for the moment, the data indicate productivity growth is still stuck in low gear.

The third and final factor holding down r-star is the high global demand for safe assets we've seen develop over the past two decades. This has driven down the returns on Treasury securities and safe short-term loans relative to those on riskier assets like corporate bonds and equities, and thereby depressed r-star (Bernanke 2015 and Del Negro et al. 2017).

A positive outlook

All this doom and gloom caused by demographics, productivity growth, and the demand for safe assets may come as a surprise. We're now in the second-longest expansion in U.S. history, and like most people I feel very positive about the economic outlook, here and abroad.

U.S. GDP increased about 2.5% last year, the unemployment rate is the lowest we've seen in 18 years, and inflation is nearing the Fed's 2% target.

The latest inflation data show that the drop in inflation we saw in 2017 was temporary. It is very reassuring to me, as I spent the latter part of last year making predictions that inflation would start to rise this year. And it's always a relief when one of your predictions comes true!

Looking ahead, I expect the expansion to continue, with growth averaging around 2.5% over this year and the next.

There are a few tailwinds that account for this solid economic performance. These include strong financial conditions, solid global growth, and the fiscal stimulus. In fact, the International Monetary Fund recently reported that global growth registered an impressive 3.8% in 2017, and they expect it to be near 4% this year and next (International Monetary Fund 2018).

The optimism about r-star is (sadly) misplaced

It's these strong tailwinds that are leading some people to believe that we'll see r-star move back up. But, as I said, this optimism is, sadly, misplaced.

It's time to return to our trio of demographics, productivity growth, and the global demand for safe assets.

When it comes to demographics, the thing I hear discussed is that the baby boomer generation is a *peculiarity* that will slowly work its way out of the data. That's a polite way of saying that, once my generation has retired, labor force growth will return to the speed of recent decades. But research by my colleagues at the San Francisco Fed reveals that our increased longevity and propensity to save are the key demographic drivers keeping r-star low, and they're not about to reverse (Carvalho, Ferrero, and Nechio 2017).

People living longer and saving more are two trends I would like to see continue! But they do both spell bad news for the fortunes of r-star.

The second thing I hear discussed is that there's more cause for optimism around productivity growth because of the fiscal stimulus and, more specifically, the tax cuts. In principle, if businesses have a smaller tax burden, they'll have a greater incentive to invest in capital equipment and research and development, which will drive productivity growth.

Although I agree that lower tax rates on businesses should spur greater investment and productivity, the resulting effect on r-star is likely to be relatively modest. By my own calculations, we can expect the fiscal stimulus to increase r-star over the next decade by no more than 0.25 percentage point. This modest effect is in part because the tax cuts are front-loaded—that is, they have a larger effect on growth in the next few years than in later ones (Mertens 2018).

In addition, it's important to remember that r-star is affected by global economic conditions and not just those in the United States. A bump in U.S. growth improves global growth, but if other countries don't follow suit, the effect on r-star will be relatively modest.

The third leading factor in terms of a rising r-star is the demand for safe assets. The *theoretical* argument that, with such strong economic conditions, we should see the appetite for riskier investments increase, pushing up interest rates overall, makes sense. But that's not what's played out in the data, at least so far.

These three issues—demographics, productivity growth, and the demand for safe assets—all point to an r-star that's set to hold its position low in the sky for quite some time.

Monetary policy

If you're not as passionate as I am about r-star at this point, listen up, because things are about to get more interesting. I'm going to discuss what all this means for monetary policy and the path of interest rates.

Following the global financial crisis, the Fed cut interest rates and kept them low to stimulate the economy and get it back on its feet. Now that the expansion is well under way, we're in the process of normalizing monetary policy and bringing interest rates back up. Based on the center of the distribution of projections from our March meeting, the FOMC has indicated a total of three to four rate increases this year and further gradual rate increases over the next two years will be appropriate (Board of Governors 2018b). I view this to be the right direction for monetary policy.

At our most recent meeting at the beginning of May we decided not to change the federal funds rate, consistent with our gradual pace of policy normalization (Board of Governors 2018a).

But even as we raise rates, I'm conscious that the fundamental drivers that govern r-star are lower than we've seen in the past. With a new normal for short-term rates of around 2½%, interest rates are likely to remain low relative to historical experience.

Conclusion

In conclusion, it's important to distinguish between the current strong economic conditions and the key longer-run drivers underpinning interest rates. I am always keeping a close eye on both the short-term economic outlook and the longer-term factors that define the more fundamental changes taking place. I don't have a crystal ball, so it's always the numbers that inform my opinion. For the moment, r-star continues to shine brightly, guiding monetary policy, but hold steady, low on the horizon.

John C. Williams is president and chief executive officer of the Federal Reserve Bank of San Francisco.

References

Bernanke, Ben S. 2015. "Why Are Interest Rates So Low, Part 3: The Global Savings Glut." *Ben Bernanke's Blog*, Brookings, April 1. https://www.brookings.edu/blog/ben-bernanke/2015/04/01/why-are-interest-rates-so-low-part-3-the-global-savings-glut/

Board of Governors of the Federal Reserve System. 2018a. "Federal Reserve Issues FOMC Statement." Press release, May 2. https://www.federalreserve.gov/newsevents/pressreleases/monetary20180502a.htm

Board of Governors of the Federal Reserve System. 2018b. "FOMC Projections materials, accessible version." March 21. https://www.federalreserve.gov/monetarypolicy/fomcprojtabl20180321.htm

Carvalho, Carlos, Andrea Ferrero, and Fernanda Nechio. 2016. "Demographics and Real Interest Rates: Inspecting the Mechanism." *European Economic Review* 88, pp. 208–226.

Carvalho, Carlos, Andrea Ferrero, and Fernanda Nechio. 2017. "Demographic Transition and Low U.S. Interest Rates." *FRBSF Economic Letter* 2017-27 (September 25). http://www.frbsf.org/economic-research/publications/economic-letter/2017/september/demographic-transition-and-low-us-interest-rates/

Congressional Budget Office. 2018. "The Budget and Economic Outlook: 2018 to 2028." Report, April. https://www.cbo.gov/publication/53651

Del Negro, Marco, Domenico Giannone, Marc P. Giannoni, and Andrea Tambalotti. 2017. "Safety, Liquidity, and the Natural Rate of Interest." *Brookings Papers on Economic Activity* (Spring). https://www.brookings.edu/bpea-articles/safety-liquidity-and-the-natural-rate-of-interest/

Fernald, John. 2016. "What Is the New Normal for U.S. Growth?" *FRBSF Economic Letter* 2016-30 (October 11). http://www.frbsf.org/economic-research/publications/economic-letter/2016/october/new-normal-for-gdp-growth/

Fujiwara, Shigeaki, Yuto Iwasaki, Ichiro Muto, Kenji Nishizaki, and Nao Sudo. 2016. "Developments in the Natural Rate of Interest in Japan." *Bank of Japan Review* 2016-E-12 (October). https://www.boj.or.jp/en/research/wps_rev/rev_2016/data/rev16e12.pdf

Gagnon, Etienne, Benjamin K. Johannsen, and David Lopez-Salido. 2016. "Understanding the New Normal: The Role of Demographics." Finance and Economics Discussion Series 2016-080. Board of Governors of the Federal Reserve System. http://dx.doi.org/10.17016/FEDS.2016.080

Holston, Kathryn, Thomas Laubach, and John C. Williams. 2017. "Measuring the Natural Rate of Interest: International Trends and Determinants." *Journal of International Economics* 108(1, May), pp. S59–S75. Working paper version available at http://www.frbsf.org/economic-research/publications/working-papers/2016/11/

International Monetary Fund. 2018. *World Economic Outlook, April 2018: Cyclical Upswing, Structural Change*. https://www.imf.org/en/Publications/WEO/Issues/2018/03/20/world-economic-outlook-april-2018

Mertens, Karel. 2018. "The Near Term Growth Impact of the Tax Cuts and Jobs Act." FRB Dallas Working Paper 1803. https://doi.org/10.24149/wp1803

United Nations. 2017. *World Population Prospects*. https://esa.un.org/unpd/wpp/

Williams, John C. 2016. "Monetary Policy in a Low R-star World." *FRBSF Economic Letter* 2016-23 (August 15). https://www.frbsf.org/economic-research/publications/economic-letter/2016/august/monetary-policy-and-low-r-star-natural-rate-of-interest/

Williams, John C. 2017. "Three Questions on R-star." *FRBSF Economic Letter* 2017-05 (February 21). http://www.frbsf.org/economic-research/publications/economic-letter/2017/february/three-questions-on-r-star-natural-rate-of-interest/

Opinions expressed in *FRBSF Economic Letter* do not necessarily reflect the views of the management of the Federal Reserve Bank of San Francisco or of the Board of Governors of the Federal Reserve System. This publication is edited by Anita Todd with the assistance of Karen Barnes. Permission to reprint portions of articles or whole articles must be obtained in writing. Please send editorial comments and requests for reprint permission to Research.Library.sf@sf.frb.org

Recent issues of *FRBSF Economic Letter* are available at
https://www.frbsf.org/economic-research/publications/economic-letter/