NATIONAL BANK OF CANADA
FINANCIAL MARKETS

Fixed Income

Economics and Strategy

August 18, 2017

Monetary policy musing: R*

Only few years ago, when we first began to focus on the effect of demographic trends on the inflation outlook and the conduct of monetary policy, our comments were met with skepticism. Few traditional econometric models included demographic factors as explanatory variables. Neither was U.S. empirical research very helpful, since economic data covering the period from the 1960s to the Great Moderation never included such dynamics.

Although part of the discussion of the ramifications of population aging for monetary policy remains in the realm of theoretical debate, the recognition of its effects on the neutral real interest rate (R*) has become mainstream. At the forefront of the discussion has been research at the San Francisco Fed by Laubach and Williams. Their model is based on the hypothesis of a relationship between the growth of potential output and the equilibrium real interest rate. In this view, lower participation in the labour market due to the aging of the population will, all else equal, slow potential growth and thus lower the equilibrium real rate.

Now that it is widely accepted that demographic changes have lowered R*, the debate is shifting. Is this a new normal, or has this trend bottomed in the advanced economies?

A recent research paper by Goodhart and Pradhan published by the Bank of International Settlements argues that, given global demographic developments, the trend will reverse and both the neutral real rate and inflation will head higher.

Their case rests to a large extent on the point that the adherence of China and eastern European countries to the World Trade Organization led to a shift of manufacturing away from advanced economies (AEs). As a consequence, private-sector labour unions in the AEs lost bargaining power and stagnation of real wages became prevalent. Meanwhile, as China's economy has grown, its rising disposable incomes combined with the lack of social safety nets have induced Chinese households to significantly boost their pool of savings. Much of the resulting savings glut has been channelled into the U.S. financial system, pushing down real rates. Goodhart and Pradhan argue that with China also aging, these trends will now reverse. While the authors do not reject the idea that both saving and investment will be weaker overall in an aging world, in their view saving will fall faster — forcing real rates up to clear the market.

Concerning inflation, one of their key assumptions is that in democracies, the elderly will vote to protect their social safety net. As the dependency ratio — the ratio of the young and the elderly population to the working-age population — rises, worker incomes must be taxed at higher rates to finance social programs. The response will be bargaining for higher wages, resulting in inflationary pressures.

In the view of Goodhart and Pradhan, the current literature exaggerates the role of growth in determining R*. It plays a role, they say, but many other factors are also important.

In a microeconomic approach to this part of the debate, it is inarguable that many factors are at play. Deriving the demand and the supply of loanable funds from the utility functions of both savers and investors will make the point clear. In the case of savers, for example, life expectancy, risk aversion, and preference for consuming now rather than later will all be part of decision-making. In our view, however, the role of potential GDP should not be understated either. The real return that can be earned by savers is central to their arbitrage decision of how much they need to save to maximize their well-being over time.

While many factors come into play in the establishment of the market-clearing real rate, the changing age structure of a society is likely to be important among them. The age pyramid will also influence the economy's reaction to monetary policy. A lowering of the nominal policy rate aimed at bringing future consumption forward to offset a shock to the economy may be more effective when the working-age population is larger and younger. Intuitively, it is likely to be less effective in an economy dominated by risk-averse retirees living on revenue from fixed income investments.

Masaaki Shirakawa, governor of the Bank of Japan from 2008 to 2013, has made interesting comments about the Goodhart and Pradhan paper. He has suggested that given international integration of economies, the global view of their paper is appropriate. However, looking back at Japan's lost decades, he notes that the working age population peaked in the mid-1990s. The dependency ratio bottomed out between 1989 and 1993. In other words, the dependency-ratio trend reversed long before the savings glut, without the inflationary pressures the authors anticipate. Shirakawa argues that to fully grasp the issue, one needs to distinguish three stages of the population aging process:

(1) Anticipation of population aging

During this phase, expectation of depressed future demand due to aging precedes the actual decline of productive capacity, resulting in deflationary pressure.

(2) Transition to a new steady state with a smaller population

The working-age population shrinks but very old people need more and more home-care workers and nurses. In this phase, GDP growth tends to slow but inflationary pressures emerge.

People who prefer part-time jobs increase their participation in the labour-market.

(3) New steady state with a smaller population.

In this phase, maintaining fiscal sustainability will be paramount. Otherwise, either high inflation or instability of the financial system is inevitable.

Shirakawa notes that one risk in the first phase of the process is excessive debt accumulation as a result of prolonged monetary easing.

We would note that this observation is worrisome in the light of research showing significant time variation in monetary policy trade-offs. Hofmann and Peersman report that in parallel with the flattening of the Phillips Curve over time, the effects of U.S. monetary policy on credit and house prices have become considerably stronger than its effects on the macro economy. For example, they estimate that from 1955 to 1979, the use of monetary policy to engineer a 1% impact on real GDP had essentially no effect on house prices and a 0.9% peak effect on aggregate real credit. This compares to maximum changes of 3.7% in house prices and 2.2% in credit from 1984 to 2008. So monetary policy has over time become more effective in leaning against (or boosting) house prices and credit booms and weaker at managing GDP.

If that trend is still in place, macroeconomic stabilization through monetary policy is bringing greater fluctuations in the credit and housing markets, at a time when central bank inflation targets are becoming ever more difficult to achieve. In our view, this could be the case at least during the initial phase of the population aging process as described by Shirakawa. In that environment, if inflation-targeting central banks misjudge their policy trade-offs, low inflation will be met with prolonged monetary easing that will contribute to the formation of bubbles. This is why central banks cannot be complacent about financial stability risks. They need to focus on tail risks in order to prevent monetary policy from becoming a major source of economic disturbance.

Although it could be argued that Japan is now in the second phase of Shirakawa's aging process and that China and South Korea will follow given the rapid aging of their populations (Goodhart and Pradhan), most AEs are still far behind Japan in this process. For example, the current age pyramid in Canada looks more like the first phase.

In Canada in 2016, the ratio of old people to working-age people was 25.4%. In Japan in 2014, it was 42.4%. In the 28 EU countries it was 29.3%, in China about 13.8%. In the age pyramids of China and South Korea, the share of the population aged 20 or less is relatively small and the share of those aged 40 to 54 is relatively large. So to some extent the rapid aging of the population in those two countries presents a reality different from that of today's Japan. In eight years from now, China's working age population will still be very large compared to the young and the elderly.

The Chinese savings pool may grow much more slowly than in the past, given the country's demography and the expected slowing of its economic growth. Yet China seems still many years away from the time when the bulk of current Chinese savers will need to deplete their savings. In our opinion, the global economy may be characterized as being in the latter part of phase 1 of Shirakawa's three-phase aging process.

The sweet spot of the combined effects of economic globalization and demographic developments on both R* and inflation may be behind us, as Goodhart and Pradhan argue. We are nevertheless under the impression that influence of global demographic trends on R* is currently like that of the moon at neap tide. R* and inflation will eventually gain momentum but the process may not be noticeable for some time.

Bottom line: To a large extent, the discussion of the implications of population aging for monetary policy — how policy should respond to the current low-inflation environment — remains theoretical. It will take time for enough data to become available for empirical studies to provide clear answers. Yet theory suggests that central banks need to focus on tail risks, since the effectiveness of macroprudential initiatives remains uncertain. As Milton Friedman wrote in 1968: "Maybe the best monetary policy can do is preventing money from becoming a source of economic disturbance."

In the meantime, we hope both politicians and central bankers will acknowledge the limits of monetary policy as a tool of economic stabilization. Governments would then be more likely to align their fiscal policies with the goals of central banks.

Paul-André Pinsonnault

References

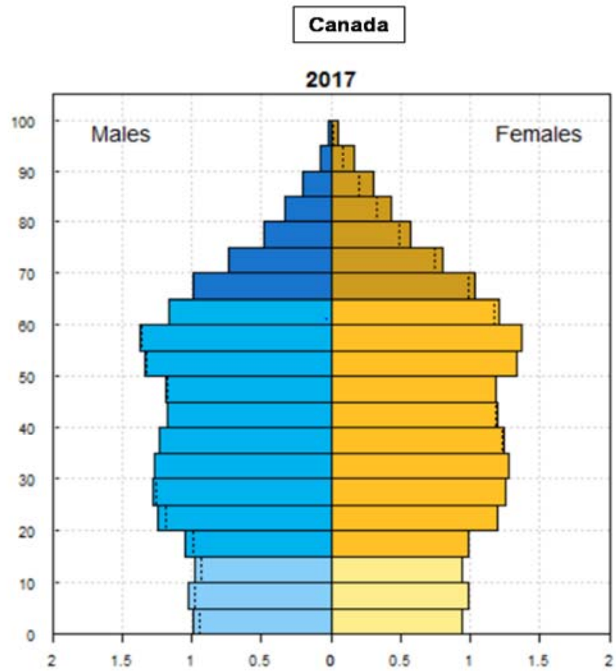
Goodhart, Charles and Pradhan, Manoj. 2017. "Demographics will reverse three multi-decade global trends." BIS Working Papers No. 656.

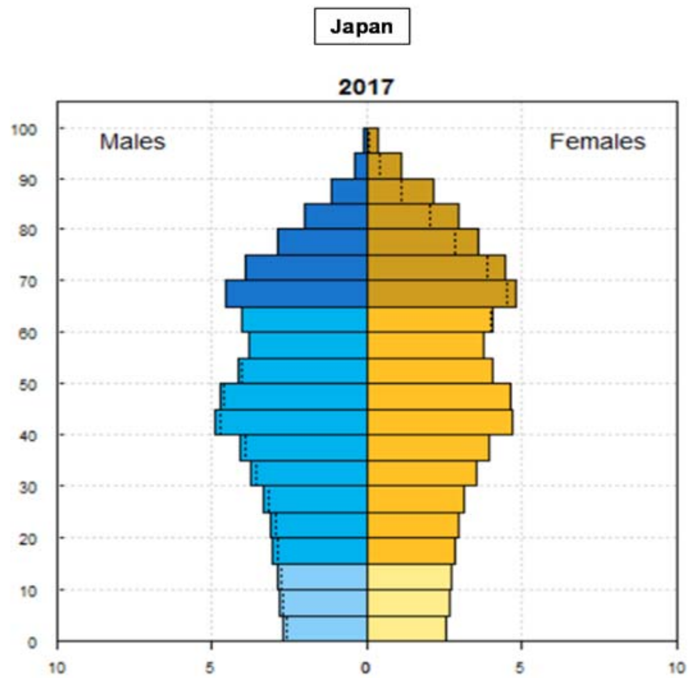
Hofmann, Boris and Peersman, Gert. 2017. "Monetary policy transmission and trade-offs in the United States: Old and new." BIS Working Papers No. 649.

Laubach, Thomas and Williams, John C. 2015. "Measuring the natural rate of interest redux." FRB San Francisco Working Papers.

Shirakawa, Masaaki. 2014. "Is inflation (or deflation) 'always and everywhere' a monetary phenomenon?" BIS Papers No. 77, keynote address to People's Bank of China—BIS Research Conference on "Globalisation and Inflation Dynamics in Asia and the Pacific."

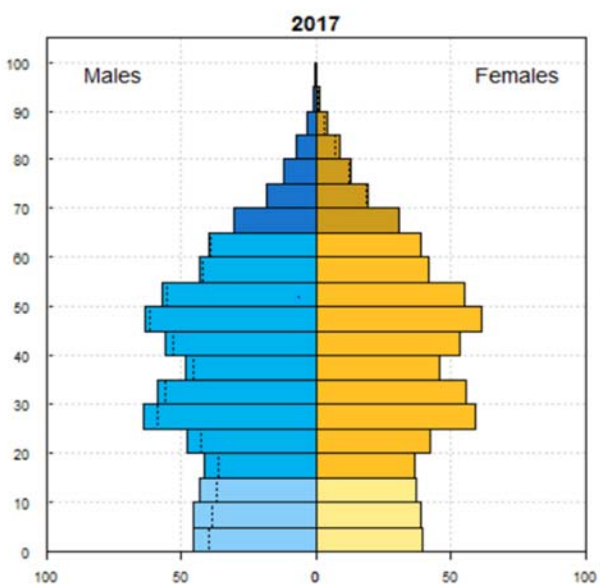
Canada and Japan age pyramids
Population in millions

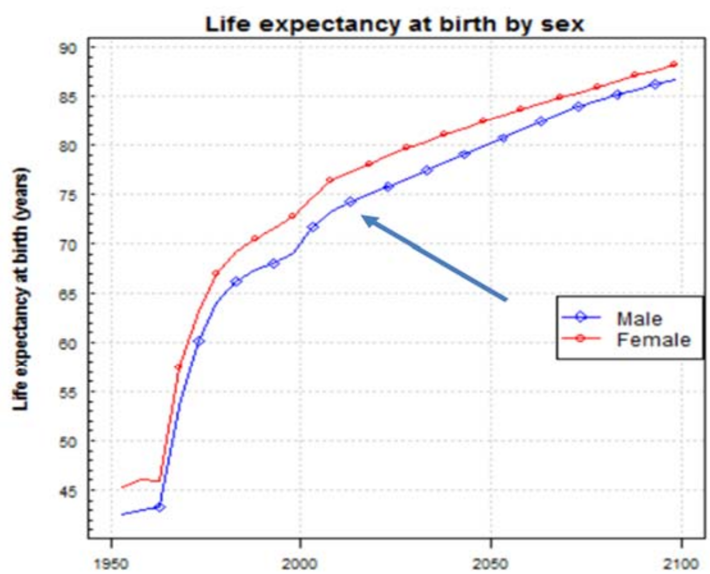




NBF Economics and Strategy (data via United Nations World Population Prospects 2017)

China: Population pyramid and life expectancy
Population in millions





NBF Economics and Strategy (data via United Nations World Population Prospects 2017)

Fixed Income

Economics and Strategy

Montreal Office
514-879-2529

Stéfane Marion
Chief Economist and Strategist
stefane.marion@nbc.ca

Marc Pinsonneault
Senior Economist
marc.pinsonneault@nbc.ca

Kyle Dahms
Economist
kyle.dahms@nbc.ca

Paul-André Pinsonnault
Senior Fixed Income Economist
paulandre.pinsonnault@nbc.ca

Matthieu Arseneau
Senior Economist
matthieu.arseneau@nbc.ca

Jocelyn Paquet
Economist
Jocelyn.paquet@nbc.ca

Krishen Rangasamy
Senior Economist
krishen.rangasamy@nbc.ca

Angelo Katsoras
Geopolitical Analyst
angelo.katsoras@nbc.ca

Toronto Office
416-869-8598

Warren Lovely
MD, Public Sector Research and Strategy
warren.lovely@nbc.ca