

In focus

Savings behaviour in a low interest rate environment:

What can we learn from Japanese households?

March 2019

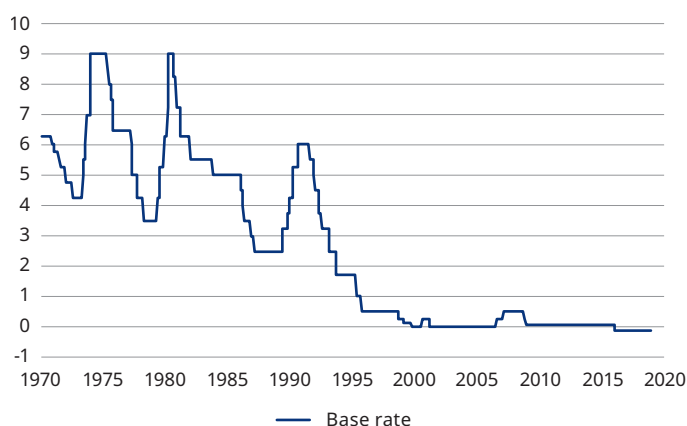
One of our inescapable truths is that risk-free interest rates in the next ten years will be higher than the exceptionally low levels of today, but are still likely to be relatively low by the standards of pre-global financial crisis levels.

Given that we see interest rates remaining low even after monetary policy normalisation, we ask whether low returns on cash could result in households taking on more risk to seek higher returns. The importance of this shift in household portfolio allocation is threefold. Firstly, this provides insight into future retail investment trends and specifically the future demand for risky and conservative investment vehicles. Secondly, the willingness of households to take on more risk is significant for the real economy as a key channel for the monetary policy transmission mechanism. Thirdly, this aids the understanding of retail investor flows, which can play a part in driving market prices.

Turning to an economy where rates have been exceptionally low for many years, we draw on the experience of Japan for an insight into the behaviour of savers. We examine the lessons learned from the Japanese with a view to understanding to what extent the behaviour will be replicated in other developed markets, such as the US, eurozone and UK.

The Japanese experience of low rates

Chart 1: The interest rate reached zero in 1999



Source: Thomson Reuters Datastream, Schroders Economics Group, 28 January 2019



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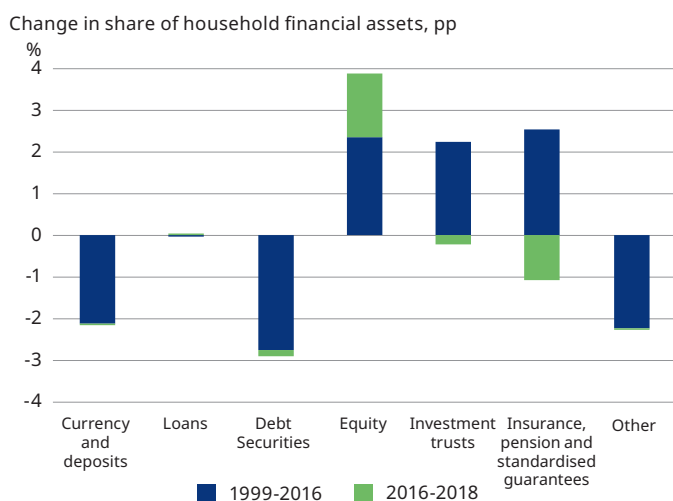
Japan has had extremely low interest rates for over two decades. Following the bursting of the Japanese asset price bubble in 1989, the Japanese economy suffered a sharp slowdown. In the late 1990s, inflation fell into negative territory. The Bank of Japan (BoJ) responded by cutting interest rates aggressively to support growth and inflation. But as a result of prolonged deflation, the central bank eventually introduced zero interest rate policy in 1999 and, in 2016, cut the base rate to -0.1%, where it stands today (chart 1).

Household portfolio shifts

Have low interest rates caused Japanese households to search for higher yielding assets and take on more risk?

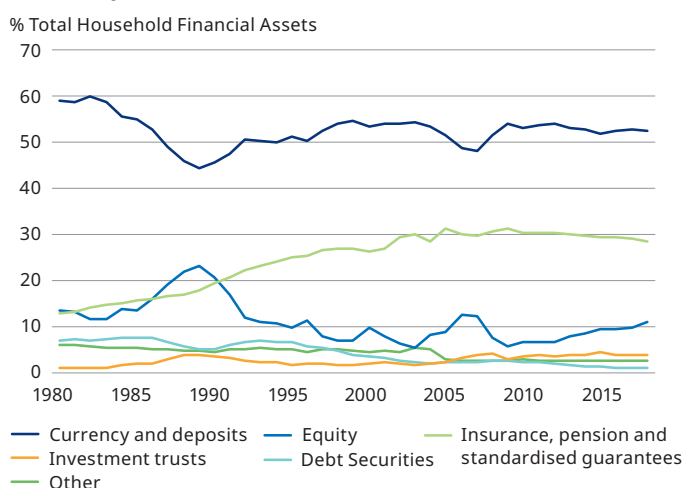
The change in composition of household financial assets since the introduction of zero rates shows some additional risk taking (chart 2). As a share of total financial assets, households have reduced their holdings of cash and debt and increased the proportion of more risky assets such as equities and investment trusts. Although the holdings of equities continued to rise after 2016, there is limited evidence to suggest the introduction of negative interest rates caused an additional wave of household risk taking as the shares of cash and bonds were fairly stable.

Chart 2: Japanese households have taken on more risk since zero rates



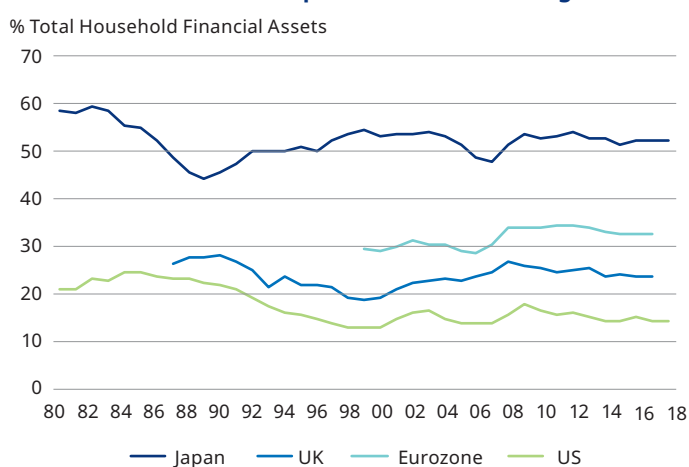
Source: Bank of Japan Flow of Funds, Schroders Economics Group, 28 January 2019

Chart 3: Japanese household financial balance sheet



Source: Bank of Japan, Schroders Economics Group, 30 January 2019

Chart 4: International comparisons of cash holdings



Source: BoJ, ONS, Eurozone, US, 30 January 2019

An international search for yield

Anecdotal evidence suggests Japanese retail investors – often colloquially known by investors as “Ms Watanabe” – have engaged in an international search for a higher yield. In particular, by using foreign exchange “carry” trades that take advantage of the interest rate differential, borrowing in low yielding yen (funding currency) and investing in a higher yielding currency (target currency). The Bank For International Settlements (BIS) highlights¹ several currencies that were attractive as target currencies due to high interest rates from 1998 to 2008. These include the Australian dollar, New Zealand dollar, sterling and South African rand. Although carry trades are notoriously difficult to track, using data from online margin accounts, the Reserve Bank of Australia (RBA) found evidence² that Japanese retail investors followed carry strategies between 2006 and 2008. In addition, Japanese investors engaged in the carry trade tended to add to positions when the high yielding currency depreciated but unwind positions when the movement was extreme. This is consistent with previous sharp exchange rate movements. “Ms Watanabe” continues to be cited in market commentary as a factor influencing various exchange rate moves³.

Combined with liberalisation of the Japanese capital market, the search for a higher return on savings by Japanese investors has given rise to demand for several products in the bond space including uridashi bonds in the retail market. These are bonds issued for the Japanese market by non-Japanese entities, usually denominated in foreign currencies and registered under Japanese securities law. As a result, this enables households to take on both foreign exchange risk and credit risk, although the latter is typically low due to high credit ratings. The BIS⁴ highlights the portfolio diversification by Japanese households in the early 2000s measured by growth in foreign exchange margin accounts, foreign currency investment trusts and uridashi bond issuance.

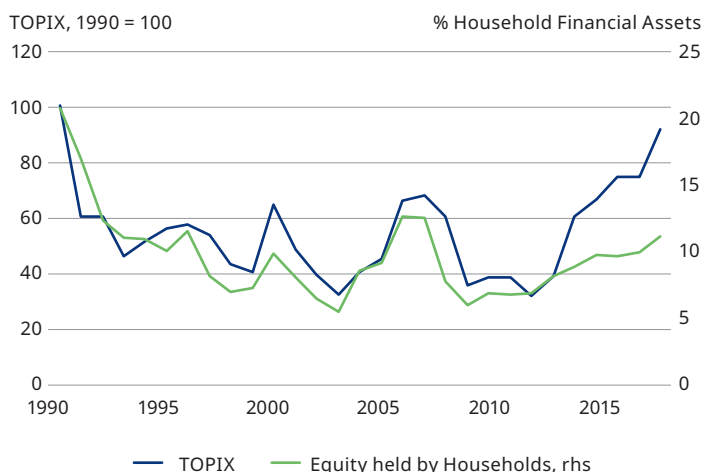
1 Galati, Heath and McGuire, 2007. “Evidence of carry trade activity,” BIS Quarterly Review, BIS

2 Zurawski and D’Arcy, 2009. “Japanese retail investors and the carry trade”, Reserve Bank of Australia

3 For example, “New Year Yen drama suggest tumult before tranquillity” 3 January 2019, Financial Times

4 Galati, Heath and McGuire, 2007. “Evidence of carry trade activity,” BIS Quarterly Review, BIS

Chart 5: Is higher allocation to equity price driven?



Source: Bank of Japan, Thomson Reuters Datastream, Schroders Economics Group, 30 January 2019

More recently, there have been reports of Japanese retail investors trading cryptocurrency with some estimating that Japan accounts for between one third and one half of bitcoin trade⁵.

However, taking a step back, Japanese households remain extremely conservative with their finances. Of the JPY 1,830,000bn (\$17,000bn) household financial assets, over half of this is kept in currency and deposits (chart 3) - significantly more than the US, eurozone and UK (chart 4). If insurance products are added, this share rises to 80%. This proportion has remained persistently high since 1999, pointing to fairly insignificant portfolio shifts and consequently a continued highly conservative asset allocation stance. Moreover, the household portfolio allocation to equities is highly correlated to the equity market itself (chart 5), suggesting a higher allocation to equity is mainly driven by price movement; a passive investment decision rather than an active one.

Households' exposure to foreign assets has risen through direct investments and via mutual funds, consistent with investors looking internationally to take on more risk (chart 6). This decision seems to be an active one, as exposure to foreign assets is not as correlated with the exchange rate. Nonetheless, exposure to foreign assets continues to be low at 3.4% of total financial assets.

In summary, we find limited evidence to suggest that in a low interest rate environment, Japanese households have taken on significantly more risk. Higher equity allocation seems to be a result of market prices and despite a rise in the international search for yield, the household portfolio remains very conservative. Before we jump to the assumption that this behaviour would extend to other developed markets, we dig a bit deeper into the environment of the Japanese retail investor and examine any special factors that could explain the lack of further active risk taking.

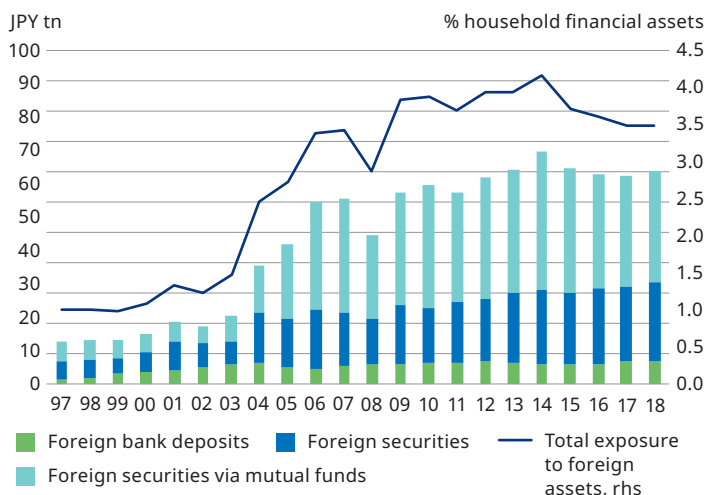
What determines asset allocation?

Portfolio selection theory outlines a simple asset allocation problem⁶ where an investor sets out to maximise utility by allocating wealth between a risky asset (stock) and a risk-

⁵ Deutsche Bank Says Japan's Retail Investors Are Behind Bitcoin's Surge, Bloomberg, December 2017

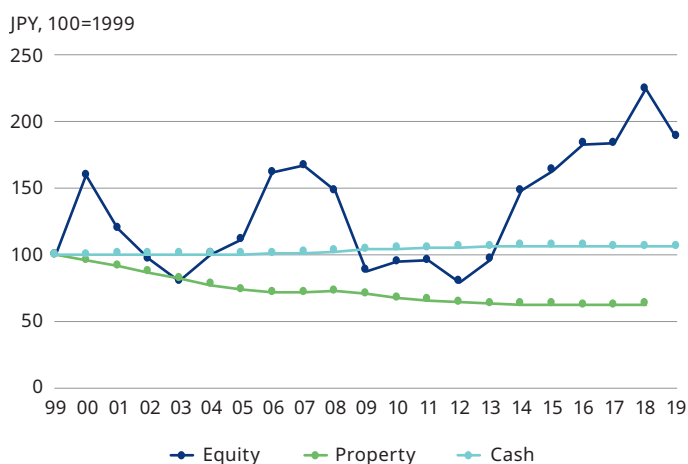
⁶ Merton (1969) and Samuelson (1969)

Chart 6: Household exposure to foreign assets



Source: Schroders Economics Group, Nomura, Bank of Japan, 30 January 2019

Chart 7: Investing ¥100 in 1999



Source: Thomson Reuters Datastream, Schroders Economics Group, 31 January 2019

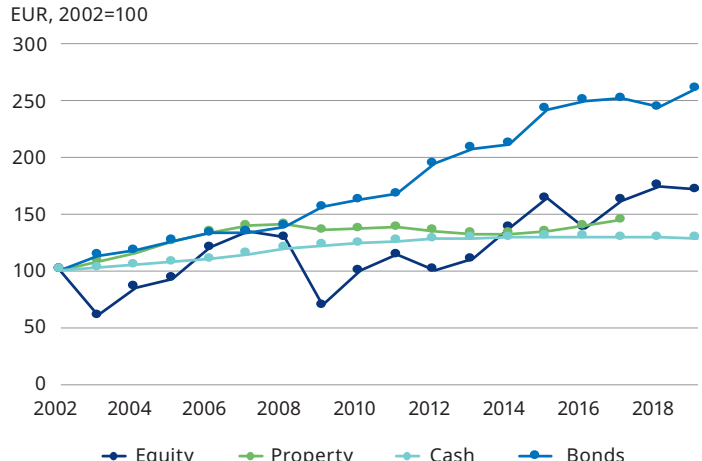
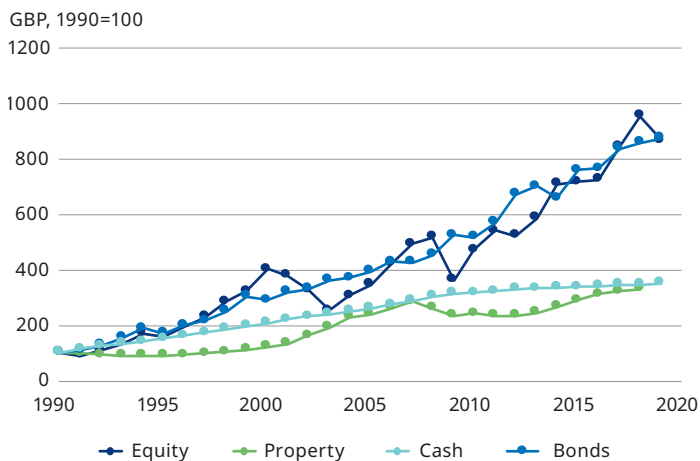
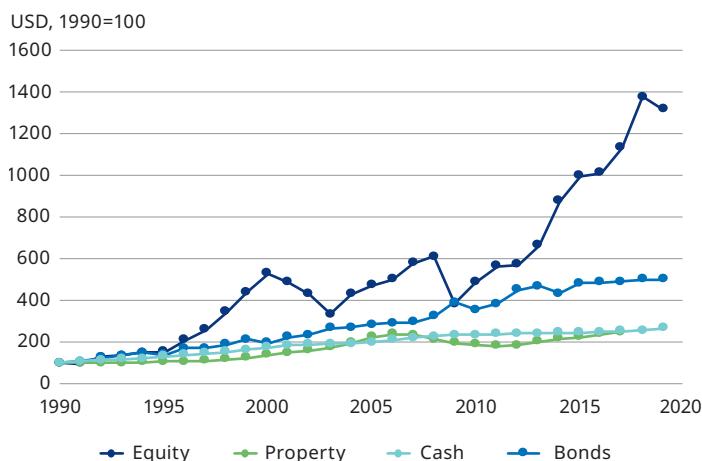
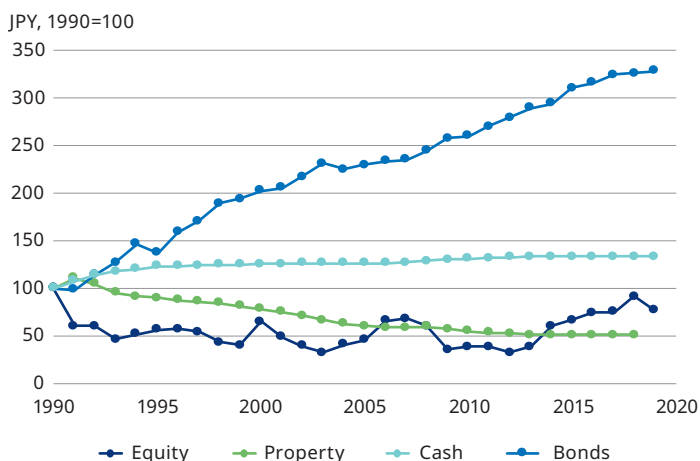
free asset (cash). The optimal allocation is a function of a few parameters. Assuming no other income, borrowing constraints or entry costs, a higher proportion of risky assets becomes more desirable, all else being equal, in the following cases: 1) the expected excess return of the risk asset rises; 2) the volatility of the risk asset falls; 3) the investor becomes less risk averse.

We explore these factors in the context of the Japanese retail investor.

Lack of alternatives?

The first factor key for optimal asset allocation is the expected return of the stock relative to the expected return of cash. Historical data allows us to assess the actual returns of assets. In this case, we focus on equity and property. We use the TOPIX equity index, residential land prices and the one-year deposit rate for equity, property and cash returns, respectively. Chart 7 shows how an investor would have fared starting with ¥100 in 1999, when the BoJ cut the interest rate to zero. Although a Japanese household would have done best investing in the equity market (the excess return of the risk asset was indeed positive), this was only really established in recent years. Cash would have given very low yet positive returns – a better alternative to investing in loss-making property.

Chart 8: Returns of cash vs domestic equity, bonds and property in local currency



Equity indices are TOPIX, S&P500, FTSE All Share, Eurostoxx 50. Property is Japanese National Residential land price, US Standard and Poor's Case-Shiller House Price Index, Halifax House Price Index, OECD House Price Index, Cash is 1 year deposit rates. Eurozone bonds is Bunds.

Source: Thomson Reuters, Schroders Economics Group, 31 January 2019

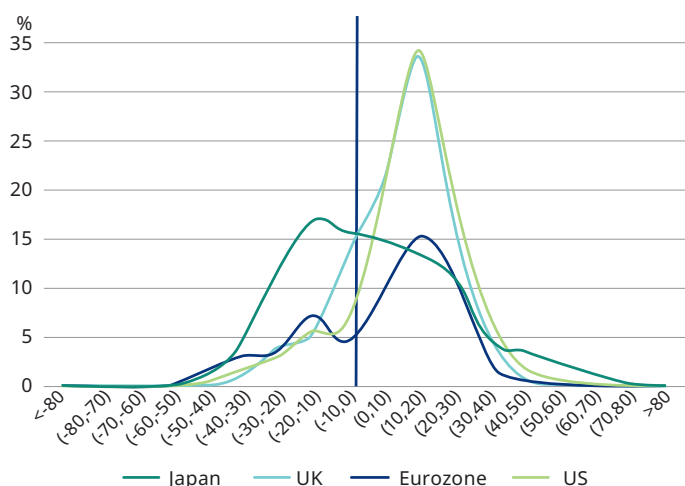
Does this mean Japanese households have been irrational for not taking on more risk as this would have maximised returns? Investing ¥100 just ten years earlier in 1990, following the peak in the equity bubble shows quite a different picture (chart 8). The excess return was negative as the investor reaped a higher return in cash than both equity and property, which would to date have left an investor with losses. It is likely that households take into account these past returns when forming their expectation of the future, also called adaptive expectations. There is some evidence to suggest these returns are somewhat embedded in household expectations. For example, households still expect land prices to go down⁷. Therefore a pessimistic expectation of the return of risk assets could, in part, explain the conservative stance of the Japanese retail investor.

⁷ Bank of Japan Opinion Survey on the General Public's Views and Behaviour, September 2018

In the meantime, historical returns in the US and UK show a vastly different picture as the equity markets significantly outperformed cash since 1990, implying a more optimistic expected excess return (chart 8). Although we have a shorter history for the eurozone due to data unavailability, since 2002 the picture for equities particularly versus cash, is more mixed. The eurozone also shares with Japan the feature that bonds have been the best performing asset over the period.

The volatility and distribution of the returns of the risk asset are also important for optimal decision making (chart 9) and in the case of Japan, the TOPIX has been equally likely to fall as rise since 1990. In other developed equity markets such as the US, UK and the eurozone, average returns are firmly in positive territory and the distribution of year-on-year equity returns are negatively skewed. The eurozone equity return distribution is most similar to Japan due to its low peak. This similarity is also reflected in a smaller difference in the sharpe ratio of Japan and the eurozone (table 1).

Chart 9: Distribution of equity returns from 1990



Y/Y equity returns using daily data. TOPIX, S&P, FTSE All Share from 1990 and Eurostoxx 50 from 2002. Note buckets are discrete so this is not a continuous probability distribution function but line gives a guide to the shape of the distribution as data has not been smoothed

Source: Thomson Reuters Datastream, Schroders Economics Group, 31 January 2019

Table 1: Summary statistics for equity market return over the last 10 years

	Equity returns	Annual Volatility	Real Cash Rate	Sharpe Ratio
Japan	9.5	17.2	-0.2	0.6
US	14.0	13.7	-1.0	1.1
UK	9.8	12.3	-1.8	0.9
Eurozone	8.0	16.8	-0.7	0.5

Using monthly returns of equity markets TOPIX, S&P, FTSE All Share, Eurostoxx. Real cash rate is central bank rate less headline inflation

Source: Thomson Reuters Datastream, Schroders Economics Group, 04 February 2019

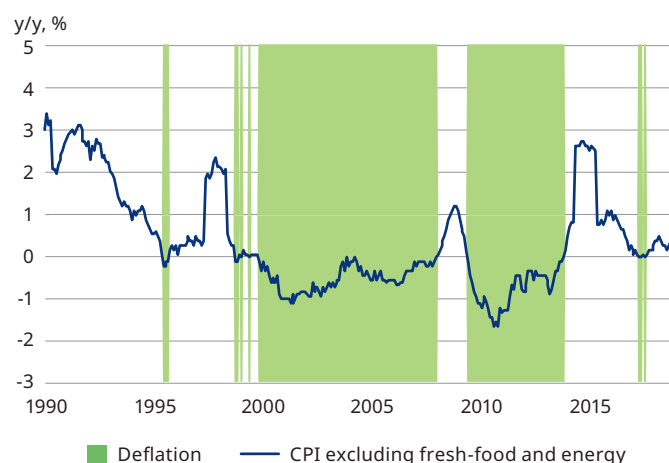
Scarring effect

Risk aversion is the final factor highlighted in portfolio theory that helps determine optimal asset allocation. Aversion to risk could explain why Japanese households have not made a larger shift into risk assets in a backdrop of low interest rates. Japanese retail investors may have suffered a “scarring effect” from the burst of the asset price bubble in 1989. Higher risk aversion is also a factor embedded within secular stagnation; a phenomenon which outlines structurally low growth and a low natural rate of interest, often associated with Japan.

The Bank of Japan estimates that the number of households that have experienced a principal loss as a result of a fall in market prices makes up more than 30% of households holding savings type assets⁸. They also find that households rarely withdraw from investments in risk assets, even if left with unrealised losses. Moreover, an aversion to risk is shown in the household selection criteria for financial assets, which highlights a preference for safety and liquidity rather profitability since 1990. This preference has become less pronounced since 1998 but remains.

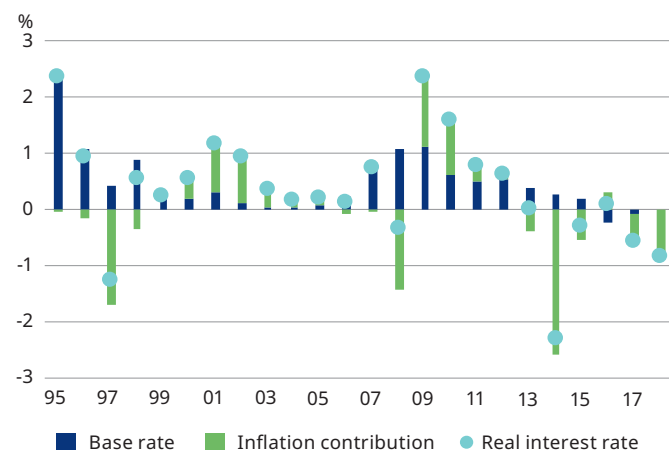
⁸ Behavioural characteristics affecting household portfolio selection in Japan, Bank of Japan Review (May 2017)

Chart 10: Deflationary periods in Japan



Source: Thomson Reuters Datastream, Schroders Economics Group, 31 January 2019

Chart 11: Decomposition of real rates



Source: Thomson Reuters Datastream, Schroders Economics Group, 16 November 2018

The deflationary mindset

Back to the portfolio problem, the investor sets out to maximise returns. However, in the case of a Japanese retail investor, with perfect hindsight the optimal investment decision since 1990 was actually to hold savings in cash. But what if the objective was to gain a positive return, rather than maximise returns? This objective to gain a positive real return does not seem far-fetched given the negative returns experienced in the domestic equity and property market. In a deflationary environment, cash can still make a positive real return even with nominal rates at zero.

During the years of deflation (chart 10), falling prices pushed the real interest rate higher, helping households earn positive real return (chart 11). Despite returning to positive territory, inflation is still lacklustre as underlying inflation, as measured by the consumer price index, excluding fresh food and energy, currently stands at 0.3% y/y. Furthermore, despite the central bank’s 2% inflation target, inflation expectations remain around 1%⁹ and the government is yet to formally declare an end to deflation. This continued deflationary mindset suggests households may continue to expect inflation to push up the real return of cash, thus keeping it a positive yielding asset. In addition, a deflationary mindset would keep households from investing in the equity market due to its detrimental impact on corporate earnings.

⁹ Bank of Japan Outlook for Economic Activity and Prices (October 2018)

Chart 12: Old-age dependency ratio

Population 65+, % 15-64



2017 estimate is the average of 2015 and projection of 2020, 2027 is the average of 2025 and 2030 projections. UN projection made in June 2017
Source: UN Population Division, Schroders Economics Group, 23 November 2018

Turning to other developed markets, despite low inflation in recent years, inflation expectations are still well anchored in the US, UK and the eurozone. As a result, inflation is expected to continue to drag on the real return of cash making the asset less attractive.

Demographics

Conventional wisdom is that asset allocation to risk assets should reduce as a person ages because they have less time to recoup losses. It is well known that ageing in Japan is more pronounced than in other economies; perhaps this

is responsible for the conservative stance of Japanese retail investors? If this is the case, it has important implications, given expectations of ageing across other economies (chart 12).

Contrary to this conventional wisdom, Nomura find that 70% of listed equities held by Japanese individuals are actually held by those in their sixties and seventies¹⁰. Nomura Research Institute also finds that among experienced investors, the value of aggressive growth investments is highest for 60 years and above¹¹, although this demographic also has the most set aside for living expenses and for the future. Nonetheless, as well as being the wealthiest, the eldest households – those aged 60 years and above - hold the highest share of risk assets¹² and are thus the most willing to take risk. With the mandatory retirement age at 60, these are likely to be people who are retired but are still expected to live for much longer¹³. Even so, the proportion of elderly households that hold risk assets is still less than half.

The finding that the older population are more active risk takers has potential implications for other economies that are expected to age, particularly for Europe which is closest behind. However, in Japan, as a consequence of seniority based pay, both annual income and savings follows an upward trajectory with age, with savings beginning to be drawn down after the age of seventy.

10 "Japan's dying shareholders signal sombre outlook for its stocks", Lewis, Financial Times, October 2018

11 Japan's Asset Management Business 2018/2019, Nomura Research Institute, December 2018

12 Compared to Ages 20-39 and 40-59. Data from the Central Council for Financial Services Information

13 Life expectancy is 84 years

Conclusions

We find some evidence to suggest that in a low interest rate environment, Japanese households have taken on more risk - particularly by gaining more exposure to foreign assets - in the currency, equity and bond space. However, the additional risk taking is fairly insignificant in the wider context of a very conservative asset allocation. Digging deeper into the environment of the Japanese retail investor over the past few decades, we find the dismal excess return of equities, risk aversion and the deflationary mindset can help explain why this was the case. These factors, including risk aversion, are somewhat special to Japan when making comparisons with other developed markets such as the US, UK and eurozone. However, out of these markets, the eurozone is most like Japan in terms of its asset return profile (and demographics), although we find that the "demographic effect", where investors become more conservative with age, does not seem to have been a feature of the Japanese retail investor.

Finally, we recognise that other factors may have played a role in the Japanese retail investor's decision such as liquidity constraints, financial literacy, regulation and fees, which should also be explored.

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