

March 8, 2013

Low for Long: The Behavior of Japanese Financial Institutions and Retail Investors during the Persistent Low Interest Rate Environment¹

Executive Summary

This memo explores the behavior of Japanese financial institutions and retail investors during the long period of low interest rates in Japan that has persisted since mid-1995 (chart 1 of exhibit 1).² We see signs that Japanese investors have, on the margin, “reached for yield,” but they have done so only modestly and have employed only moderate means:

- On the institutional side, banks increased the fraction of their portfolios allocated to longer-duration domestic bonds and to foreign assets, while insurance companies and pension funds shifted their portfolios moderately toward equities.
- Retail investors shifted the riskier portion of their portfolios (accounting for about 5 percent of their total assets) into increasingly complex financial products and strategies such as investment trusts, Uridashi bonds and retail FX margin trading.
- On balance, we do not see signs that Japanese financial institutions and retail investors have sought higher yields by significantly increasing risky activities.

Japanese Financial Institutions

During Japan’s long period of persistently low interest rates, financial institutions increased weighted-average maturities on bond holdings, exposure to foreign-currency debt, and fee-generating activities and products. However, institutions also reduced exposure to corporate credit risk while increasing Japanese government bond (JGB) holdings, a portfolio shift that we view as at least in part due to a dearth of investment opportunities in Japan that would offer prospects of much higher returns than JGBs. Outstanding corporate bonds declined significantly since the late 1990s, reflecting a reduction in corporations’ investment plans in the low-growth environment, and corporate bond yield spreads have been persistently lower in Japan than in other countries. In addition, Japanese institutions have, to a modest degree, held down their operating costs and passed on some costs to customers (for example, insurance companies have increased premiums). Although these actions kept profitability mostly positive for Japanese financial institutions, they have not led to robust and vibrant banking, insurance, and pension sectors. Even so, the consensus among banking industry analysts is that banks are not holding back economic growth at this point in time.³

¹ Authors: John Ammer (FRB), Carlos Arteta (FRB), Alex Cohen (FRBNY), Ezechiele Copic (FRBNY), Sally Davies (FRB), Jeffrey Kong (FRBNY), Patricia Mosser (FRBNY), and Robert Motyka (FRB). With research assistance from Daisy Chu (FRB) and Jerel Xaver San Gabriel (FRB).

² In response to a slowing economy, the Bank of Japan (BOJ) lowered its target for the call rate from 2.25 percent to 50 basis points in 1995, marking the beginning of a period of very low or zero interest rates that continues to date. The yield on 10-year Japanese government bonds declined in tandem and has remained below 2 percent since mid-1997.

³ In recent years, bank credit to the non-financial sector as a percent of GDP has been rising from a trough it reached in 2004 (though it remains below the bubble-era peak it reached in 1989).

The Banking Sector

For much of the period of low interest rates, Japanese banks struggled with large loan losses, which ranged annually from 1/3 percent to 1 percent of banks' total assets. These losses arose from loans made during the bubble era (1980s to 1991), which Japanese banks were slow to write down, as well as more recent loans that became non-performing because of the persistently weak macroeconomic environment.

Facing high loan losses and weak loan demand, Japanese banks attempted to stem declining core profitability and remain viable in the face of falling net interest margins, or NIM (chart 2 of exhibit 1),⁴ by: 1) increasing the weighted average maturity of bond holdings; 2) moving toward more non-interest income businesses; and 3) expanding overseas lending, particularly to Asian emerging markets.

Japanese banks also shifted their portfolios from traditional lending toward investment securities, particularly JGBs (chart 3), reflecting tightened bank lending standards (which is consistent with increased risk aversion) as well as low loan demand following the Japanese financial crisis. From 1997 to 2012, Japanese banks increased holdings of JGBs from approximately 5 percent to over 11 percent of total assets, while loans declined from 80 percent to approximately 65 percent during the same period.⁵

Within their JGB portfolios, Japanese banks (particularly small and medium-sized banks) have reached for yield on the margin by increasing the average maturity of their holdings. Another activity to boost profitability comes from non-interest income sources, such as fees and commissions and trading (chart 4). Since 2000, Japanese banks have attempted to supplement declining net interest income with income from investment banking and capital markets activities that generate fees and commissions, which grew from almost 20 percent of net interest income in 2000 to almost 30 percent in 2011.⁶ It appears that in recent years, Japanese banks have not increased the total amount of non-interest income from these sources.

The largest Japanese banks are also looking overseas for profitable lending opportunities to counter the low rate environment at home. However, NIM for overseas lending is not higher than domestic NIM due to competition with local banks and higher funding costs overseas. Deleveraging by European banks has provided profitable opportunities (and may provide more), but Japanese banks' overseas expansion into riskier markets so far has been modest in scale. Since 2003, claims on borrowers in emerging market countries have risen from 1 percent to

⁴ For example, NIM fell approximately 43 basis points from 2001 to 2011 for all Japanese banks, according to data from the Japanese Bankers Association. For 2011, average NIM was 1.0 percent. NIM has been lower in the past, dipping below 1.0 percent in 1990.

⁵ Although increased holdings of JGBs cannot be characterized as a reach for yield, it is not without risk. For example, very high levels of Japanese government debt could trigger a run on JGBs. However, such an event is likely only a tail risk at this point in time.

⁶ Indeed, Japanese banks have been slow to develop the expertise needed to make sizable gains in these sources of income. For example, one of the strategic reasons for the Japanese joint venture established in 2008 between Mitsubishi UFJ Financial Group (MUFG) and Morgan Stanley was for MUFG to gain investment banking expertise from Morgan Stanley.

3 percent of banks' total assets. Over the same period, claims on borrowers in other advanced economies (at least part of which are in currencies that are higher-yielding than yen) rose from 14 percent to 20 percent of banks' total assets.

Attempts by Japanese banks to reduce operating expenses have thus far met with only modest success. Unlike many U.S. banking organizations, Japanese banks have been reluctant to use layoffs in significant size to reduce costs in a low interest rate environment.

Insurance Companies

Persistently low interest rates threatened the viability of the Japanese insurance sector during the second half of the 1990s and the early 2000s, as the sector struggled to pay high yields guaranteed to policyholders during the bubble era. Based on their overly optimistic assessment of anticipated investment returns, in the early 1990s insurance companies were selling lifelong annuities that promised to pay returns of over 5 percent. With long-term Japanese yields falling to below 2 percent towards end-1997 and the sharp decline of Japanese stock markets around 2000, life insurance companies suffered as interest rates offered to policyholders exceeded the insurers' investment returns. Seven mid-size Japanese life-insurance companies, which had invested heavily in JGBs and Japanese stocks, failed between 1997 and 2001. These failures were resolved using a formal bankruptcy procedure, in which the failed insurers were reorganized and bought by foreign and domestic companies and lowered their promised rates to around 1 to 2 percent. Thus, the major part of losses at failed insurers was born by policyholders in the form of reductions in promised yields, with no public money used to support the sector.

In 2003, Japanese stock markets rebounded strongly, which improved the solvency of the remaining Japanese insurers and helped prevent further bankruptcies. In recent years, conditions for life insurers have improved further, and only one insurer (which had problematic investments in securitization products) has failed since 2001.

In general, Japanese life insurers that have survived during the low interest rate period have done so through a combination of increased premium revenues from individual annuity products; a decline in insurance payouts attributable to increasing longevity; cuts to operating costs; and an improvement in asset portfolio performance thanks to higher returns from foreign securities and stocks and the lengthening of the average duration of JGBs.

Furthermore, insurance companies engaged in very limited "reach for yield" during this period. Holdings of equities increased somewhat during periods of high stock returns, only to shrink during weaker periods (for example, the early 2000s and post-2008). Holdings of JGBs as a percent of total assets increased substantially (from about 13 percent in 1997 to 48 percent in 2012 (chart 5)), while holdings of foreign securities increased only modestly.

Pension Funds

Japan's low interest rate environment ultimately brought about deterioration in the performance of pension portfolios by prompting an untimely shift into riskier assets. During the late 1990s, pension funds increased their allocations to foreign securities and equities in a bid to

make up for low domestic interest rates. This shift initially proved successful as the global economy boomed over the next few years. However, the dot-com crash led pension funds to decrease their holdings of equities in the early 2000s. From 2004 to 2007, amid improved conditions, pension funds again increased their allocation to equities and foreign securities. However, returns for the late 2000s dropped into negative territory as a consequence of the global financial crisis. Notably, since the onset of the crisis, pension funds have increased their allocations to JGBs, which are now higher than their allocations to foreign securities, while markedly reducing their holdings of equities, which is consistent with the funds exhibiting greater risk aversion.

More generally, three broad trends are evident in the portfolio allocations of Japanese pension funds (chart 6). First, the share of investments in foreign securities increased, which could be viewed as reaching for yield by taking on additional risk, although it could also be viewed as portfolio diversification. Second, early in the period—up to 2000—holdings of equity securities increased, which can reasonably be characterized as a reach for yield. Third, holdings of JGBs increased, which could increase interest rate exposure if the weighted-average maturity of the portfolio increases at the same time, but certainly does not add to credit risk.

Since the early 2000s, total assets of the Japanese pension sector have been declining amid sluggish growth in contributions, increasing payouts, and relatively poor portfolio returns. A natural response would have been for pension fund managers to seek higher returns on their asset portfolios. However, in practice, the average investment return of the major funds declined from over 3 percent in 2001-2005 to nearly zero in 2006-2010. The failure to increase returns is due, in part, to pension funds remaining heavily invested in low-yielding, fixed-income securities through the protracted period of low rates. Finally, the sharp deterioration in portfolio returns in the second half of the 2000s—a reflection of the negative performance of domestic equities, foreign bonds, and foreign equities—suggest that, to the extent pension funds did reach for yield during this period, they took on risks that led to poorer returns, *ex post*.

Comparison with U.S. Financial Institutions

Thus far, Japanese financial institutions appear to have increased risk-taking only on the margin in the face of a persistent low-rate environment. Several factors may have deterred these financial institutions from responding more aggressively, including lessons learned from Japan's bubble-era banking crisis that may have made them more wary of taking on risk. In addition, weak economy activity and subdued demand for credit reduced the prospects for institutions to improve returns by taking on more credit risk.

Extrapolating the Japanese low-rate experience to the United States could be misleading, because U.S. and Japanese financial institutions have different opportunities and may also have somewhat different incentives. U.S. financial institutions have an established history of seeking profits in the large and liquid U.S. domestic capital markets. However, Japanese capital markets offer fewer such opportunities, and Japanese institutions have not been active in capital markets

outside of Japan on a significant scale, at least in part due to their long-running preoccupation with resolving non-performing loans.

Differences in corporate governance may also lead Japanese financial institutions to pursue higher rates of return less aggressively than their U.S. counterparts. Incentives for managers to perform likely are heightened in the U.S. by a greater possibility of changes in control through hostile take-overs, which have been much rarer in Japan historically. In addition, widespread use of incentive-compensation policies by U.S. banks encourages staff to pursue profit opportunities more energetically. Japan's Financial Service Agency staff has told Board staff that Japanese banks make only very limited use of incentive-compensation policies.

Japanese Retail Investors

Overall, Japanese households are very conservative investors who typically hold between 50-60 percent of their financial assets in cash (chart 1 of exhibit 2). This compares to U.S. households, which place a much greater share of assets in equities and other riskier assets and typically hold less than 20 percent in cash (chart 2). However, within the riskier portion of their portfolios (about 5 percent), Japanese households shifted into increasingly complex financial products and strategies, such as investment trusts, Uridashi bonds (that is, foreign-currency-denominated bonds issued in Japan), and retail foreign exchange (FX) margin trading. Although these riskier investments likely pose little threat to financial stability due to their limited size, Japanese retail investment behavior suggests that it may be prudent to keep a close watch for signs of reach for yield by U.S. households, particularly given their higher risk tolerances.

Investment Trusts ("Toshins")

Investment trusts (or "Toshin" funds) represent the largest retail investment vehicle used by Japanese households in search of high dividend income in a low-rate environment. With approximately \$1 trillion in total assets, Toshin funds, which are essentially open-end mutual funds, have become increasingly risky and more complex. Despite the riskier nature of some of these investment trusts, Toshin funds are legally prohibited from employing leverage. Additionally, these riskier investments account for only about 4 percent of total financial assets held by Japanese households and thus are likely too small to pose a threat to financial stability. Indeed, previous episodes of forced liquidations of some of these funds have not led to any systemic problems in Japanese financial markets.

Throughout much of the 1980s and 1990s, the flow of Toshin funds across asset classes was fairly cyclical, driven largely by relative returns across equities and domestic fixed income securities. However, the persistence of low rates and Japan's aging demographics increased demand for investment trusts in the last decade. The majority of Toshins (72 percent) are owned by investors 60 years and older, reflecting older investors' appetite for regular monthly dividends offered by many investment trusts. As persistently low rates eroded the interest income derived from large cash deposits, investors' willingness to take on more risk increased. However, rather than rebalancing their portfolios away from cash and increasing the size of their (low) exposure

to riskier assets such as equity securities, retail investors maintained the same portfolio balance, but shifted towards increasingly risky assets. Over the course of the last 15 years, retail investors shifted from domestic bonds to equities to higher yielding foreign assets (chart 3). Indeed, even within foreign assets, declining long-term rates in many industrial countries prompted a notable shift from those countries' sovereign debt to high-yield foreign credit products, emerging market sovereign debt, and REITs. In fact, since the financial crisis in 2008 low returns on many global assets increased demand for Toshin funds that combine high-yielding foreign investments with an FX overlay investment in a high-yielding currency, such as the Brazilian real (chart 4).⁷

Although Japan's low rate environment increased investor risk appetite for Toshin funds, regulatory reforms broadened access to these funds and helped fuel the industry's growth. In December 1998, the blanket guarantee on bank demand deposits was discontinued, and banks and insurers were allowed to sell Toshins, both of which increased attractiveness of investment trusts. Similarly, the introduction of defined contribution pension plans in 2001 helped increase demand for investment trust products. And, the availability of investment trusts was further boosted in October 2005 when Japan Post Bank was allowed to sell Toshins.

Despite the relatively risky nature of some Toshin funds, they do not appear to have contributed to any financial instability thus far. Although many Toshin funds have been liquidated, as a result of financial stress or adverse currency movements, no material impact on financial stability has been witnessed.⁸ Most Toshin funds retain excessive returns above the guaranteed monthly dividend level in a reserve account so that in times of stress they can draw on these funds instead of principal assets. Even when funds need to draw on principal to maintain dividend payments, they are usually liquidated before the principal is exhausted.

Uridashi Bonds

Uridashi bonds are foreign currency denominated bonds issued in Japan, typically in a high yielding currency and marketed specifically to Japanese retail investors.⁹ Uridashi bonds are nearly always simple fixed-rate coupon bonds commonly with maturities between 3 to 5 years. They are issued overwhelmingly by investment grade issuers, including large global banks, supranationals and public sector finance issuers (such as the World Bank, Asian Development Bank, and export-import banks), and a few large industrials. Investors are generally characterized as older buy-and-hold investors seeking to balance requirements for a safe and consistent income stream while maximizing yield potential in the context of the low

⁷ Often referred to as "double decker" funds, the FX overlay is typically structured through the FX forward market, where the underlying asset's currency is sold forward against a higher-yielding currency and rolled throughout the life of the fund. Also, some Toshin funds use the double decker structure and add an additional layer by selling a call option on the underlying asset.

⁸ The collapse of Enron in 2001 had a negative impact on some Toshin fund investments, prompting net asset values per share to fall below the principal value and leading to the outflow of money from these funds. Nonetheless, these liquidations did not lead to any systemic problems within Japanese financial markets.

⁹ There is no universally shared definition for a Uridashi bond. The broadest definition only requires the bond be marketed specifically to Japanese retail investors. The narrowest definition specifies a highly-rated non-yen denominated bond issued in Japan by a non-Japanese entity and marketed specifically to Japanese retail investors.

yield environment in Japan. As a result, secondary market trading of Uridashis is limited and liquidity is generally characterized as thin. Uridashi issuance since 2008 has increased sharply with nearly \$30 billion outstanding at the end of 2012. But Uridashis remain a small portion of risk-taking, amounting to only 0.2 percent of total household financial assets at the end of 2011.

Like Toshins, Uridashis provide exposure to a wide range of currencies, the most popular of which have relatively high interest rates, such as the Australian and New Zealand dollars, Brazilian real, and Turkish Lira. Since 2008, issuance has shifted in denomination from developed market currencies to emerging market currencies, which market participants attributed to yield-seeking behavior by investors (chart 5). For example, New Zealand dollar-denominated issuance has declined while Brazilian real and Turkish lira-denominated Uridashi issuance increased.

For issuers, Uridashis are opportunistic funding vehicles, which offer higher (foreign) yields to investors, via the chosen foreign currency denomination, while taking advantage of the low cost of funding in Japan through the use of FX swaps and/or forward hedging.¹⁰ From an investor's perspective, credit risk is expected to be limited given the investment grade credit quality of nearly all issuers. Foreign exchange risk is actively pursued by investors for higher yields, but can presumably be offset via retail foreign exchange trading if desired.

Retail FX Margin Trading

Another popular investment method for Japanese households is FX margin trading. In short, this investment strategy entails opening a personal account at an FX broker to take leveraged long or short positions in foreign currencies relative to the yen, partially funded by margin credit. Japanese retail investors employ several different investment strategies, but broadly speaking, retail investors have been highly biased towards short-yen exposure (likely due in part to positive carry), and trading behavior tends to be contrarian, with retail investors selling the yen as it appreciates, and buying it back when it begins to depreciate.

The size of the Japanese retail FX market has grown notably over the past few decades (chart 6), and at its peak in 2011 amounted to approximately 25 percent of total Japanese yen trading volume. In addition to yield-seeking behavior by these investors, structural factors such as technological advances for electronic trading and regulatory reforms starting in 2005 contributed to the growth of retail FX trading.¹¹ Regulations restricting retail leverage limits to 50-times in 2010 and then to 25-times in 2011 have served to reduce overall retail positions somewhat since then. These recent regulatory changes were prompted by consumer protection concerns, though in practice they also had the macro-prudential impact of somewhat reducing the size and volatility of FX margin trading flows. That said, FX margin trading remains robust and anecdotal reports suggest that these investors have more recently responded by increasing the notional values of their accounts.

¹⁰The need to hedge is dependent on the structure of the bond issuance.

¹¹The advent of the "Click365" platform in 2005 allowed retail FX investors to access trading on the Tokyo Futures Exchange. Additionally, the amendment of Japan's Financial Futures Trading Act in 2005 required retail FX brokers to register with the Financial Services Agency, and specified which acts by FX brokers were illegal.

The biggest risk that Japanese retail trading imposes on broader financial stability stems from the fact that retail investors tend to follow similar strategies and because of their high leverage, they can be forced rapidly out of positions when prices move against them, thereby exacerbating market dynamics. Retail deleveraging impacted yen movements during the Lehman crisis in September 2008 and the “flash crash” of May 2010, but the most significant example occurred in the days following the earthquake and tsunami in March 2011. At that time, the yen was trading near its all-time nominal highs against the U.S. dollar, while net-short yen positions of Japanese retail investors registered more than \$24 billion, close to its all-time high. On March 16, the yen appreciated over 4 percent in a matter of minutes, due in large part to stop-loss and closeout orders triggered on Japanese retail trading platforms. In this case, the rapid reduction of large retail positions exacerbated already high FX volatility, which ultimately led to the coordinated G-7 intervention to address the disorderly movements in the yen.

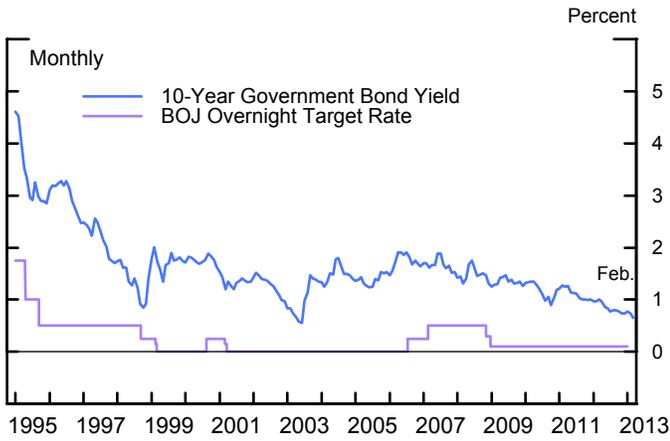
Comparison with U.S. retail investors

The significant differences in risk profiles make it difficult to make direct comparisons between retail investor behavior in Japan and the United States. Nonetheless, as Japan’s persistently low interest rate environment became more endemic, Japanese retail investor demand for higher yields prompted financial institutions to design ever riskier products, such as double- and triple-decker Toshin funds and increased Uridashi bond issuance in emerging market currencies. Another important distinction between Japan and the U.S. is the general lack of alternative investments in Japan in a low yield environment. Indeed, without large, robust corporate bond or securitization markets Japanese investors turned to Uridashi bonds and Toshin funds. In contrast, United States financial markets provide a variety of alternatives including high-yield corporate bonds and asset-backed securities.

Similarly, the prevalence of retail FX margin trading in Japan is very unlikely to be matched in the U.S. in the foreseeable future. The evolution of retail margin trading in Japan may have been perpetuated by persistently low interest rates compared to the rest of the world, but its popularity also likely reflects other factors such as differing preferences regarding household money management and fewer domestic opportunities for credit and equity investing. In the United States, FX retail brokers are shifting to servicing small business rather than pure retail demand, and U.S. regulatory requirements, particularly high capital requirements, have constrained growth in retail trading. Estimates suggest that retail-related FX volume in Japan is roughly double that in the United States, but total U.S. dollar volume is roughly four times that of the yen. Even if retail margin trading were to significantly gain in popularity against a backdrop of comparatively low U.S. rates, it is unlikely that the size would reach levels that could compare to the very large volume of overall U.S. dollar transactions.

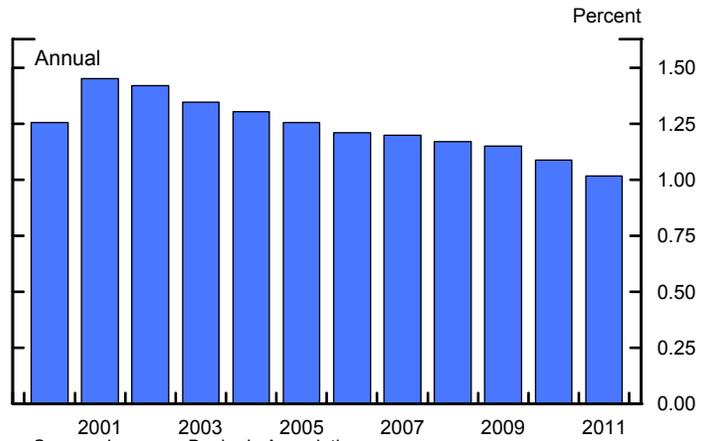
Japanese Financial Institutions

Chart 1
Japanese Interest Rates



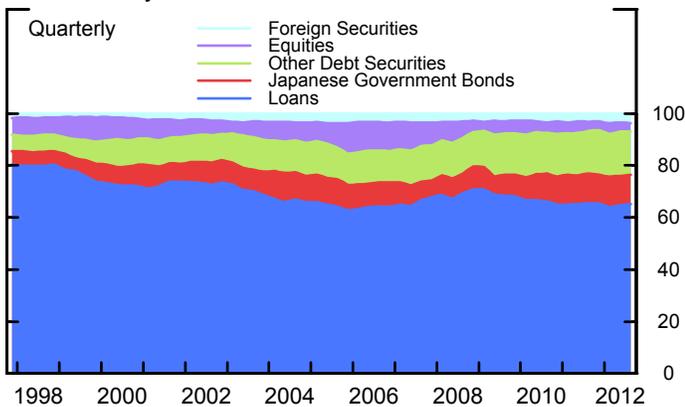
Source: Federal Reserve Board.

Chart 2
Net Interest Margin of Japanese Banks



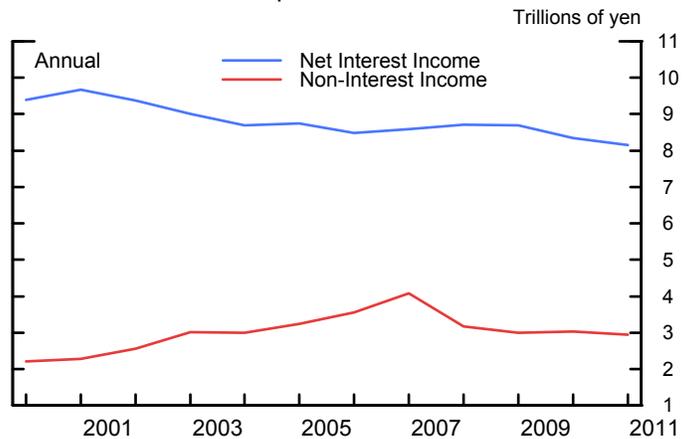
Source: Japanese Banker's Association.

Chart 3
Investment Portfolio Allocations of Japanese Domestically Licensed Banks



Source: Bank of Japan Flow of Funds.

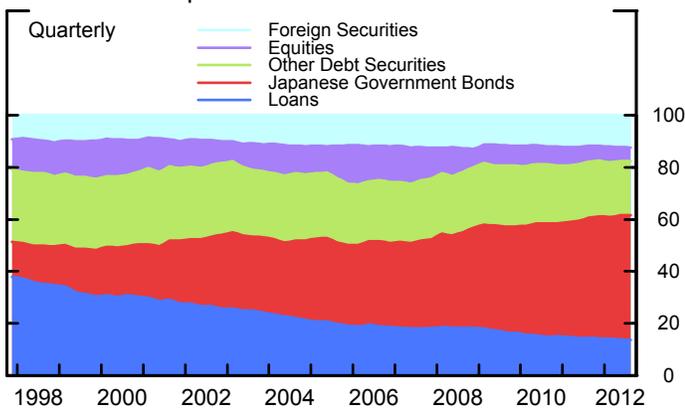
Chart 4
Sources of Income, Japanese Banks



Source: Japanese Banker's Association.

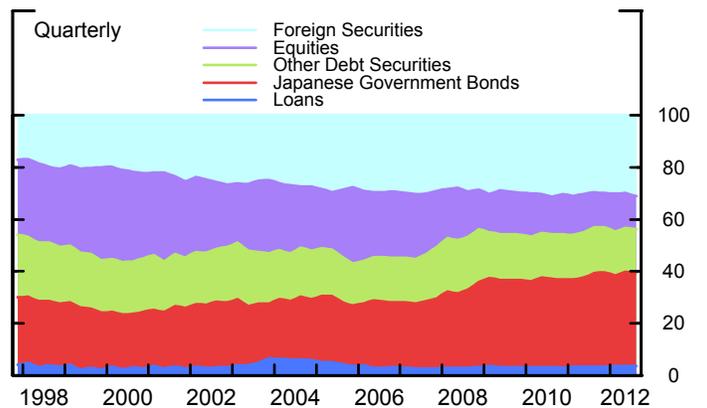
Note: Non-interest income include fees, commissions and trading income.

Chart 5
Investment Portfolio Allocations of Japanese Insurance Companies



Source: Bank of Japan Flow of Funds.

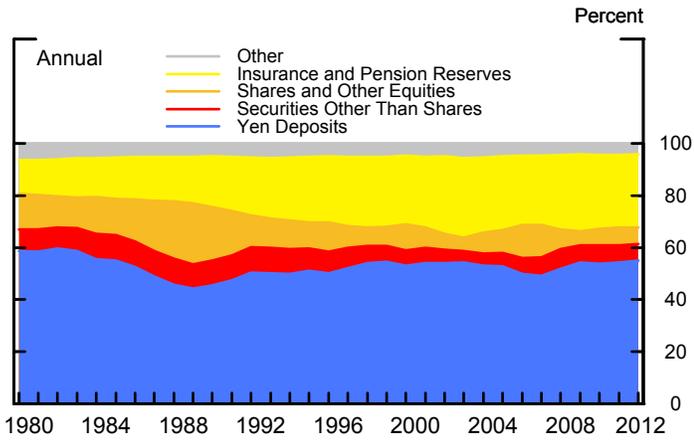
Chart 6
Investment Portfolio Allocations of Japanese Pension Funds



Source: Bank of Japan Flow of Funds.

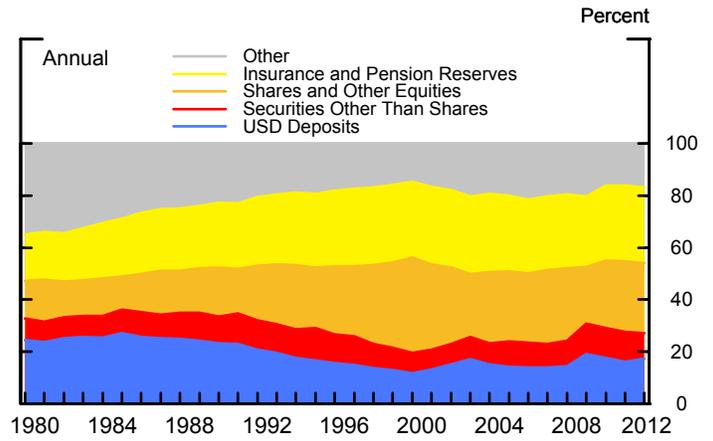
Japanese Retail Investors

Chart 1
Japanese Household Financial Assets



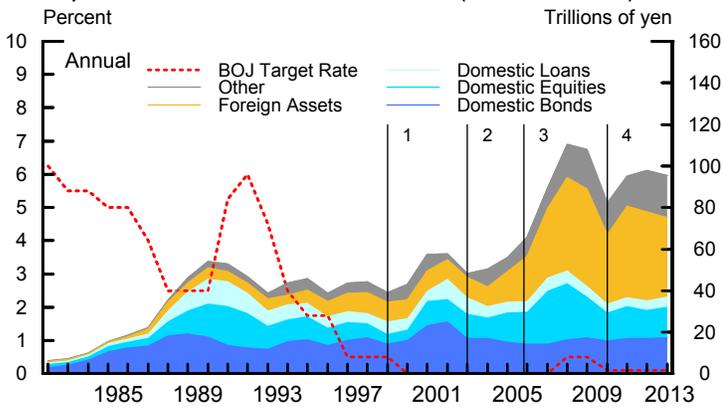
Source: Bank of Japan, Haver Analytics.

Chart 2
U.S. Household Financial Assets



Source: Federal Reserve Board, Haver Analytics.

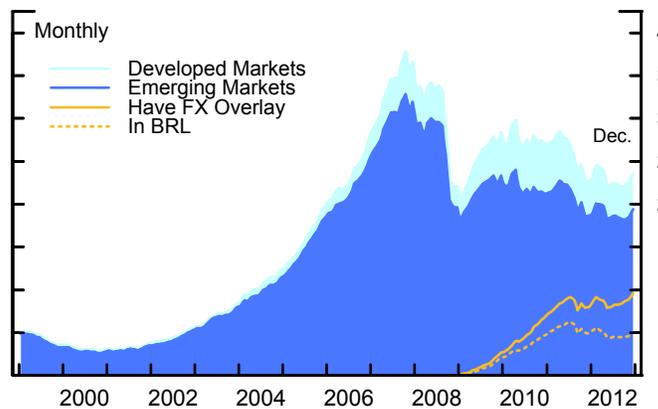
Chart 3
Japanese Investment Trust Assets (Toshin Funds)



Source: Bank of Japan, Bloomberg.

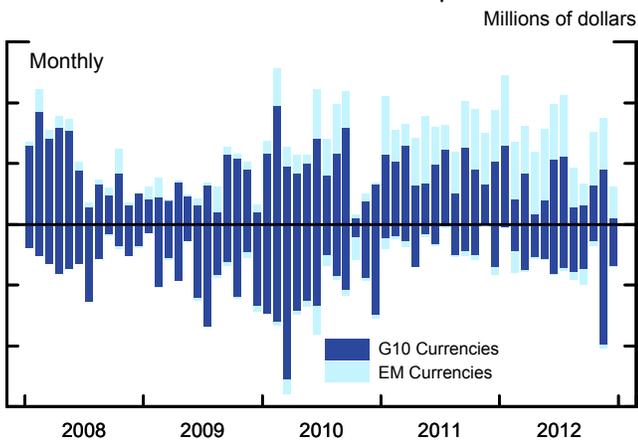
1. Banks/insurers permitted to sell Toshins.
2. Defined contribution pension plans introduced.
3. Japan Post Bank permitted to sell Toshins.
4. FX Overlay funds introduced.

Chart 4
Foreign Currency-Denominated Japanese Investment Trust Assets



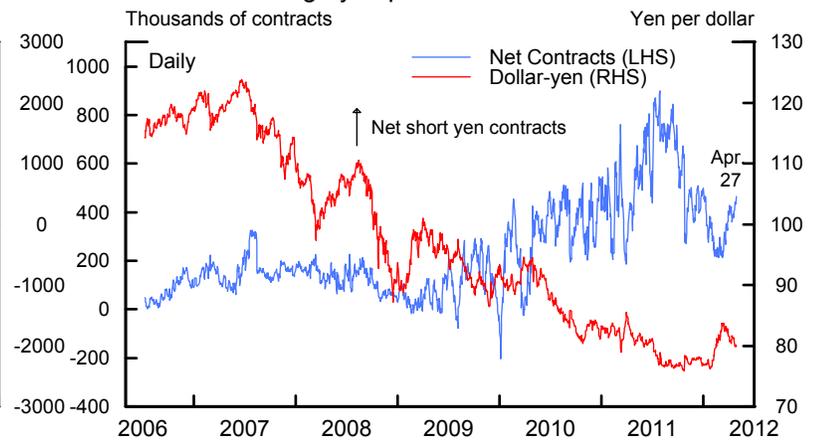
Source: Nomura; Investment Trust Association, Japan.

Chart 5
Uridashi Bond Issuance and Redemption



Source: Dealogic.

Chart 6
Yen Positioning by Japanese Retail



Source: Tokyo Futures Exchange.