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Masazumi Hattori and Hyun Song Shin

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The Broad Yen Carry Trade

Masazumi Hattori* and Hyun Song Shin**

Abstract

Yen carry trades have traditionally been viewed in narrow terms purely as a foreign exchange transaction. However, evidence from the waxing and waning of balance sheets of foreign banks operating in Japan points to a broader notion of the carry trade. Yen liabilities fund not only pure currency carry trades, but also fund the general increase in balance sheets of hedge funds and financial intermediaries. The difference in overnight rates across countries is a crucial determinant of balance sheet changes. Domestic monetary policy thus has a global dimension.

Keywords: Yen carry trade; liquidity; risk appetite; monetary policy

JEL classification: F31, G21, G24

* Director and Senior Economist, Deputy Head of Economics Section, Institute for Monetary and Economic Studies, Bank of Japan (E-mail: masazumi.hattori@boj.or.jp)

** Professor of Economics, Princeton University (E-mail: hsshin@princeton.edu)

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1. Introduction

A carry trade is constructed by borrowing a low interest rate currency to fund the purchase of a high interest rate currency - that is, in selling currencies forward that are at a significant forward premium. The “yen carry trade” in particular has been a topical subject of debate over the last decade or more given the extended period of low interest rates in Japan.

Although the carry trade is often portrayed purely as a bet on the foreign exchange markets, the significance of the carry trade extends far beyond the narrow confines of the FX market, and arguably extends into all reaches of the global financial system. The key to understanding the wider significance of the carry trade is to follow the trail of leveraged bets through the financial system through interlocking balance sheets of the financial intermediaries involved. Take an example. A hedge fund that wishes to take on a larger position in a security obtains funding from its prime broker (a Wall Street investment bank, say) by pledging assets in a repurchase agreement (a “repo”). The prime broker, for its part, funds the loan to the hedge fund by borrowing from another party. But who lends to the Wall Street bank and at what rate?

If the Wall Street bank borrows in New York, it will pay a rate closely tied to the short term US Dollar interbank rate. However, if it were to borrow in Tokyo, and in Japanese Yen, it can borrow at the much lower yen overnight rate. A bank with global reach can borrow yen through its Tokyo office. The Tokyo office of the Wall Street bank then has yen liabilities to Japanese banks, but has yen assets against its New York head office. The lending by the Japan office of the Wall Street bank to its head office is captured in its “interoffice” accounts, and reported to the Bank of Japan. By monitoring the waxing and waning of the interoffice accounts of foreign banks in Tokyo, we can gain a valuable window

on the overall risk appetite and the workings of the global financial system.

We find that the interoffice accounts of foreign banks in Tokyo reveal some important lessons. We focus on three in particular.

- Until recently, foreign banks have maintained a net long position in Japanese assets through its interoffice accounts. However, in the period leading up to the credit crisis of 2007, yen liabilities of foreign banks surged, leading to an unprecedented net *short* position in Japanese assets. We see this surge as bearing the hallmarks of the yen carry trade, interpreted broadly as above. These net short positions were sharply unwound in August 2007, coinciding with the peak of the credit crisis of 2007.
- As found in Adrian and Shin (2007a) for the fluctuations in US primary dealer balance sheets, we find that the fluctuations in the size of the net interoffice accounts is intimately tied to the state of overall risk appetite, as measured by the VIX index of implied volatility on the broader US stock market. The periods when foreign banks have large yen liabilities are also those periods with low readings of the VIX index. This fact gives a clue as to why major global stock indices have been so closely aligned with the exchange rates of high yielding currencies vis-à-vis the yen in recent years.
- Finally, we find that the difference between the yen overnight rate and a summary measure of overnight rates in developed countries mirrors closely the overall size of the net interoffice accounts. Yen liabilities are high when foreign overnight rates are high relative to overnight rates in Japan. Conversely, when foreign overnight rates are close to Japanese rates, foreign banks have low yen liabilities. During the period of exceptionally low US interest rates in 2002 to 2004, foreign banks maintained low yen liabilities,

suggesting that they could satisfy their funding needs by borrowing in US dollars without tapping the yen market.

This last bullet point holds potentially important lessons for monetary policy. Although monetary policy is conducted primarily with domestic macroeconomic conditions in mind, there are inevitable global spillovers of monetary policy. In recent years, with the advent of formal inflation-targeting and moves toward greater focus on managing market expectations of future central bank actions, attention has shifted away from short term rates as an important price variable in its own right. Our preliminary findings suggest that short term rates and balance sheet size may be important in their own right for the conduct of monetary policy.

The outline of our paper is as follows. We begin with a review of the institutional background of the interoffice accounts of foreign banks in Japan and chart the shifts in the balance sheet composition of foreign banks over time. We chart the fluctuations in the interoffice accounts, and highlight the surge in yen liabilities immediately preceding the 2007 credit crisis. We then investigate how the fluctuations in the net interoffice accounts relate to risk appetite, as measured by the VIX index, and how they relate to the difference between foreign overnight rates and the yen interest rate. We conclude with some tentative observations on the implications of our findings for monetary policy.

2. Institutional Background

Our focus is the chain of balance sheet interconnections that link a global financial intermediary with sources of yen funding. The stylized chain is depicted in figure 2.1.

A Wall Street bank can tap short-term yen funds through its office in Japan by borrowing in the yen interbank market. Some of these funds will be lent on

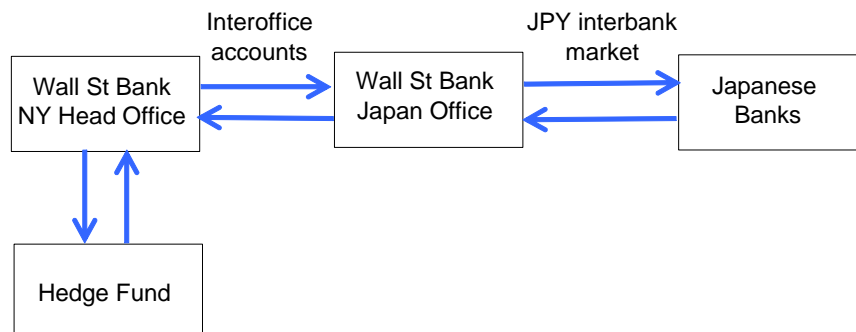


Figure 2.1: Balance Sheet Trail

to its headquarters for further recycling to other users (e.g. hedge funds), or kept on the bank’s books for its own use (such as funding its own proprietary trading desk).

Two links in the chain are of particular interest in the context of this paper - namely, the size of the short term lending and borrowing in the yen interbank market (the final link), and the interoffice accounts (the penultimate link). Although the interbank positions will give some idea of the aggregate yen liabilities, the interoffice account gives an insight into how much of the yen liabilities are used to fund activities *outside* Japan. The tell-tale signs of the “broad yen carry trade” (if we may coin this term) would be the conjunction of:

- Large yen liabilities in the JPY interbank market
- Large net assets on the interoffice account

This is because when yen funds are channeled for use outside Japan, there is the conjunction of large yen borrowing and then the on-lending of these yen funds to entities outside Japan.

Figure 2.2 illustrates the trail through the balance sheet of the Japan office of the global bank. The left hand panel shows the initial stylized balance sheet of

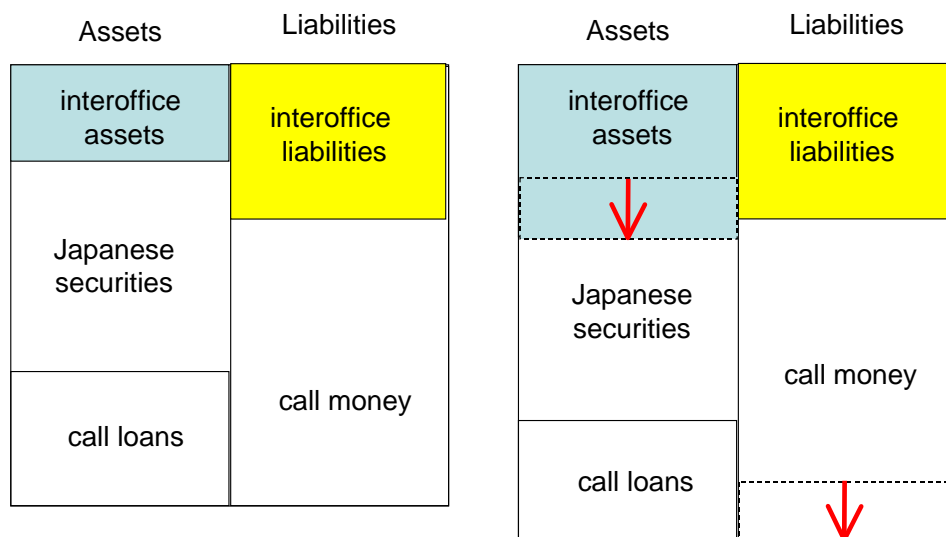


Figure 2.2: Channeling of yen funds via interoffice account

the Japan office. The Japan office holds various assets - such as Japanese securities and loans to Japanese entities (“call loans”) - and funds the asset holding partly by borrowing locally in the JPY interbank market (“call money”), and partly by funding from its New York headquarters through the interoffice liabilities. In the left hand panel, the net interoffice account (interoffice assets – interoffice liabilities) is negative, meaning that the Wall Street bank holds a net long position in Japanese assets.

The right hand panel of figure 2.2 shows the increased channeling of yen funds to the New York head office via the interoffice account. The Japan office borrows more yen (increases call money), and then lends on the proceeds to the New York headquarters through increased interoffice assets. In the illustration in the right hand panel, the net interoffice account becomes positive, reflecting the larger on-lending to the New York office. Such a position is tantamount to a net short position in Japanese assets, and can be seen as part of the broad yen carry trade.

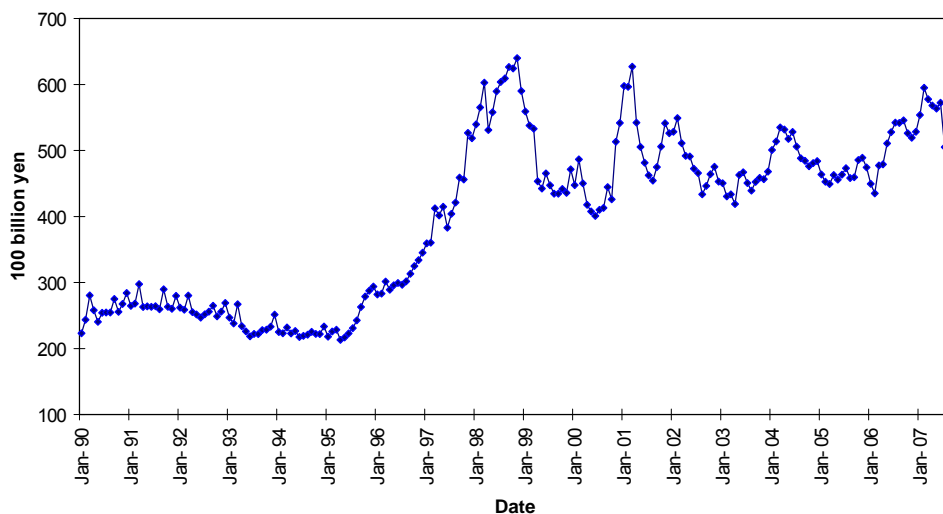


Figure 3.1: Total Assets of Foreign Banks in Japan

As we will see, the net interoffice account has normally been negative, implying that foreign banks have held net long positions in Japanese assets. However, in the run-up to the credit crisis of 2007, the channeling of yen funds surged, making net interoffice accounts *positive*, until being unwound sharply in August 2007. The implication is that the broad yen carry trade reached a peak in this most recent period leading up to the credit crisis of 2007.

3. A First Look at the Data

3.1. Total Assets of Foreign Banks in Japan

Before going to our key plots, we first plot the total assets of foreign banks in Japan in figure 3.1. Total assets of foreign banks increased rapidly in the late 90s, and have stayed high since. The composition of total assets (given in figure

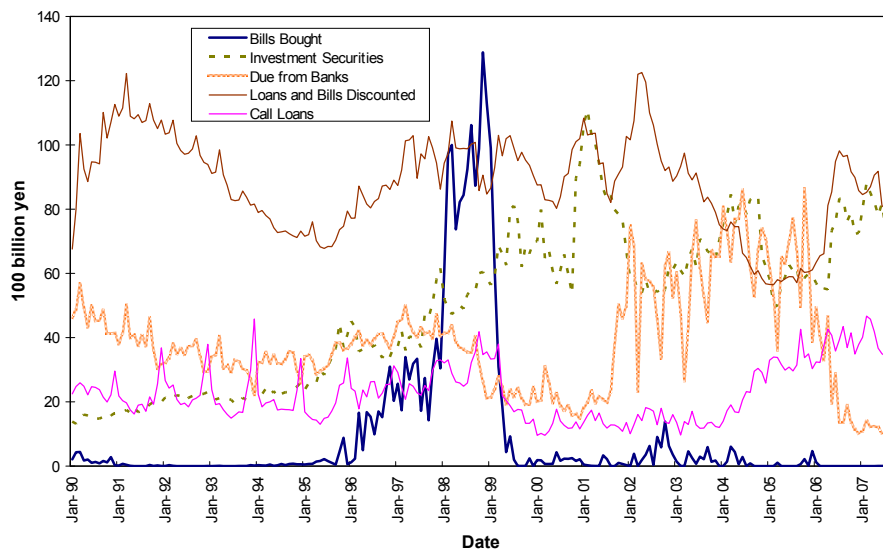


Figure 3.2: Composition of Assets of Foreign Banks in Japan

3.2) gives clues as to the reasons for the increase in the late 90s.

The sharp increase in foreign bank assets in 1997 and 1998 is accounted for by the increase in “bills bought”. The Japan premium ruling at the time meant that non-Japanese banks had a considerable pricing advantage over local Japanese rivals, and managed to exploit this advantage.

Even as the “bills bought” amount falls in 1999 and 2000, the slack is taken up by holdings of Japanese securities in 2000 and 2001. Lately, the item “due from banks” has taken up the slack left by falls in other categories. This period coincides with the period of quantitative easing by the Bank of Japan, and suggests that even foreign banks had surplus balances at the BOJ.

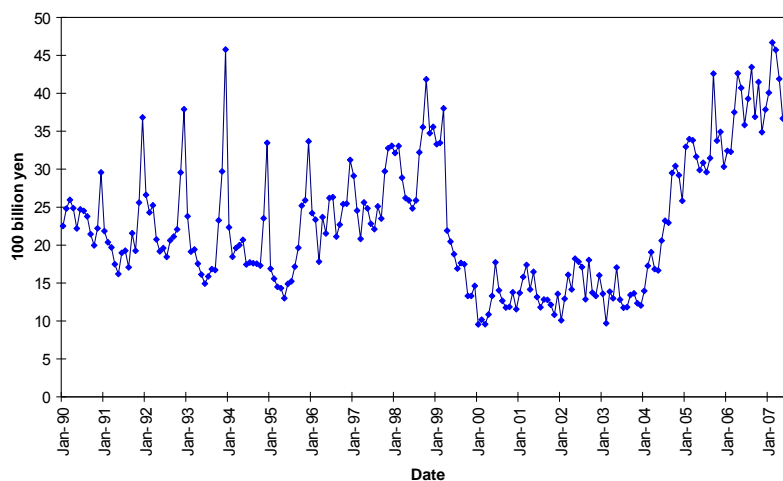


Figure 3.3: Interbank Assets (Call Loan) of Foreign Banks in Japan

3.2. Broad Yen Carry Trade

We now focus on the key series. Figures 3.3 and 3.4 plot, respectively, the aggregate interbank assets of foreign banks in Japan (“call loan”) and the aggregate interbank liabilities of foreign banks in Japan (“call money”). Call loans have fluctuated over the years, and were low in the early part of the decade when US interest rates were exceptionally low. Call money (yen liabilities) have fluctuated even more, with a surge in the period after 2004, when the US interbank rate was rising. Note that the scale is different in the two series, so that the surge in yen liabilities is larger than at first meets the eye.

As a result of the surge in yen liabilities, the net interbank position of foreign banks becomes sharply negative in the most recent period, beginning in 2006 (see figure 3.5). However, the critical piece in the jigsaw puzzle is the stance on the interoffice account. In order to conclude that the surge in yen liabilities is associated with the broad yen carry trade, we need to verify that the increased yen

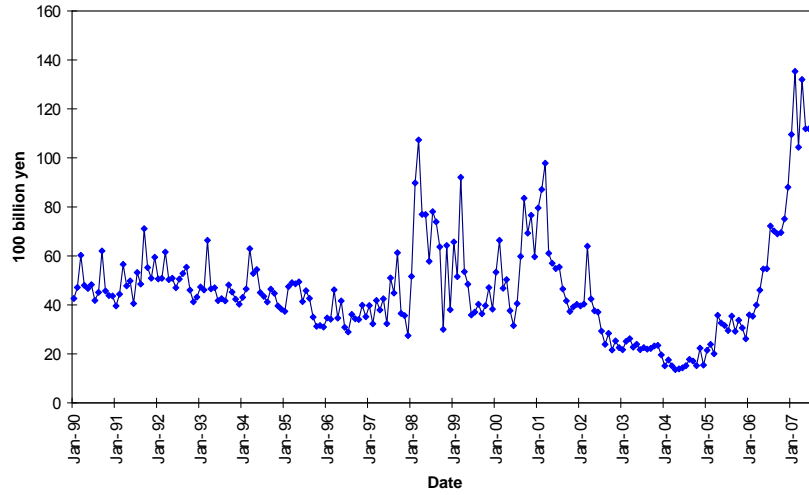


Figure 3.4: Interbank Liabilities (Call Money) of Foreign Banks in Japan

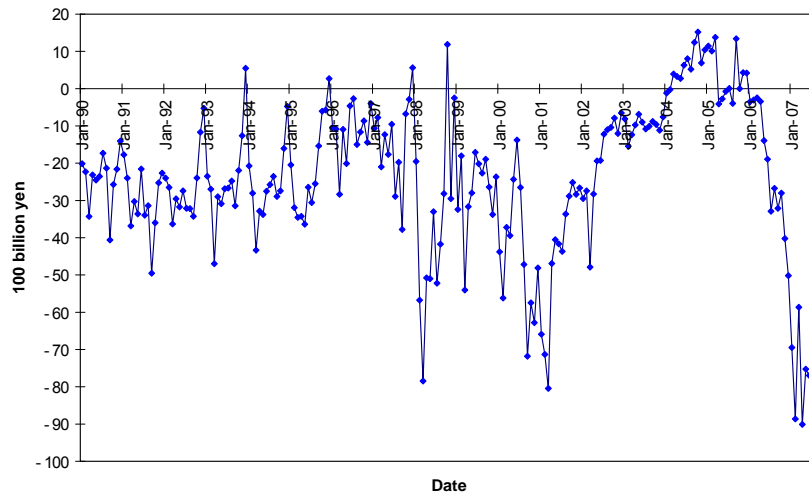


Figure 3.5: Net Interbank Assets of Foreign Banks in Japan

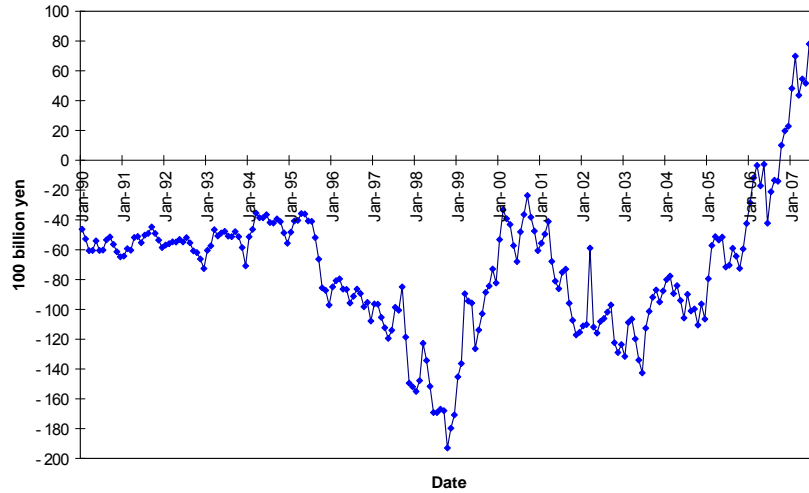


Figure 3.6: Net Interoffice Accounts of Foreign Banks in Japan

liabilities has been channeled out of Japan to other offices of the banks concerned. The crucial piece of evidence is therefore the net interoffice accounts, as presented in figure 3.6.

As previously discussed, the net interoffice accounts of foreign banks have normally been negative, implying that foreign banks have held a net long position in Japanese assets. In the period of the “Japan premium” (roughly 1997 to 1998) foreign banks held large net long positions in Japanese assets, given their funding advantage over Japanese rivals handicapped by the Japan premium.¹

However, the most noteworthy feature of figure 3.6 is the surge in net interoffice accounts in the most recent period, dating from around 2005. The increase in the net interoffice account is so large that the usual sign of the net interoffice account was reversed in the period leading up to the crisis of 2007. The implication is

¹The Japan premium explains the very sharp spike upward in the “bills bought” component of foreign banks’ assets, as shown in figure 3.2.

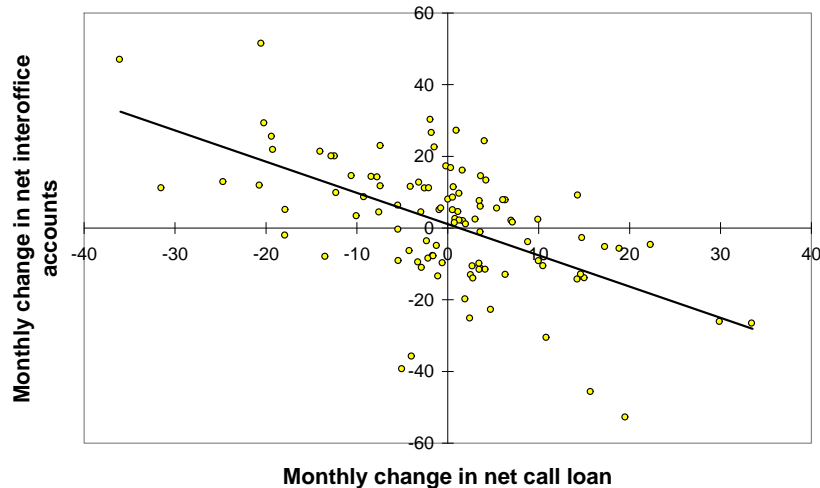


Figure 3.7: Scatter chart of change in net interoffice accounts against change in net call loans (units: 100 billion yen)

that yen funding had been channeled out of Japan in large quantities immediately prior to the credit crisis of 2007.

Figure 3.7 is a scatter chart of the monthly change in the interoffice accounts of foreign banks against the monthly change in the net interbank assets (call loan – call money) of foreign banks from 1999. If our hypothesis is correct that the fluctuations in yen liabilities reflect the broad yen carry trade, then the points on the scatter chart should be negatively sloped. The slope of the relationship would depend on the degree to which the yen liabilities of the foreign banks’ Japan office merely reflects the channeling of yen to uses outside Japan. If the slope is -1 , then there is a one-for-one relationship between increases in yen interbank liabilities and yen interoffice accounts, suggesting that changes in yen liabilities reflect the broad yen carry trade. If the slope has a lower absolute value, then the fluctuations in yen interbank liabilities would reflect other motives for borrowing

yen (such as funding the purchase of Japanese securities)

In the scatter chart, we see, indeed, that the relationship is strongly negative. The slope of the OLS regression is -0.89 .² Thus, the slope is reasonably close to -1 , which is consistent with the hypothesis that the Japan offices of the foreign banks play the role of channeling yen liquidity out of Japan in the broad yen carry trade.

The evidence focuses attention on the question of how such yen funding has been used by the headquarters offices of the foreign banks. At this point, the trail becomes murkier, but it would be a reasonable conjecture (to be verified through other evidence) that the increased yen funding has either been recycled for use by the customers of the foreign banks in their home markets (e.g. hedge funds), or have funded the broad yen carry trade on the bank's own books (e.g. through its proprietary trading desk).

We have focused on the yen interbank for evidence of the broad carry trade, but there are other means through which foreign institutions can raise funding in Japan, such as the issuance of "Samurai bonds" - i.e. yen-denominated bonds issued by non-residents, especially when the issuer is a foreign bank. A more comprehensive study of the carry trade would need to take account of such alternative funding sources.

4. Carry Trades and Risk Appetite

We now examine the wider implications of the carry trade. Our focus is on the implications of expansions of balance sheets for the appetite for risk. In a financial system where balance sheets are continuously marked to market, changes in asset prices show up immediately on the balance sheet, and so have an immediate impact on the net worth of all constituents of the financial system. The reactions

²The t -statistic is -7.15 and the R^2 is 0.34 .

of financial intermediaries to such changes in net worth is a critical influence on overall market risk appetite.

If financial intermediaries were passive and did not adjust their balance sheets to changes in net worth, then leverage would fall when total assets rise. Change in leverage and change in balance sheet size would then be negatively related. However, as documented by Adrian and Shin (2007a), the evidence points to a strongly *positive* relationship between changes in leverage and changes in balance sheet size. Far from being passive, financial intermediaries adjust their balance sheets actively, and doing so in such a way that leverage is high during booms and low during busts.

Procyclical leverage can be seen as a consequence of the active management of balance sheets by financial intermediaries who respond to changes in prices and measured risk. For financial intermediaries, their models of risk and economic capital dictate active management of their overall value at risk (VaR) through adjustments of their balance sheets. Credit ratings are a key determinant of their cost of funding, and they will attempt to manage key financial ratios so as to hit their credit rating targets.

From the point of view of each financial intermediary, decision rules that result in procyclical leverage are readily understandable. However, there are aggregate consequences of such behavior for the financial system as a whole that are not taken into consideration by an individual financial intermediary. Such behavior has aggregate consequences on overall financial conditions, risk appetite and the amplification of financial cycles.

Figures 4.1 and 4.2 are taken from Adrian and Shin (2007a) and plot the contrasting patterns in the quarterly changes in total assets to quarterly changes in leverage as given in the Flow of Funds account for the United States. The data are from 1963 to 2006. For households, scatter chart shows a strongly negative

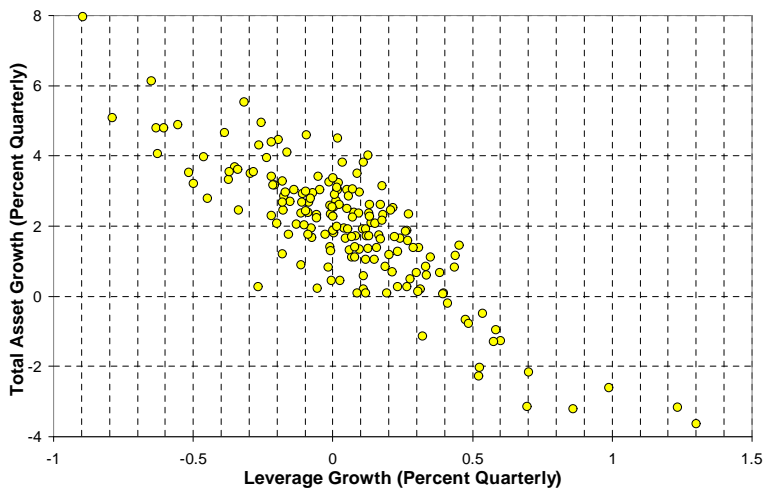


Figure 4.1: Households: Total Assets and Leverage [source: Board of Governors, Federal Reserve, Flow of Funds, 1963 Q1 - 2006 Q4.]

relationship, suggesting a passive stance toward changes in net worth arising from asset price changes.

In contrast, figure 4.2 shows that for financial intermediaries, leverage is high exactly when balance sheets are large. In this sense, leverage is pro-cyclical. Ayuso, Perez and Saurina (2004) exhibit similar evidence on regulatory capital over the cycle from panel data for Spanish banks.

In order to appreciate the aggregate consequences of pro-cyclical leverage, let us consider the behavior of a financial intermediary that manages its balance sheet actively so as to maintain a *constant* leverage ratio of 10. Suppose the initial balance sheet is as follows. The financial intermediary holds 100 worth of securities, and has funded this holding with debt worth 90.

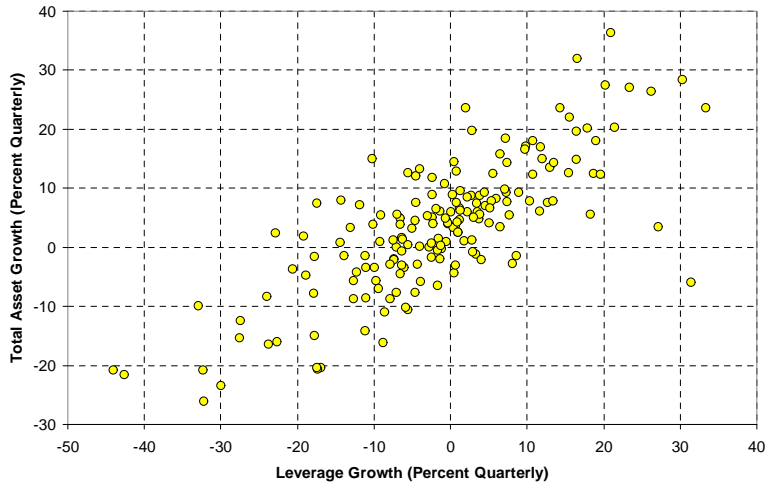


Figure 4.2: Security Dealers and Brokers: [source: Board of Governors, Federal Reserve, Flow of Funds, 1963 Q1 - 2006 Q4.]

| Assets | Liabilities |
|-----------------|-------------|
| Securities, 100 | Equity, 10 |
| | Debt, 90 |

Assume that the price of debt is approximately constant for small changes in total assets. Suppose the price of securities increases by 1% to 101.

| Assets | Liabilities |
|-----------------|-------------|
| Securities, 101 | Equity, 11 |
| | Debt, 90 |

Leverage then falls to $101/11 = 9.18$. If the bank targets leverage of 10, then it must take on additional debt of D to purchase D worth of securities on the asset

side so that

$$\frac{\text{assets}}{\text{equity}} = \frac{101 + D}{11} = 10$$

The solution is $D = 9$. The bank takes on additional debt worth 9, and with this money purchases securities worth 9. Thus, an increase in the price of the security of 1 leads to an increased holding worth 9. The demand curve is *upward*-sloping. After the purchase, leverage is now back up to 10.

| Assets | Liabilities |
|-----------------|-------------|
| Securities, 110 | Equity, 11 |
| | Debt, 99 |

The mechanism works in reverse, too. Suppose there is shock to the securities price so that the value of security holdings falls to 109. On the liabilities side, it is equity that bears the burden of adjustment, since the value of debt stays approximately constant.

| Assets | Liabilities |
|-----------------|-------------|
| Securities, 109 | Equity, 10 |
| | Debt, 99 |

Leverage is now too high ($109/10 = 10.9$). The bank can adjust down its leverage by selling securities worth 9, and paying down 9 worth of debt. Thus, a *fall* in the price of securities of leads to *sales* of securities. The supply curve is *downward*-sloping. The new balance sheet then looks as follows.

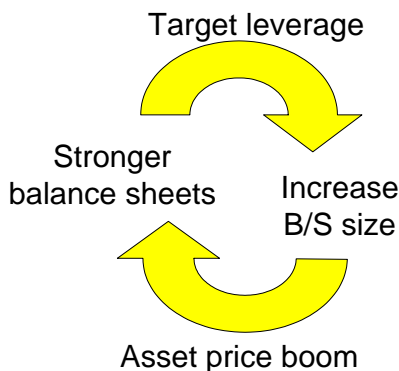


Figure 4.3: Target Leverage in Booms

| Assets | Liabilities |
|-----------------|-------------|
| Securities, 100 | Equity, 10 |
| | Debt, 90 |

The balance sheet is now back to where it started before the price changes. Leverage is back down to the target level of 10.

Leverage targeting entails upward-sloping demands and downward-sloping supplies. The perverse nature of the demand and supply curves are even stronger when the leverage of the financial intermediary is pro-cyclical - that is, when leverage is high during booms and low during busts. When the securities price goes up, the upward adjustment of leverage entails purchases of securities that are even larger than that for the case of constant leverage. If, in addition, there is the possibility of feedback, then the adjustment of leverage and price changes will reinforce each other in an amplification of the financial cycle. If we hypothesize that greater demand for the asset tends to put upward pressure on its price (a plausible hypothesis, it would seem), then there is the potential for a feedback effect in which stronger balance sheets feed greater demand for the asset, which

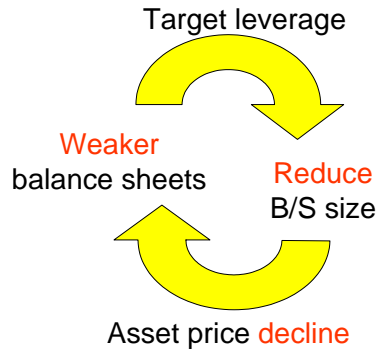


Figure 4.4: Target Leverage in Busts

in turn raises the asset’s price and lead to stronger balance sheets. Figure 4.3 illustrates the feedback during a boom.

The mechanism works exactly in reverse in downturns. If we hypothesize that greater supply of the asset tends to put downward pressure on its price, then there is the potential for a feedback effect in which weaker balance sheets lead to greater sales of the asset, which depresses the asset’s price and lead to even weaker balance sheets. Figure 4.4 illustrates the feedback during a downturn.

For these reasons, it would be important to draw a distinction between the capital outflows from Japan due to the carry trades by financial intermediaries and the outflows due to the household sector’s purchase of foreign assets, or the diversification of the portfolios of institutions such as mutual funds and life insurance companies that are not leveraged, or have minimal leverage. Indeed, the purchase of foreign currency assets for these entities should not be seen as part of the broad yen carry trade we have discussed so far. In contrast, the most important marginal players are the financial intermediaries whose fluctuating balance sheets determine overall financial market liquidity conditions.

Aggregate liquidity can be understood as the rate of growth of aggregate bal-

ance sheets. When financial intermediaries' balance sheets are generally strong, their leverage is too low. The financial intermediaries hold surplus capital, and they will attempt to find ways in which they can employ their surplus capital. In a loose analogy with manufacturing firms, we may see the financial system as having "surplus capacity". For such surplus capacity to be utilized, the intermediaries must expand their balance sheets. On the liabilities side, they take on more short-term debt. On the asset side, they search for potential borrowers that they can lend to. It is in this context that the broad yen carry trade comes into sharper focus. By allowing intermediaries to expand their balance sheets at lower cost, the broad carry trade fuels the financial boom. Aggregate liquidity is intimately tied to how hard the financial intermediaries search for borrowers. In the sub-prime mortgage market in the United States we have seen that when balance sheets are expanding fast enough, even borrowers that do not have the means to repay are granted credit - so intense is the urge to employ surplus capital. The seeds of the subsequent downturn in the credit cycle are thus sown. Jimenez and Saurina (2006) show from their study of Spanish banks that the loans granted during booms have higher default rates than those granted during leaner times.

Adrian and Shin (2007a) have shown that balance sheet changes are closely related to the overall market risk appetite, as measured by the VIX index of implied volatility of stocks. In the context of the broad yen carry trade, it would be reasonable to conjecture that something similar holds, too.

Figure 4.5 is a scatter chart of the VIX index against the net interoffice account of foreign banks in Japan. There is a striking negative relation, where large net interoffice accounts are associated with lower implied volatility - i.e. large balance sheets with greater risk appetite. We know from the period immediately preceding the 2007 credit crisis that implied volatility had plumbed historical lows. As we have seen earlier, this was precisely the period when the net interoffice accounts

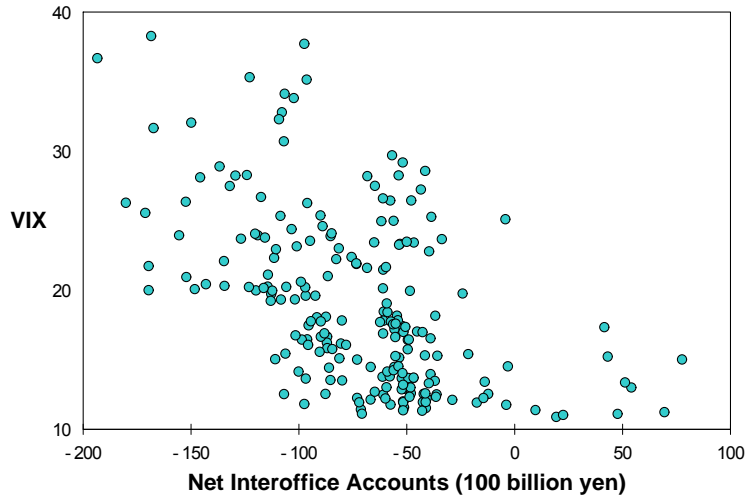


Figure 4.5: Scatter chart of VIX against net interoffice account

became positive - also an unprecedented event. More worryingly, the unwinding of these large net interbank assets to return the system to its historical norm will undoubtedly have adverse aggregate consequences.

5. Carry Trades and Monetary Policy

Given the importance of balance sheet fluctuations for overall risk appetite and their spillover effects for the economy as a whole, the role of the carry trade in facilitating or amplifying the balance sheet fluctuations make it a prime concern for monetary authorities. We examine the determinants of the size of the yen carry trade, especially the role of the short term interest rate.

The important role played by the overnight rate can be gleaned from the relationship between the extent of the broad yen carry trade and the interest rate differential between Japan and other developed countries. Figure 5.1 charts the net interoffice accounts with the difference between the overnight rates in Japan

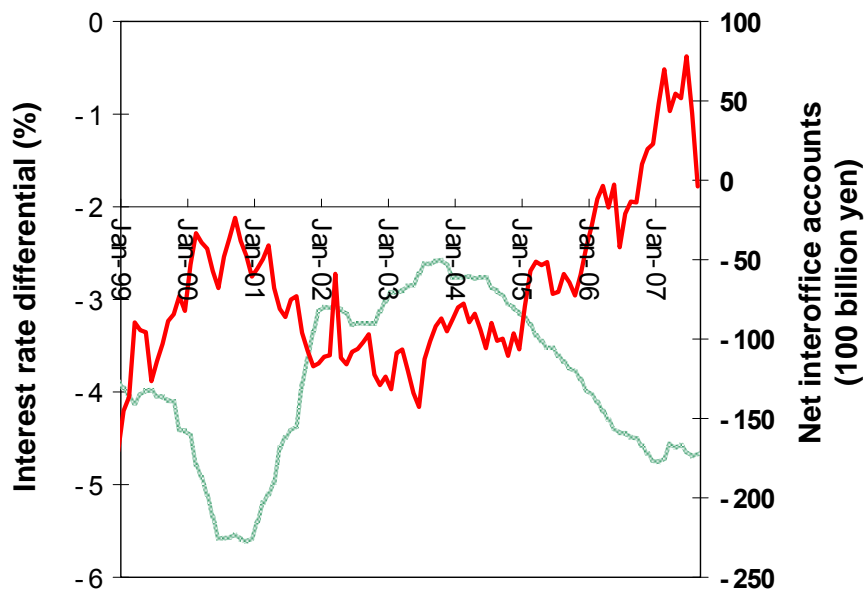


Figure 5.1: Net interoffice accounts and interest rate differential between Japan and simple average of USD, EUR and AUD

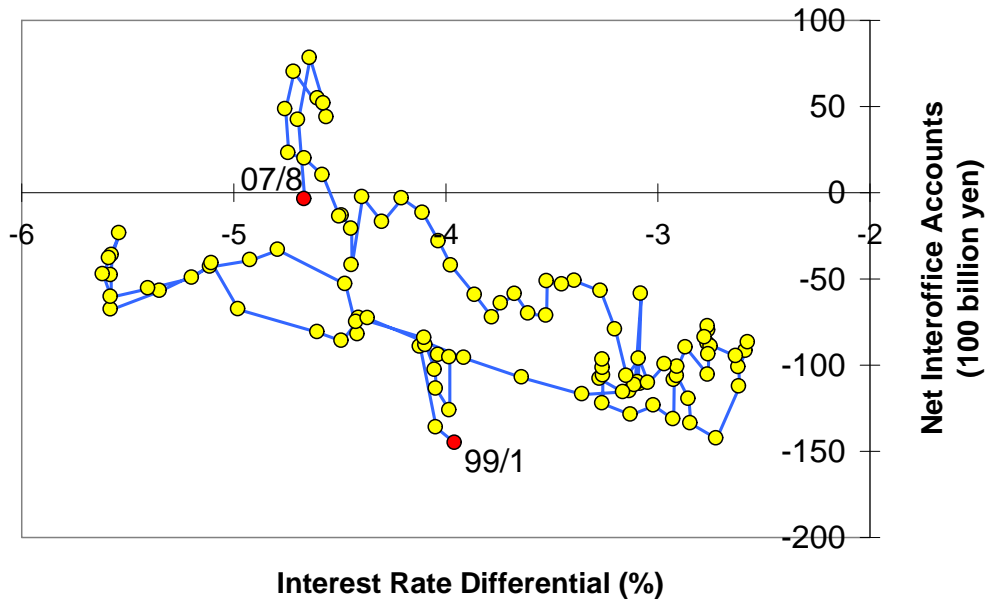


Figure 5.2: Scatter chart of the net interoffice accounts and interest rate differential

and a simple average of the policy rates in the US, Eurozone and Australia. The chart suggests that since 1999, we have a negative relationship between the two. The larger is the difference in short term rates between Japan and the group of countries we consider (US, Eurozone and Australia) the greater is the broad yen carry trade. It is notable, especially, that in the period 2002 - 2004 when US interest rates were low, and hence close to that of Japan's, the net interoffice account shows little evidence of large scale carry trades. In contrast, the period from 2005 onwards shows a surge in net interoffice accounts coming at the time when US interest rates were moving back up to historically more normal levels.

The same information can be represented as a timed scatter chart as in figure 5.2. There is a strongly negative relationship in the two series. The first and last data points (January 1999 and August 2007) are indicated with the red dots. An OLS regression has a t -statistic of -7.8 .

The importance of the interest rate differential also figures in theoretical models of the carry trade (see Plantin and Shin (2006)). The carry element combined with a procyclical leverage ratio (illustrated in the previous section) serve to increase the spillover effects of one currency speculator's actions on others, making speculative trading strategic complements. The carry element turns out to be crucial in this regard. Without the carry element, speculators' actions are strategic substitutes.

Our empirical findings suggest that the overnight rate set by central banks may have an important role in influencing the scale of the carry trade, but more broadly in determining balance sheet size in the financial sector as a whole. Our results are in line with the results of Adrian and Shin (2007b), who show that the residuals from a Taylor rule regression is closely (negatively) related to the growth of financial sector balance sheets in the United States. These results suggest that overnight rates may have some importance in their own right when conducting monetary policy, not merely as an instrument to signal the central bank's intentions of future actions.

Indeed, the trend in recent years, especially with the advent of formal inflation-targeting at many central banks around the world, has been to emphasize the role of the overnight rate only as a means of communicating with the market on future central bank actions, and thereby managing market expectations. Alan Blinder (1998, p.70) in his Lionel Robbins lectures states that:

“central banks generally control only the overnight interest rate, an interest rate that is relevant to virtually no economically interesting

transactions. Monetary policy has important macroeconomic effects only to the extent that it moves financial market prices that really matter - like long-term interest rates, stock market values and exchange rates.”

Blinder’s comments are echoed by other leading monetary economists - Svensson, Woodford, Bernanke and others - who have similarly emphasized the insignificance of the overnight rate, other than as a means of communicating with the markets on the future course of monetary policy (see, for instance, Bernanke (2004a, 2004b)).

However, to the extent that financial stability concerns should impinge on monetary policy, the insignificance of the overnight rate may have been somewhat overdone. On the contrary, short term rates could be conjectured to play an important role in their own right, since it is the short term rate that determines the cost of rolling over liabilities.

In addition, although monetary policy is conducted primarily with domestic macroeconomic conditions in mind, there are undoubted international spillover effects. The experience of the 2007 credit crisis is a lesson in the importance of financial stability in the conduct of monetary policy.

6. Concluding Remarks

In this paper, we have examined the broader implications of the yen carry trade for risk appetite and financial cycles. Although the yen carry trade has traditionally been viewed in narrow terms purely as a foreign exchange transaction, we have argued that they hold broader implications for the workings of the financial system and for monetary policy. The evidence from the waxing and waning of balance sheets of foreign banks operating in Japan points to a broader notion of the carry

trade. Yen liabilities fund not only pure currency carry trades, but also fund the general increase in balance sheets of hedge funds and financial intermediaries. Finally, we have shown that the difference in overnight rates across countries is a crucial determinant of balance sheet changes. Therefore, the short term interest rate may be more important as a gauge of the stance of monetary policy than is given credit for by many leading monetary economists. Domestic monetary policy has a global dimension through the workings of the global financial system.

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