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Japan's Exorbitant Privilege (Revised)

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Abstract

The concept of “exorbitant privilege” has received great attention from policy makers as well as academics worldwide. The idea originally referred to the willingness of foreigners to hold large quantities of US government debt at extremely low interest rates, due to the dollar’s world reserve currency status. In recent years, the term exorbitant privilege has been expanded to explain why the US appears to be enjoying excess return from its external assets over liabilities across all asset classes, including foreign direct investment, equities and other forms of portfolio investment. In this paper, we give a brief review of the recent literature on exorbitant privilege, and then proceed to discuss exorbitant privilege in the context of another country, Japan, which has been the world’s largest creditor nation for more than two decades. In contrast to the common perception that Japan has been a particularly poor international investor, we find that Japan enjoys exorbitant privilege in both the broad and narrow sense. Japan also earns higher expected returns from maturity transformation. Thus although the dollar is the reserve currency, the yen also has enjoyed a safe haven effect in the recent period.

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1. Introduction: the evolution of the concept of “exorbitant privilege”

The term exorbitant privilege was coined by French Finance Minister Giscard d’Estaing in 1965 to explain the United States’ unique position in the international monetary order (Gourinchas and Rey 2007a). Giscard d’Estaing was mainly referring to foreigners’ willingness to hold large amounts of US Treasury debt at very low interest rates (zero, in the case of currency), thanks to the US’s privileged position at the center of the postwar Bretton Woods system of fixed exchange rates. There have been many recent books alluding to the dollar’s continuing special role, including Barry Eichengreen’s *Exorbitant Privilege*, Ronald I. McKinnon’s *The Unloved Dollar Standard*, and Eswar S. Prasad’s *The Dollar Trap*.

This study explores the question of whether in recent years Japan has also begun to enjoy a similar form of exorbitant privilege. Compared to the small number of earlier studies that incorporate Japan, we extend the data through the financial crisis period and analyze the sensitivity to exchange rate changes (a considerable percentage of which are likely unanticipated), explore the breakdown across different asset classes, and analyze the implications of the portfolio composition of Japan’s external assets and liabilities.

Why might exorbitant privilege extend to a broader class of assets than just government bonds, and why might Japan be a candidate if it is not a hegemon or world military power like the United States? A modern notion of exorbitant privilege might be that a country’s assets are “safer” in the sense that they have higher payoffs against rare or extreme events. These might include global financial crises, conflagrations and pandemics. Barro (2009) and Barro and Ursua (2012) argue that in standard consumption-based asset pricing models, agents place a very large weight on asset payoffs in extreme bad states of nature (when the marginal utility of consumption is high). Barro uses this device to help explain both the equity premium puzzle and the low interest rate puzzle. Gourinchas et al. (2010) incorporate this rare-disasters model into exorbitant privilege literature, suggesting that exorbitant privilege provides insurance against global disasters.

Japan, of course, is not a world military power or a global economic hegemon, the traditional rationales for a center country to have exorbitant privilege. But it is easy to imagine that investors might consider yen assets “safe” in many other types of severe crises, particularly a global financial crises where Japan’s status as the world’s largest creditor nation and the world’s second biggest G7 country might be particularly important. Yen assets might also serve as hedge against the remote chance of a breakdown in US policy, for example if dollar inflation rose dramatically against a backdrop of political paralysis. Lastly, Japan enjoys deep and liquid markets for many of assets, much like the United States.¹

¹ Japan’s possible safe haven status has been discussed previously in several studies, such as Ranaldo and Söderlind (2010), De Bock and de Carvalho Filho (2013) and Botman et al. (2013), though ours appears to be the first to look at a broad range of assets through the critical financial crisis period.

Bearing in mind this modern perspective on exorbitant privilege, what are some of the alternative measures?

Perhaps the narrowest definition of exorbitant privilege pertains to a fixed exchange rate system (such as the post-WW II Bretton Woods system or a gold standard) and implies that a country's government can borrow from abroad at lower rates than other countries, even in large amounts. In the post-WW II exchange rate system, there was a huge foreign appetite for US Treasury debt as countries used it to help stabilize their exchange rates against the dollar. Indeed, the system ultimately collapsed under the weight of "the Triffin Dilemma", named after economist Robert Triffin who pointed out the inherent inconsistency between a system that required an ever-expanding supply of US dollars to support an ever-expanding global economy, and yet also required the US to stand ready to convert the growing supply of dollars into gold, despite the fact its gold holdings were fixed (Triffin 1960).

A much broader definition of exorbitant privilege implies that a country enjoys a cost advantage in any kind of borrowing or investment instrument, from equities to bonds (both government and private) to foreign direct investment. The broader definition, of course, confounds many different phenomena, not all of which can necessarily be thought of as "privilege". If a US company builds an auto plant in a risky and unstable emerging market, a high return might be regarded as compensation for taking a greater risk than a foreign company that invests in the US market. Since the mid-2000s, several studies of this broader definition of exorbitant privilege have been conducted (Gourinchas and Rey, 2014, summarize the literature). There remains controversy. Gourinchas and Rey (2007a), for example, find that the US has enjoyed a sizable excess return on its external assets over external liabilities for a long period across all asset classes. More recently, however, some researchers have argued that if one corrects for various subtle measurement issues, much of the apparent excess return dissipates (Lane and Milesi-Ferretti 2009, Curcuru et al. 2008). Curcuru et al. (2013) argue that in fact the main area where the United States enjoys excess return is in foreign direct investment.

Cross-border asset flows have expanded massively over the past three decades, considerably increasing the importance of the exorbitant privilege issue. To the extent a country (say the United States) does enjoy higher rates of return on foreign assets than it pays on comparable liabilities to foreigners, then it can earn a profit by "grossing up" the size of its balance sheet in much the same manner that a hedge fund does. The United States, for example, had net foreign liabilities of 27% of GDP in 2012, but this in fact represented a difference between assets of 140% of GDP and liabilities of 167% of GDP. Because of the return differential, the US has actually enjoyed higher receipts from abroad than it has paid to foreigners, despite its overall negative net foreign asset position.

In addition to return differentials on comparable assets, composition effects constitute another major contributor to a country's net return on foreign assets and liabilities. Because over long periods, equities have paid a significant premium over bonds, another way a country can enjoy high net returns is by having a portfolio where assets are tilted towards equities and risky assets, and liabilities are tilted towards debt and relatively safe assets (Gourinchas and Rey

2007a, 2014).² A further issue, which has become important for Japan, is debt maturity transformation, with Japan's external debt liabilities being mainly in low-yielding long-term maturities and Japanese external debt assets being in riskier by higher-yielding long-term maturities. Of course, portfolio composition can reflect many factors including the representative citizen's degree of risk aversion, age distribution, the riskiness of the country's own income stream, the depth of its asset markets, and other factors.

The United States holds a relatively high share of its foreign assets in equity and direct foreign investment (about 55%), while a relatively high share of foreign holdings of US assets consist of debt (about 70%).³

Of course, the fact that the US might be able to earn an apparently higher average return on its assets relative to its liabilities does not necessarily imply that foreigners who invest in the US are naïve. We have already noted that dollar assets may be a hedge against severe global crises. The Chinese government, for example, holds a very large quantity of US Treasury bills and agency obligations through its central bank: over three trillion dollars worth. On the surface, it might seem puzzling that the Chinese central bank does not find a mechanism for holding a far larger share of its assets in equities. The high debt share could indeed be a political distortion, with the central bank afraid that it will not get credit for good management when equity returns are high, but will get blamed for poor management if equity returns are low. But there are also other rational explanations. The Chinese government has a claim on future taxes in a fast-growing but highly volatile economy. The biggest risk it needs to hedge against is a sustained slowdown in the Chinese economy. Such a slowdown would hit tax revenues at just the moment when the authorities would likely need extra resources to bail out the financial sector. Holding dollar assets is a hedge against this low-risk, high-cost event. The fact that reserves do not pay a high return is a cost, but as long as the economy maintains its rapid rate of growth, the cost is easily borne. And why dollar reserves versus other currencies? As a relatively closed economy, the US might be less severely hit by a Chinese slowdown than say, Germany, and far less severely hit than a country highly dependent on Chinese growth such as Australia.

One can continue with many other examples in this vein. One does not want to confuse "exorbitant privilege" with differential equilibrium returns to risk within the context of what might be a perfectly rational portfolio.

So in a sense, exploring whether Japan enjoys exorbitant privilege is a way of asking whether global investors view Japan as a hedge against at least some types of extreme events.

With these perspectives in mind, it is interesting to explore how Japan's asset and liability positions have performed relative to those of the United States. It is especially interesting in light of conventional wisdom that suggests that Japan invests its funds poorly, and

² Gourinchas and Rey (2007a and 2014) attribute US positive excess return to composition effect. However, other studies, such as Curcuru et al (2013), point out US excess return from composition effect has been roughly zero in recent decades since debt outperformed equities during the recent financial crisis and even pre-crisis period.

³ Economic Report of the President (2013, Table 107b).

thus has gained little in terms of greater foreign wealth even after decades of running current account surpluses, sometimes very large ones.

This paper will explore a number of benchmarks, including rates of return on broad classes of assets and liabilities, and look at how Japan's portfolio has performed in the aggregate. Does Japan earn a significant differential between assets and liabilities as the United States does? Or is the opposite true?

As we have already remarked, the concept of exorbitant privilege was developed within the 1960s Bretton Woods system of fixed exchange rates, and involved comparing the cost faced by different governments when borrowing from foreigners. Japan today, of course, has a floating exchange rate and this complicates the interpretation of data considerably. In principle, we can still think of a narrow definition of exorbitant privilege as whether Japan's government borrows relatively cheaply compared to other governments, taking into account expected exchange rate valuation effects. It is important to recognize, though, that even if we detect a statistically significant differential on average, this may not represent exorbitant privilege since, in general equilibrium, the average return to yen borrowing may reflect how the yen exchange risk is valued. In addition, we have not mentioned liquidity factors, but the yen bond market is extremely deep and liquid which might also justify an interest rate differential.

Also, over relatively small sample periods, realized exchange rate changes may give a very distorted view of what market participants actually expected. Indeed, that major country exchange rates are well approximated by a random walk is well known from Meese and Rogoff (1983) and the large ensuing literature. Thus in a small sample, asset returns that do not adjust for ex-post exchange rate changes or adjust only for forward premia (which are generally small) arguably give a more accurate picture of expected return differentials that do include realized exchange rate changes, which are quite volatile and can have a significant effect. We find that our sample is long enough that our core results are robust to whether or not we incorporate ex post exchange rate valuation effects.

When we consider broader measures of exorbitant privilege, deciding how to account for exchange rate valuation effects (when converting returns to a common currency) remains quite central to our evaluation, as does the methodology for calculating capital gains and losses in domestic currency terms (e.g. the change in the value of Japanese holdings of the UK stock market, measured in pounds, or the change in the imputed value of Japanese FDI in the UK, again measured in pounds). Of course, there is also an interaction between the two adjustments. Once again risk considerations cloud interpretation even between two equally liquid markets, and one needs to be careful in interpreting the effects of large unexpected exchange rate movements across relatively small samples.

We now proceed to calculations of how Japan's portfolio of foreign assets and liabilities to foreigners has performed. We will then interpret the results.

2. Revisiting exorbitant privilege: the case of Japan

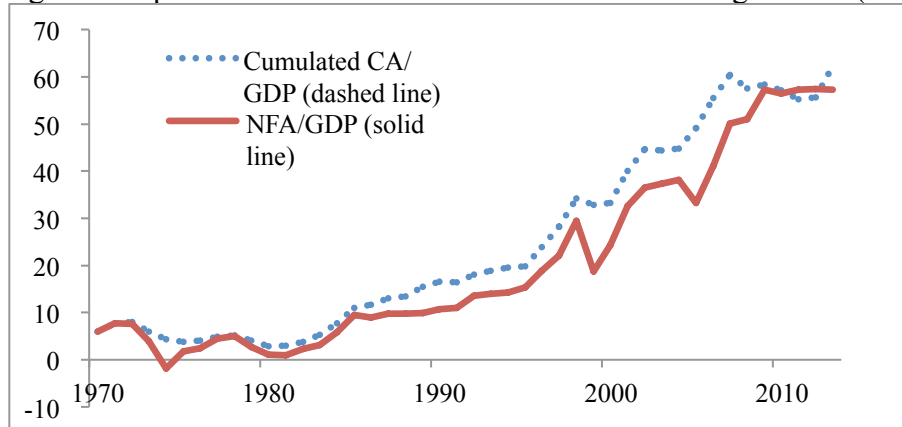
In this section, we revisit the concept of exorbitant privilege, using Japan as an example. The case of Japan is also interesting because unlike the United States, which is a large debtor nation, Japan is a large creditor nation.

2.1 The position puzzle and income puzzle for the case of Japan

We begin by examining the international investment position of Japan. One motivation for exploring exorbitant privilege is because it relates to the “income” puzzle and the “net position” puzzle. The former puzzle refers to the substantial net income from abroad that the US earns even though its net foreign asset position is negative. The latter puzzle refers to the US net international position being dramatically less negative than one would expect by simply cumulating its large and persistent current account deficit. Indeed, these puzzles raise questions about the meaning and importance of official measurements of current accounts (Obstfeld 2012).

In contrast to the United States, Japan has been running, until recently, consistent current account surpluses, often quite large. Figure 1 shows Japan’s cumulated current account and net foreign assets as a percent of GDP from 1970 to 2013. Interestingly, and in contrast to the US position puzzle, the two curves show little difference.

Figure 1: Japan: Cumulated current account and net foreign assets (as a percent of GDP)



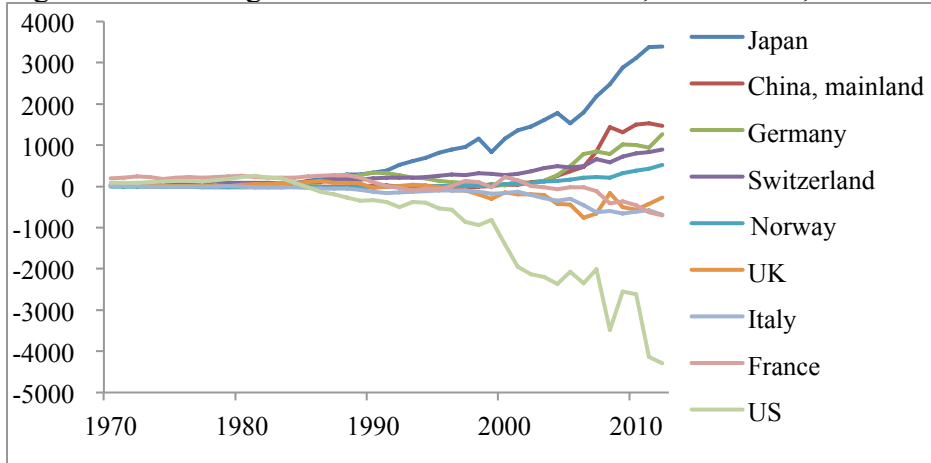
Sources: IMF, *International Financial Statistics* and *Balance of Payments Statistics*, Lane and Milesi-Ferretti (2007, updated), Bank of Japan/Ministry of Finance, *International Investment Position and International Historical Statistics* (2013).

Note: The cumulated current account series starts with Japan’s net foreign asset position at the end of 1970 then cumulates Japan’s subsequent current account balances.

Figure 1 indicates that there is little mystery associated with Japan’s international investment position. There is a gap between cumulated current account and reported net foreign

asset position but it is small compared to the US and has ended at about 5% in 2013. Indeed, Japan has been the world's largest creditor for 22 straight years since 1991 (figure 2).

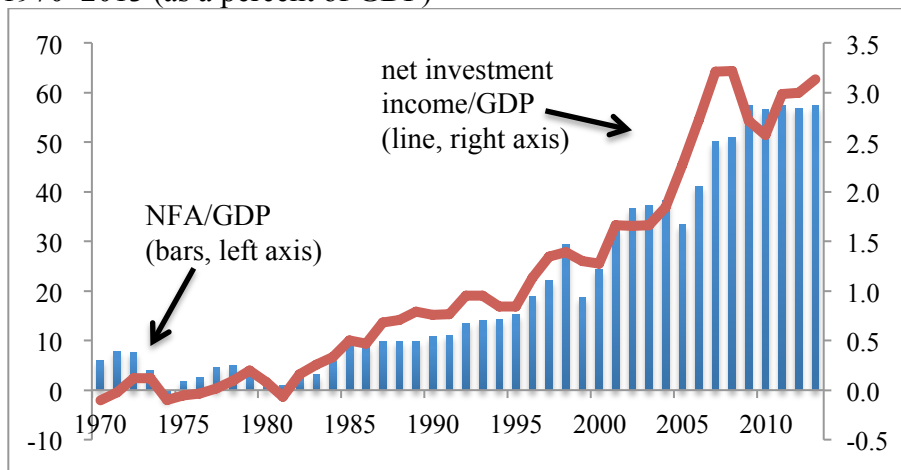
Figure 2: Net foreign assets for selected countries, 1970–2012, in billion USD



Sources: Lane and Milesi-Ferretti (2007, updated) ⁴

With such huge and growing net foreign assets, Japan has been gradually increasing its net gains from investment. Now, Japan's net investment income from abroad exceeds 3% of its GDP (figure 3). This evidence indicates that there is little mystery associated with investment income as well.

Figure 3. Japan: Net foreign assets (bars, left axis) and net investment income (line, right axis), 1970–2013 (as a percent of GDP)



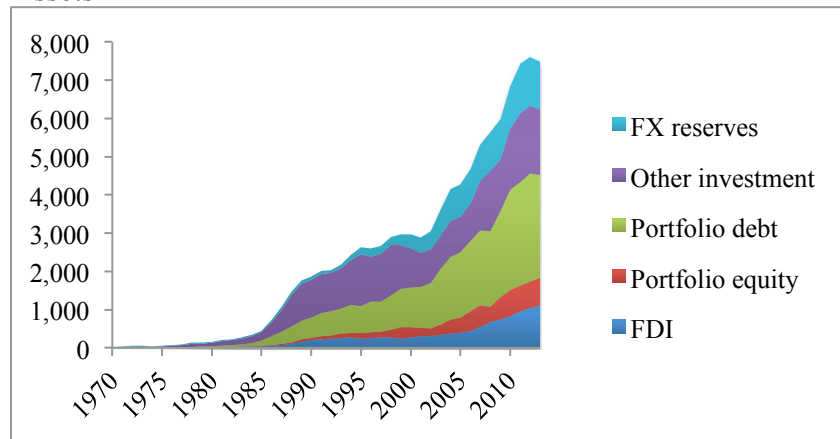
Source: Lane and Milesi-Ferretti (2007, updated), IMF, *International Financial Statistics*, Bank of Japan/Ministry of Finance, *Balance of Payments statistics* and *International Investment Position*.

⁴ We use Lane and Milesi-Ferretti (2007, updated), instead of IMF's international investment position data, since Lane and Milesi-Ferretti (2007, updated) compile data in a consistent fashion.

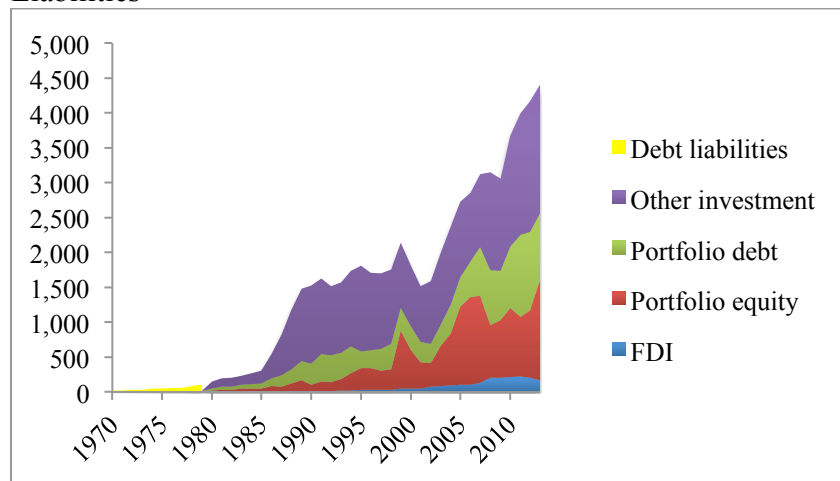
2.2 Composition of assets and liabilities in the case of Japan

As we mentioned in the introduction, the structure of the US external balance sheet is asymmetric. Is the same true for Japan? In figure 4, we break down the composition of Japan's gross external assets and liabilities.⁵

Figure 4: Japan: Composition of gross external assets and liabilities, 1970–2013, in billion USD



Liabilities



Note: Breakdown of debt liabilities is not available prior to 1980.

Source: Lane and Milesi-Ferretti (2007, updated), Bank of Japan/Ministry of Finance, *International Investment Position*, IMF, *International Financial Statistics and Balance of Payments statistics*

⁵ As one category of balance of payments statistics, other investment is defined as “a residual category that includes all financial transactions not covered in direct investment, portfolio investment, or reserve assets” (IMF, 1993, updated). This other investment category mainly consists of loans, trade credits, and currency and deposits. Since this is a catch-all category, it is difficult to interpret and received less weight in our analysis. As such, its possible importance also represents an important caveat to our results.

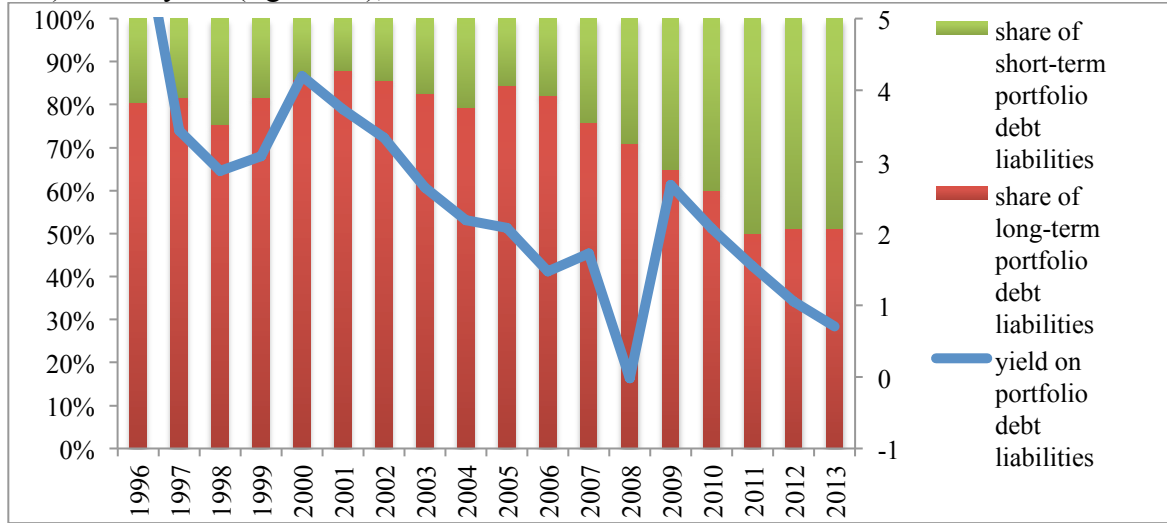
Several findings are noteworthy. First, contrary to the United States, where the share of equity and FDI assets are greater than the share of debt assets (aggregate of portfolio debt, other investment and reserves assets), and where debt liabilities (aggregate of portfolio debt and other investment liabilities) are greater than equity and FDI liabilities, Japan has a greater share of both its foreign assets and its liabilities to foreigners in debt (though as figure 4 shows, equity was dominant only a decade ago). Japan's share of debt in both assets and liabilities exceeds 60%.

If one further breaks down Japan's portfolio debt assets and portfolio debt liabilities, one sees some interesting trends. Using Japan's international investment position data, the share of long-term debt in Japan's total portfolio debt assets exceeds 90%,⁶ though this is somewhat misleading because the "other investment" category includes trade credits, loans and deposits, some significant fraction of which can be regarded as short-term debt. It is nevertheless notable the share of long-term debt in total portfolio debt liabilities has been gradually declining (figure 5).⁷ This indicates there may be both maturity transformation and a liquidity discount on portfolio debt investment. Put differently, whereas for the case of the United States, the equity premium is the main driver a positive composition effect, Japan appears to enjoy a significant composition effect in its debt portfolio, with assets being more heavily weighted towards higher-yielding long-term maturities and liabilities weighted toward short-term maturities. This maturity transformation comes with certain risks, of course, a point we return to in the conclusions.

⁶ The IMF's coordinated portfolio investment surveys defines long-term debt securities in portfolio debt investment as debt securities with an original maturity of over one year and short-term debt securities as debt securities with an original maturity of one year or less (IMF, 2002). Long-term debt securities correspond to bonds and notes, and short-term debt securities correspond to money market instruments in Japan's IIP data.

⁷ Most of portfolio debt assets are private (99% in 2013). On the other hand, most of portfolio debt liabilities are public sector (91% in 2013) (Bank of Japan/Ministry of Finance, IIP data). Again, we caution that the catch-all category "Other Investment income" in the balance of payments statistics might contain assets and liabilities that significantly temper weightings based only on portfolio entities.

Figure 5: Japan: Short-term and long-term debt composition of portfolio debt liabilities (left axis) and its yield (right axis), 1996–2013



Source: Bank of Japan/Ministry of Finance, *Balance of Payments statistics* and *International Investment Position*. IMF, *International Financial Statistics*

In this section, we have introduced the breakdown of Japan’s external assets and liabilities, and will explore the implications later (mainly in the section on the composition effect).

2.3 Narrow definition of exorbitant privilege—interest rate differentials adjusted for expected exchange rate changes

We now turn to measuring exorbitant privilege defined narrowly as the cost of government borrowing from foreigners.

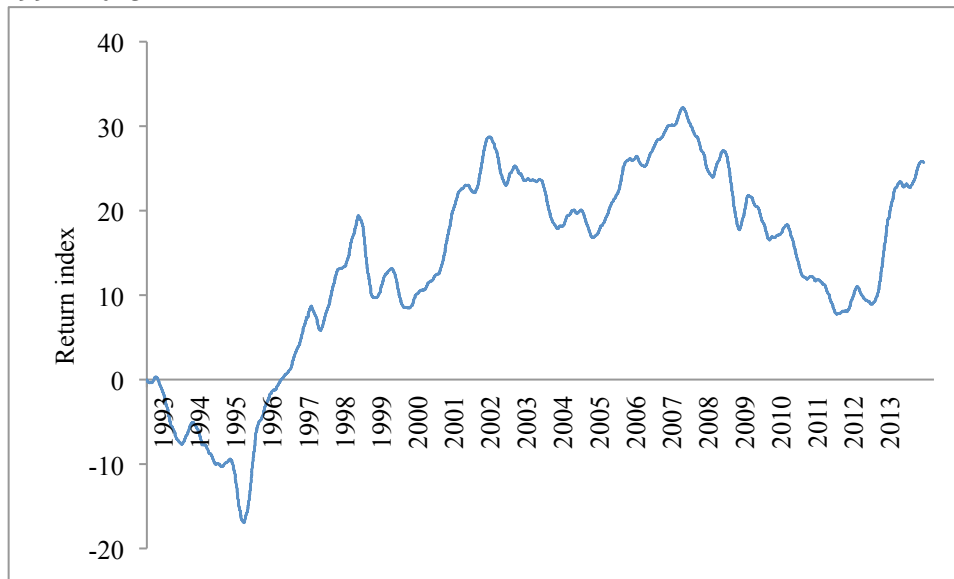
Japan’s interest rates have been lower than those in the United States for a very long period, but of course one needs to express all returns in a common currency to take into account exchange rate fluctuations. Thus, in a floating exchange rate world, we can approximate the narrow version of exorbitant privilege as the *expected* gains from a carry trade strategy. This kind of calculation is relatively straightforward and widely analyzed in the literature (see, for example, Engel 2014). Following the uncovered interest rate parity, the *ex post* payoff to taking a long position on foreign currency is:

$$r_{t+1} = (1 + i_t^{foreign}) \frac{S_{t+1}}{S_t} - (1 + i_t^{domestic})$$

S_t denotes the spot exchange rate expressed as domestic currency per foreign currency at time t , while $i_t^{country}$ denotes the interest rate (domestic or foreign) at time t . This is, of course, an ex-post calculation⁸ and so may not necessarily give an accurate representation in a small sample.⁹

Figure 6 documents the cumulative gains from the carry trade strategy between Japan and the United States.

Figure 6: Cumulative gains from carry trade, borrowing 1 unit of yen, lending in the US dollars, 1992–2013¹⁰



Source: Daily data of 3-month US Treasury bill rates, 3-month Japanese Government bill rates, US dollar to Japanese yen exchange rate, taken from Bloomberg; and authors' calculations.

Not surprisingly, the ex post gains to a carry trade strategy are sensitive to the time period chosen. The gains to the yen carry trade were extremely positive during the pre-global-financial-crisis period due both to interest rate differentials as well as to exchange rate depreciation against the US dollar. After the onset of the global financial crisis, rapid yen appreciation made it harder to earn profit from this carry trade strategy. However, several studies, such as Clarida et al. (2009) and Lewis (2011), find that averaging over a prolonged period, the yen carry trade has earned significant gains. Indeed, the sizable depreciation of the yen versus the dollar since December 2012 has again established a large gap. So in a narrow sense, it is Japan and not the United States that has enjoyed an exorbitant privilege. (Of course, this simple

⁸ Of course, ex-post return does not necessarily mean ex-ante return.

⁹ Indeed, the US dollar had smaller cumulative returns than the yen during the global financial crisis period (see, for example, Baba and Packer, 2009 and Fukuda, 2012)

¹⁰ This figure documents cumulative gains from carry trade with 3-month bill interest rate differentials between Japan and the US from August 1992 to December 2013 following the uncovered interest rate parity. We document other interest rates cases in the appendix.

calibration does not take into account the composition of assets, for example, the fact that foreigners hold a high share of their US assets in debt as opposed to equity.)¹¹

In addition, as we have already mentioned, the carry trade strategy is not a risk-free strategy. As long as the market is liquid and deep, gains from the carry trade stem from how exchange rate risk is valued. For example, Jordà and Taylor (2012) point out the skewness of the carry trade return and the low-tail risk of periodic crashes.

2.4 Broad definitions of exorbitant privilege—return differentials

Next, we move to recent generalizations of exorbitant privilege, applying the concept to returns across all asset classes. This broader usage of exorbitant privilege has been motivated by the fact that the US income puzzle has attracted huge attention in the global imbalances literatures. We note that in our favored “insurance against rare disaster” interpretation of exorbitant privilege, it is perfectly possible that even if US government bonds are the “safest” asset, some other kinds of US assets also might be expected to outperform in a global crisis, albeit less so equities and high yield bonds.

The literature on return differentials primarily deals with excess return on US assets over US liabilities. There has been relatively little study of return differentials conducted for international comparison purposes, and only a few studies have attempted to estimate Japan’s return differentials. Lane and Milesi-Ferretti (2005) calculate the total return on all assets and liabilities for Japan during 1995–2004 and compare it with the total return of the US and the UK. They find that Japan has not experienced excess return with the exception of the period 2000–2001. Lane (2009) shows the co-movements between output growth and return differentials over various sub-periods from 1982 to 2005. According to his computation, Japan experienced positive return differentials during 1990–1993, 1994–1997 and 1998–2001. On the other hand, Japan suffered negative return differentials in other sub-periods. Habib (2010) examines return differentials around the world, including Japan, from 1981 to 2007. He finds that Japan enjoyed both positive yield differentials and positive capital gain effects, especially during 2000s. In terms of the yield differential, Meissner and Taylor (2006) find that if one excludes capital gain effects, then Japan enjoyed similar privilege to the US throughout most of the observation period from 1981 to 2003 at a statistically significant level. On the other hand, if one includes capital gain effects, then Japan’s total return differential is small and insignificant. It should be noted that even some of the above studies attempt to incorporate capital gain effects, they did not take into account the further issues raised in Lane (2013) with regard to adjustments for data revisions, new measurement techniques, reclassifications etc., due to limitations of the Japanese data. Also, in the very recent study of Curcuru et al. (2013), the authors mention that, in their unreported analysis, major advanced economies, including Japan, have similar return differentials to the US if one excludes foreign direct investment.

¹¹ We recognize that categorizing nationality may be difficult for multinational financial firms, both practically and conceptually, and this problem may be especially important for carry trades. We believe our overall point is likely robust to this consideration, but we hope to address the issue in future work.

It is important to recognize that the period covered by these studies is not long; and for the most part these studies do not include the post-global financial crisis period. For the post-crisis period, Gourinchas et al. (2010) mention the changing dynamics of international capital flows, referring to the US as suffering from “exorbitant duty” after the crisis, contrasted with the “exorbitant privilege” it enjoyed before the crisis. Thus, it is potentially interesting to examine return differentials before and after the crisis period.

In sum, existing studies reveal that Japan enjoys return differentials at least in yield. However, no study clearly identifies why Japan is now enjoying a similar level of privilege to the US, at least by the yield differential. Thus, we will explore Japan’s return differentials in more detail in an attempt to uncover the underlying drivers and what they imply about the concept of exorbitant privilege. First we explain the methods we use to calculate return differentials, and then we interpret the results of our computation.

Methodology

Before discussing the methodology, it is helpful to lay out our rate of return definitions more precisely following existing studies (such as Curcuru et al, 2013 and Lane, 2013).

Total returns: Total returns can be divided into two components, *yield* and *stock-flow adjustment effects*. Yield is the return attributable to income flows from one’s assets or liabilities, while stock-flow adjustment effects are the returns attributable to the combination of net valuation effects (including exchange rate movements and other asset price movements) and net other adjustments (data revisions, new measurement techniques, reclassifications and so on) on assets or liabilities (Lane, 2013).

Returns differentials: return differentials are differentials in yield, stock-flow adjustment effects, or their sum.

Returns on foreign assets and liabilities are calculated in nominal and real domestic currency. In practice, position change and flow data from the balance of payments in a given year are divided by international investment positions at the end of the previous year to generate returns on foreign positions. The total return on assets (or liabilities) can be calculated as follows:

$$\text{Total return on assets} = \frac{\text{Assets}_t - \text{Assets}_{t-1} - \text{Flow}_t}{\text{Assets}_{t-1}} + \frac{\text{Income}_t}{\text{Assets}_{t-1}}$$

where Assets_t is the assets (or liabilities) at the end of period t , Flow_t is flows to abroad (or foreign flows into the home country in the case of liabilities) during period t , and Income_t is income (interest, dividend, and FDI earnings) during period t . The first term calculates the total stock-flow adjustment effects and the second calculates the yield (from interest and dividend, etc.). If one then adjusts for inflation, one obtains return differentials in real domestic currency. We apply this method to each asset class.

All of the previous studies on Japan's return differentials use this methodology for their calculations. We follow this methodology to compute Japan's return differentials from 1996 to 2013.¹²

*Estimation of Japan's return differentials, 1996–2013*¹³

This paper makes three contributions. First, this study extends the period of analysis through 2013, as earlier studies did not cover the post-financial crisis period. Second, we separate return differentials from exchange rate valuation effects, which is helpful in interpreting the results. Third, we explore underlying driver of composition effect while using decomposition of assets/liabilities positions. By looking a broader range of assets, and by including date through the financial crisis period, we are better able to both test broader perspectives on exorbitant privilege, and to compare alternative interpretations.

First of all, since earlier studies calculated returns in terms of domestic currency, Japan's exchange rate valuation effects before the crisis might be exaggerated, as the Japanese yen had depreciated during the early 2000s. Indeed, Habib (2010) estimated Japan's rate differential of stock-flow adjustment effects from 2000 to 2007 as 1.3 percent. The opposite occurred in period immediately after the financial crisis, when Japan experienced a dramatic appreciation of its currency. This prediction coincides with the notion of "from exorbitant privilege to exorbitant duty" for the US put forward by Gourinchas et al. (2010). Table 1 documents our estimates of return differentials from 1996 to 2013. On average, Japan suffers from negative stock-flow adjustment effects during this extended period with declining stock-flow adjustment effects after the financial crisis. However, Japan enjoys high yield differentials that compensate such negative stock-flow adjustment effects and total return differentials are positive.

¹² Curcuru et al. (2013) demonstrate that for the case of estimating US excess return, the methodology here can lead to upward biased estimates of return differentials, especially for stock-flow adjustment effects. The primary cause of disagreement in estimates was the US IIP revision policies. With the consistent IIP data based on Gohrband and Howell (forthcoming), Curcuru et al. (2013) use this methodology to compute US return differentials (except that they use "average of the previous year and current year positions" as denominator, instead of the previous year position). This measurement issue is uncertain for Japan. Lane (2013) acknowledges this measurement issue and uses stock-flow adjustment term for the euro area instead. As Lane (2013) argues stock-flow adjustment is still informative, we follow his terminology.

¹³ Our analysis starts 1996, as there is not consistent data available for the earlier period as far as we aware. Japan's balance of payment manual changed in 1996 and it is not easy to bridge the data. We document return differential estimation prior to 1996 in the appendix 2.

Table 1: Estimates of Return Differentials, 1996–2013 (in percent)

		Assets	Liabilities	Difference
Total				
	Total	4.2	3.1	1.1
	Yield	3.6	1.9	1.7
	Stock-flow adjustment effects	0.6	1.3	-0.6
FDI				
	Total	4.3	9.1	-4.8
	Yield	6.4	8.3	-1.9
	Stock-flow adjustment effects	-2.0	0.9	-2.9
Debt				
	Total	5.8	0.4	5.5
	Yield	5.2	2.5	2.6
	Stock-flow adjustment effects	0.7	-2.1	2.8
Equity				
	Total	10.9	8.8	2.1
	Yield	5.2	1.3	3.9
	Stock-flow adjustment effects	5.7	7.5	-1.8
Others				
	Total	2.2	3.4	-1.2
	Yield	1.9	1.6	0.4
	Stock-flow adjustment effects	0.3	1.9	-1.5
Reserves	Stock-flow adjustment effects	1.8		
(for reference)				
Debt and reserves				
	Yield	1.2		

Note: Stock-flow adjustment is “change in outstanding” minus “financial account.”

Income flow from reserves is not available separately. We show yield from aggregate of debt and reserves for the source of debt income flow as a reference.

Reinvested earning for FDI is included for this return differentials estimation.

Assets and liabilities outstanding include securities lending in 1995 used as denominators for computing return differentials for 1996 because of data availability.

Sources: Asset and liabilities outstanding: Bank of Japan/Ministry of Finance, *International Investment Position*. Balance on income and financial account: Bank of Japan/Ministry of Finance, *Balance of Payments statistics*, and IMF, *Balance of Payments statistics*. Inflation: IMF, *International Financial Statistics*.

Second, we estimate return differentials from 2001 to 2013, while excluding the exchange rate effect, to illustrate how exchange rate risk affects Japan's return differentials. From 2001, the Bank of Japan/Ministry of Finance break down their estimates of the change in Japan's foreign assets and liabilities position into transactions, exchange rate effects, and other changes (including price changes and statistical adjustment)¹⁴. Using those estimates, Table 2 documents the return differentials excluding the exchange rate valuation effects from stock-flow adjustment effects.

¹⁴ The category "other changes" comprises factors other than transactions and exchange rate effects, such as changes in the value of assets and liabilities resulting from fluctuations in stock and bond prices (Bank of Japan). This "other changes" is considered to be driven primarily by the price change effect. However, there still exists a measurement issue. Thus, we use stock-flow adjustment effects term for this analysis as well. For the table 2, our analysis starts 2001, as there is not data available for the earlier period as far as we aware.

Table 2: Estimates of Return Differentials, 2001–2013, excluding FX change effects (in percent)

		Assets	Liabilities	Difference
Total				
	Total	4.4	3.2	1.2
	Ex FX change	4.0	3.1	0.9
	Yield	3.6	1.8	1.8
	Stock-flow adjustment effects	1.0	1.6	-0.6
	Ex FX change	0.6	1.5	-0.9
FDI				
	Total	5.5	10.8	-5.3
	Ex FX change	4.7	10.8	-6.1
	Yield	7.2	7.8	-0.6
	Stock-flow adjustment effects	-1.5	3.2	-4.7
	Ex FX change	-2.3	3.2	-5.4
Debt				
	Total	5.2	0.4	4.8
	Ex FX change	4.5	0.2	4.2
	Yield	4.8	1.9	2.9
	Stock-flow adjustment effects	0.6	-1.3	1.9
	Ex FX change	-0.1	-1.5	1.4
Equity				
	Total	11.6	7.3	4.3
	Ex FX change	10.1	7.3	2.8
	Yield	6.0	1.8	4.3
	Stock-flow adjustment effects	5.8	5.8	0.0
	Ex FX change	4.3	5.8	-1.5
Others				
	Total	3.1	3.2	0.0
	Ex FX change	3.2	3.1	0.1
	Yield	1.7	1.3	0.5
	Stock-flow adjustment effects	1.6	2.1	-0.5
	Ex FX change	1.7	2.0	-0.3
Reserves				
	Stock-flow adjustment effects	1.0		
	Ex FX change	1.1		
(for reference)				
Debt and reserves				
	Yield	1.4		

Note: Stock-flow adjustment is “change in outstanding” minus “transaction” based on Bank of Japan/Ministry of Finance estimation.

Income flow from reserves is not available separately. We show yield from aggregate of debt and reserves for the source of debt income flow as a reference.

Reinvested earning for FDI is included for this return differentials estimation.

Sources: Balance on income: Bank of Japan/Ministry of Finance, *Balance of Payments statistics*.

Outstanding assets and liabilities: Bank of Japan, "Japan's International Investment Position", various issues; and Ministry of Finance, "Zaisei Kinyu Tokei Geppou" (“Monthly Fiscal and Financial Statistics Review”), various issues. Inflation: IMF, *International Financial Statistics*.

Table 1 and Table 2 illustrate that Japan earns positive return differentials from portfolio debt investment and portfolio equity investment. Not surprisingly, table 2 indicates the exchange rate effect has significant impacts on stock-flow adjustment effects.

As discussed in Curcuru et al. (2013), one must be cautious in comparing return differentials across countries, since each country computes international investment position differently. For example, Japan computes FDI data on a book value basis, but the US compiles FDI data on market value, current cost, and historic cost (book value) bases. Market value is the basis used to estimate US return differentials in existing studies. Our aim is not to compare the size of return differentials across countries, but to determine whether there are return differentials in Japan. Indeed, as Table 1 and Table 2 demonstrate, Japan enjoys positive return differentials.

Composition effect

As our third contribution in this paper, we analyze the implications of the portfolio composition of Japan's external assets and liabilities. As we see in tables 1 and 2, Japan's positive return differentials derive mainly from portfolio debt and portfolio equity. Breaking down the contribution of each of these into composition effect and return effect, we can analyze how the structure of the external balance sheet contributes to the return differentials (Gourinchas and Rey 2007a). As we shall see, the composition effect is not as important a driver of return for Japan as it is for the United States. Thus, return differentials are central to the evolution of Japan's net foreign asset position, along with the cumulated current account surplus.

Following Gourinchas and Rey (2007a), we break down return differentials into return effect and composition effect. One can then write the expected excess return of assets over liabilities as:

$$E(r^a - r^l) = \sum_i \mu^i (r^{ai} - r^{li}) + \sum_i (\mu^{ai} - \mu^{li}) r^i$$

where E denotes the expectation sign, $\mu^i = \frac{\mu^{ai} + \mu^{li}}{2}$ is the average portfolio share for asset class i , and $r^i = \frac{r^{ai} + r^{li}}{2}$ is the average return on asset class i . The first term represents the return effect and equals the average excess return on assets over liabilities within each asset class. The return effect becomes neutral when the return is the same within each asset class. The last term shows the composition effect. This composition effect specifies the difference in weights between assets and liabilities for each asset class. The composition effect becomes neutral when assets have the same composition as liabilities within each asset class.

In table 3, we analyze how the composition and return effects contribute to Japan's return differentials. The table shows that the return effect explains Japan's return differentials whereas the composition effect contributes negatively. When we separate the composition effect and return effect for each asset class, we do see some asymmetries. Portfolio debt is the largest source of Japan's return differentials. FDI assets contribute little, and portfolio equity and other

investments earn negative returns in aggregate.¹⁵ A high contribution from portfolio debt assets is consistent with the analysis of Habib (2010).

Table 3: Return effect and composition effect, 1996–2013 (in percent)

	Total	FDI	Equity	Debt	Other
return effect	1.4	-0.3	0.7	1.5	-0.5
composition effect	-0.4	0.4	-1.1	0.8	-0.5

Note: Income flow derived from reserves is not available separately. Thus, we combine portfolio debt investment and reserve as “debt”.

Sources: Bank of Japan/Ministry of Finance, *Balance of Payments statistics*, and *International Investment Position*. IMF, *International Financial Statistics* and *Balance of Payments statistics*

How should we interpret these results? The overall composition effect on return differentials is negative as, on the whole, Japan’s external position is not weighted toward riskier assets with higher average returns. For portfolio debt investment, however, the composition effect is positive, which may reflect some liquidity discount. As we saw in section 2.2, Japan’s portfolio debt assets investment is weighted toward long-term debt. On the other hand, the long-term share of portfolio debt liabilities has been decreasing. Also, this shift corresponds with a decreasing yield on portfolio debt liabilities (figure 4). Such changes in composition within asset class can be one source of the return differentials in portfolio debt. As for the US, Curcuro et al. (2013) estimate composition effect of the US from 1990 to 2011. They find overall composition effect is almost neutral. They do not provide within asset class composition effect estimation, however, Gourinchas and Rey (2014) argue that there may be excess returns within asset classes, because of difference in tax system of FDI. Indeed, past estimations, such as Gourinchas and Rey (2007a) find positive composition effect within FDI over long period.

Overall, the evidence suggests that Japan enjoys safe-haven status, especially after the recent financial crisis.¹⁶ However, Japan’s composition of portfolio debt investment is hardly free of risks. In particular, although it has roughly the same share of debt assets and liabilities, the latter is far more tilted towards the short-term, so Japan is subject to maturity transformation risks. Of course, it is also subject to other risks, such as rapid exchange rate changes, though these are not necessarily as severe.¹⁷

¹⁵ A significant share of “other investment” relate to working capital for trade in goods and financial market, and as such is a different category of investment. Over the sample period 1996-2013, comparing assets and liabilities, Japan earned positive unadjusted interest differentials on each category, except currency and deposits. Taking into account exchange rate changes, however, the total return fluctuates. Calculations are included with the spreadsheet to this paper.

¹⁶ Hassan (forthcoming) presents a theoretical model and empirical evidence that market size is one reason a country’s bonds may pay a lower expected interest rate in equilibrium. See Gournichas and Rey (2014) for further discussion.

¹⁷ As of this writing, we incorporate the first one-year of the Abenomics period. Although exchange rate effects through yen depreciation improved stock-flow adjustment effects, the domestic equity position change was so huge that it more than offset the effect of the massive depreciation of the yen (which ceteris paribus, makes Japan’s foreign assets worth more relative to liabilities to foreigners). Thus, the

3. Concluding remarks

Much has been said about the exorbitant privilege of the United States, but only a relatively small part of the literature has looked at other countries. In this paper, we clarify some of the alternative definitions of exorbitant privilege, and then focus on Japan as a case study. Japan is interesting because it is often regarded as the mirror image of the United States, with Japan being a poor investor that suffers from exorbitant duty.

Contrary to conventional wisdom, we find that Japan is not unsophisticated in international investing. Indeed, Japan is now enjoying positive exorbitant privilege, from the narrow definition to the broad definition. The evidence might be interpreted as suggesting that Japan has been enjoying safe-haven status, particularly against extreme events as suggested, for example, by Farhi and Gabaix (2013). Indeed, this should not be entirely surprising within a modern interpretation of exorbitant privilege that allows for assets to pay lower rates of return if they are insurance against extreme events. Even if Japan is neither a military power nor the central country in the global economic system, it is nevertheless quite plausible to believe that the world's largest creditor and second largest market economy provides important insurance properties that could have a broad effect over many classes. A "rare disaster" interpretation of exorbitant privilege is also helpful because it helps us understand why the effect might be much stronger for government bonds (which tend to pay off in extreme events other than wars) than say, for equity assets (which tend to fall sharply in crisis situations, even in stronger economies.)

Obviously, the empirical results here are sensitive to the relatively short time sample, particularly if one uses the rationale of "rare events" to justify Japan's exorbitant privilege. Our results also might be biased to the extent large exchange rate shifts may have long half lives, so that one or two events may be dominant in a short sample.

Of course, although Japanese assets may be hedge against many types of global economic risk, they also incorporate Japan-centric risk. For example, it is notable that Japan's debt liabilities are of considerably shorter duration than its debt assets, implying the country's overall foreign portfolio is subject to maturity transformation risks. Moreover, the short-term portfolio external debt is overwhelmingly government debt and the long-term portfolio external assets are mainly private. In addition, the government itself holds huge amount of long-term external assets through its reserves. Future stability of Japan's economy will depend on navigating these risks. Thus, even if Japan does enjoy "safe haven" status and exorbitant privilege, it does not imply that its assets are entirely safe.

total return differential during 2013 was negative. However, return differentials from FDI and portfolio debt improved. Overall, Japan enjoyed, on average, a positive total return differential from 1996 to 2013.

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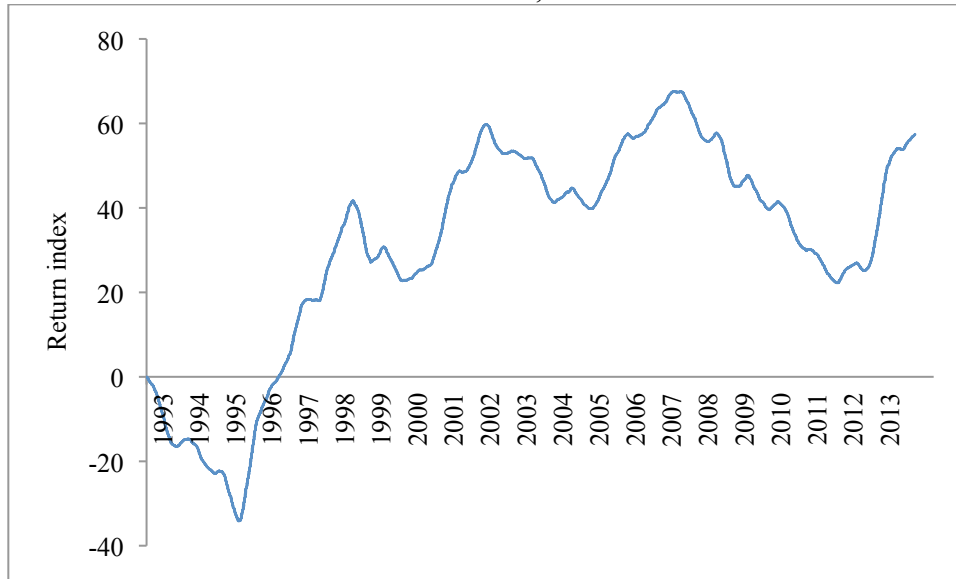
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Appendix 1: Estimation of carry trade gains with different interest rates cases

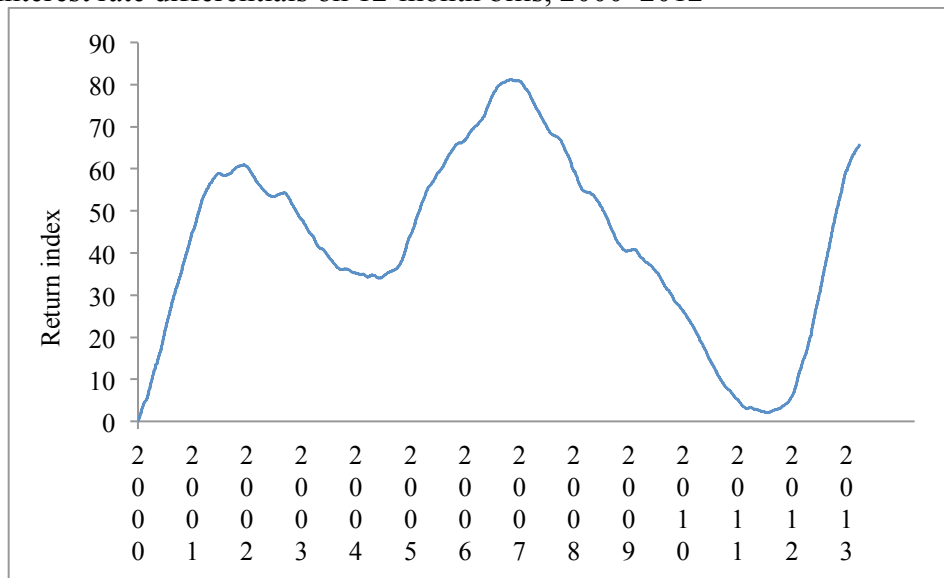
In this appendix, we document cumulative gains from carry trade with 6-month bill interest rate differentials between Japan and the US from August 1992 to September 2013, and cumulative gains from carry trade with 12-month bill interest rate differentials between Japan and the US from January 2000 to March 2013.

Interest rate differentials on 6-month bills, 1992–2013



Source: Daily data of 6-month US Treasury bill rates, 6-month Japanese Government bill rates and US dollar to Japanese yen exchange rates, taken from Bloomberg and authors' calculations.

Interest rate differentials on 12-month bills, 2000–2012



Sources: Daily data of 12-month US Treasury bill rates, 12-month Japanese Government bill rates and US dollar to Japanese yen exchange rates, taken from Bloomberg, FRED and authors' calculations.

Appendix 2: Japan's return differential estimation, 1977-2013 (in percent)

This appendix table documents return differential estimation from 1977 to 2013.

average differential	total	yield	stock-flow adjustment effects
1977-2013	-1.74	0.76	-2.50
1996-2013 ¹	1.05	1.66	-0.61
1977-1995 ²	-4.38	-0.10	-4.28

Note 1: Aggregate of FDI, Equity, Debt, Other investment and Reserves. Data from January 1996 onward compiled based on the fifth edition of the Balance of Payments Manual published by the IMF.

Note 2: Lane and Milesi-Ferretti (2007, updated) is used for assets/liabilities position. Financial account taken from IMF *Balance of Payments statistics* is used as flow. Investment income data taken from Ministry of Finance dataset is used for yield calculation.

Source: Bank of Japan/Ministry of Finance, *Balance of Payments statistics* and *International Investment Position*, IMF, *Balance of Payments statistics* and *International Financial Statistics*, Lane and Milesi-Ferretti (2007, updated). Ministry of Finance, "Zaisei Kinyu Tokei Geppou" ("Monthly Fiscal and Financial Statistics Review"), various issues.

Appendix 3: Japan's return differential estimation, excluding FX effect (including financial derivatives), 2001-2013 (in percent)

In this appendix table, financial derivatives are added to table 2 analysis.

		Assets	Liabilities	Difference
Total				
	Total	3.7	1.9	1.8
	Ex FX change	3.3	1.8	1.5
	Yield	3.6	1.8	1.8
	Stock-flow adjustment effects	0.3	0.3	0.0
	Ex FX change	-0.1	0.2	-0.3
FDI				
	Total	5.5	10.8	-5.3
	Ex FX change	4.7	10.8	-6.1
	Yield	7.2	7.8	-0.6
	Stock-flow adjustment effects	-1.5	3.2	-4.7
	Ex FX change	-2.3	3.2	-5.4
Debt				
	Total	5.2	0.4	4.8
	Ex FX change	4.5	0.2	4.2
	Yield	4.8	1.9	2.9
	Stock-flow adjustment effects	0.6	-1.3	1.9
	Ex FX change	-0.1	-1.5	1.4
Equity				
	Total	11.6	7.3	4.3
	Ex FX change	10.1	7.3	2.8
	Yield	6.0	1.8	4.3
	Stock-flow adjustment effects	5.8	5.8	0.0
	Ex FX change	4.3	5.8	-1.5
Others				
	Total	3.1	3.2	0.0
	Ex FX change	3.2	3.1	0.1
	Yield	1.7	1.3	0.5
	Stock-flow adjustment effects	1.6	2.1	-0.5
	Ex FX change	1.7	2.0	-0.3
Reserves				
	Stock-flow adjustment effects	1.0		
	Ex FX change	1.1		

Sources: Balance on income: Bank of Japan/Ministry of Finance, *Balance of Payments statistics*. Outstanding of assets and liabilities: Bank of Japan, "Japan's International Investment Position" various issues and Ministry of Finance, "Zaisei Kinyu Tokei Geppou" ("Monthly Fiscal and Financial Statistics Review"), various issues. Inflation: IMF, *International Financial Statistics*.

Appendix 4: Japan's return differential estimates in existing literature (in percent)

This appendix table documents Japan's return differential estimation from other studies. Other studies also show Japan enjoy positive return differentials due to yield (see text).

Source	Period	Total ¹	Yield ¹	Stock-flow adjustment effects ¹
Lane and Milesi-Ferretti (2005)	1995–1999	-3.9	-	-
	2000–2001	13.0	-	-
	2002–2004	-3.0	-	-
Meissner and Taylor (2006)	1981-2003 ²	0.1	1.1	-1.0
Habib (2010)	1986-2007	-1.8	0.9	-2.7
	1996-2007	1.0	1.6	-0.6
	2000-2007	3.0	1.8	1.3

Note 1: Yield is the return attributable to income flows from one's assets or liabilities, while stock-flow adjustment effects are the returns attributable to the combination of net valuation effects (including exchange rate movements and other asset price movements) and net other adjustments (data revisions, new measurement techniques, reclassifications and so on) on assets or liabilities. "Plus sign" means that a country gets higher returns on its assets than it pays on its liabilities, and minus sign means the opposite. There is a debate over measurement issue in these studies that we discussed in text.

Note 2: Among G7 countries, only Japan's number of observation is 17 in their analysis.

Source: Lane and Milesi-Ferretti (2005), Meissner and Taylor (2006) and Habib (2010)

Appendix 5: Return differential estimates for selected countries in existing literature (in percent)

This table documents return differential estimation for selected countries in existing studies.

Country	Source	Period	Total	Yield	Stock-flow adjustment effects
UK	Lane and Milesi-Ferretti (2005)	1995–1999	-0.6	-	-
		2000–2001	1.3	-	-
		2002–2004	0.7	-	-
	Meissner and Taylor (2006)	1981-2003	0.3	0.1	0.2
	Habib (2010)	1986-2007	0.2	0.2	0.0
		1996-2007	0.3	0.6	-0.2
2000-2007		1.2	0.7	0.5	
Eurozone	Lane and Milesi-Ferretti (2005)	2000–2001	0.1	-	-
		2002–2004	-3.2	-	-
	Habib (2010)	2000-2007	-0.8	-0.1	-0.7
Germany	Meissner and Taylor (2006)	1981-2003	-0.6	0.3	-0.9
	Habib (2010)	1986-2007	-1.1	-0.3	-0.8
		1996-2007	-0.1	-0.2	0.1
		2000-2007	-0.1	-0.1	0.0
France	Meissner and Taylor (2006)	1981-2003	0.2	0.8	-0.6
Italy	Meissner and Taylor (2006)	1981-2003	-0.3	-0.5	0.2
Canada	Meissner and Taylor (2006)	1981-2003	-0.1	-1.4	1.3
	Habib (2010)	1986-2007	-1.7	-1.6	-0.2
		1996-2007	-2.1	-1.5	-0.5
		2000-2007	-3.3	-1.6	-1.7
Switzerland	Habib (2010)	1986-2007	-0.5	1.2	-1.6
		1996-2007	-1.2	1.0	-2.2
		2000-2007	-1.5	0.9	-2.4
Australia	Habib (2010)	1986-2007	1.0	-1.6	2.7
		1996-2007	2.1	-1.2	3.3
		2000-2007	0.4	-1.2	1.6

Note: Yield is the return attributable to income flows from one's assets or liabilities, while stock-flow adjustment effects are the returns attributable to the combination of net valuation effects (including exchange rate movements and other asset price movements) and net other adjustments (data revisions, new measurement techniques, reclassifications and so on) on assets or liabilities. Total is sum of yield and stock-flow adjustment effects. There is a debate over measurement issue in these studies that we discussed in text. "Plus sign" means that a country gets higher returns on its assets than it pays on its liabilities, and minus sign means the opposite.

Source: Lane and Milesi-Ferretti (2005), Meissner and Taylor (2006) and Habib (2010)