The cool ride of carry trades

Over the past several years Japanese investors have been enthusiastic buyers of uridashi bonds. Taken from the Japanese for "bargain sale", uridashi issues are aimed at taking advantage of the difference in interest rates between low and high yield currencies.

The appeal of such trades is obvious. Take, for example the case of the New Zealand kiwi: the Reserve Bank of New Zealand's official cash rate of 7.25% is much higher than the Bank of Japan's zero interest rate of the last five years. This creates an opportunity for investors to borrow low interest currencies at home and invest in high yield currencies abroad. These "carry trades", as currency traders denote them, have proven highly profitable since 2001, and investors have bought hundreds of billions of yen worth of uridashi bonds denominated in the currencies of countries such as New Zealand and Australia. US and European hedge funds specialized in macroeconomic strategies are also performing such trades, by shorting the dollar and the Euro while going long a portfolio of currencies that include the two antipodean countries, South Africa, Turkey and Hungary, among others.

Recently, however, worries have surfaced that may explain why the appetite for carry trades may dwindle.

First, there is the synchronized rate increasing in developed countries that started in 2005 and is expected to accelerate this year. Since the beginning of 2006 there have been clear signals that the Bank of Japan will soon end its zero interest rate policy. Central banks in the US and the Eurozone are also in a tightening mode. The prospect of higher interest rates in these economies could draw investor's money away from high yield currencies. Masuhisa Kobayashi, a currency strategist at Barclays Capital in Tokyo, claims that there is a big danger looming with the cross border changes in interest rate policies of the large economies –Japan, USA and Eurozone. In his opinion: "We seem to be in a very similar situation to the Mexican crisis of 1994. US interest rates started to spike, so money came back from Mexico to the US and the large reversals of capital flows led to the collapse of the Mexican Peso". The fall in value of the high yield currencies could easily wipe out many years of gains made by choosing the high yield currency bonds over dollar, euro and yen-denominated money market instruments.

This case was written by Antonio S. Mello and Dilek Gurel at the University of Wisconsin, Madison as a basis for class discussion.

Second, and perhaps more important are the macroeconomic imbalances that have accumulated in many of countries with high yield currencies. Take the examples of New Zeland and Iceland. New Zeland growth rate, which averaged 3.6 per cent a year since 1999, pushed inflation above the 3 per cent upper limit targeted by the country's central bank. The growth, which was fuelled by consumers spending far more than they earned led to a record current account deficit in 2005 of 9 per cent of GDP. Housing prices have reached record levels and the stock market is at an all time high. In an attempt to rein in consumer spending, the Reserve Bank has raised interest rates nine times in two years, to 7.25 per cent – by far the highest in the OECD. The medicine has taken a long time to work, with lenders engaged in a fierce pricing war and four fifths of borrowers on fixed rate mortgages. But the high interest rate has sent the value of the kiwi soaring against the dollar –its highest value in 23 years – compounding the trade deficit by making imports cheaper and exports more uncompetitive.

16,000 kilometers away from New Zealand lies small north Atlantic island of Iceland. Yesterday, Iceland Central bank was forced to raise its key interest rate sharply to avert a currency turmoil sparked by shifts in foreign exchange movements, deteriorating economic conditions and rising global interest rates. Iceland's current account deficit has reached 15 per cent of gross domestic product in 2005 and inflation has climbed to 4.5 per cent, well above the central bank's 2.5 per cent target. Danske Bank from Denmark recently warned that the Iceland economy could shrink by 5-10 per cent in 2006 and 2007 and its currency could fall by 25 per cent.

Iceland and New Zealand's problems are that their economies have been getting whipsawed the past few years. First, foreign money poured into these countries by investors in search of their relatively high interest rates. This helped fuel both housing and stock market booms, and rapid economic growth. As residents of these countries felt richer consumption shot up, leading to a growing current account deficit. Now, as interest rates start creeping back up in developed countries, the foreign funds may flood right back out. All this could lead to a drastic drop in the stock market and to a dramatic weakening of the currency. The possibility of this scenario would transform these nations into poster boys for how fast-changing global money flows can make or break economies.

As carry trades slowly unwind, investors are becoming more cautious and focusing more and more on economic fundamentals of high yield countries. In addition to New Zealand and Iceland, Hungary, Turkey, Australia and South Africa are also seen as potentially vulnerable. Exhibit 1 provides macroeconomic information about some of these countries. All face similar economic problems, such as excessive short term debt, rising interest rates and an increasing current account deficit. A worst case scenario could mean a financial crisis leading to a recession. Central banks would be forced to raise interest rates sharply to head off a crisis of confidence in the currency, and in the process choke economic growth. However, officials of these countries point to reports from credit rating agencies Standard & Poor's and Moddy's Investors Service that have been confident that these economies will be able to stave-off crisis. For example, Halldor Asgrimsson, Iceland prime minister believes that the country will have a soft landing, with continued growth although at a slower rate.

Recently, an article in an European financial magazine posed the question whether Iceland, a country of just 300,000 people and an economy one-third the size of Luxembourg's, could cause any serious damage to the world financial system, and

not be just as the fabled headline, “Small earthquake: not many dead.” But dire warnings of contagion have flourished out of all proportion to the country’s size. Pessimistic reports warn that the Nordic nation’s debt problems could spread far beyond its shores. In today’s global financial markets, investors employ similar speculative trades everywhere almost simultaneously. And once they become wary about the prospects of such strategies in one country, they tend to reverse their trades in all other countries in a synchronized way. A crisis of confidence in the Iceland krona or the New Zealand kiwi could potentially create ripples in markets far beyond these small islands, with serious repercussions in all high yield countries.

Recently some international bankers have warned that investors following some macro carry trades were being indiscriminate in their search for higher yields. Josef Ackermann, Chief Executive of Deutsche Bank said: “Investors need to recognize the costly consequences of sudden reversals in global conditions that could impact markets.”

Indiscriminate behavior and herd instinct are characteristics of international investors that every once in a while cause havoc in global financial markets.

Masako Kanno, head of the Tokyo office of Opportunity fund, a US hedge fund, is preparing for a meeting of the worldwide risk management committee to start in one hour, at 9:00 p.m. Tokyo time (8:00 a.m. New York time). The committee will decide whether to continue with the carry trades the fund has performed since the beginning of 2004 or unwind them, and if the decision is to continue, whether to follow a more aggressive strategy of borrowing in low interest currencies and invest in the stock markets of high yield currencies. She feels that the meeting will last long, with people divided between those that support a more conservative strategy of unwinding everything, and those that advocate that the spread will warrant holding on.

She has gathered information on interest rates (Exhibit 2), exchange rates (Exhibit 3) and stock indices (Exhibit 4). Looking over the numbers she realized how profitable that strategy had been from the view point of Japanese investors until now, the end of February 2006, shown in Exhibits 11-13. She asked whether that had also been the case from the point of view of US and Eurozone investors. She also had a junior analyst running a few regressions to see how exchange rates and interest rate differentials could be both factored into the results of the carry trades (Exhibits 5-7). In addition, she thought that it would be a good idea to compute the value at risk of such strategy –VAR- at 95 per cent confidence interval over one year, to figure out how much the strategy could potentially lose over such a period of time. For this purpose she computed the volatility of the carry trade strategies during the period December 2003 to end of February 2006, shown in Exhibits 8-10.

Exhibit 1 – Macroeconomic Data (2000-2007)

	GDP Growth Rate (%)				Current Account Balance (% of GDP)				Inflation (%)				Real Private Consumption Growth (%)			
Dates	**Iceland**	**NZ**	**SA**	**Turkey**	**Iceland**	**NZ**	**SA**	**Turkey[1]**	**Iceland**	**NZ**	**SA**	**Turkey**	**Iceland**	**NZ**	**SA**	**Turkey**
2000	5.00	2.70	4.00	7.40	-10.30	-5.30	-3.10	N/A	4.20	4.00	7.80	54.92	4.20	3.30	3.50	6.20
2001	3.30	3.90	3.00	-7.50	-4.40	-2.80	-2.80	2.30	6.70	1.80	7.60	54.40	-3.00	1.40	3.00	-9.00
2002	-1.30	4.70	3.50	8.10	1.40	-4.00	6.70	-0.80	4.80	2.70	9.30	44.96	-1.60	3.20	3.00	2.00
2003	3.60	3.10	3.00	5.70	-5.00	-4.30	-10.10	-3.40	2.10	1.60	6.80	25.30	5.90	4.30	3.50	6.60
2004	6.10	3.10	4.50	9.10	-9.30	-6.70	-3.40	-5.20	3.90	2.70	4.30	8.60	7.20	6.30	6.50	10.80
2005	5.50	1.80	4.90	5.00	-16.50	-8.90	-4.20	-6.30	4.16	3.20	3.90	8.18	11.90	5.80	7.00	4.20
2006 (E)	4.20	2.50	N/A	N/A	-14.10	-9.00	N/A	N/A	4.90	3.25	5.20	5.00	5.40	4.50	N/A	N/A
2007 (E)	0.40	1.50	N/A	N/A	-9.90	-9.25	N/A	N/A	6.20	2.50	4.80	4.00	0.50	1.25	N/A	N/A

Source: Central Banks of Iceland, New Zealand, South Africa and Turkey

[1] *Current Account Balance as percentage of GNP*

Exhibit 2 - Interest Rates - % (Dec 2003-February 2006)

Dates	Iceland- 1 M Interbank Rate	New Zealand - 1 M Rate	South Africa - Repo Rate	Turkey - 1 M Offered Rate	USA - 1 M T-bill	EURO Zone - Overnight Deposit Rate	Japan - 1 M T-bill
12/1/2003	4.92	5.29	8.50	27.49	0.94	1.00	0.0075
1/1/2004	4.63	5.23	8.00	26.40	0.88	1.00	0.0065
2/1/2004	5.06	5.46	8.00	26.84	0.85	1.00	0.0040
3/1/2004	5.13	5.52	8.00	25.11	0.95	1.00	0.0040
4/1/2004	5.17	5.47	8.00	23.06	0.94	1.00	0.0040
5/1/2004	5.13	5.72	8.00	23.02	0.80	1.00	0.0045
6/1/2004	5.54	5.85	8.00	24.20	0.93	1.00	0.0040
7/1/2004	5.67	6.03	8.00	24.17	0.99	1.00	0.0055
8/1/2004	6.02	6.21	8.00	24.14	1.24	1.00	0.0055
9/1/2004	6.26	6.38	7.50	24.10	1.41	1.00	0.0065
10/1/2004	6.57	6.59	7.50	23.33	1.49	1.00	0.0070
11/1/2004	7.06	6.67	7.50	22.94	1.74	1.00	0.0045
12/1/2004	7.42	6.67	7.50	23.10	2.02	1.00	0.0045
1/1/2005	8.13	6.69	7.50	20.90	1.91	1.00	0.0040
2/1/2005	8.07	6.70	7.50	19.80	2.20	1.00	0.0035
3/1/2005	8.55	6.77	7.50	18.70	2.51	1.00	0.0035
4/1/2005	8.69	6.99	7.50	17.53	2.61	1.00	0.0040
5/1/2005	8.67	6.95	7.00	16.62	2.60	1.00	0.0040
6/1/2005	8.69	6.96	7.00	16.50	2.74	1.00	0.0040
7/1/2005	9.13	6.99	7.00	16.32	2.96	1.00	0.0040
8/1/2005	9.13	6.97	7.00	15.86	3.23	1.00	0.0040
9/1/2005	9.13	7.01	7.00	15.89	3.29	1.00	0.0040
10/1/2005	9.81	7.09	7.00	15.92	3.12	1.00	0.0040
11/1/2005	9.86	7.24	7.00	15.38	3.72	1.00	0.0040
12/1/2005	9.92	7.55	7.00	14.87	3.93	1.00	0.0040
1/1/2006	10.16	7.61	7.00	14.76	3.94	1.25	0.0040
2/1/2006	10.27	7.55	7.00	14.69	4.26	1.25	0.0040
3/1/2006	10.30	7.44	7.00	14.51	4.37	1.25	0.0100

Source: Datastream

Exhibit 3 – Exchange Rates (Dec 2003-February 2006)

Dates	Iceland ISK/USD	New Zealand NZD/USD	South Africa ZAR/USD	Turkey YTL/USD	Japan JPY/USD	EURO Zone EUR/USD
11/28/2003	74.58	0.64	6.39	1.46	109.63	0.83
12/31/2003	70.97	0.66	6.68	1.41	107.22	0.79
1/30/2004	69.35	0.67	7.07	1.34	105.71	0.80
2/27/2004	69.33	0.69	6.63	1.33	109.11	0.80
3/31/2004	71.86	0.67	6.29	1.31	104.22	0.81
4/30/2004	73.72	0.63	6.99	1.42	110.52	0.83
5/31/2004	71.56	0.63	6.52	1.50	109.51	0.82
6/30/2004	72.46	0.64	6.14	1.48	108.77	0.82
7/30/2004	71.63	0.64	6.27	1.47	111.35	0.83
8/31/2004	71.99	0.66	6.63	1.50	109.17	0.82
9/30/2004	70.56	0.68	6.45	1.51	110.05	0.80
10/29/2004	68.93	0.68	6.10	1.47	105.81	0.78
11/30/2004	64.93	0.71	5.80	1.43	103.07	0.75
12/31/2004	61.54	0.72	5.67	1.35	102.63	0.74
1/31/2005	61.93	0.71	5.99	1.34	103.70	0.77
2/28/2005	60.68	0.73	5.82	1.28	104.63	0.76
3/31/2005	60.58	0.71	6.24	1.35	107.15	0.77
4/29/2005	63.26	0.73	6.09	1.39	104.75	0.78
5/31/2005	64.82	0.70	6.81	1.36	108.57	0.81
6/30/2005	64.94	0.70	6.65	1.34	110.92	0.83
7/29/2005	64.74	0.68	6.58	1.33	112.50	0.82
8/31/2005	62.51	0.70	6.37	1.34	110.60	0.81
9/30/2005	61.07	0.69	6.37	1.35	113.51	0.83
10/31/2005	60.88	0.70	6.70	1.35	116.40	0.83
11/30/2005	63.11	0.70	6.46	1.35	119.81	0.85
12/30/2005	63.13	0.68	6.33	1.35	117.75	0.84
1/31/2006	62.42	0.69	6.06	1.32	117.20	0.82
2/28/2006	65.16	0.66	6.17	1.31	115.77	0.84

Source: Bloomberg and Financial Times

ISK is Icelandic Krona; NZD is New Zealand Dollar; ZAR is South African Rand; YTL is New Turkish Lira; USD is US Dollar; JPY is Japanese Yen; EUR is Euro

Exhibit 4 – Stock Index Performance (Dec 2003-February 2006)

Dates	Iceland[1]	New Zealand[2]	South Africa[3]	Turkey[4]
12/30/03	2114	850	10441	18625
1/30/04	2391	865	10872	17259
2/27/04	2629	852	10919	18889
3/31/04	2551	876	11058	20191
4/30/04	2698	891	11128	18023
5/31/04	2665	873	11159	17081
6/30/04	2955	906	11147	17968
7/30/04	3111	938	11172	19381
8/31/04	3390	917	11798	20218
9/30/04	3802	942	12532	21954
10/29/04	3364	931	13090	22900
11/30/04	3441	983	14457	22486
12/31/04	3360	1008	15064	24972
1/31/05	3697	1012	15002	27330
2/28/05	3770	1045	15365	28396
3/31/05	3917	983	15045	25558
4/29/05	4109	954	14485	23592
5/31/05	4041	964	15378	25236
6/30/05	4134	1019	15806	26957
7/29/05	4307	1056	17097	29615
8/31/05	4678	1039	17336	30908
9/30/05	4630	1057	18352	33333
10/31/05	4677	1007	17927	31964
11/30/05	5105	1006	18197	38089
12/30/05	5534	1020	19713	39778
1/31/06	6272	1000	21158	44590
2/28/06	6592	1001	21073	47016

Source: [1] Iceland Stock Exchange (Kauphoell Islands), ICE 15 Index

[2] Bloomberg, NZX All Index

[3] Bloomberg, Jalex 140 Index

[4] Bloomberg, XU100 Index

Exhibit 5 – Regression Results for ISK/JPY (monthly observations: 2004-2005)

$\Delta S(ISK/JPY) = \alpha + \beta (R_{ISK}-R_{JPY}) + \epsilon$

R_{ISK} is the 1-month interbank rate for Iceland
R_{JPY} is the 1-month T-bill rate for Japan

Parameter	Value	Standard deviation	Student's t	Pr > t	Lower bound 95 %	Upper bound 95 %
Intercept	0.010	0.030	0.349	0.730	-0.051	0.072
RISK-RJPY	-0.003	0.004	-0.709	0.486	-0.011	0.005

R (coefficient of correlation)	0.149
R^2 (coefficient of determination)	0.022
R^2adj. (adjusted coefficient of determination)	-0.022
SSR	0.025

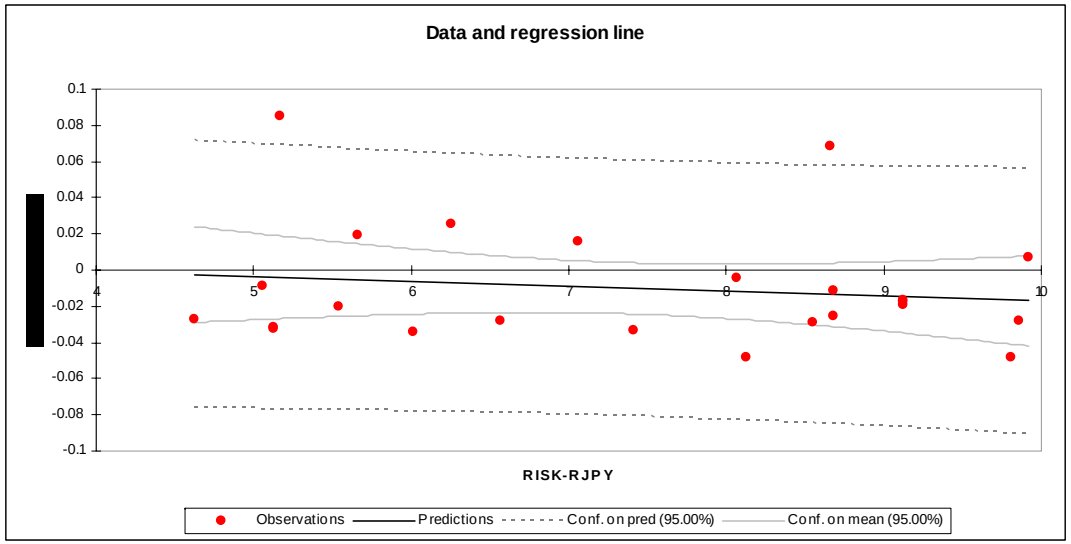

Exhibit 6 – Regression Results for NZD/JPY (monthly observations: 2004-2005)

Δ S(NZD/JPY) = α + β (R_{NZD}-R_{JPY}) + Є

R_{NZD} is the 1-month interbank rate for New Zealand
R_{JPY} is the 1-month T-bill rate for Japan

Parameter	Value	Standard deviation	Student's t	Pr > t	Lower bound 95 %	Upper bound 95 %
Intercept	0.076	0.095	0.801	0.431	-0.121	0.273
RNZD-RJPY	-0.012	0.015	-0.793	0.436	-0.042	0.019

R (coefficient of correlation)	0.167
R^2 (coefficient of determination)	0.028
R^2adj. (adjusted coefficient of determination)	-0.016
SSR	0.045

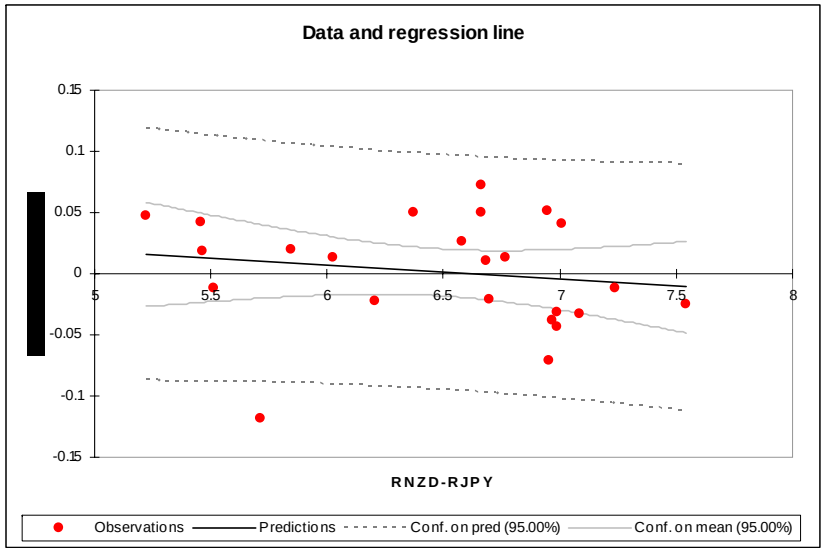

Exhibit 7 – Regression Results for YTL/JPY (monthly observations: 2004-2005)

$\Delta S(YTL/JPY) = \alpha + \beta (R_{YTL}-R_{JPY}) + \epsilon$

R_{YTL} is the 1-month offered rate for Turkey
R_{JPY} is the 1-month T-bill rate for Japan

Parameter	Value	Standard deviation	Student's t	Pr > t	Lower bound 95 %	Upper bound 95 %
Intercept	-0.031	0.040	-0.788	0.439	-0.113	0.051
RYTL-RJP'	0.001	0.002	0.642	0.528	-0.003	0.005

R (coefficient of correlation)	0.136
R^2 (coefficient of determination)	0.018
R^2adj. (adjusted coefficient of determination)	-0.026
SSR	0.029

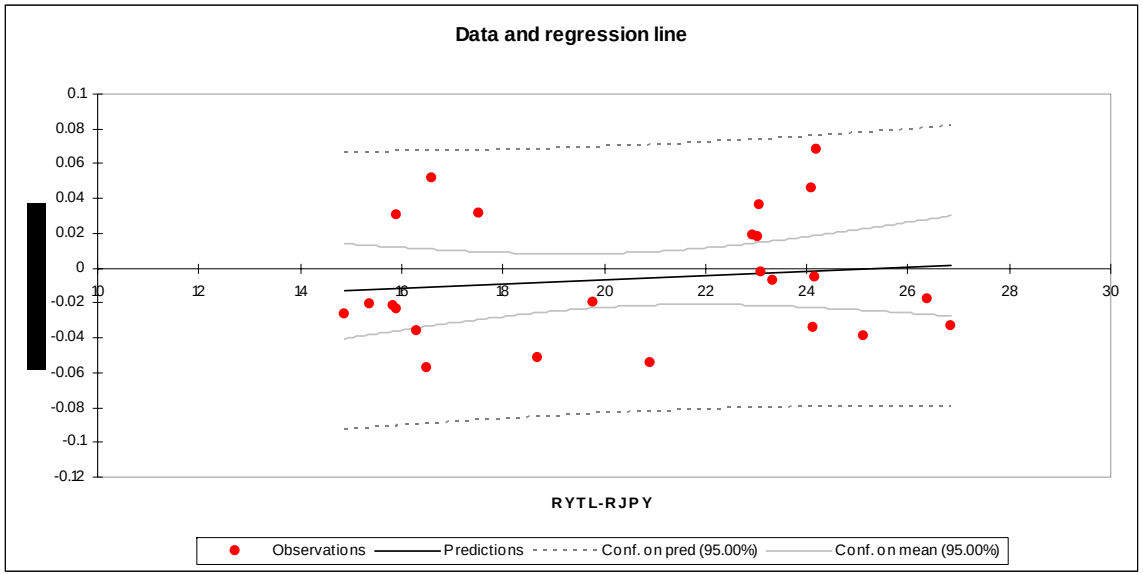

Exhibit 8 – Monthly return and return volatility of carry trades – borrowing in Yen

Dates	Borrow in Japan, invest in Iceland		Borrow in Japan, invest in New Zealand		Borrow in Japan, invest in South Africa		Borrow in Japan, invest in Turkey	
	Cumulative Returns (R_{ISK} in JPY-R_{JPY})/1¥	Monthly Returns (R_{ISK} in JPY-R_{JPY})/1¥	Cumulative Returns (R_{NZD} in JPY-R_{JPY})/1¥	Monthly Returns (R_{NZD} in JPY-R_{JPY})/1¥	Cumulative Returns (R_{ZAR} in JPY-R_{JPY})/1¥	Monthly Returns (R_{ZAR} in JPY-R_{JPY})/1¥	Cumulative Returns (R_{YTL} in JPY-R_{JPY})/1¥	Monthly Returns (R_{YTL} in JPY-R_{JPY})/1¥
12/1/03								
1/1/04	3%	3%	-4%	-4%	-6%	-6%	4%	4%
2/1/04	5%	1%	-8%	-4%	-12%	-6%	10%	6%
3/1/04	8%	4%	-6%	2%	-2%	10%	17%	7%
4/1/04	0%	-8%	-7%	-1%	-1%	1%	15%	-2%
5/1/04	4%	4%	6%	13%	-5%	-4%	16%	0%
6/1/04	7%	3%	4%	-2%	2%	7%	10%	-5%
7/1/04	5%	-2%	3%	-1%	8%	6%	13%	3%
8/1/04	9%	4%	6%	3%	9%	1%	19%	6%
9/1/04	7%	-2%	1%	-5%	2%	-7%	17%	-3%
10/1/04	11%	4%	-1%	-2%	6%	4%	20%	3%
11/1/04	10%	-1%	-5%	-4%	9%	3%	20%	0%
12/1/04	14%	4%	-11%	-6%	12%	3%	22%	3%
1/1/05	21%	7%	-11%	0%	15%	3%	32%	10%
2/1/05	22%	1%	-9%	2%	10%	-5%	36%	5%
3/1/05	26%	5%	-9%	0%	16%	5%	47%	10%
4/1/05	31%	4%	-5%	5%	11%	-5%	44%	-2%
5/1/05	23%	-7%	-9%	-4%	12%	1%	39%	-5%
6/1/05	26%	2%	-1%	7%	4%	-8%	50%	11%
7/1/05	29%	3%	2%	4%	10%	6%	58%	8%
8/1/05	32%	3%	7%	5%	13%	3%	63%	6%
9/1/05	36%	3%	3%	-4%	16%	3%	61%	-3%
10/1/05	44%	8%	8%	4%	19%	4%	67%	6%
11/1/05	49%	5%	10%	2%	17%	-2%	72%	6%
12/1/05	49%	0%	13%	3%	26%	9%	79%	7%
1/1/06	48%	-1%	15%	2%	27%	1%	79%	0%
2/1/06	50%	2%	14%	-1%	33%	6%	84%	5%
3/1/06	43%	-7%	18%	4%	30%	-3%	85%	1%
Volatility		**4.05%**		**4.28%**		**4.98%**		**4.58%**

Exhibit 9 – Monthly return and return volatility of carry trades – borrowing in USD

Dates	Borrow in USA, invest in Iceland		Borrow in USA, invest in New Zealand		Borrow in USA, invest in South Africa		Borrow in USA, invest in Turkey	
	Cumulative Returns (R_{ISK} in USD-R_{USD})/1USD	Monthly Returns (R_{ISK} in USD-R_{USD})/1USD	Cumulative Returns (R_{NZD} in USD-R_{USD})/1USD	Monthly Returns (R_{NZD} in USD-R_{USD})/1USD	Cumulative Returns (R_{ZAR} in USD-R_{USD})/1USD	Monthly Returns (R_{ZAR} in USD-R_{USD})/1USD	Cumulative Returns (R_{YTL} in USD-R_{USD})/1USD	Monthly Returns (R_{YTL} in USD-R_{USD})/1USD
12/1/03								
1/1/04	5%	5%	-2%	-2%	-4%	-4%	6%	6%
2/1/04	8%	3%	-4%	-2%	-9%	-5%	14%	8%
3/1/04	9%	0%	-6%	-1%	-2%	7%	17%	3%
4/1/04	5%	-3%	-3%	3%	4%	6%	21%	4%
5/1/04	3%	-2%	4%	7%	-6%	-10%	14%	-7%
6/1/04	6%	4%	4%	-1%	2%	8%	10%	-4%
7/1/04	5%	-1%	3%	0%	9%	7%	13%	3%
8/1/04	7%	2%	4%	0%	7%	-2%	17%	4%
9/1/04	7%	0%	1%	-3%	2%	-5%	16%	-1%
10/1/04	10%	3%	-2%	-3%	5%	3%	18%	2%
11/1/04	13%	3%	-2%	0%	12%	7%	23%	5%
12/1/04	20%	8%	-6%	-4%	18%	6%	29%	6%
1/1/05	28%	7%	-6%	0%	22%	4%	40%	11%
2/1/05	28%	0%	-5%	1%	16%	-6%	43%	4%
3/1/05	31%	3%	-7%	-2%	20%	4%	52%	9%
4/1/05	32%	1%	-4%	2%	12%	-8%	46%	-6%
5/1/05	27%	-5%	-7%	-2%	15%	3%	44%	-2%
6/1/05	24%	-2%	-3%	4%	3%	-12%	49%	5%
7/1/05	25%	0%	-1%	1%	6%	3%	53%	4%
8/1/05	26%	1%	2%	3%	8%	2%	56%	3%
9/1/05	31%	5%	0%	-2%	12%	4%	56%	0%
10/1/05	35%	4%	1%	1%	12%	0%	58%	1%
11/1/05	37%	1%	0%	-1%	7%	-5%	59%	1%
12/1/05	32%	-4%	0%	0%	11%	4%	60%	1%
1/1/06	33%	1%	3%	3%	14%	3%	62%	2%
2/1/06	36%	2%	2%	0%	20%	6%	68%	5%
3/1/06	31%	-5%	7%	5%	18%	-2%	70%	2%
Volatility		**3.41%**		**2.64%**		**5.67%**		**4.12%**

Exhibit 10 – Monthly return and return volatility of carry trades – borrowing in Euro

Dates	Borrow in Euro, invest in Iceland		Borrow in Euro, invest in New Zealand		Borrow in Euro, invest in South Africa		Borrow in Euro, invest in Turkey	
	Cumulative Returns (R_{ISK} in EUR-R_{EUR})/1EUR	Monthly Returns (R_{ISK} in EUR-R_{EUR})/1EUR	Cumulative Returns (R_{NZD} in EUR-R_{EUR})/1EUR	Monthly Returns (R_{NZD} in EUR-R_{EUR})/1EUR	Cumulative Returns (R_{ZAR} in EUR-R_{EUR})/1EUR	Monthly Returns (R_{ZAR} in EUR-R_{EUR})/1EUR	Cumulative Returns (R_{YTL} in EUR-R_{EUR})/1EUR	Monthly Returns (R_{YTL} in EUR-R_{EUR})/1EUR
12/01/03								
01/01/04	11%	11%	3%	3%	1%	1%	12%	12%
02/01/04	13%	2%	-1%	-3%	-5%	-6%	19%	7%
03/01/04	13%	1%	-2%	-1%	2%	7%	22%	4%
04/01/04	8%	-5%	0%	2%	7%	5%	24%	2%
05/01/04	3%	-5%	4%	4%	-6%	-13%	14%	-10%
06/01/04	8%	5%	5%	1%	3%	9%	12%	-2%
07/01/04	7%	-1%	5%	0%	10%	7%	15%	4%
08/01/04	7%	0%	4%	-1%	7%	-3%	17%	2%
09/01/04	9%	1%	3%	-1%	3%	-4%	18%	1%
10/01/04	14%	5%	2%	-1%	9%	6%	23%	5%
11/01/04	20%	7%	4%	3%	19%	10%	31%	9%
12/01/04	33%	13%	4%	0%	31%	12%	43%	12%
01/01/05	45%	11%	6%	2%	38%	7%	58%	15%
02/01/05	39%	-6%	4%	-2%	26%	-12%	56%	-2%
03/01/05	45%	6%	3%	0%	32%	6%	68%	12%
04/01/05	43%	-2%	4%	1%	22%	-11%	58%	-10%
05/01/05	37%	-6%	1%	-3%	24%	3%	55%	-3%
06/01/05	29%	-8%	1%	0%	7%	-18%	54%	-1%
07/01/05	27%	-1%	1%	0%	8%	1%	56%	2%
08/01/05	29%	1%	4%	3%	10%	2%	59%	3%
09/01/05	37%	8%	4%	0%	16%	6%	62%	3%
10/01/05	37%	1%	2%	-1%	14%	-3%	60%	-3%
11/01/05	38%	1%	1%	-1%	8%	-5%	60%	1%
12/01/05	32%	-6%	0%	-2%	11%	3%	59%	-1%
01/01/06	34%	2%	4%	4%	15%	4%	62%	3%
02/01/06	40%	6%	6%	3%	24%	9%	72%	10%
03/01/06	32%	-8%	9%	3%	20%	-4%	71%	-1%
Volatility		**5.94%**		**2.14%**		**7.76%**		**6.21%**

Exhibit 11 – Cumulative Returns on JPY (December 2003-February 2006)

Dates	Borrow 1JPY	Pay Back JPY loan	R-Japan 1 M T-bill rate	(R_{ISK} in JPY-R_{JPY})/1¥	(R_{NZD} in JPY-R_{JPY})/1¥	(R_{ZAR} in JPY-R_{JPY})/1¥	(R_{YTL} in JPY-R_{JPY})/1¥
12/1/2003	1.00	1.0000000	0.0075				
1/1/2004		1.0000063	0.0065	3%	-4%	-6%	4%
2/1/2004		1.0000117	0.0040	5%	-8%	-12%	10%
3/1/2004		1.0000150	0.0040	8%	-6%	-2%	17%
4/1/2004		1.0000183	0.0040	0%	-7%	-1%	15%
5/1/2004		1.0000217	0.0045	4%	6%	-5%	16%
6/1/2004		1.0000254	0.0040	7%	4%	2%	10%
7/1/2004		1.0000288	0.0055	5%	3%	8%	13%
8/1/2004		1.0000333	0.0055	9%	6%	9%	19%
9/1/2004		1.0000379	0.0065	7%	1%	2%	17%
10/1/2004		1.0000433	0.0070	11%	-1%	6%	20%
11/1/2004		1.0000492	0.0045	10%	-5%	9%	20%
12/1/2004		1.0000529	0.0045	14%	-11%	12%	22%
1/1/2005		1.0000567	0.0040	21%	-11%	15%	32%
2/1/2005		1.0045565	0.0035	22%	-9%	10%	36%
3/1/2005		1.0000629	0.0035	26%	-9%	16%	47%
4/1/2005		1.0000658	0.0040	31%	-5%	11%	44%
5/1/2005		1.0000692	0.0040	23%	-9%	12%	39%
6/1/2005		1.0000725	0.0040	26%	-1%	4%	50%
7/1/2005		1.0000758	0.0040	29%	2%	10%	58%
8/1/2005		1.0000792	0.0040	32%	7%	13%	63%
9/1/2005		1.0000825	0.0040	36%	3%	16%	61%
10/1/2005		1.0000858	0.0040	44%	8%	19%	67%
11/1/2005		1.0000892	0.0040	49%	10%	17%	72%
12/1/2005		1.0000925	0.0040	49%	13%	26%	79%
1/1/2006		1.0000958	0.0040	48%	15%	27%	79%
2/1/2006		1.0000992	0.0040	50%	14%	33%	84%
3/1/2006		1.0001025	0.0100	43%	18%	30%	85%

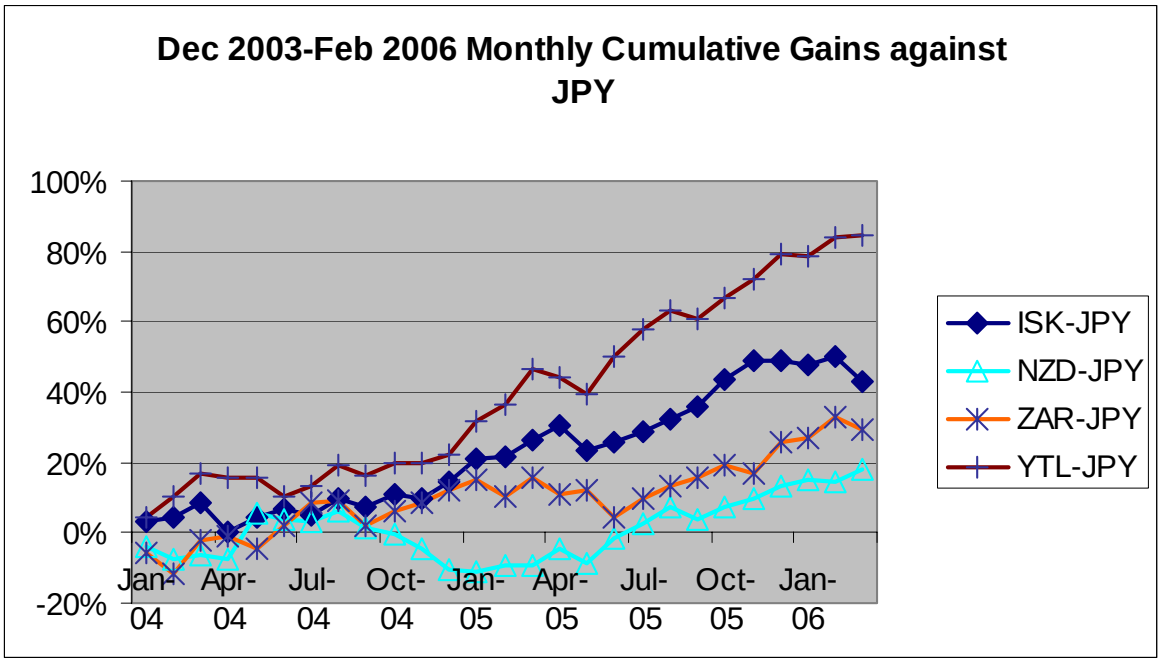

Exhibit 12 – Cumulative Returns on USD (December 2003-February 2006)

Dates	Borrow 1USD	Pay Back USD loan	R-USD 1 M T-bill	(R_{ISK} in USD-R_{USD})/1USD	(R_{NZD} in USD-R_{USD})/1USD	(R_{ZAR} in USD-R_{USD})/1USD	(R_{YTL} in USD-R_{USD})/1USD
12/1/2003	1.00	1.0000	0.94				
1/1/2004		1.0008	0.88	5%	-2%	-4%	6%
2/1/2004		1.0015	0.85	8%	-4%	-9%	14%
3/1/2004		1.0022	0.95	9%	-6%	-2%	17%
4/1/2004		1.0030	0.94	5%	-3%	4%	21%
5/1/2004		1.0038	0.80	3%	4%	-6%	14%
6/1/2004		1.0045	0.93	6%	4%	2%	10%
7/1/2004		1.0053	0.99	5%	3%	9%	13%
8/1/2004		1.0061	1.24	7%	4%	7%	17%
9/1/2004		1.0071	1.41	7%	1%	2%	16%
10/1/2004		1.0083	1.49	10%	-2%	5%	18%
11/1/2004		1.0096	1.74	13%	-2%	12%	23%
12/1/2004		1.0110	2.02	20%	-6%	18%	29%
1/1/2005		1.0127	1.91	28%	-6%	22%	40%
2/1/2005		1.0143	2.20	28%	-5%	16%	43%
3/1/2005		1.0162	2.51	31%	-7%	20%	52%
4/1/2005		1.0183	2.61	32%	-4%	12%	46%
5/1/2005		1.0205	2.60	27%	-7%	15%	44%
6/1/2005		1.0227	2.74	24%	-3%	3%	49%
7/1/2005		1.0251	2.96	25%	-1%	6%	53%
8/1/2005		1.0276	3.23	26%	2%	8%	56%
9/1/2005		1.0304	3.29	31%	0%	12%	56%
10/1/2005		1.0332	3.12	35%	1%	12%	58%
11/1/2005		1.0359	3.72	37%	0%	7%	59%
12/1/2005		1.0391	3.93	32%	0%	11%	60%
1/1/2006		1.0425	3.94	33%	3%	14%	62%
2/1/2006		1.0459	4.26	36%	2%	20%	68%
3/1/2006		1.0496	4.37	31%	7%	18%	70%

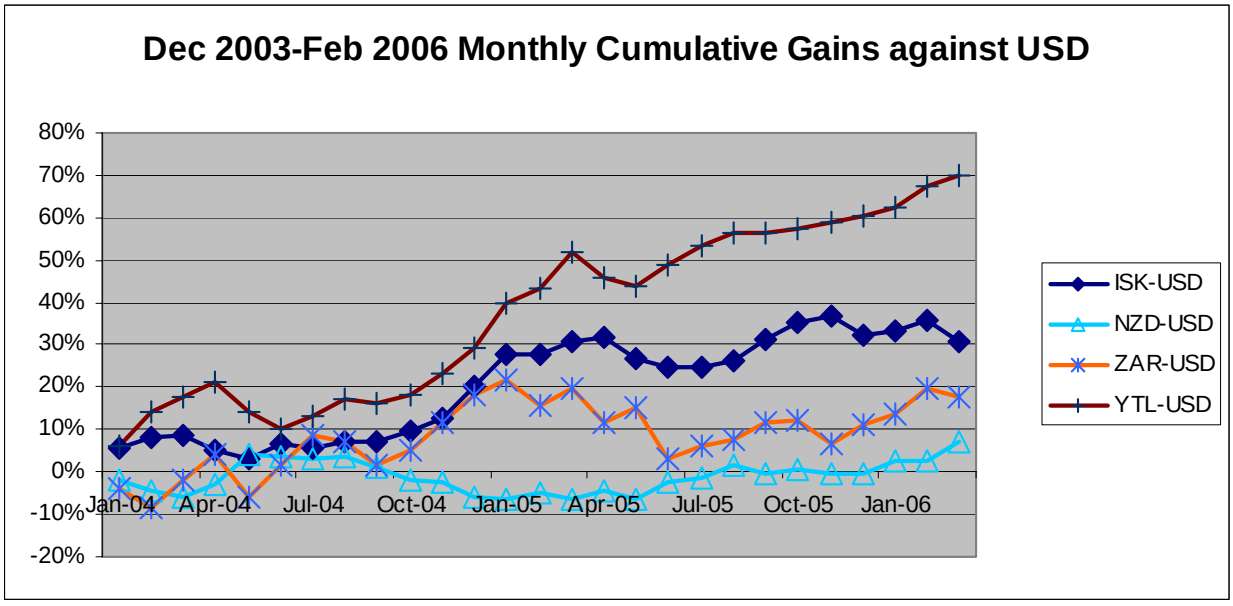

Exhibit 13 – Cumulative Returns on EUR (December 2003-February 2006)

Dates	Borrow 1 EUR	Pay Back EUR loan	R-EUR Overnight Deposit Rate	(R_{ISK} in EUR-R_{EUR})/1EUR	(R_{NZD} in EUR-R_{EUR})/1EUR	(R_{ZAR} in EUR-R_{EUR})/1EUR	(R_{YTL} in EUR-R_{EUR})/1EUR
12/1/2003	1.00	1.0000	1.00				
1/1/2004		1.0008	1.00	11%	3%	1%	12%
2/1/2004		1.0017	1.00	13%	-1%	-5%	19%
3/1/2004		1.0025	1.00	13%	-2%	2%	22%
4/1/2004		1.0033	1.00	8%	0%	7%	24%
5/1/2004		1.0042	1.00	3%	4%	-6%	14%
6/1/2004		1.0050	1.00	8%	5%	3%	12%
7/1/2004		1.0058	1.00	7%	5%	10%	15%
8/1/2004		1.0067	1.00	7%	4%	7%	17%
9/1/2004		1.0075	1.00	9%	3%	3%	18%
10/1/2004		1.0084	1.00	14%	2%	9%	23%
11/1/2004		1.0092	1.00	20%	4%	19%	31%
12/1/2004		1.0100	1.00	33%	4%	31%	43%
1/1/2005		1.0109	1.00	45%	6%	38%	58%
2/1/2005		1.0117	1.00	39%	4%	26%	56%
3/1/2005		1.0126	1.00	45%	3%	32%	68%
4/1/2005		1.0134	1.00	43%	4%	22%	58%
5/1/2005		1.0143	1.00	37%	1%	24%	55%
6/1/2005		1.0151	1.00	29%	1%	7%	54%
7/1/2005		1.0160	1.00	27%	1%	8%	56%
8/1/2005		1.0168	1.00	29%	4%	10%	59%
9/1/2005		1.0176	1.00	37%	4%	16%	62%
10/1/2005		1.0185	1.00	37%	2%	14%	60%
11/1/2005		1.0193	1.00	38%	1%	8%	60%
12/1/2005		1.0202	1.00	32%	0%	11%	59%
1/1/2006		1.0210	1.25	34%	4%	15%	62%
2/1/2006		1.0221	1.25	40%	6%	24%	72%
3/1/2006		1.0232	1.25	32%	9%	20%	71%