COMMERZBANK

Cross Asset Feature

18 June 2010

The value of weekly fund flow data

How fund flow data helps to improve tactical asset allocation

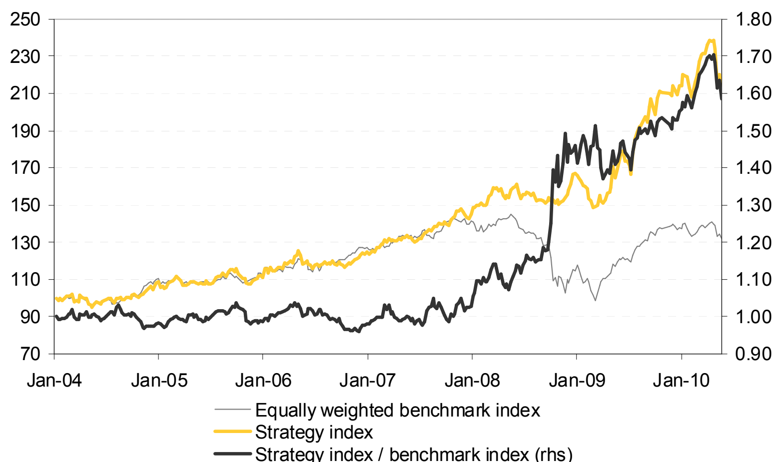
When deciding on tactical asset allocation, investors often support their decision-making using a scoring system that ranks the asset classes according to various criteria. Based on weekly fund flows since 2001, this article reveals that fund flow data can add significant value to such a scoring system. It shows that fund flow data allows one to achieve excess returns versus equally-weighted benchmarks in tactical regional equity allocation, tactical fixed income sector allocation, and tactical equity versus bond allocation. Investors can find the relevant fund flow information necessary to implement the backtested strategies in our weekly *Cross Asset Monitor*.

When deciding on tactical asset allocation, investors often support their decision-making using a scoring system that ranks the asset classes according to various criteria. In this article, we analyse whether fund flows add value to such a scoring system. Money flows are the ultimate drivers of asset prices. But it is not just that money flows drive performance – good asset performance also tends to attract money flows. This interplay means fund flows tend to show some inertia, and as such should contain some momentum information.

It is not the first time that we examine the predictive power of fund flows.[1] However, our previous analysis was based on data up to summer 2006 only. We wonder whether fund flow data would have helped during the volatile market conditions observed since then.

Based on backtests of simple investment strategies utilising only weekly fund flow information, this note shows that fund flow information improves tactical asset allocation decisions. In particular, it shows that successful regional equity allocation and fixed-income sector allocation strategies can be derived based only on the relative strength of the four-week average fund flow as a percentage of assets under management (AuM). Moreover, using the direction of the flows into or out of risk assets and into or out of money markets as indicators of risk appetite, highly successful bond-equity allocation strategies can be implemented.

CHART 1: **Global equity vs global bond allocation strategy solely based on fund-flow data vs equally weighted benchmark** (for details see pp. 7+8)



Source: EPFR, Datastream, Commerzbank Corporates & Markets Our backtested models do not include relevant transaction costs or taxes. Past performance may not be a reliable guide to future performance.

Analysts

Dr. Bernd Meyer, CFA

Head of Cross Asset Strategy
+49 69 136 87788
dr.bernd.meyer@commerzbank.com

Bloomberg: CBIR
cbcm.commerzbank.com

[1] See, for example, Bernd Meyer, Joelle Anamootoo and Ingo Schmitz: “The Predictive Power of Weekly Fund Flows”, The Technical Analyst, June 2008, pp. 19-26.

For important disclosure information please see pages 9 and 10

Data and methodology

We aim to analyse the predictive power of fund flows for

- Regional equity allocation.
- Sector allocation in the fixed-income space.
- Allocation between equities and bonds.

EPFR tracks funds on a global basis for a mix of retail and institutional investors

We use weekly fund flows provided by Emerging Portfolio Fund Research (EPFR, www.epfr.com). EPFR tracks funds and ETFs on a global basis. The investors are a mix of retail and institutional investors. EPFR estimates that 70% of them are institutional, mainly pension funds and insurance companies. In our analysis we focus on the following fund categories that are available on a weekly basis: seven equity regions (US, Western Europe, Japan, Pacific, EMEA, Asia ex-Japan, LatAm), three fixed-income sectors (US bonds, EM bonds, HY bonds), money market funds as well as the aggregates, all equities and all bonds. Chart 2 summarises the number and total assets of the funds in the EPFR universe.

CHART 2: **Number and size of funds in the EPFR universe for weekly fund flows**

As at 02/06/2010	Asset under Management ($bn)	Number of Funds		Asset under Management ($bn)	Number of Funds
All equities funds	**3,167**	**14,284**	**All bond funds**	**1,273**	**5,232**
Developed market equity funds	**2,666**	**11,585**	US Bonds	728	2,559
US	1,666	5,758	EM Bonds	81	689
Europe	263	1,972	High Yield	129	578
Japan	34	562	Int. Bonds	335	1,406
Pacific	19	176			
International equitiy funds	684	3,117	**Others**	**3,029**	**2,246**
Emerging market equity funds	**501**	**2,699**	Money Market	2,784	1,735
EMEA	34	493	Balanced	245	511
Asia Ex-Japan	180	1,211			
Latin America	45	229	**Total**	**7,829**	**23,650**
Global Emerging Markets	243	766			

Source: EPFR, Commerzbank Corporates & Markets

Weekly equity fund flows are generally available from late 2000 onwards. Japan is the only exception, with data starting in October 2001. Aggregated bond fund flows also start in 2001. Unfortunately the more detailed fixed-income sectors are only covered from May 2003 (HY and US bond funds) and early 2004 (EM bond funds). Data on money market fund flows finally started only in January 2007.

We focus on fund flows as a proportion of assets under management…

To avoid double counting and strong volatility in flows, we focus on pure fund flows, i.e. excluding ETF flows. We are concerned only with fund flows as a proportion of assets under management (AuM) and not the absolute volume of flows, as the funds covered by EPFR are a representative sample only and EPFR has widened its coverage of fund flows over time.

The cut-off point for the inclusion of data by EPFR is Wednesday close of business. After collation, the fund flow statistics are published each Thursday evening US time and can be found in our weekly *Cross Asset Monitor*.

The strategies we show either reallocate each Friday at close of business based on the fund flow data published the evening before or, taking a more practical approach, reallocate at the end of each month based on the latest available fund flow data.

… in particular the four-week average of flows, to reduce volatility and extract the major trends

All strategies are based on four-week average flows as a percentage of AuM rather than solely on the last weekly observation. This reduces volatility and allows the extraction of major trends in flows. Moreover, for strategies with monthly reallocation, the four-week average comprises all information from the previous month. Results do in some cases even improve when using alternatives such as five-week average flows or three-week average flows. However, to avoid falling into the trap of data mining, we stick to four-week averages for all analyses.

(1) Predictive power of fund flows for regional equity allocation

For equity allocation, we first allocate across seven regions and then simply switch between developed and emerging market equities

Here we assess whether the relative strength of flows for different regions contains any explanatory power for subsequent relative performance of the regions. We use two approaches. First, we look at the seven main regions covered by the EPFR fund flow data: Western Europe, the US, Japan, Pacific, Latin-America, Asia ex Japan, and EMEA. Second, we only distinguish between equity markets in emerging and developed economies. The benchmark is in both cases an equally weighted portfolio of the respective region, readjusted weekly. We apply MSCI total return indices in dollars for the individual regions and assume the investment decision is implemented based on Friday's closing prices.

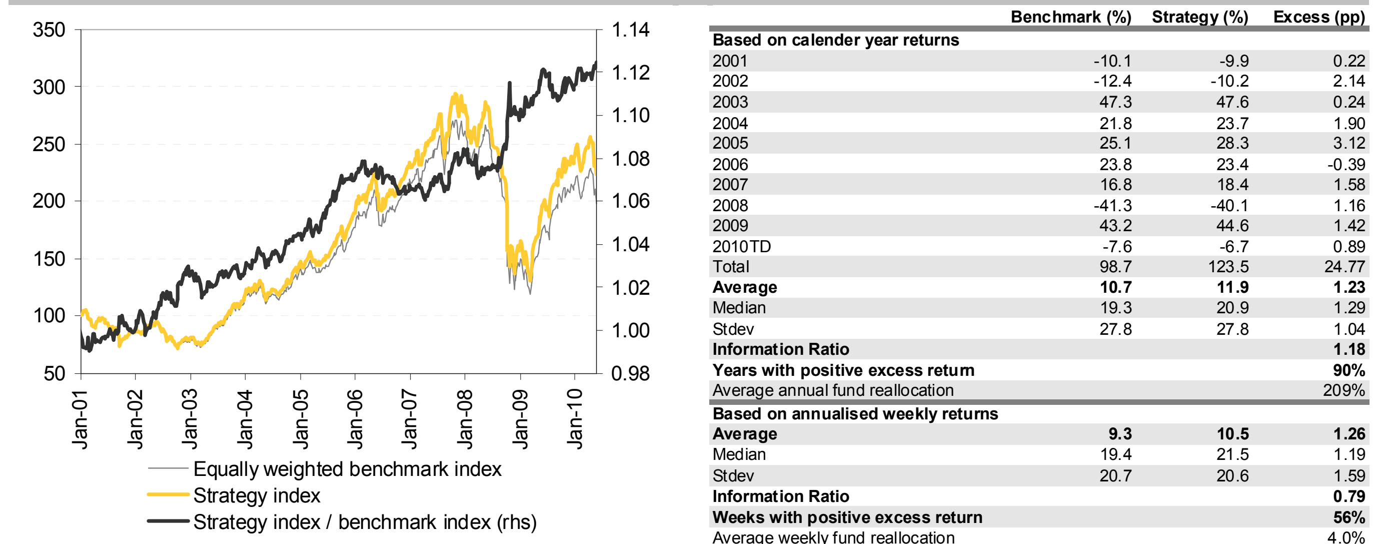
Relative allocation across seven equity regions

In the first approach, the cross-sectional comparison of the flows is based on the four-week average flow as a percentage of AuM. Each week we normalise these seven observations by calculating the cross-sectional z-score. These z-scores are capped at 2 to reduce the impact of outliers.[2] We ensure though, that the sum of the z-scores equals zero. The strategy takes active bets relative to the benchmark with the size and the direction of the active bet similar to the z-score of the flows times a fixed multiplier. For example, if a region has a z-score of 1, we add one percentage point, times the multiplier, to the initial weighting of 14.3% (=1/7) to that region. Therefore every week we adjust our positions in all seven regions around their initial positions of 14.3%, depending on their respective z-score values. We apply a multiplier of four, meaning that the absolute size of the maximum active bet equals 8pp.

Weekly allocation across seven regions leads to a statistically significant information ratio of 1.18 over 10 years

This strategy outperformed the market in 9 of the 10 years since the end of 2000 (Chart 3). The only year the strategy underperformed was 2006, when it lost 39bps relative to the benchmark. In total, the strategy outperformed by 25pp. The average excess return per calendar year is 1.23pp with a standard deviation of only 1.04, resulting in a statistically significant information ratio of 1.18.[3] Some 56% of the weekly excess returns have been positive. Fund reallocations of 209% of the portfolio size were needed annually, suggesting that an excess return can be generated even including transaction costs.

CHART 3: **Weekly regional equity allocation based on relative strength of four-week average fund flows**



	Benchmark (%)	Strategy (%)	Excess (pp)
Based on calender year returns			
2001	-10.1	-9.9	0.22
2002	-12.4	-10.2	2.14
2003	47.3	47.6	0.24
2004	21.8	23.7	1.90
2005	25.1	28.3	3.12
2006	23.8	23.4	-0.39
2007	16.8	18.4	1.58
2008	-41.3	-40.1	1.16
2009	43.2	44.6	1.42
2010TD	-7.6	-6.7	0.89
Total	98.7	123.5	24.77
Average	**10.7**	**11.9**	**1.23**
Median	19.3	20.9	1.29
Stdev	27.8	27.8	1.04
Information Ratio			**1.18**
Years with positive excess return			**90%**
Average annual fund reallocation			209%
Based on annualised weekly returns			
Average	**9.3**	**10.5**	**1.26**
Median	19.4	21.5	1.19
Stdev	20.7	20.6	1.59
Information Ratio			**0.79**
Weeks with positive excess return			**56%**
Average weekly fund reallocation			4.0%

Source: EPFR, Datastream, Commerzbank Corporates & Markets

Our back-tested models do not include relevant transaction costs or taxes. Past performance may not be a reliable guide to future performance.

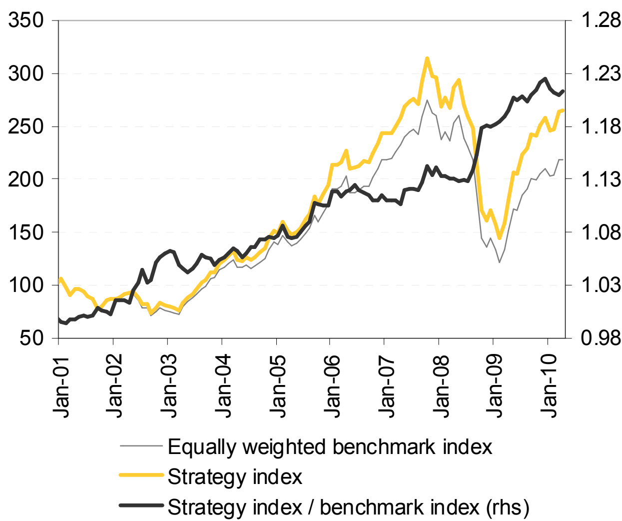
[2] The analysis starts at the end of 2000. As Japanese fund flows are only available from October 2001, we initially focus on six regions only. During this initial phase, the benchmark is thus also an average of the six regions.

[3] The information ratio relates the average excess return to the standard deviation of the excess return. The latter is often called the tracking error. While the size of the active weights taken affects the excess return and the tracking error, the information ratio is independent of the size of the active weights. It is therefore the preferred measure of the information content/allocation skill of a strategy or a fund manager. The higher the information ratio and the longer the time period over which it is measured, the higher the statistical significance of the results. As a rule-of-thumb, if the square root of the number of years times the information ratio exceeds 3, the results are highly significant.

Monthly allocation across seven regions yields similarly convincing results

Now, let's take a more practical course of action. Rather than reallocating each Friday, the portfolio will now be reallocated at the end of each month, based on the latest available fund flow information. Once again we use scoring based on the four-week average flow as a percentage of AuM as described above. It is very encouraging to find that this strategy leads to practically the same convincing results (Chart 4). The overall excess return is even larger and the average annual fund reallocation drops to 177%. The information ratio of this strategy remains statistically significant.

CHART 4: **End of month regional equity allocation based on relative strength of four-week average fund flows**



	Benchmark (%)	Strategy (%)	Excess (pp)
Based on calender year returns			
2001	-13.2	-12.9	0.21
2002	-11.3	-6.2	5.13
2003	48.9	48.0	-0.95
2004	22.8	25.2	2.39
2005	25.2	28.9	3.70
2006	23.7	24.6	0.96
2007	19.2	22.0	2.84
2008	-44.5	-42.6	1.89
2009	45.7	51.2	5.50
2010TD	4.0	3.0	-0.99
Total	118.6	165.1	46.53
Average	**12.1**	**14.1**	**2.07**
Median	21.0	23.3	2.14
Stdev	28.7	28.9	2.30
Information Ratio			**0.90**
Years with positive excess return			**80%**
Average annual fund reallocation			177%
Based on calender month returns			
Average	**10.4**	**12.5**	**2.09**
Median	23.3	24.1	1.17
Stdev	19.6	19.7	1.94
Information Ratio			**1.07**
Months with positive excess return			**54%**
Average monthly fund reallocation			14.8%

Source: EPFR, Datastream, Commerzbank Corporates & Markets

Our back-tested models do not include relevant transaction costs or taxes. Past performance may not be a reliable guide to future performance.

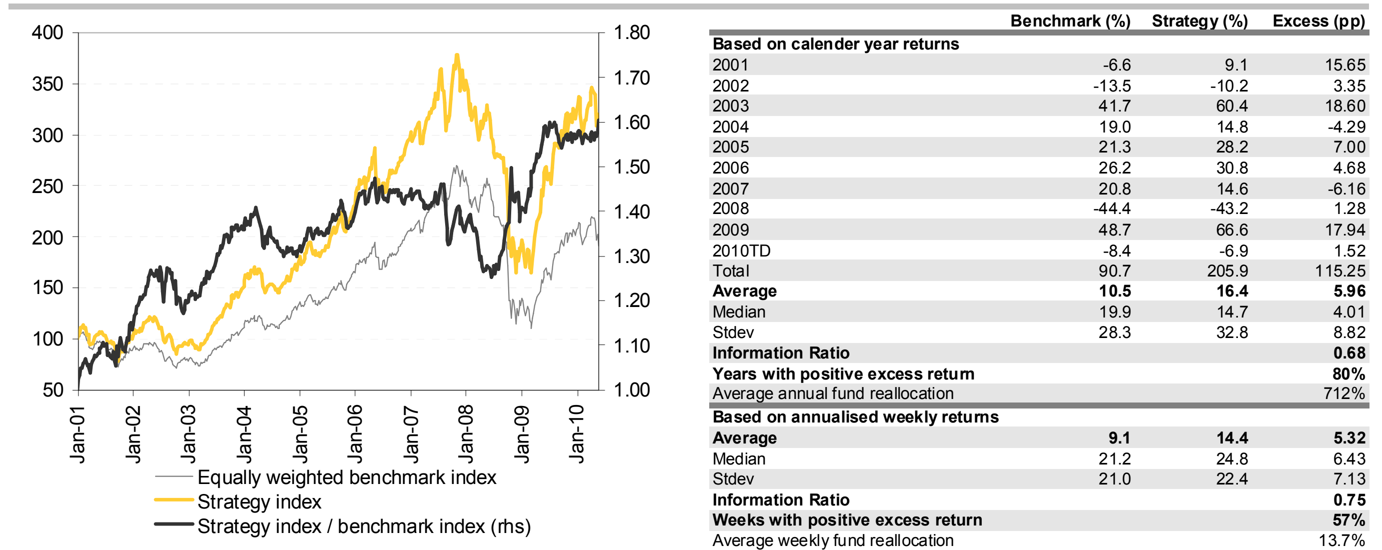
Switching between developed and emerging market equities

The second approach reallocates solely between developed market equities (MSCI World in dollars) and emerging market equities (MSCI Emerging Markets in dollars) on a weekly basis. The strategy is fully invested in the region that has seen the strongest inflow or the lowest outflow of both, based on the four-week average flow as a percentage of AuM – thus it is a 'best-of-two' strategy. The benchmark is equally weighted in developed market and emerging market equities on a monthly basis.

Weekly allocation between developed market and EM equities would have resulted in 6pp average annual excess return since 2001

As shown in Chart 5, this strategy outperformed the market in 8 of the 10 years since the end of 2000. Only in 2004 and in 2007 did it lose 4.29pp and 6.16pp relative to the benchmark. In total, the strategy outperformed by 115pp. The average excess return per calendar year was 5.96pp with a standard deviation of 8.02, resulting in an information ratio of 0.68. Some 57% of the weekly excess returns were positive. In an average calendar year, the strategy switched seven times between the two regions, in other words the average duration without a switch was slightly less than two months.

CHART 5: **Weekly ‘best-of-two’ strategy for developed and emerging market equities based on relative strength of four-week average fund flows**



	Benchmark (%)	Strategy (%)	Excess (pp)
Based on calender year returns			
2001	-6.6	9.1	15.65
2002	-13.5	-10.2	3.35
2003	41.7	60.4	18.60
2004	19.0	14.8	-4.29
2005	21.3	28.2	7.00
2006	26.2	30.8	4.68
2007	20.8	14.6	-6.16
2008	-44.4	-43.2	1.28
2009	48.7	66.6	17.94
2010TD	-8.4	-6.9	1.52
Total	90.7	205.9	115.25
Average	**10.5**	**16.4**	**5.96**
Median	19.9	14.7	4.01
Stdev	28.3	32.8	8.82
Information Ratio			**0.68**
Years with positive excess return			**80%**
Average annual fund reallocation			712%
Based on annualised weekly returns			
Average	**9.1**	**14.4**	**5.32**
Median	21.2	24.8	6.43
Stdev	21.0	22.4	7.13
Information Ratio			**0.75**
Weeks with positive excess return			**57%**
Average weekly fund reallocation			13.7%

Source: EPFR, Datastream, Commerzbank Corporates & Markets

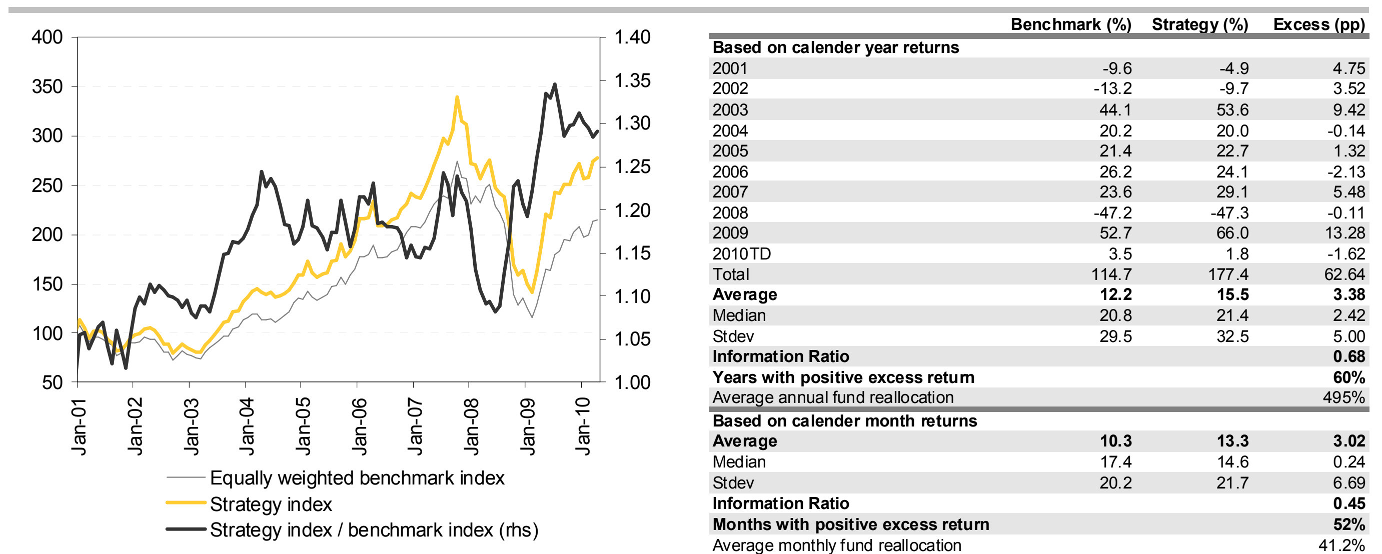
Our back-tested models do not include relevant transaction costs or taxes. Past performance may not be a reliable guide to future performance.

Monthly allocation between developed market and EM equities would have still resulted in an information ratio of 0.68 since 2001

Similarly to the first approach with the allocation across seven equity regions, we also test the more practical course of action with reallocation at the end of each month. Thus, at the end of each month we look at the latest available four-week average fund flow as a percentage of AuM for developed and emerging market equities and invest fully into the region with the strongest flow.

The results (Chart 6) are not as strong as for the weekly switching. However, the annual excess return is still above 3pp with an information ratio of 0.68. In an average year, the strategy switches five times between both regions, i.e. about once each quarter on average.

CHART 6: **End-of-month ‘best-of-two’ strategy for developed and EM equities based on relative strength of four-week average fund flows**



	Benchmark (%)	Strategy (%)	Excess (pp)
Based on calender year returns			
2001	-9.6	-4.9	4.75
2002	-13.2	-9.7	3.52
2003	44.1	53.6	9.42
2004	20.2	20.0	-0.14
2005	21.4	22.7	1.32
2006	26.2	24.1	-2.13
2007	23.6	29.1	5.48
2008	-47.2	-47.3	-0.11
2009	52.7	66.0	13.28
2010TD	3.5	1.8	-1.62
Total	114.7	177.4	62.64
Average	**12.2**	**15.5**	**3.38**
Median	20.8	21.4	2.42
Stdev	29.5	32.5	5.00
Information Ratio			**0.68**
Years with positive excess return			**60%**
Average annual fund reallocation			495%
Based on calender month returns			
Average	**10.3**	**13.3**	**3.02**
Median	17.4	14.6	0.24
Stdev	20.2	21.7	6.69
Information Ratio			**0.45**
Months with positive excess return			**52%**
Average monthly fund reallocation			41.2%

Source: EPFR, Datastream, Commerzbank Corporates & Markets

Our back-tested models do not include relevant transaction costs or taxes. Past performance may not be a reliable guide to future performance.

Overall, the results of both approaches clearly suggest that the relative strength of weekly fund flows does indeed add significant value to models for regional equity allocation.

(2) Predictive power of fund flows for FI sector allocation

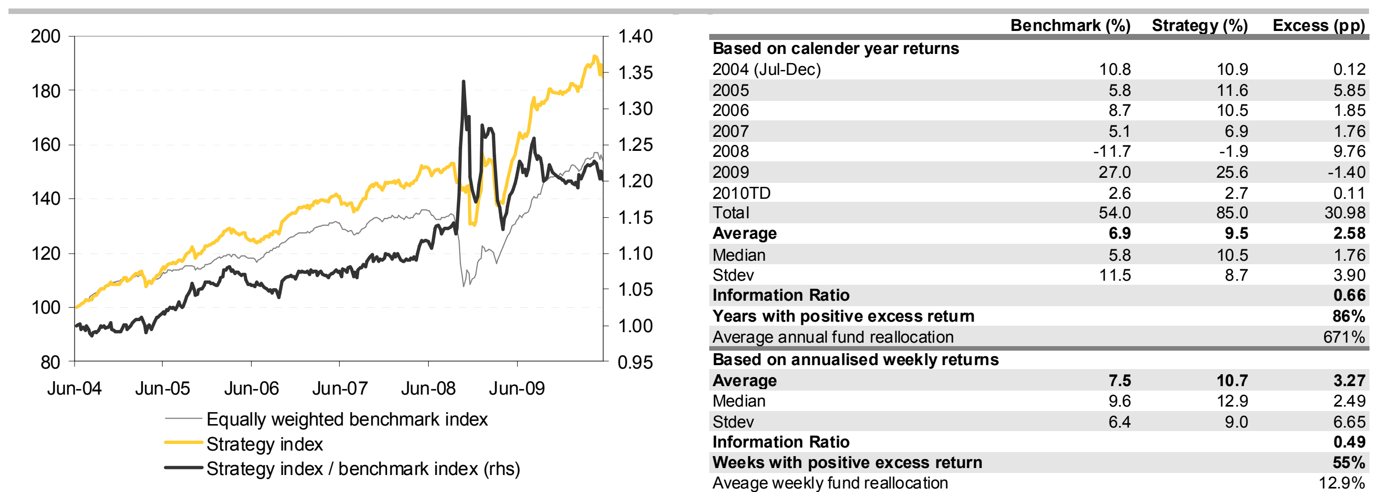
Despite the limited history available, the results suggest that fund flow data also contain predictive power for sector allocation in the fixed-income space

Given the encouraging results for regional equity allocation, let us now examine a similar strategy in the fixed-income space. Unfortunately, bond fund flow data for the individual sectors, emerging market bonds, high yield bonds and US bonds, are only completely available from early 2004. To measure the total return of the individual fixed income sectors we use the following total return indices, iBoxx $ Overall, ML $ Emerging Market Sovereign and iBoxx $ Liquid HY.

In the first approach we once again reallocate each Friday at close of business. We fully invested in the sector showing the strongest four-week average fund flow as a percentage of AuM based on the data published on Friday morning. Hence, this is a 'best-of-three' strategy. The benchmark is an equally weighted average of the three sectors with weekly adjustment.

As Chart 7 shows, this strategy would have outperformed the equally-weighted benchmark in six out of seven years since 2004. The excess return per calendar year would have been 2.58pp with a standard deviation of 3.9, yielding an information ratio of 0.66. On average, one would have switched 6.7 times per year between the different sectors.

CHART 7: **Weekly 'best-of-three' strategy for fixed-income sectors based on relative strength of four-week average fund flows as a percentage of AuM**



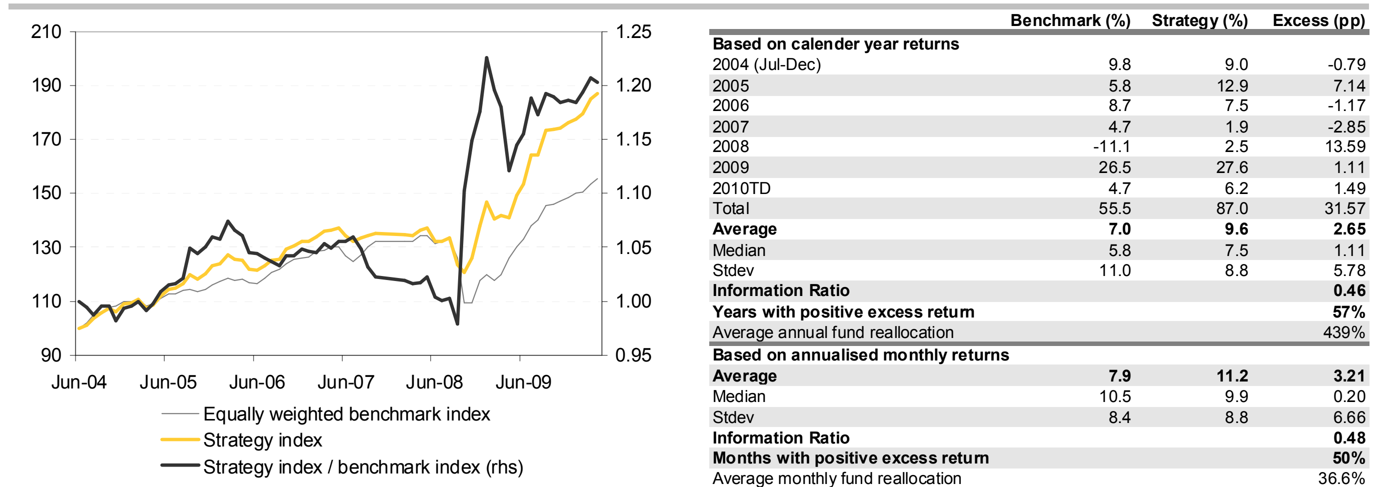
	Benchmark (%)	Strategy (%)	Excess (pp)
Based on calender year returns			
2004 (Jul-Dec)	10.8	10.9	0.12
2005	5.8	11.6	5.85
2006	8.7	10.5	1.85
2007	5.1	6.9	1.76
2008	-11.7	-1.9	9.76
2009	27.0	25.6	-1.40
2010TD	2.6	2.7	0.11
Total	54.0	85.0	30.98
Average	**6.9**	**9.5**	**2.58**
Median	5.8	10.5	1.76
Stdev	11.5	8.7	3.90
Information Ratio			**0.66**
Years with positive excess return			**86%**
Average annual fund reallocation			671%
Based on annualised weekly returns			
Average	**7.5**	**10.7**	**3.27**
Median	9.6	12.9	2.49
Stdev	6.4	9.0	6.65
Information Ratio			**0.49**
Weeks with positive excess return			**55%**
Aveage weekly fund reallocation			12.9%

Source: EPFR, Datastream, Commerzbank Corporates & Markets

Our back-tested models do not include relevant transaction costs or taxes. Past performance may not be a reliable guide to future performance.

The second approach once again reallocates only at the end of each month based on the latest available information. The benchmark is thus equally-weighted with monthly adjustment. As Chart 8 shows, the results are somewhat weaker. Despite an excess return similar to that achieved with weekly reallocation, the information ratio is weaker due to the substantially higher standard deviation of excess returns. It is noteworthy though, that the average annual reallocation declined to 4.4 times, and that the annual strategy returns continue to have substantially lower volatility than the annual benchmark returns.

CHART 8: **End-of-month 'best-of-three' strategy for fixed-income sectors based on relative strength of four-week average fund flows as a percentage of AuM**



	Benchmark (%)	Strategy (%)	Excess (pp)
Based on calender year returns			
2004 (Jul-Dec)	9.8	9.0	-0.79
2005	5.8	12.9	7.14
2006	8.7	7.5	-1.17
2007	4.7	1.9	-2.85
2008	-11.1	2.5	13.59
2009	26.5	27.6	1.11
2010TD	4.7	6.2	1.49
Total	55.5	87.0	31.57
Average	**7.0**	**9.6**	**2.65**
Median	5.8	7.5	1.11
Stdev	11.0	8.8	5.78
Information Ratio			**0.46**
Years with positive excess return			**57%**
Average annual fund reallocation			439%
Based on annualised monthly returns			
Average	**7.9**	**11.2**	**3.21**
Median	10.5	9.9	0.20
Stdev	8.4	8.8	6.66
Information Ratio			**0.48**
Months with positive excess return			**50%**
Average monthly fund reallocation			36.6%

Source: EPFR, Datastream, Commerzbank Corporates & Markets

Our back-tested models do not include relevant transaction costs or taxes. Past performance may not be a reliable guide to future performance.

Despite the limited history available, we believe these results clearly suggest that weekly fund flow data also contain predictive power for sector allocation in the fixed-income space.

(3) Predictive power of fund flows for Equity vs Bond allocation

Last, but not least, we investigate the predictive power of fund flows for allocation across bonds and equities. The aim is to switch between global equities and global bonds and to measure the strategy against an equally-weighted benchmark of both. For global equities, we use the MSCI All Country total return index in dollars, and for global bonds, the EFFAS Global Market Cap Weighted total return index in dollars.

Equity vs bond allocation solely based on fund flows into both classes does not yield convincing results,…

Here, it is interesting to note that a pure 'best-of-two' strategy based on the four-week average fund flow as a percentage of AuM does not yield convincing results. However, using flows into risk assets such as EM equity, HY bonds and EM bonds versus flows into money market funds as an indicator of risk appetite, we can easily show highly successful strategies reallocating between equities and bonds.

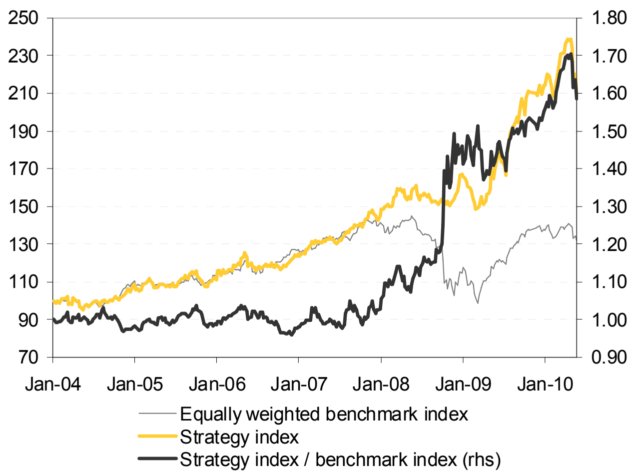
…but using flows into risk assets and money markets as an indicator of risk appetite, highly successful strategies can be derived

We aggregate EM equity fund flows, HY bond fund flows and EM bond fund flows into one measure of risk asset fund flows. Whenever the four-week average flow into risk assets is positive and, at the same time, the four-week average flow into money market funds[4] is negative we are invested in global equities. Otherwise we are invested in global bonds. The first approach once again reallocates each Friday at close of business, the second at the end of each month.

The results of the weekly 'best-of-two' strategy versus an equally-weighted benchmark with weekly adjustment are shown in Chart 9. While the strategy moved basically in line with the benchmark during the equity bull market in 2004 to 2006, it significantly outperformed in 2007 to 2009. The strategy would have generated more than twice the benchmark return with an information ratio of close to 0.7. On average, one would have switched five times per year between bonds and equities.

[4] Money market fund flows are only available from 2007 onwards. Before 2007, we are invested in global equities whenever the four-week average flow into risk assets is positive. Otherwise we are invested in global bonds.

CHART 9: **Weekly 'best-of-two' strategy for global equities vs global bonds based on the four-week average fund flows as a percentage of AuM into risk assets and money market funds**



	Benchmark (%)	Strategy (%)	Excess (pp)
Based on calender year returns			
2004	10.5	8.7	-1.86
2005	1.8	2.2	0.39
2006	12.9	12.3	-0.65
2007	10.8	19.0	8.24
2008	-16.6	11.9	28.43
2009	17.2	29.2	12.04
2010TD	-3.9	-2.3	1.56
Total	32.2	109.4	77.23
Average	**4.7**	**11.6**	**6.88**
Median	10.5	11.9	1.56
Stdev	11.7	10.5	10.77
Information Ratio			**0.64**
Years with positive excess return			**71%**
Average annual fund reallocation			498%
Based on annualised weekly returns			
Average	**5.0**	**12.3**	**7.29**
Median	7.8	14.4	7.60
Stdev	10.9	11.5	10.72
Information Ratio			**0.68**
Weeks with positive excess return			**54%**
Average weekly fund reallocation			9.6%

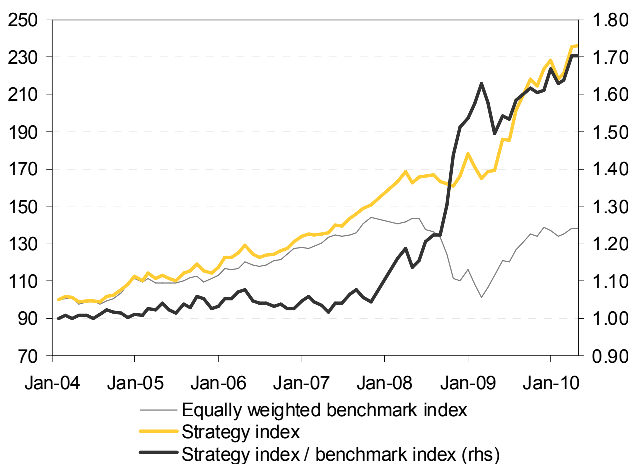
Source: EPFR, Datastream, Commerzbank Corporates & Markets

Our back-tested models do not include relevant transaction costs or taxes. Past performance may not be a reliable guide to future performance.

Monthly allocation between equities and bonds would have resulted in more than twice the benchmark return since 2004, with a Sharpe ratio of 1.3

Chart 10 shows that the results of the monthly 'best-of-two' strategy for global equities and global bonds are similarly convincing. The strategy would have generated an excess return of roughly 8pp per year before costs, and total return was more than twice the benchmark return with lower volatility. The strategy therefore clearly dominates the equally-weighted benchmark. Using money market returns as risk-free rate, the strategy has had a Sharpe ratio of 1.3 since 2004, while the benchmark only had a Sharpe ratio of 0.2. On average, funds would have to be switched between global equities and global bonds three times per year; so even including transaction costs, a significant excess return would have been earned.

CHART 10: **End-of-month 'best-of-two' strategy for global equities vs global bonds based on the four-week average fund flows as a percentage of AuM into risk assets and money market funds**



	Benchmark (%)	Strategy (%)	Excess (pp)
Based on calender year returns			
2004	11.3	12.8	1.49
2005	1.8	3.8	2.04
2006	12.9	14.4	1.56
2007	10.8	14.6	3.72
2008	-18.2	16.1	34.37
2009	18.0	28.1	10.07
2010TD	1.2	3.3	2.09
Total	38.5	136.0	97.50
Average	**5.4**	**13.3**	**7.90**
Median	10.8	14.4	2.09
Stdev	12.0	8.4	12.06
Information Ratio			**0.66**
Years with positive excess return			**100%**
Annual fund reallocation			300%
Based on annualised monthly returns			
Average	**5.7**	**14.3**	**8.54**
Median	8.8	12.4	7.01
Stdev	9.9	9.5	8.22
Information Ratio			**1.04**
Months with positive excess return			**60%**
Monthly fund reallocation			25.0%

Source: EPFR, Datastream, Commerzbank Corporates & Markets

Our back-tested models do not include relevant transaction costs or taxes. Past performance may not be a reliable guide to future performance.

These results clearly suggest that the direction of flows into or out of risk assets and into or out of money market funds contains information about future performance of equities versus bonds.

Summary

Based on backtests of simple investment strategies based solely on weekly fund flow information, this note shows that fund flow information can improve tactical asset allocation decisions. In particular, it shows that successful regional equity and fixed-income sector allocation strategies can be derived, based only on the relative strength of the four-week average fund flow as a percentage of AuM. Moreover, using the direction of the flows into or out of risk assets and into or out of money markets, highly successful bond-equity allocation strategies can be implemented.

Distribution of ratings:

Number of recommendations from Commerzbank, Research, at the end of the first quarter 2010	thereof recommendations for issuers to which investment banking services were provided during the preceding twelve months
95 (52.7%) Buy / Add	43 (47.7%)
64 (35.6%) Hold	39 (43.4%)
21 (11.7%) Sell / Reduce	8 (8.9%)

This document has been created and published by the Corporates & Markets division of Commerzbank AG, Frankfurt/Main or Commerzbank's group companies mentioned in the document. Commerzbank Corporates & Markets is the investment banking division of Commerzbank, integrating research, debt, equities, interest rates and foreign exchange.

The relevant research analyst(s), as named on the front cover of this report, certify that (a) the views expressed in this research report accurately reflect their personal views about the securities and companies mentioned in this document; and (b) no part of their compensation was, is, or will be directly or indirectly related to the specific recommendation(s) or views expressed by them contained in this document. The research analyst(s) named on this report are not registered / qualified as research analysts with FINRA. The research analyst(s) may not be associated persons of Commerz Markets LLC and therefore may not be subject to NASD Rule 2711 and incorporated NYSE Rule 472 restrictions on communications with a subject company, public appearances and trading securities held by a research analyst.

It has not been determined in advance whether and in what intervals this document will be updated. Unless otherwise stated current prices refer to the most recent trading day's closing price.

Conflicts of interest:

Disclosures of potential conflicts of interest relating to Commerzbank AG, its affiliates, subsidiaries (together "Commerzbank") and its relevant employees with respect to the issuers, financial instruments and/or securities forming the subject of this document valid as of the end of the month prior to publication of this document*:

Please refer to the following link for disclosures on companies included in compendium reports or disclosures on any company covered by Commerzbank analysts: https://cbcm.commerzbank.com/en/site/research/equity/disclaimer/index.jsp *

* Updating this information may take up to ten days after month end.

Ratings and definitions

Our fundamental equity analysts rate shares on an absolute basis using a 6-month target price. A Buy rating implies potential share price upside of more than 15%. An Add rating reflects potential share price upside of between 5% and 15%. A Hold rating is given when implied upside or downside is within 5% of the current share price. A Reduce rating implies potential downside of between 5% and 15%. A Sell rating implies potential share price downside of more than 15%. For more information pleaser refer to: https://cbcm.commerzbank.com/en/site/research/equity/ratingsanddefinitions/index.jsp

Explanation of valuation parameters and risk assessment

Unless otherwise stated, target prices are based on either absolute valuation methods (discounted cash flow, absolute multiple) or comparable peer multiples, or a combination of both. The result of this fundamental valuation is adjusted to reflect the analyst's view on the likely development of investor sentiment and its impact on the share price. Whichever valuation method is used there is a significant risk that the target price will not be achieved. Risk factors include, but are not limited to, unforeseen changes in competitive pressures, the level of demand for the company's products, management, technology, the level of economic activity, interest rates, operating and/or material costs, consumer tastes, regulation, exchange rates and taxation. Investment in overseas markets and instruments such as ADRs can result in increased risk from factors such as exchange rates, exchange controls, taxation, political and social conditions.

Disclaimer

This document is for information purposes only and does not take account of the specific circumstances of any recipient. The information contained herein does not constitute the provision of investment advice. It is not intended to be and should not be construed as a recommendation, offer or solicitation to acquire, or dispose of, any of the financial instruments and/or securities mentioned in this document and will not form the basis or a part of any contract or commitment whatsoever.

The information in this document is based on data obtained from sources believed by Commerzbank to be reliable and in good faith, but no representations, guarantees or warranties are made by Commerzbank with regard to accuracy, completeness or suitability of the data. The opinions and estimates contained herein reflect the current judgement of the author(s) on the data of this document and are subject to change without notice. The opinions do not necessarily correspond to the opinions of Commerzbank. Commerzbank does not have an obligation to update, modify or amend this document or to otherwise notify a reader thereof in the event that any matter stated herein, or any opinion, projection, forecast or estimate set forth herein, changes or subsequently becomes inaccurate.

The past performance of financial instruments is not indicative of future results. No assurance can be given that any financial instrument or issuer described herein would yield favourable investment results. Any forecasts or price targets shown for companies and/or securities discussed in this document may not be achieved due to multiple risk factors including without limitation market volatility, sector volatility, corporate actions, the unavailability of complete and accurate information and/or the subsequent transpiration that underlying assumptions made by Commerzbank or by other sources relied upon in the document were inapposite.

Neither Commerzbank nor any of its respective directors, officers or employees accepts any responsibility or liability whatsoever for any expense, loss or damages arising out of or in any way connected with the use of all or any part of this document.

Commerzbank may provide hyperlinks to websites of entities mentioned in this document, however the inclusion of a link does not imply that Commerzbank endorses, recommends or approves any material on the linked page or accessible from it. Commerzbank does not accept responsibility whatsoever for any such material, nor for any consequences of its use.

This document is for the use of the addressees only and may not be reproduced, redistributed or passed on to any other person or published, in whole or in part, for any purpose, without the prior, written consent of Commerzbank. The manner of distributing this document may be restricted by law or regulation in certain countries, including the United States. Persons into whose possession this document may come are required to inform themselves about and to observe such restrictions. By accepting this document, a recipient hereof agrees to be bound by the foregoing limitations.

Additional notes to readers in the following countries:

Germany: Commerzbank AG is registered in the Commercial Register at Amtsgericht Frankfurt under the number HRB 32000. Commerzbank AG is supervised by the German regulator Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin), Lurgiallee 12, 60439 Frankfurt am Main, Germany.

United Kingdom: This document has been issued or approved for issue in the United Kingdom by Commerzbank AG London Branch. Commerzbank AG, London Branch is authorised by Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) and subject to limited regulation by the Financial Services Authority. Details on the extent of our regulation by the Financial Services Authority are available from us on request. This document is directed exclusively to eligible counterparties and professional clients. It is not directed to retail clients. No persons other than an eligible counterparty or a professional client should read or rely on any information in this document. Commerzbank AG, London Branch does not deal for or advise or otherwise offer any investment services to retail clients.

United States: Commerz Markets LLC (“Commerz Markets”): This document has been approved for distribution in the US under applicable US law by Commerz Markets, a wholly owned subsidiary of Commerzbank and a US registered broker-dealer. Any transaction by US persons must be effected with Commerz Markets. Under applicable US law; information regarding clients of Commerz Markets may be distributed to other companies within the Commerzbank group. This research report is intended for distribution in the United States solely to “institutional investors” and “major U.S. institutional investors,” as defined in Rule 15a-6 under the Securities Exchange Act of 1934. Commerz Markets is a member of FINRA and SIPC.

European Economic Area: Where this document has been produced by a legal entity outside of the EEA, the document has been re-issued by Commerzbank AG, London Branch for distribution into the EEA.

Singapore: This document is being distributed for Commerzbank in Singapore by Commerzbank AG, Singapore Branch purely as a resource and for general informational purposes only, and is intended for general circulation. Accordingly, this research document does not take into account the specific investment objectives, financial situation, or needs of any particular person and is exempted from the same by Regulation 34 of the Financial Advisers Regulations ("FAR") (as required under Section 27 of the Financial Advisers Act (Cap. 110) of Singapore ("FAA")).

Hong Kong: This document is being distributed in Hong Kong by Commerzbank AG, London Branch. Unless permitted to do so by the securities laws of Hong Kong, no person may issue or have in its possession for the purposes of issue this document, whether in Hong Kong or elsewhere, which is directed at, or the contents of which are likely to be accessed or read by, the public in Hong Kong, other than with respect to the securities referred to in this document which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" within the meaning of the Securities and Futures Ordinance (Cap.571) of Hong Kong and any rules made thereunder, and to persons whose ordinary business is to buy and sell shares or debentures.

Japan: Commerzbank AG, Tokyo Branch is responsible for the distribution of Research in Japan. Commerzbank AG, Tokyo Branch is regulated by the Japanese Financial Services Agency (FSA).

Australia: Commerzbank AG does not hold an Australian financial services licence. This document is being distributed in Australia to wholesale customers pursuant to an Australian financial services licence exemption for Commerzbank AG under Class Order 04/1313. Commerzbank AG is regulated by Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) under the laws of Germany which differ from Australian laws.

© Commerzbank AG 2010. All rights reserved. Version 9.11

Commerzbank Corporates & Markets

Frankfurt
Commerzbank AG

DLZ - Gebäude 2, Händlerhaus
Mainzer Landstraße 153
60327 Frankfurt
Tel: + 49 69 136 21200
Fax: + 49 69 136 40357

London
Commerzbank AG
London Branch
PO BOX 52715
30 Gresham Street
London, EC2P 2XY
Tel: + 44 207 623 8000

New York
Commerz Markets LLC
2 World Financial Center, 31st floor
New York,
NY 10020-1050
Tel: + 1 212 703 4000
Fax: + 1 212 703 4201