



Does the Timing of Central Bank Announcements Matter?

Trade-Level Data on Hedge Fund Behavior Before Swiss National Bank Meetings

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Introduction

Just over three years after enacting a Minimum Exchange Rate policy for the Swiss Franc vs. Euro (EUR/CHF), the Swiss National Bank (SNB) removed it in a surprise announcement on January 15, 2015. The announcement shocked the FX market—EUR/CHF dropped 25.5 percent in the minutes that followed the press release. In our report *FX Markets Move on Surprise News: Institutional Investor Trading Behavior around Brexit, the US Election, and the Swiss Franc Floor*, we chronicled institutional investor trading behavior ahead of, during, and just after the SNB's announcement. We found evidence that (1) hedge funds predicated a trading strategy on the belief that the SNB would maintain the EUR/CHF floor, and (2) just after the policy was removed, hedge funds were on net large buyers of CHF, trading with the prevailing move in the exchange rate.

In this follow-up research, we examine hedge fund trading in EUR/CHF during the Minimum Exchange Rate policy period. In doing so, we found a pattern in hedge fund trading in EUR/CHF just before regularly scheduled SNB announcements that suggests that there would have been less buying of CHF and potentially less EUR/CHF exchange rate volatility on the policy removal announcement had the SNB removed the EUR/CHF floor at a regularly scheduled quarterly monetary policy meeting rather than via a surprise press release in between meetings.¹

Specifically, to the extent that hedge funds bought EUR/CHF in between quarterly SNB announcements when the exchange rate was close to the 1.20 floor, we see evidence that they then sold EUR/CHF immediately ahead of the next regularly scheduled SNB meeting. Our results suggest that had the Minimum Exchange Rate policy been removed at a regularly scheduled SNB meeting, hedge funds would have been less long EUR/CHF just before the announcement, and therefore it would be reasonable to expect less overall buying of CHF and potentially less EUR/CHF exchange rate volatility just after the announcement.

Executive Summary

In our report *FX Markets Move on Surprise News: Institutional Investor Trading Behavior around Brexit, the US Election, and the Swiss Franc Floor*, we found evidence that, when the Swiss National Bank (SNB) had the Minimum Exchange Rate policy in effect, hedge funds bought EUR/CHF when the exchange rate was close to the 1.20 floor. The potential upside of a long EUR/CHF position far exceeded the downside as long as the SNB defended the exchange rate floor.

In this brief, we examine whether hedge funds then unwound this strategy immediately ahead of the next regularly scheduled SNB meeting to mitigate losses in the event the SNB removed the policy. We found that to the extent that hedge funds bought EUR/CHF in between quarterly SNB announcements when the exchange rate was close to the 1.20 floor, they then sold EUR/CHF immediately ahead of the next regularly scheduled SNB meeting.

Our results suggest that had the Minimum Exchange Rate policy been removed at a regularly scheduled SNB meeting (rather than as a surprise announcement between meetings), hedge funds would have been less long EUR/CHF, and therefore it would be reasonable to expect less overall buying of CHF and potentially less EUR/CHF exchange rate volatility just after the announcement.

Our findings have implications for central banks as they consider how their choices with respect to communicating policy changes might impact financial market stability.

The Swiss National Bank’s Minimum Exchange Rate policy

The SNB implemented the Minimum Exchange Rate policy via a surprise announcement on September 6, 2011, noting that the “current massive overvaluation of the Swiss Franc poses an acute threat to the Swiss economy and carries the risk of a deflationary development.” In order to weaken CHF in a sustainable and substantial manner, the SNB would “no longer tolerate” a EUR/CHF exchange rate below 1.20. To establish credibility for this policy, the SNB pledged to enforce it “with the utmost determination,” and to be “prepared to buy foreign currencies in unlimited quantities,” stating that “if the outlook and deflationary risks so require, the SNB will take further measures.”^{2,3}

Over the ensuing months, the floor held—EUR/CHF settled between 1.201 and 1.261, as shown in the shaded region of Figure 1. Figure 1 also shows the increase in the SNB’s foreign exchange reserves over the period that the floor was in place, which was likely a result of their intervention in FX markets: selling CHF and buying EUR (and other currencies) when CHF appreciated towards the 1.20 minimum. As a consequence, from the inception of the Minimum Exchange Rate policy in 2011 to the end of 2014, the SNB’s balance sheet had grown from CHF318 billion to CHF542 billion (71 percent), and from 51 percent to 83 percent of Swiss GDP.⁴ Of the CHF542 billion total, 46 percent of the balance sheet was held in assets denominated in EUR.⁵ Assuming that the removal of the EUR/CHF floor would result in an immediate and sharp CHF appreciation, the increase in the SNB’s FX reserves created a Hobson’s choice—abandon the floor now and realize a large loss on the portfolio, or continue selling CHF and growing FX reserves and abandon the floor later, realizing even larger losses in the future.⁶

Just minutes after the SNB removed the EUR/CHF floor in a surprise announcement, EUR/CHF dropped 25 percent.

On January 15, 2015, the SNB surprised the FX market by entirely removing the EUR/CHF floor in an announcement in between two regularly scheduled meetings. The EUR/CHF exchange rate plunged from 1.201 to 0.895 (25.5 percent) over the next 24 minutes before partially retracing to settle at 1.053 (12.3 percent) at the end of the London trading day. To support their decision, the SNB suggested that the Swiss economy had been “able to take advantage” of the policy, and because of the recent weakness of CHF against USD, maintaining the Minimum Exchange Rate policy was no longer justified. The policy decision was accompanied by a 50 basis point cut in CHF three-month LIBOR, taking the interest rate further into negative territory (-1.25% to -0.25%).⁷

Figure 1: The EUR/CHF exchange rate and SNB FX reserves.



Source: Swiss National Bank, accessed via Haver Analytics; JPMorgan Chase Institute

Hedge funds executed a trading strategy designed to profit if the Minimum Exchange Rate policy remained in place.

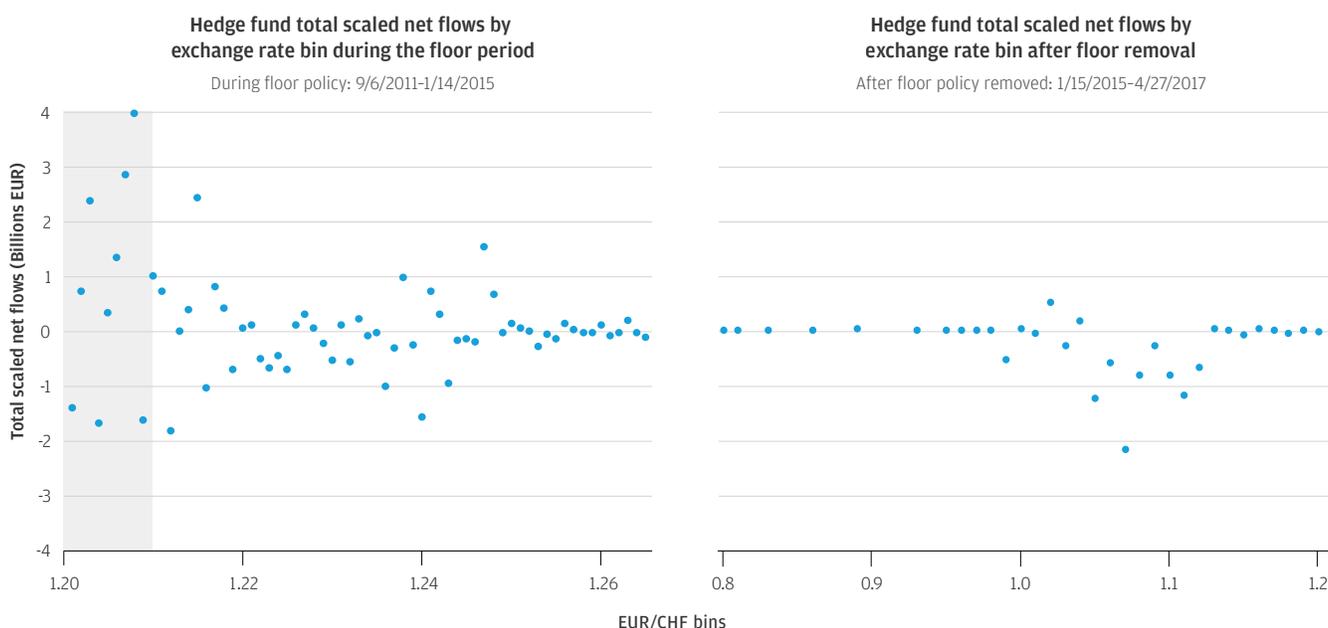
During the period in which the floor policy was in place, hedge funds predicated a trading strategy on the belief that the SNB would maintain the EUR/CHF floor. We will refer to this trading strategy as the **long EUR/CHF strategy**. The long EUR/CHF strategy worked as follows: If and when the EUR/CHF exchange rate approached the 1.20 floor, hedge funds would buy EUR and sell CHF in the anticipation that the exchange rate would rise (EUR would appreciate relative to CHF). As long as the SNB was committed to maintaining the EUR/CHF floor by purchasing an unlimited amount of EUR against CHF at 1.20, the potential loss on such a position was limited to the difference between the entry exchange rate and the 1.20 floor. However, if the SNB removed the EUR/CHF floor, CHF was likely to appreciate and the long EUR/CHF strategy would suffer severe losses in such a scenario. The upside of the long EUR/CHF strategy could be unlimited, depending on how EUR/CHF evolved. Thus, as long as the SNB’s Minimum Exchange Rate policy remained in place, the risk/reward ratio of the long EUR/CHF strategy was compelling.

To illustrate the risk/reward ratio, suppose EUR/CHF were trading at 1.202. Buying EUR and selling CHF at 1.202 would have a maximum downside of 0.002 because in order to maintain the floor, the SNB would buy EUR and sell CHF somewhere between 1.202 and 1.20, not letting EUR/CHF drop below 1.20. If EUR/CHF were then expected to trade between 1.20 and 1.22 over the next three months, the maximum upside of the long EUR/CHF strategy would be 0.018, nine times the maximum downside.

The closer the EUR/CHF exchange rate was to the 1.20 floor, the more attractive the entry point for the long EUR/CHF strategy, because the 1.20 floor limited the downside of the long EUR/CHF position. The entry point for the long EUR/CHF strategy became less attractive as the EUR/CHF exchange rate moved away from the 1.20 floor because the downside increased. In the scenario above where EUR/CHF was expected to trade between 1.20 and 1.22, buying EUR/CHF at 1.215 would be a much less attractive entry point, because the downside (0.015) would be larger than the upside (0.005).

As noted in [previous research](#), we saw evidence of hedge funds executing the long EUR/CHF strategy in our data. When the EUR/CHF floor was in place, hedge funds were more likely to buy EUR/CHF when the exchange rate was below 1.21. As indicated in Figure 2 below (reproduced from [previous research](#)), the sum of scaled net flows was more positive for exchange rate bins close to the 1.20 floor than for exchange rate bins further away from the floor (left panel); once the EUR/CHF floor was removed, there was no longer a relationship between hedge fund scaled net flows and the exchange rate (right panel).⁸

Figure 2: Hedge funds were more likely to buy EUR/CHF when the exchange rate approached the 1.20 floor (LHS). Once the floor was removed, this behavior ceased (RHS).



Note: For the Floor Policy period, exchange rate bins sizes are 0.001 and for the After Floor Policy period, exchange rate bin sizes are 0.01.

Source: JPMorgan Chase Institute

By executing the long EUR/CHF strategy, hedge funds were in effect helping the SNB support the Minimum Exchange Rate policy. The more these institutional investors bought EUR and sold CHF when the exchange rate approached the 1.20 floor, the less foreign exchange intervention the SNB would have to conduct and the less their foreign exchange reserves would grow.

Two additional considerations are important to note when considering the implications of this trading strategy relative to the European Central Bank's (ECB) and SNB's policy decisions and the consequences of the SNB's decision to remove the EUR/CHF floor via a surprise press release. First, the interest rate differential between the EUR deposit rate and the CHF deposit rate also impacted the attractiveness of the long EUR/CHF strategy: Higher EUR deposit rates or lower CHF deposit rates led to better "carry" for an investor with a long EUR / short CHF position and thus higher profits.⁹ Therefore, the interest rate decisions from the SNB and the ECB during the floor period may have affected the incentives to enter this trading strategy.

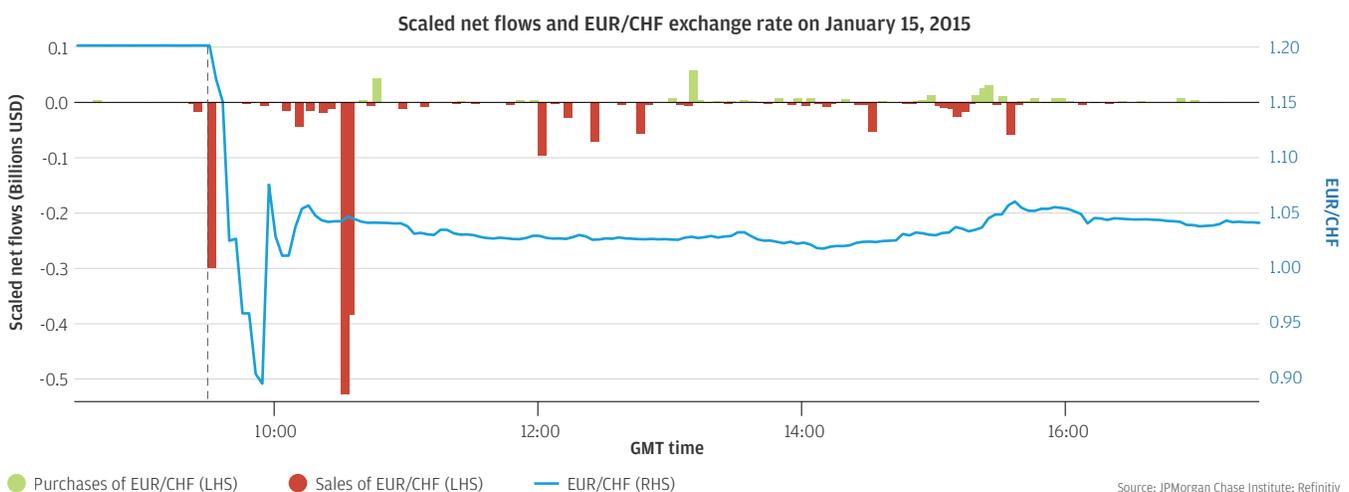
Second, hedge funds likely used leverage to increase their potential returns from the long EUR/CHF strategy. The typical market maker or prime broker would require a hedge fund to post an independent amount (or collateral) of around 10 percent against such a transaction, which implies the hedge fund could achieve leverage of 10 times. While leverage enhances returns, it also inflates losses relative to the amount of equity capital supporting a position. Therefore, investors that employ leverage are less able to withstand large losses and may be forced to exit loss-making positions earlier than investors that do not employ leverage. For example, a hedge fund using 10 times leverage to establish a position that then suffers a 10 percent loss would have their equity reduced to zero and would likely be forced to liquidate the position. As we will discuss later, the use of leverage may explain the extent to which hedge funds bought CHF after the SNB's surprise announcement.

Hedge funds bought a large quantity of CHF in the minutes after the Minimum Exchange Rate policy was removed, trading with the prevailing move in the exchange rate.

As noted in [previous research](#), the net flows during the 24 minutes following the surprise announcement from the SNB indicated that net risk transferred was largely one way—all investor sectors were either buying CHF or absent. Figure 3 shows scaled net flows for hedge funds on January 15, 2015, aggregated into three-minute periods. In the first three minutes after the announcement, hedge funds bought large quantities of CHF (sold EUR/CHF), trading in a manner consistent with the appreciation of CHF. Because hedge funds (and other institutional investors) were on net buying CHF as it appreciated, market makers were left as the only market participants selling CHF during this critical stage. While we don't measure the connection directly, the hedge fund buying just after the press release may have amplified the initial move in the exchange rate—between the 9:30 a.m. announcement and 9:54 a.m., EUR/CHF dropped from 1.201 to 0.895, before recovering to settle around 1.053 at the end of the London trading day.

We hypothesize that the long EUR/CHF strategy described above could partially explain why hedge funds were buying large quantities of CHF in the three minutes after the policy was removed. The immediate and sharp appreciation of CHF just after 9:30 a.m. created losses for any investor left holding the long EUR/CHF strategy. Hedge funds losses were likely amplified due to the use of leverage. Hedge funds continued to purchase CHF over the rest of the day, and by the close of business in London, their CHF purchases outpaced sales by nearly six to one.

Figure 3: Hedge funds purchased large quantities of CHF in the first three minutes after the SNB announced the removal of the EUR/CHF floor.



Finding One

After hedge funds executed the long EUR/CHF strategy, they then sold EUR/CHF in the days immediately preceding the next regularly scheduled SNB announcement, reducing their potential losses if the Minimum Exchange Rate policy was removed at that meeting.

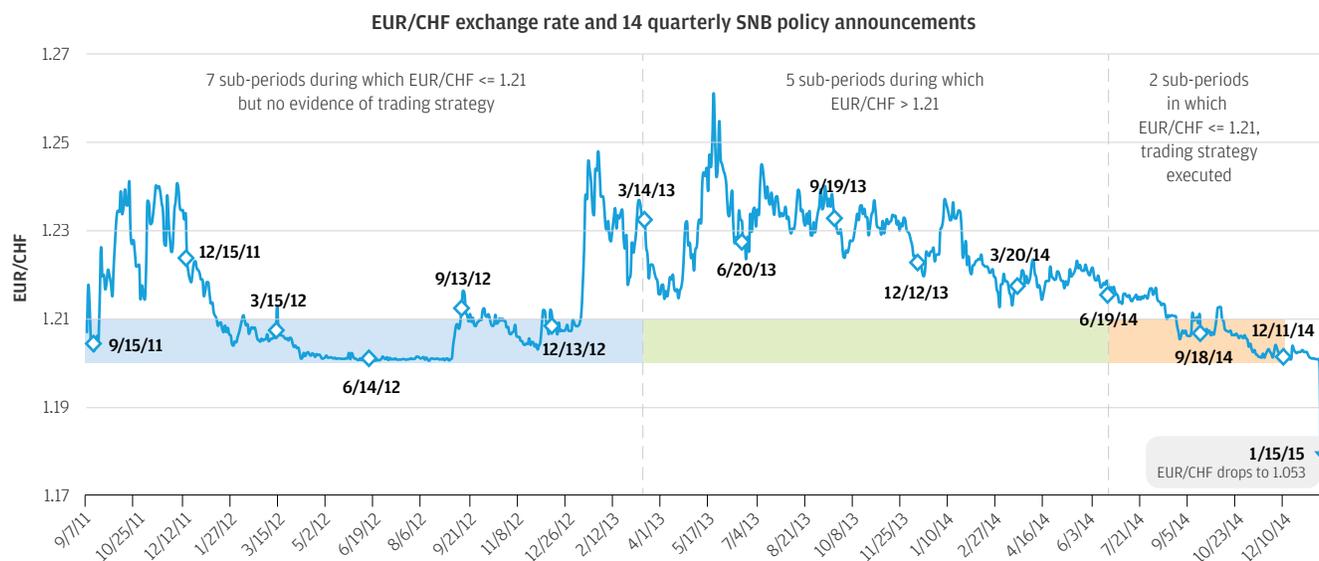
To reach this conclusion, we first examined the net flows of hedge funds to isolate the periods in which they executed the long EUR/CHF strategy. We divided the EUR/CHF floor policy period into 14 sub-periods according to the quarterly schedule of SNB policy announcements. The first sub-period begins on the day the policy was introduced (September 6, 2011) and ends just before the September 15, 2011 SNB policy announcement. The next sub-period begins just after the September 15, 2011 SNB policy announcement and ends just before the December 15, 2011 SNB policy announcement, and so on. Thus each sub-period captures the days between regularly scheduled quarterly SNB policy announcements and, apart from the first one, each sub-period covers about three months.

The left panel of Figure 2 above, which shows total scaled net flows for hedge funds in each exchange rate bin during the Minimum Exchange Rate policy period, indicates there should be evidence of the long EUR/CHF strategy when the EUR/CHF exchange rate was below 1.21. There could be many reasons why hedge funds might buy EUR/CHF, so to limit the purchases of EUR/CHF to those that represent the long EUR/CHF strategy described above, we included the trading condition that the exchange rate be at or below 1.21 on any day in the sub-period when we look for evidence of the long EUR/CHF strategy.

For each sub-period, we repeated the analysis shown in Figure 2 above to look for evidence of hedge funds executing the long EUR/CHF strategy.¹⁰ We only found evidence in the two sub-periods that roughly cover the third and fourth quarters of 2014. Figure 4 shows the evolution of the EUR/CHF exchange rate during the Minimum Exchange Rate policy period. The dates in Figure 4 indicate the 14 quarterly SNB policy announcements that separate the 14 sub-periods. The shading in Figure 4 indicates a category for each sub-period according to whether the trading condition was met and whether we observed evidence of hedge fund buying of EUR/CHF in our scaled net flow data, as follows:

1. EUR/CHF traded at or below 1.21 in the sub-period but there was no evidence of the long EUR/CHF strategy (the first seven sub-periods)
2. EUR/CHF did not trade below 1.21 (the next five sub-periods)
3. EUR/CHF traded at or below 1.21 in the sub-period and there was evidence of the long EUR/CHF strategy (the last two sub-periods covering the second half of 2014)

Figure 4: During nine of the 14 sub-periods between SNB meetings, EUR/CHF traded at or below 1.21 and afforded hedge funds the opportunity to enter the long EUR/CHF strategy.



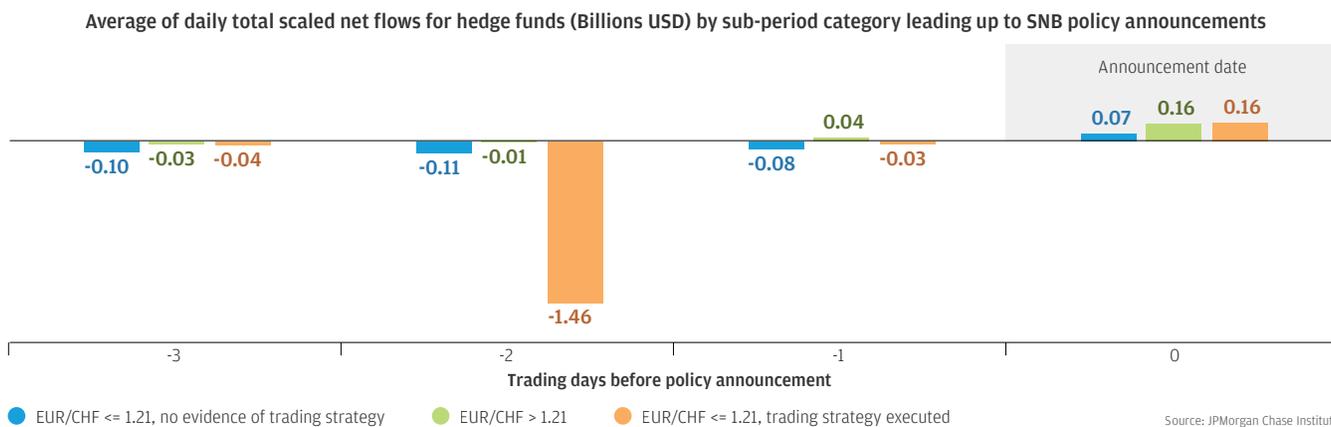
◆ SNB meeting announcement date

Source: JPMorgan Chase Institute

Using the three categories for each sub-period noted above, we then examined average net flows from hedge funds in EUR/CHF spot and forward trades in the days leading up to each of the 14 regularly scheduled quarterly announcements that took place when the Minimum Exchange Rate policy was in place. We show results for each of the three categories in Figure 5.

Figure 5 indicates that in the sub-periods in which hedge funds had an attractive entry point for and did execute the long EUR/CHF strategy (i.e., bought EUR/CHF at or below 1.21), net flows were indicative of large selling of EUR/CHF two days prior to the next quarterly SNB policy announcement. In contrast, net flows were centered around zero on each of the three days prior to each quarterly SNB policy announcement following sub-periods in which hedge funds either did not have an attractive entry point for the long EUR/CHF strategy after the previous SNB meeting (i.e., EUR/CHF did not trade below 1.21), or hedge funds chose not to execute the long EUR/CHF strategy despite the exchange rate trading below 1.21.¹¹

Figure 5: After executing the long EUR/CHF strategy, hedge funds then sold EUR/CHF two days prior to the next SNB policy announcement.



We note that the seven sub-periods in which EUR/CHF did trade at or below 1.21 but for which we do not observe hedge funds executing the long EUR/CHF strategy occurred at the beginning of the Minimum Exchange Rate policy period (Figure 4). While we do not measure this directly, it could be the case that hedge funds did not believe that the SNB had established the credibility of this policy, and it would take more time and more statements of commitment from the SNB for hedge funds to accept the policy as credible. Importantly, for these seven sub-periods where we do not observe hedge funds entering the long EUR/CHF strategy despite having an attractive entry point, we also do not observe selling of EUR/CHF just before the next SNB policy announcement (Figure 5).

During the next five sub-periods, the EUR/CHF exchange rate traded well-above an attractive entry point for the long EUR/CHF strategy. Again, for these five sub-periods, we do not observe selling of EUR/CHF just before the next SNB policy announcement (Figure 5).

In the final two sub-periods, which cover the second half of 2014, we see evidence of (1) hedge funds executing the long EUR/CHF strategy during the sub-period, and (2) hedge funds selling EUR/CHF (and therefore reducing their long EUR/CHF exposure) just before the next scheduled SNB policy announcement. While our transaction data cannot tell us why hedge funds chose to reduce the risk associated with the long EUR/CHF strategy ahead of regularly scheduled SNB policy announcements, we hypothesize that hedge funds ascribed a higher probability that the SNB might remove or adjust the EUR/CHF floor to lower levels on regularly scheduled policy announcement days relative to any other single day in the sub-period.

While the SNB generally had a range of policy options at their disposal, the weak macroeconomic backdrop present in the second half of 2014 likely narrowed its choices. Tepid economic growth and the fear of deflation in Switzerland coupled with the recent move by the ECB to cut deposit rates into negative territory suggested that the most likely policy change from the SNB would have been a move to negative CHF interest rates, which (as described above) would have made the long EUR/CHF strategy more profitable.^{12,13} Increasing CHF interest rates was not at all warranted by macroeconomic conditions, and it is therefore unlikely that hedge funds sold EUR/CHF to protect against the possibility of this policy outcome. Removing or lowering the EUR/CHF floor was the outcome that would have been most damaging to the long EUR/CHF strategy, therefore we conclude that the observed hedge fund’s sales of EUR/CHF ahead of regularly scheduled SNB policy announcements were taken to mitigate this risk.

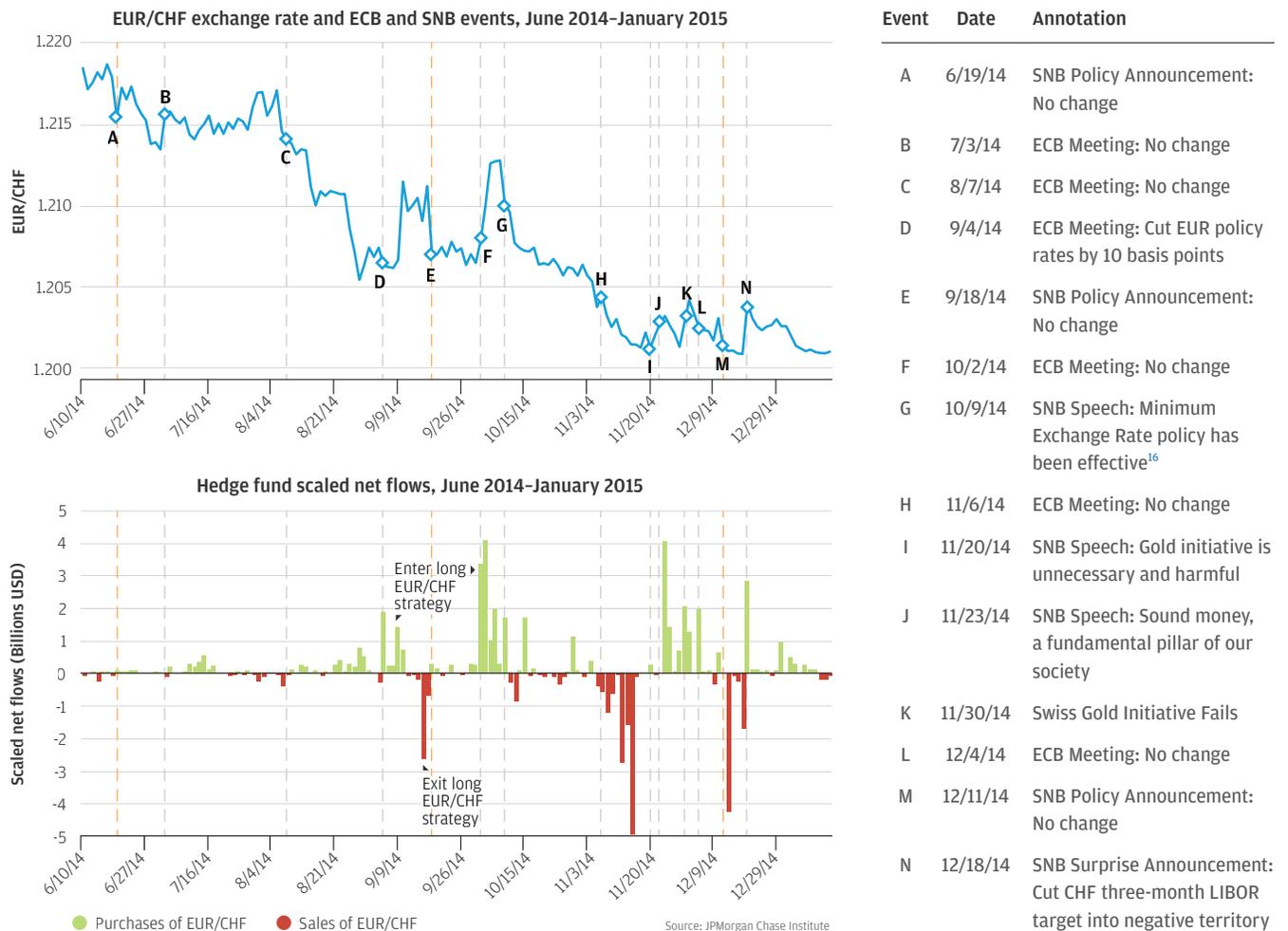
Next, we narrow our focus to the two sub-periods in which we see evidence of hedge funds entering the long EUR/CHF strategy (the three-month periods before the September 18, 2014 and December 11, 2014 SNB policy announcements) and examine them separately to see if our net flow data show any variation in this behavior ahead of these two SNB policy announcements.

In both sub-periods, EUR/CHF traded at or below 1.21 and hedge fund net flows indicate that they bought EUR/CHF below 1.21. For these two sub-periods and the final five weeks during which the Minimum Exchange Rate policy was in effect, we illustrate the path of the EUR/CHF exchange rate annotated with SNB and ECB policy-related events in the top panel of Figure 6 and hedge fund net flows for each day in the bottom panel of Figure 6.

In the sub-period that begins just after the June 19, 2014 SNB policy announcement and ends just before the September 18, 2014 SNB policy announcement, hedge funds bought EUR/CHF at 1.21 or lower, entering the long EUR/CHF strategy. Most of this buying occurred after August 15, 2014, as EUR/CHF was generally above 1.21 prior to this date. Hedge funds then sold EUR/CHF just prior to the September 18, 2014 SNB policy announcement, reducing their risk allocated to the long EUR/CHF strategy and confirming the pattern in trading behavior noted in Figure 5.

In the sub-period that begins just after the September 18, 2014 SNB announcement and ends just before the December 11, 2014 announcement, hedge funds also bought EUR/CHF at 1.21 or lower. However, our data do not show evidence of hedge fund selling of EUR/CHF just prior to the December SNB announcement, suggesting they did not reduce their risk allocated to the long EUR/CHF strategy before this particular announcement date. Instead, our data indicate that hedge funds sold EUR/CHF prior to the SNB speech delivered on November 20, 2014, perhaps in anticipation of the speaker suggesting the SNB might remove the EUR/CHF floor.¹⁴ After a second SNB speech on November 23, 2014 passed without any indication that the EUR/CHF floor might be removed, hedge funds bought EUR/CHF to re-enter the long EUR/CHF strategy.¹⁵

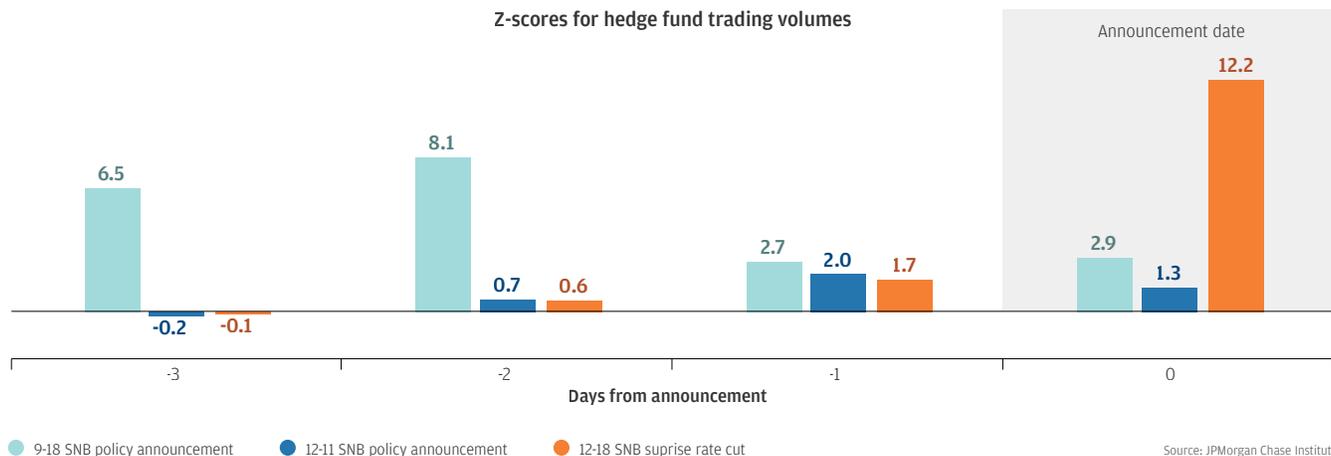
Figure 6: Hedge fund scaled net flows indicate that they executed the long EUR/CHF strategy in August and September 2014, but then sold EUR/CHF just ahead of the September 18, 2014 SNB policy announcement.



To understand why hedge fund behavior in EUR/CHF spot and forward transactions was different just prior to the September SNB policy announcement compared to just prior to the December SNB policy announcement, we first examined hedge fund trading volumes in EUR/CHF in our data during the period when the Minimum Exchange Rate policy was in effect. In Figure 7 we show trading volume z-scores for the four trading days leading up to and including the last two regularly scheduled SNB policy announcements in 2014, calculated relative to the average daily trading volume of hedge funds during the Minimum Exchange Rate policy period.¹⁷ While EUR/CHF trading volumes spiked ahead of the September SNB policy announcement, the increase in volumes was considerably smaller ahead of the December SNB policy announcement. The lower trading volumes ahead of the December policy announcement suggest that hedge fund's expectations for a change in policy were lower heading in to the December SNB announcement relative to the September SNB announcement.

After the June 2014 SNB policy announcement, we see evidence of hedge funds entering the long EUR/CHF strategy. Then, just prior to the September 2014 SNB policy announcement, hedge funds reduced their exposure to the strategy by selling EUR/CHF.

Figure 7: Relative to their average daily volumes, hedge fund trading in EUR/CHF increased considerably before the September 18, 2014 SNB policy announcement but only modestly before the December 11, 2014 SNB policy announcement.



We then examined macroeconomic conditions and central bank activity over the second half of 2014. There were no obvious economic indicators or events that indicate why the unwind behavior was attenuated in our spot and forward FX transactions in December. However, we can speculate that the two November SNB speeches noted above and the SNB's September monetary policy assessment, which noted (1) their continued commitment to the EUR/CHF floor, and (2) bleak economic and lower inflation forecasts, reduced the perception that they would remove the EUR/CHF floor and increased the perception that they would reduce interest rates at the December meeting.¹⁸

Hedge Funds used CHF FX futures to employ a strategy similar to the long EUR/CHF strategy and unwound their CHF FX futures positions ahead of regularly scheduled SNB policy announcements.

Data from the Commodity Futures Trading Commission's (CFTC) Commitments of Traders (CoT) report provide additional evidence that not only were hedge funds employing a trading strategy similar to the long EUR/CHF strategy using CHF FX futures, they also unwound this strategy just before the December SNB policy announcement.¹⁹

Each Friday, the CFTC publishes the CoT report, which includes the net position of leveraged funds (hedge funds) and open interest by futures contract as of the close of trading from the prior Tuesday.²⁰ Just as we found in our data, the CFTC CoT reports indicate that, beginning in mid-2014, hedge funds consistently maintained a net short position in CHF FX futures. Moreover, for the two sub-periods ending with the September and December 2014 SNB policy announcements, hedge fund trading in CHF FX futures was largely consistent with our transaction data, showing an accumulation of a short position in CHF FX futures. Just before the December 2014 SNB policy announcement, hedge funds bought CHF FX futures, eliminating their short position in CHF FX futures.

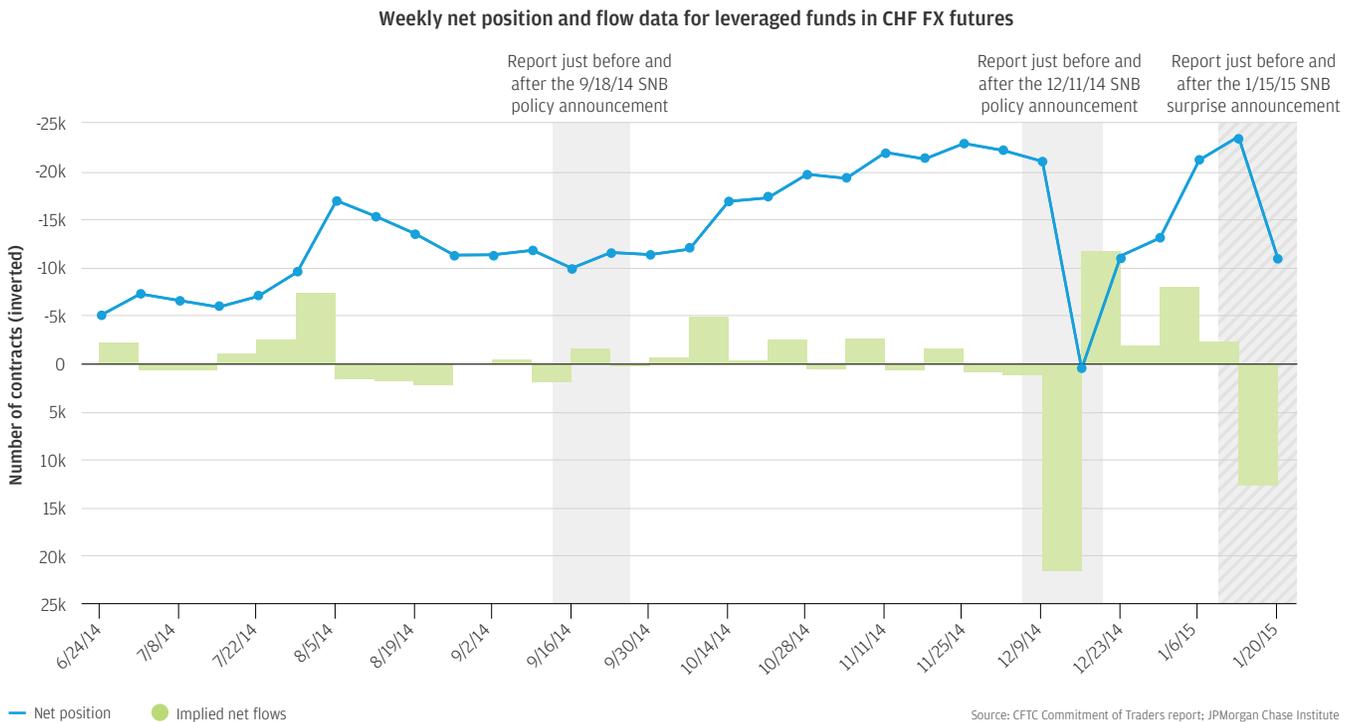
Figure 8 shows the weekly net positions of hedge funds in CHF FX futures for each Tuesday from June 24, 2014 to January 20, 2015.²¹ We have inverted the y-axis to align the data with the other figures in this brief, as a net short position in CHF FX Futures would be in the same direction (long USD, short CHF) as a long position in EUR/CHF (long EUR, short CHF). In addition, we show implied net flows (the week-over-week change in position) and highlight each SNB policy announcement date and the date the EUR/CHF floor was removed.

Hedge funds were short about 10,000 CHF FX futures as the September 2014 SNB policy announcement approached. While our trading data indicates that hedge funds sold EUR/CHF ahead of this SNB policy announcement, CFTC CoT data shows little change in CHF FX futures positions between September 16, 2014 and September 23, 2014. While it could be the case that hedge funds allowed their short in CHF FX futures to remain in place through this policy announcement, we suggest it is more likely that they covered their short position on September 17, 2014 and reset it on September 19 and September 22, such that the change in position did not register in the weekly CoT data.

In the weeks preceding the December 11, 2014 meeting, the hedge fund short position in CHF FX futures had increased to over 20,000 contracts. Between the December 9 CoT and the December 16 CoT, hedge funds covered this short entirely. While the weekly CoT data does not indicate whether the short covering was completed before the December 11 policy announcement, we suggest it is likely that the short covering took place on December 10.²² Between December 9 and December 16, open interest in CHF FX futures dropped by over 27,000 contracts, indicating that the buying of CHF FX futures that week represented short-covering.²³

Taken together, the trading activity of hedge funds in EUR/CHF and CHF FX futures indicate that, to the extent that they executed either trading strategy, they then were likely to reduce some, if not all, of the risk associated with the trading strategy just prior to the next regularly scheduled SNB policy announcement.

Figure 8: CFTC Commitment of Traders CHF FX futures position data suggest hedge funds covered their short position ahead of the December 2014 SNB policy announcement.

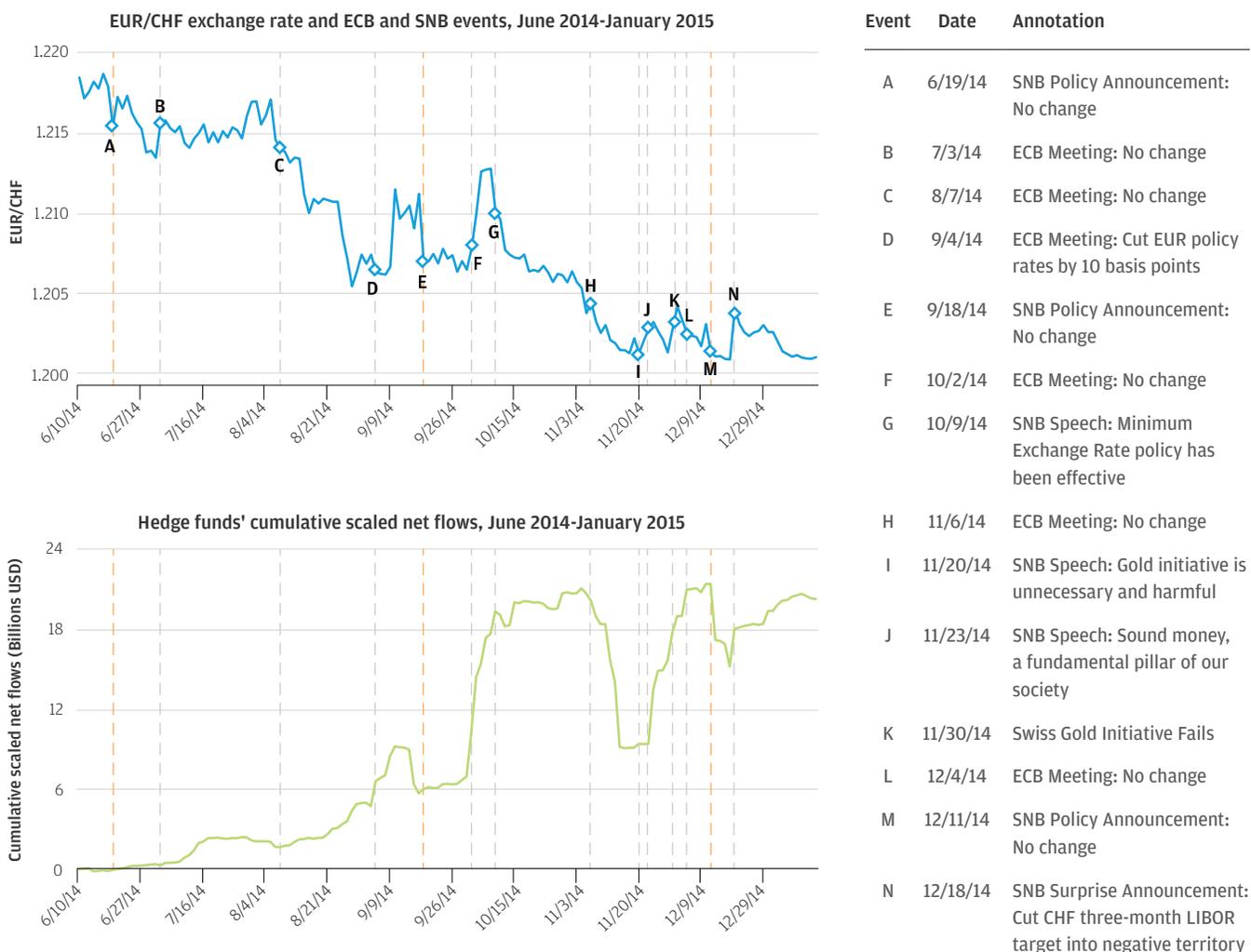


Finding Two

Hedge fund's confidence in the persistence of the SNB's Minimum Exchange Rate policy appears to have peaked in the four weeks before the policy was removed.

We arrived at this finding by examining hedge fund trading in EUR/CHF and CHF FX futures in the four weeks prior to the removal of the EUR/CHF floor. We observe from the hedge fund net flows in EUR/CHF (Figure 6 above) that they bought more EUR/CHF between December 18, 2014 and January 14, 2015. In the bottom panel of Figure 9, we illustrate the impact of the accumulation of these trades by showing cumulative net flows in EUR/CHF between June 2014 and January 14, 2015.²⁴ The accumulation of buying in EUR/CHF demonstrated in Figure 9 suggests that hedge funds had a high level of conviction that the EUR/CHF floor would remain in place.

Figure 9: The cumulative scaled net flows of hedge funds between June 2014 and mid-January 2015 suggest they were confident that the SNB would maintain the EUR/CHF floor.



Source: JPMorgan Chase Institute

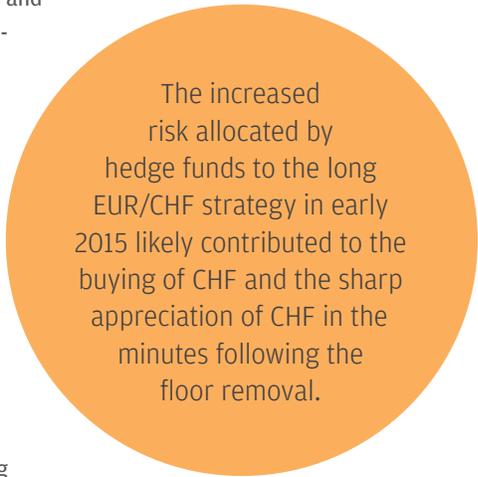
According to the CFTC's CoT data, hedge funds also accumulated a short position in CHF FX futures in the month prior to January 15, 2015. Specifically, in the weeks that followed the December 11, 2014 SNB policy announcement, hedge funds reestablished their short position in CHF FX futures and, as of January 13, 2015, hedge funds were net short over 23,000 CHF FX futures contracts (Figure 8 above), their largest net short position during the Minimum Exchange Rate policy period.

It is notable that after the December 18, 2014 surprise announcement from the SNB to cut CHF three-month LIBOR into negative territory, hedge funds bought more EUR/CHF (Figure 6) and sold more CHF FX futures (Figure 8).²⁵ As discussed earlier, the reduction in CHF three-month LIBOR increased the incentives for investors to enter the long EUR/CHF strategy, as it made long EUR/CHF positions more positive carry less than one month before the policy was removed.²⁶ As part of this announcement, the SNB also reaffirmed its commitment to the Minimum Exchange Rate policy.

We make two additional observations regarding the hedge fund response to the December 18, 2014 announcement. First, the increase in hedge fund trading volume on December 18, 2014 itself relative to the three days prior (Figure 7 above) suggests that the surprise policy announcement made on this date was not anticipated. Second, the accumulation of risk associated with the long EUR/CHF strategy would be consistent with hedge funds viewing the introduction of negative interest rates by the SNB on December 18, 2014 as a complement to rather than an eventual substitute for the EUR/CHF floor. We also note that it is possible that the buying of EUR/CHF and selling of CHF FX futures during this period was in response to the SNB's monetary policy assessment of December 11, 2014, in which they noted that "deflation risks have increased once again and the Swiss Franc is still high."²⁷

Finally, it is likely that the increased risk allocated to the long EUR/CHF strategy by hedge funds in early 2015 contributed to the appreciation in CHF in the minutes following the EUR/CHF floor removal. As noted in the Introduction and illustrated in Figure 3, to unwind the long EUR/CHF strategy, hedge funds bought a large amount of CHF just after the SNB removed the EUR/CHF floor, and between the 9:30 a.m. announcement and 9:54 a.m., EUR/CHF dropped from 1.201 to 0.895. Research has shown that liquidity in CHF dropped just after the SNB announcement. Consistent with the model of exchange rate dynamics we described in [previous research](#) whereby exchange rate changes are a function of net flows, news, and liquidity, large net flows that occur just after news breaks and during a period of low liquidity are likely to increase market volatility.

The CFTC CoT data show a similar pattern of risk reduction, as by January 20, 2015 (the date of the first CoT report after the surprise SNB announcement), hedge funds had covered more than half of their January 13, 2015 short position of 23,000 CHF FX futures contracts (Figure 8). While the weekly CoT data is not definitive, it is likely that the buying of CHF FX futures took place just after the SNB abandoned the Minimum Exchange Rate policy on January 15, 2015. The price action of the front CHF FX futures contract on January 15, 2015 showed a similar pattern to the EUR/CHF exchange rate, rising by about 25 percent just after the announcement before ending the day up about 17 percent. Open interest in CHF FX futures dropped by 19,000 contracts over the week, consistent with purchases related to short covering.²⁸



The increased risk allocated by hedge funds to the long EUR/CHF strategy in early 2015 likely contributed to the buying of CHF and the sharp appreciation of CHF in the minutes following the floor removal.

Conclusions and Implications

Based on the evidence presented in this brief, we conclude that during the Minimum Exchange Rate policy period hedge funds engaged in a long EUR/CHF strategy whereby they would purchase EUR/CHF if it approached the 1.20 floor. The risk/reward ratio of such a strategy was compelling as long as SNB remained committed to purchasing EUR/CHF at 1.20. While the upside of the long EUR/CHF strategy could be unlimited, if the SNB removed or lowered the EUR/CHF floor the long EUR/CHF strategy would likely suffer large losses. We see evidence that when hedge funds employed the long EUR/CHF strategy, they subsequently sold EUR/CHF just before the next SNB quarterly policy announcement to reduce their risk in the event the EUR/CHF floor was removed at that meeting. From this evidence, we conclude that while hedge funds believed the policy would remain in place, they also believed that the SNB was most likely to remove the policy at a quarterly meeting and adjusted their risk positions to account for this outcome.

The SNB announced the removal of the EUR/CHF floor in a surprise press release rather than as part of a regularly scheduled quarterly policy announcement. The decision to make a surprise announcement likely contributed to the substantial buying of CHF in the three minutes that followed the press release and the volatility in the EUR/CHF exchange rate that followed (Figure 3). This buying of CHF, combined with a drop in market liquidity, likely contributed to the subsequent sharp decline in the EUR/CHF exchange rate—just 24 minutes after the announcement, the EUR/CHF exchange rate had plunged to 0.895 (25.5 percent), overshooting the eventual 1.053 settlement level by two-fold. Had the SNB instead removed the EUR/CHF floor at a regularly scheduled quarterly policy announcement, hedge fund long positions in EUR/CHF may have been smaller, leading to less buying of CHF and therefore less volatility in EUR/CHF just after the announcement.

Our findings have implications for central banks as they consider how their choices with respect to communicating policy changes might impact financial market stability. Our data and the CFTC CoT data demonstrate that hedge funds did in fact prepare for a range of possible outcomes in the days before scheduled SNB policy announcements. If institutional investors generally exhibit similar behavior and also prepare for a range of possible outcomes in the days before scheduled central bank announcements, then announcing unexpected monetary policy changes at a previously scheduled meeting may produce more balanced post-event flows. In contrast, enacting unexpected policy changes via a surprise announcement may not allow investors to adjust their risk in advance, which in turn leads to directional net flows that could amplify price movements.

Therefore, when choosing the most appropriate method to communicate policy changes, policymakers can use our results to help weigh market expectations with respect to both the **timing of announcements** and the **policy outcomes** in the context of the central bank's desired market impacts and other pertinent factors. In the instances when market stability is important, announcing policy outcomes at odds with market expectations at a regularly scheduled meeting may lead to less market volatility. When policymakers want markets to reprice rapidly and are less concerned with market volatility, releasing unexpected policy outcomes as a surprise announcement may be more effective.

These considerations will be particularly important when central banks deliberate unconventional policy measures that directly set the price of financial instruments, as such policies take pricing power away from the market and therefore can distort the incentives and, in turn, the behavior of market participants. This was the case with the SNB's Minimum Exchange Rate policy, as it created an incentive to execute the long EUR/CHF strategy described herein. To the extent that policymakers then want to unwind such a policy and return pricing power to the market with minimal unintended market impacts, the behavior induced by the policy-distorted incentives can lead to directional net flows that may increase market volatility.

Data Asset

To conduct financial markets research, the JPMorgan Chase Institute uses a unique, de-identified trade-level data asset that includes all available institutional investor transactions where the Markets Division of J.P. Morgan's Corporate & Investment Bank (CIB) acted as the market maker. The data set includes 395 million de-identified transactions across 44,000 institutional investors and covers all types of institutional investors, all regions globally, all asset classes (foreign exchange, equities, fixed income, and commodities), electronic and voice trades, and the post-financial crises period (historical coverage varies by asset class).

For this report, we used a sample of transactions where the following criteria were met:

- FX spot or forward trades in EUR/CHF
- Institutional investor is a hedge fund
- Executed while the SNB's Minimum Exchange Rate policy was in effect
- Not cancelled
- Eliminated trades with: missing trade date/execution time, zero/missing buy or sell amount, and missing investor sector

Our final analysis sample includes 35,000 trades from 120 hedge funds.

The CIB's market share in foreign exchange varies from year to year between 10 percent and 15 percent. Broadly speaking, we believe that the CIB's overall market share is large enough that our data is representative of the market activity of all hedge funds in the market we studied. However, there is natural variation in the CIB's market share across different currencies, investor sectors, regions, and time zones, and this is an important factor to consider when interpreting the results of our analysis.

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Endnotes

- 1 The SNB conducts an in-depth monetary policy assessment in each March, June, September, and December that results in an interest rate decision and inflation forecast, as described here: <https://www.snb.ch/en/i/about/monpol>.
- 2 See https://www.snb.ch/en/mmr/reference/pre_20110906/source/pre_20110906.en.pdf.
- 3 For a further description of the conditions that led to the implementation of the SNB's Minimum Exchange Rate policy and why it was removed, see *FX Markets Move on Surprise News: Institutional Investor Trading Behavior around Brexit, the US Election, and the Swiss Franc Floor*.
- 4 By the end of 2014, the SNB's balance sheet as a percentage of local GDP was considerably higher than other developed market central banks, such as the BoJ (58 percent), the Federal Reserve (26 percent), and the ECB (21 percent). Source: Haver Analytics.
- 5 Source: https://www.snb.ch/en/mmr/reference/annrep_2014_komplett/source/annrep_2014_komplett.en.pdf, page 75.
- 6 The risks of large and increasing central bank balance sheets are still up for debate. [Research](#) addresses this topic, concluding that the fear of future, larger losses can lead a central bank that has built up large foreign exchange reserves to abandon a currency floor.
- 7 See https://www.snb.ch/en/mmr/reference/pre_20150115/source/pre_20150115.en.pdf.
- 8 Throughout this report we apply a scaling factor to our net flow data to account for currency-specific volume and price volatility in order to be consistent with the analysis in *FX Markets Move on Surprise News: Institutional Investor Trading Behavior around Brexit, the US Election, and the Swiss Franc Floor*. For a complete description of this calculation, see the Methodology section of *FX Markets Move on Surprise News: Institutional Investor Trading Behavior around Brexit, the US Election, and the Swiss Franc Floor*.
- 9 Carry refers to the income derived or paid from holding a financial position. In practice, investors would most likely implement such a trade through an FX forward contract, where the difference between the forward exchange rate and the spot exchange rate reflected the interest rate differential between the EUR deposit rate and the CHF deposit rate to the date of the forward contract (the carry). Over the period the floor was in place, the differential in one-month interest rates averaged about 28 basis points.
- 10 To be specific, for the EUR/CHF trades from hedge funds in each of the 14 sub-periods between regularly scheduled SNB meetings, we recreated the left-hand panel of Figure 2, where we plotted total scaled net flows for each exchange rate bin. We then checked to see if there was evidence of more buying of EUR/CHF (more positive scaled total net flows) when the exchange rate was closer to 1.20 compared to when the exchange rate was higher.
- 11 To test the statistical significance of this finding, we isolated all of the EUR/CHF spot trades executed by hedge funds from 3 days before each meeting to the day before the meeting. We then scrambled the trade dates on these trades, randomly assigning the dates to each trade. We divided the trades with scrambled dates into the three groups of interest in Figure 5 based on the scrambled date: (1) EUR/CHF traded at or below 1.21 in the sub-period but there is no evidence of the long EUR/CHF strategy; (2) EUR/CHF traded at or below 1.21 in the sub-period and there is evidence of the long EUR/CHF strategy; and (3) EUR/CHF did not trade below 1.21. We then calculated average daily total net flows by hedge funds for each event day relative to the meeting from three days before the meeting to the day before the meeting and examined our results to see if these rules were satisfied: for group 2, there was at least one day before the meeting where the total net flow is less than -\$1B, while for groups 1 and 3, there were zero days before the meeting where the total net flow is less than -\$1B. We repeated these steps 1,000 times, and noted that the rule above was satisfied 1 out of 1,000 times, suggesting this finding is statistically significant at the 95 percent confidence level.
- 12 The ECB's statement on June 4, 2014 read: "The interest rate on the deposit facility will be decreased by 10 basis points to -0.10%, with effect from 11 June 2014," and the ECB's statement on September 4, 2014 read: "The interest rate on the deposit facility will be decreased by 10 basis points to -0.20%, with effect from 10 September 2014." Following these two ECB decisions, for the SNB, the option to cut interest rates below zero was viewed as the most effective option to clearly demonstrate its resolve to maintain a sufficiently small interest rate differential relative to the ECB to prevent Swiss Franc appreciation.
- 13 For a brief description of the Swiss economy and inflation outlook, see the SNB's monetary policy assessments of June and September 2014, found here: https://www.snb.ch/en/mmr/reference/pre_20140619_1/source/pre_20140619_1.en.pdf and here: https://www.snb.ch/en/mmr/reference/pre_20140918/source/pre_20140918.en.pdf.
- 14 For the full text of Fritz Zurbrugg's speech, see https://www.snb.ch/en/mmr/speeches/id/ref_20141120_zur/source/ref_20141120_zur.en.pdf.
- 15 For the full text of Thomas Jordan's speech, see https://www.snb.ch/en/mmr/speeches/id/ref_20141123_tjn/source/ref_20141123_tjn.en.pdf.

- 16 For the full text of Jean-Pierre Danthine's speech, see https://www.snb.ch/en/mmr/speeches/id/ref_20141009_jpd/source/ref_20141009_jpd.en.pdf.
- 17 A z-score is a measure of how many standard deviations an observation is from the mean.
- 18 See https://www.snb.ch/en/mmr/reference/pre_20140918/source/pre_20140918.en.pdf.
- 19 See <https://www.cftc.gov/MarketReports/CommitmentsofTraders/index.htm>. Note that the Commitment of Traders report only captures partial FX exposures, as it only shows positions in FX futures (not FX spot, forwards, or options) and does not allow day-over-day position analysis because of its weekly frequency.
- 20 The CFTC CoT provides position information across four categories of traders: Dealer/Intermediary, Asset Manager/Institutional, Leveraged Funds, and Other Reportables. Leveraged Funds are typically hedge funds, as described in: <https://www.cftc.gov/sites/default/files/idc/groups/public/@commitmentsoftraders/documents/file/tfmexplanatorynotes.pdf>. We calculate net positions for Leveraged Funds as the difference between their long positions and short positions. Open interest is the number of contracts outstanding at a given time.
- 21 Each CHF FX Futures contract equates to 125,000 Swiss Francs, as described here: http://www.cmegroup.com/trading/fg10/swiss-franc_contract_specifications.html. Commitment of Traders report data sourced from Haver Analytics.
- 22 The price of CHF FX futures is correlated with the USD/CHF exchange rate, and some hedge funds may have held a short position in CHF FX futures in combination with a long position in EUR FX futures to effect a long EUR/CHF position. Therefore, we also examined net position changes for leveraged funds in EUR FX futures. According to the CFTC CoT reports, over both the September and December SNB policy announcements, the net position of hedge funds in EUR FX futures decreased, indicating that hedge funds sold EUR FX futures. While hedge funds were likely executing many trading strategies using EUR FX futures at this time, the decrease in their net positions in EUR FX futures over these two periods combined with the increase in their net position of CHF FX futures over the same two periods is consistent with our view that hedge funds were unwinding a trading strategy using FX futures that was similar to the long EUR/CHF strategy just before the September and December 2014 SNB policy announcements.
- 23 The change in open interest indicates if the change in net position was created by an investor with an existing position in the same direction as the net position, or by an investor with an existing position in the opposite direction or no position. For example, if a net short position becomes less short (closer to zero) AND open interest decreases, it means that an investor that had the net short position bought contracts and reduced their short position. In contrast, if a net short position becomes less short (closer to zero) AND open interest increases, it means that an investor that had a net long position or no position bought contracts.
- 24 Cumulative net flows can only be interpreted as a very rough indication of positions because the starting position is unknown. As such, cumulative net flows should not be over-interpreted.
- 25 See https://www.snb.ch/en/mmr/reference/pre_20141218/source/pre_20141218.en.pdf.
- 26 After the December 18, 2014 SNB announcement, the spread between EUR and CHF three-month deposit rates increased from 25 basis points to 38 basis points. Source: JP Morgan Markets.
- 27 See https://www.snb.ch/en/mmr/reference/pre_20141211/source/pre_20141211.en.pdf.
- 28 Our transaction data and the CFTC CoT data indicate that it was not "overbuying" of CHF by hedge funds after the surprise policy announcement that drove the sharp move in EUR/CHF. The sum of the net flows in EUR/CHF on January 15, 2015 shown in Figure 3 is smaller than the accumulation of buys of EUR/CHF as of January 14, 2015, shown in Figure 8. Similarly, between the January 13, 2015 and January 20, 2015 CFTC CoT reports, hedge funds only covered about half of their short position in CHF FX futures.

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