

## Flash note 20/08/2024

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### **The VaR Effect. How Forced Selling Triggered the Collapse and Resurrection of the Japanese Market. What's Next?**

#### **The Impact of the VaR Model on Stock Liquidation in Japan: An Analysis of Extreme Volatility and Market Cleansing**

The recent stock liquidation in Japan, triggered on August 5th, was primarily driven by forced selling linked to the Value at Risk (VaR) model. The renowned publication Nikkei has thoroughly analyzed the underlying causes of this collapse, which resulted in a 12% drop in a single day. On that day, the volatility index VIX spiked to 70, a level not seen since the 2008 financial crisis, causing trading halts in around 800 companies (approximately 20% of the total) due to circuit breakers. Additionally, the price of out-of-the-money put options soared. Notably, all of this occurred in a context where Japanese stocks were already significantly undervalued, with a high percentage of companies trading below their book value and financial multiples suggesting attractive opportunities.

Until now, explanations for the causes of this market crash have focused on the dual shock of an aggressive intervention by the Bank of Japan (BOJ) from mid-July and disappointing macroeconomic data from the United States, particularly in job creation. However, these factors alone hardly justify a drop of such magnitude. To truly understand the reasons behind this extreme movement and assess the likelihood of it recurring, it is essential to consider market mechanics.

The vulnerability of the Japanese market was largely due to the accumulation of leveraged positions. When extreme volatility materialized, most of these positions, subject to the VaR model, were forcibly liquidated. This model, used by virtually all banks (where there is leverage, there is always a bank), triggers automatic sales when the value of the asset purchased with leverage begins to fluctuate significantly. Banks, in defense of their interests, force borrowers to liquidate, exacerbating the decline. According to Nikkei's findings, supported by data from entities like JPMorgan, volatility-induced selling was the primary driver of the collapse, followed by the unwinding of carry trades. These dynamics are closely related. Macroeconomic factors in the U.S. and expectations of an increase in BOJ interest rates simply acted as the spark.

#### **Probability of Recurrence and Market Cleansing**

After a market crash caused by the massive liquidation of leveraged positions, especially when leverage is tied to models like Value at Risk (VaR), a significant and healthy market cleansing usually takes place, which considerably reduces the risk of new episodes of extreme volatility. Based on historical experiences and available data, these are the key developments that unfold in the weeks following such events:

##### **1. Leverage Reduction and Market Cleansing:**

- During a crash triggered by forced liquidation, a substantial portion of financial leverage quickly disappears. Banks exercise their rights, and speculative positions are eliminated, typically leading to a reduction of between 20% and 50% of total leverage in the affected markets. Significant events, like the 2008 financial crisis, saw a contraction of up to 50% in some market segments, reflecting a massive purge of accumulated risk.
2. **Risk Reassessment:**
- Extreme volatility forces financial institutions to reconsider their risk tolerance and adjust their risk management models. Banks tend to tighten margin requirements and recalibrate their VaR models to reflect the new market reality, potentially leading to further leverage reduction in the short term. This results in a brief phase of gradual market consolidation.
3. **Market Recovery:**
- After these cleansing episodes, and following the consolidation phase as VaR models and margin requirements are recalibrated, the market usually shows a gradual, favorable, and steady recovery. The reduction in leverage itself decreases systemic vulnerability, and more importantly, the “cleansing” and deleveraging are never permanent. Over time, as the market stabilizes and confidence is restored, leverage tends to increase again, though initially in a more cautious manner.

It is not surprising that since August 5th, the Japanese market has risen by 20%, recovering 80% of the losses suffered during that fateful first week of August. However, the difficulties for the Japanese market began on July 10th with increasingly evident interventions by the BOJ in defense of the yen, which initiated the unwinding of carry trades. Indeed, the yen's recovery began to materialize violently, but it was accompanied by an even more violent and unexpected movement in the Japanese stock index.

### **Discretionary Mandates Positioning and Impact Assessment**

Despite the sharp correction in early August in the Topix Index, our position in Japan within our discretionary mandates was in local currency, which helped cushion the blow. Putting the numbers on the table, since July 10th, when the correction began, stock market losses (Topix) have been -8.22% but gains from JPYEUR appreciation have been 8% (with the exchange rate moving from 175 to 162).

### **Outlook**

Looking ahead, we foresee continued yen appreciation to 145-150 against the euro, accompanied by a rising Japanese equity market, benefiting from the reduction of leverage (by approximately 40%), improved corporate earnings, and more attractive valuations compared to other developed markets (measured by the forward PE multiple and the risk premium).

The forced selling driven by the VaR model was the primary catalyst behind the Japanese market collapse on August 5th. Despite macroeconomic factors and BOJ decisions, the true cause of the crash lay in market mechanics and the accumulation of leverage (which is difficult to measure, as data and records on the volume of leveraged positions from major banks are not easily available). The subsequent market cleansing has significantly reduced the risk of new episodes of extreme volatility, which, combined with more attractive market conditions, suggests a favorable outlook for the recovery of the Japanese market.

Kind regards.