

## FX Column: Derivatives Risk Management and Aviation

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Working in derivatives risk management and the cockpit of a plane has much in common. There are stunning similarities already in the number of screens and indicators one observes and needs to pay attention to while flying, and similarly while running a derivatives portfolio, see the panel in [Figure 1](#). And the usual questions are: can I continue my position, or do I need to change something? Which adjustments do I make to fly smoothly? Do I need to abandon the flight?



**Figure 1: Cockpit of a Single-Engine Mooney 20J**

As in risk management, one needs to judge multiple factors at the same time: altitude (spot), airspeed (implied volatility), ground speed (historic/prevaling volatility), vertical speed indication (delta hedging in high gamma), wing level (skew), visibility (market data access), fuel consumption (margin in the account), weather (market turbulence), engine (risk management software), traffic rules (compliance),

passenger safety (involvement of colleagues), traveling costs (sales and traders' margin), paperwork (documentation, regulation), etc.

One of the main questions I am asked frequently is if one can have accidents in planes. While the answer is obvious, one tends to associate a (statistically) very small probability to aviation accidents. And in case of an accident, the probability of its occurrence assigned before becomes completely irrelevant.

Ask yourself this question: Suppose you boarded an aircraft ready to fly to your destination and pilot announces that on the upcoming flight the probability of having an accident is twice as high as usual (but still 0.0002%). If you decide to take the flight, you get half the ticket cost refunded, but you have the option to leave the aircraft. Would you fly?

I am trying to create awareness of probabilities of a hazard. Before we take off, let me illustrate how a treasurer assess financial risk.

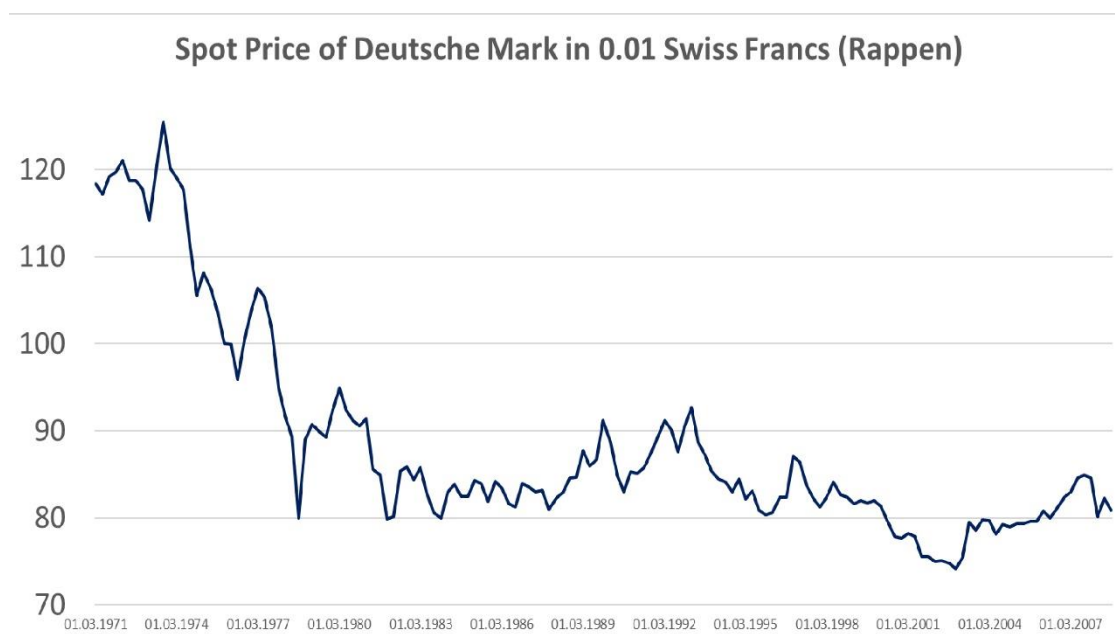
		<b>Severity</b>			
<b>Likelihood</b>		Catastrophic	Critical	Marginal	Negligible
Probable		<b>High</b>	<b>High</b>	<b>Serious</b>	<b>Medium</b>
Occasional		<b>High</b>	<b>Serious</b>	<b>Medium</b>	<b>Low</b>
Remote		<b>Serious</b>	<b>Medium</b>	<b>Medium</b>	<b>Low</b>
Improbable		<b>Medium</b>	<b>Medium</b>	<b>Medium</b>	<b>Low</b>

Figure 2: Aviation Risk Assessment Matrix

I have seen in many examples of risk management of **floans** (FX loans, loans in foreign currency) that the hazard of the exchange rate moving against the floan-taker is considered as only remotely likely to occur – and therefore the floan feels like a low risk decision. However, one often forgets to put it in relation to the severity of the outcome: A large move of the exchange rate can leave the corporate or city treasurer with a catastrophic loss that ruins the company or the municipality; the equivalent in aviation would be a fatal accident. In the risk assessment matrix, the likelihood of the hazard would be classified as *remote* (this classification depends on the assessor), and the severity of the outcome as *catastrophic* (this classification also depends on the assessor). The matrix shows that the **risk is serious** under this assessment.

There is a lot to learn from a risk assessment matrix I found in an aviation training program of the FAA (Federal Aviation Association): In this matrix ([Figure 2](#)) one considers the likelihood of a hazard occurring and the severity of its outcome. Applying the aviation risk assessment matrix is rather simple, but I consider it extremely useful also in a financial risk management context. Using it can prevent us to be penny wise pound foolish.

A lower interest rate in Swiss Franc (CHF) for decades has tempted many corporates and private people in the Euro zone (EUR/CHF), Poland (PLN/CHF) and Hungary (HUF/CHF) to become **floanies** (loan takers in foreign currency). A floan is a carry trade, no matter how you twist and turn it. Carry trades can fail, if the spot moves more and causes more loss than the interest the treasurer saves. For example, the Swiss Franc lost 30% of its value against Deutsche Mark in the seventies ([Figure 3](#)), and a short term history does often not reveal the potential spot movements ahead.



**Figure 3: History DEM-CHF spot rates before 2007**

The carry-traders forget to assess their risk and are then trying to blame the banks if the carry trade fails. While all the focus is given to the probability of the hazard, what is missing is a good assessment of its severity. If a floan creates a loss of 30% of the loan notional, and this is so much that the municipality would not be able to handle it, then the probability of its occurrence becomes irrelevant.

The next round of floans taken at a large scale with a serious risk is already on its way: in India, Brazil and in China, to name a few. Regular flying (as in [Figure 4](#)) can increase risk awareness and the aviation risk assessment matrix should very well become part of risk management. In case of an engine failure we want to land at the closest airfield. Can you spot it? Happy Landings!



Figure 4: La Llagonne Airfield in Sight?