

FX Column: The Salzburg Financial Scandal – When Imprisonment Depends on the Value of a Structured Interest Rate Swap

Uwe Wystup, MathFinance AG, Frankfurt am Main

It's been a few days, but the Salzburg financial scandal is a story worth telling, as there is in fact not much to find in the non-German press. Salzburg is a city in Austria and is also the capital of the state of Salzburg. The majestic castle ([Figure 1](#)) overlooks Mozart's birthplace. The *primary financial scandal* of the State of Salzburg was discovered in 2012 and is about the state treasurer Monika Rathgeber acting as essentially as a hedge fund manager aiming to generate profit using structured interest rate products that banks liked to sell in the first decade. She has been sentenced to jail eventually and published a book¹ describing why she felt a victim of the system.



Figure 1: Salzburg castle in summer 2017

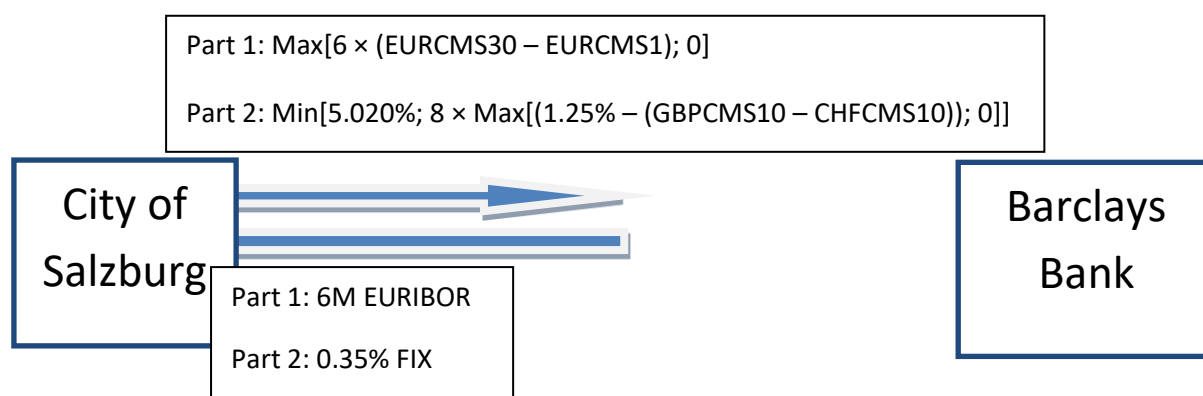
¹ Monika Rathgeber: Am System zerbrochen. Der Salzburger Finanzskandal: eine Frau zwischen Politik und Verantwortung. Edition Innsalz u.a., Ranshofen u.a. 2013.

Today, I will shed some light on the *secondary financial scandal* of the City of Salzburg: Heinz Schaden, the mayor and his treasury team had found out that somehow the city had five structured interest rate swaps in their portfolio. Given the capacities of systems and staff, the mayor had concluded that the City can't handle the complexity, valuation, and risk management of the instruments and, since he knew Ms. Rathgeber, handed over the structured interest rate swaps to her state portfolio of structured investments – under mutual agreement. Every was just fine.

Only later, auditors had discovered that the value of the city's structured investments at the time of hand-over was negative, and therefore, the city should have paid a compensation to the state of Salzburg. The representatives of the state had not done this and were accused of embezzlement. The representatives of the city of Salzburg were charged with aiding and abetting this embezzlement. The mayor, however, had a completely different notion of the events, as first of all he thought he saved the city from complexity and (potential) losses and secondly had in fact saved the city some money.

A critical part of the criminal litigation was to determine the value of the structured products investments at the time of hand-over. The reason is that if this value exceeds a certain threshold of about EUR 300,000, the defendants may be sentenced to terms of imprisonment. A value below the threshold may only result in a fine.

The Products: The five structured interest rate swaps had all coupons not related to the city's cash-flows. There were speculative instruments. I will illustrate just one example: On 25 May 2007 the city of Salzburg traded an interest rate swap with a notional of around EUR 12M, the swap had two parts, first part started on 30 November 2006 and would terminate on 30 November 2021, second part started 1 June 2012 and would terminate on 1 June 2025. The semi-annual coupons per annum are displayed here:



The coupons were based on constant-maturity-swap (CMS) rates in the currencies Euro (EUR), British Pound (GBP) and Swiss Franc (CHF), in **part 1** based on the difference of the 1-year and the 30-year swap rates in the same currency, in **part 2** based on 10-year swap rates in different currencies. One of the reasons for the special structure of this swap is that it was the result of re-structuring another swap that had gone under water.

The Valuation of the Barclays swap is obviously heavily model-dependent. Figure 2 shows different GBP-CHF interest rate spread evolutions. The prosecutor’s expert had apparently used a model with significantly higher variance, whence the value of the option-like payoff embedded in the coupon will be higher than it would be using a smaller variance, as historically observed. Already this observation demonstrates that there is no firm answer to the value of the swap. Essentially here, the choice of the model and the calibration of the model parameters, in particular the variances and correlation, would determine whether the mayor would have to go to jail or not.

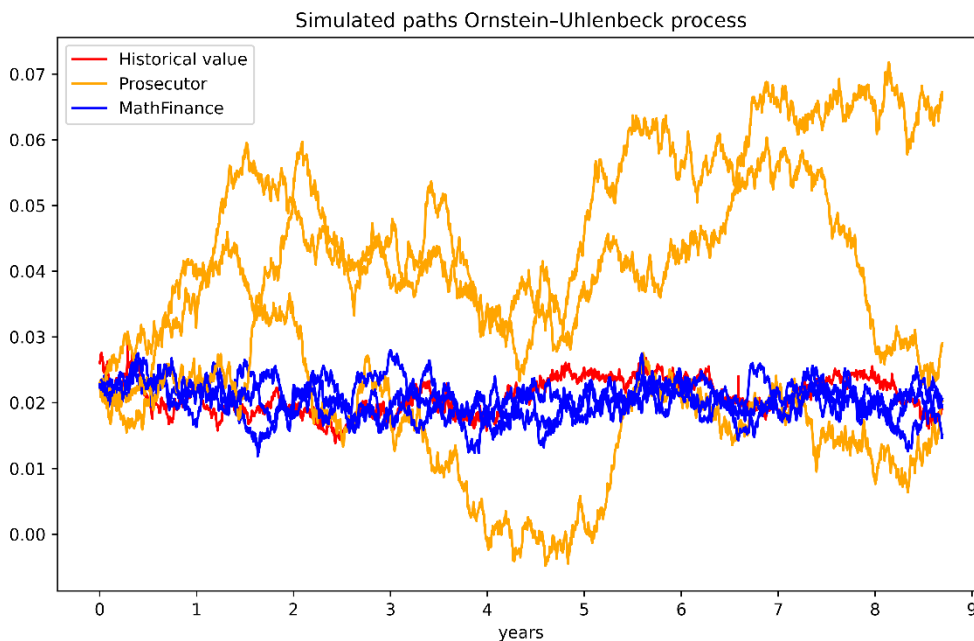


Figure 2: Differences of the 10-year CMS rates in GBP and CHF, historic (red), simulated by MathFinance AG (MF) in a Gaussian model (blue), simulated following the model of the prosecutor’s expert (orange).

In Figure 3 we can observe how the distribution of the difference of interest rates depends firstly on the choice of the model and secondly on the calibrated model parameters. We use the (Gaussian) Vasicek and the mean-reverting Ornstein-Uhlenbeck (OU) model to examine the distribution of the difference of interest rates. In particular, in the OU-model there is a significant difference between the variance we found at MathFinance and the variance the prosecutor’s expert had implied. It is not clear if that expert just did sloppy work, or was incompetent, or had tried to manipulate the variance to foster the idea that the judge would send Mr. Schaden to prison.

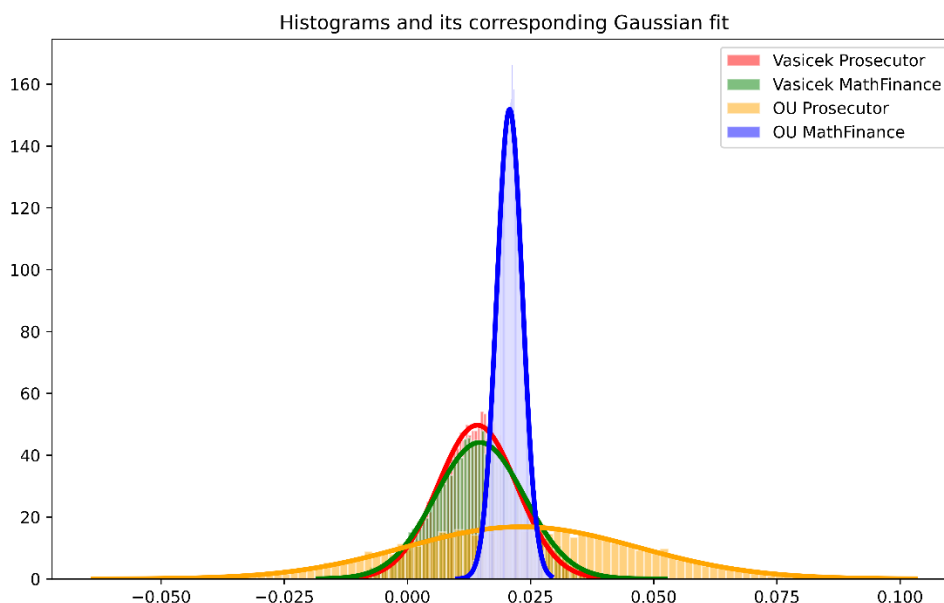


Figure 3: Histograms showing the distribution of the difference of the GBP and CHF 10-year CMS rates in various models and parameter sets: MF calculated by MathFinance, the others implied by the prosecutor’s expert analysis.

The Austrian Legal System: as it turned out, in a criminal case in Austria, the prosecutor can nominate an expert, to write an expert report and to provide expert evidence in the court hearing. The expert of the prosecutor then becomes the expert of the court. Not a joke – Austria. However, the defendant must not have such an expert, so other than in a civil litigation where experts of both parties provide reports and evidence, this is not the case in a criminal case. The defendant can only bring a *person with special qualification* along to the trial, who is permitted to ask question to the prosecutor’s expert, but not permitted anything else, i.e., not to provide comments on the answers, no comments, or reflections on other factual witness statements, just questions to the expert. If the expert of the prosecutor and court has done mistakes in his calculations or conclusions, this would have to be made evident to the court only through such Q&A sessions.

The Prosecutor’s Expert: In this trial, during the first week, the expert couldn’t provide any material explanations to the calculations in his report, nor the source code that was included. The judge had granted him a few days of reflection and requested everybody to come back to Salzburg after a few weeks. In the second court hearing the judge had finally concluded that the expert is neither credible nor useful and decided to continue the trial without him.

The Public Sentiment: Looking at the street in front of the court building (Figure 4), there were hundreds of inhabitants of the City of Salzburg demonstrating for Mr. Schaden to be let go and remain their mayor. The general public was under the impression that their mayor and his treasury team was first a victim of aggressive

structured products sales teams of various investment banks, secondly a victim of an over-ambitious audit firm, finally a victim of a pontifical Austrian prosecution and ego-driven court system mis-interpreting the mutual agreements between him and Ms. Rathgeber. Austrian print media and TV reported frequently about the scandal.



Figure 4: The State Court and the Prosecution Department of Salzburg

The Outcome: the judgment was a conditional imprisonment of some of the actors involved, and a lot of problems with procedural abnormalities, which triggered a review by the court of appeal. Mr. Schaden preventively resigned from his role as Salzburg's mayor in September 2017.

Conclusion

1. Never underestimate model risk: A few wrongly calibrated model parameters can get you to jail.
2. Structured products trading for municipalities has been under considerable review with new legal framework in Austria and many other countries.
3. Education – Education – Education