

## **Catching up with Complexity – Report on the 4<sup>th</sup> International Conference on Credit Risk Analysis and Management**

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After a very successful Basel Credit Conference in summer 2013, Basel was hosting the 4<sup>th</sup> Conference on Credit Risk Analysis and Risk Management on August 27/28<sup>th</sup>, 2015. Jointly organized by the University of Applied Sciences Northwestern Switzerland and the University of Basel and co-chaired by the Universities of Regensburg, Hohenheim, Oakland, Rotterdam, St. Gallen, and the University of Applied Sciences in Vorarlberg, the conference was the fourth in this set-up. The conference series is intended to establish a discussion platform on credit analysis and related topics for both academia and banking practice alike. Around 55 international academics and practitioners gathered in Basel to discuss keynotes and latest academic research categorized in the streams Regulation, Credit Portfolio Models, Credit Analysis and Ratings, CDS & Bond Pricing, and Risk Analysis.

Rather surprisingly the two keynote speakers opening the conference program on Thursday afternoon seemed not as contradictory as one may expect from two people on different sides of the regulatory power: Marcel Fligge, Head of Client Credit Risk from Credit Suisse and Alexandre Kurth, team head in the ‘Risk Management’ department of the banks division of the Swiss Financial Market Supervisory Authority FINMA, both spoke about stress testing from a bank respectively a supervisor’s perspective. A common professional past of the two speakers probably soothed the natural rivalry present on company level. Marcel Fligge focused in his speech on the design of stress testing models as well as on

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governance and embedment of the respective models within the financial institution. He concluded that a matured risk culture that fosters a critical and informed debate about model outcomes and potential management activities provides the basis for a meaningful use of stress testing models and results. Alexandre Kurth gave amongst others an insight into real estate stress testing. The choice of this topic is driven by its actuality as the Swiss authorities, led by the Swiss national bank, are concerned about a potential bubble on the Swiss real estate market. Kurth emphasized in this context the comparatively high level of mortgage debt relative to GDP (about 140 %) in Switzerland, motivated mainly by tax incentives encouraging slow repayments. Nevertheless, the stress test of the FINMA is promising. Under the extreme scenario only 60 % of the realized losses that occurred between 1991–1996 are expected to repeat even though the exposure doubled since then. Compared with the bank internal stress testing the FINMA-model estimates a more severe stress loss. According to Kurth, only a few banks have internal models which lead to more severe stress losses compared to the stress test of the FINMA. On average the banks stress loss deviates around -7 % (excluding 2 outliers) from the stress loss calculated by the FINMA.

In accordance with the starting keynotes the first academic session covered predominantly regulation-related topics and featured three contributions. In their paper “Optimal Regulation, Executive Compensation and Risk Taking by Financial Institutions” *Jens Hilscher* (International Business School), *Yoram Landskroner* (Brandeis University) and *Alon Raviv* (Brandeis University) present an equilibrium model of financial institutions in which they can examine the optimal regulation of risk taking. Starting point of the paper is an optimal level of financial risk taking identified as a result of a tradeoff between the benefits of a well-functioning financial sector and the expected social cost of financial distress. According to the three authors the risk level chosen by the three stakeholders (regulators, shareholders of financial institutions, and management) depends on their strategic interactions. The main finding of the paper is that it is possible for the regulators to achieve a socially optimal level of financial risk taking by applying any of two probable policy tools. Regulators either could put caps into place on equity-based executive compensation or on asset risk. Both measures based on the assumption that shareholders choose levels of management’s ownership; and management chooses the level of asset risk. Final conclusion of the paper is that with a limited ability of the regulator to enforce such limits, capping equity based compensation becomes a less efficient tool than

setting an upper limit on asset risk. In addition the authors conclude that employing more than one policy tool is the optimal decision if stockholders and management have better information about losses to executives in case of bank failure than regulators.

*Dennis Kahlert* and *Niklas Wagner* (both from University of Passau) perform a stress test for Eurozone banks of systemic importance by applying a historical simulation approach in the paper “Are Eurozone Banks Undercapitalized? A Stress Testing Approach to Financial Stability”. They analyze the banks’ risk bearing capacity by simulating the impact of recent financial market turbulences onto the present capital base. Additionally the authors compare their results with regulatory benchmarks. The study is based on market and credit risk exposures from publicly available annual reports in the period from January 2007 to December 2013. The authors calculate the impact of stress on economic capital by applying the market capitalization weighted average balance sheet of the sample banks as a representative of aggregate risk exposure. Consequently they assign appropriate risk factors to major on- and off-balance sheet positions and calculate bank capital maximum drawdowns for different time horizons by revaluating the fair valued balance sheet on a daily basis. The authors find that systemically important Eurozone banks are well capitalized with respect to market risks but undercapitalized regarding credit- and counterparty risks.

In their paper “How does the Market View Bank Regulatory Capital Forbearance Policies?” *Van Son Lao* (Laval University) and *Xiaoxia Ye* (Stockholm University) analyze the reaction of the US regulator Federal Deposit Insurance Corporation (FDIC) to banks in distress. As a starting point to their research program they observed a lax handling of insolvent institutions at the climax of the 2007–2009 subprime crisis. Precisely, the FDIC revived insolvent systemically important financial institutions by infusing funds rather than automatically closing them. This mechanism defines the tolerance level below which a bank closure is triggered. It is called policy parameter by *Ronn* and *Verma* (1986)<sup>1</sup>. The authors of the current paper therefore develop a model in which they make this policy parameter stochastic and bank-specific to conclude the stock market view of the regulatory capital forbearance value. Their analysis is based on data about more than 700 U.S. listed banks in the period from 1990 to 2012. They link the model-derived forbearance fraction in equity capital

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<sup>1</sup> *Ronn, E. I.* and *A. K. Verma* (1986): “Pricing Risk-Adjusted Deposit Insurance: An Option-Based Model”, *Journal of Finance*, 41, pp. 871–95.

to bank specific risk variables and business cycles. The authors conclude that the market expects banks to receive more capital forbearance in recessions. This market expectation is matching with banks' intrinsic owner-contributed capital, idiosyncratic risk, systemic risk, and charter value so the finding of the authors.

In the stream "Credit Portfolio Models" three presenting authors spoke about the newest research results of modeling credit portfolio risk. *Christian Greve* and *Lutz Hahnenstein* (both from WGZ Bank AG) explore in their paper "Benchmarking the LGD Parameter for Mortgage Loan Portfolios under Stress" portfolios of mortgage loans. They analyze the impact of a decline in property prices that leads to stressed recovery rates for collateral on the loss given default (LGD) parameter in portfolios of mortgage loans. Firstly, the authors prove that the average LGD's stress sensitivity depends on the portfolio's loan-to-value-distribution. In addition they demonstrate this relationship to be crucial for understanding the stress resilience of banks involved in the mortgage business. Finally, the authors present a formula for portfolio LGD and check the robustness of this approximation for several hypothetical bank portfolios. The closed-form solution shown in the paper is announced as a meaningful starting point for benchmarking analyses by regulators, rating agencies and risk managers.

The paper "The Demand and Supply of Mortgage Fixation Periods" written by *Christoph Basten* (FINMA and ETHZ), *Benjamin Guin* (University of St.Gallen), and *Catherine Koch* (BIS) focuses on mortgage portfolios also. The three authors evaluate the determinants of households' and banks' choice of mortgage rate fixation periods (FP). With a unique dataset, containing offers from multiple lenders for each mortgage request, they challenge the existing literature that interprets equilibrium FP as purely demand driven. The results reveal that banks do deviate from requested FP. Generally, banks already exposed to high interest rate risk offer shorter FP. Households with high payment to income ratios are, however, shown to be offered longer FP. This approach insures the households against interest rate risks, and thus insures banks against credit risk, so the final conclusion of the authors.

In their paper "Global Credit Risk: World, Country, and Industry Factors" *Siem Jan Koopmann* (VU University Amsterdam and Tinbergen Institute), *André Lucas* (VU University Amsterdam and Tinbergen Institute), and *Bernd Schwaab* (European Central Bank) investigate the dynamic properties of systematic default risk conditions for firms in

different countries, from different industries and rating groups. In detail they evaluate common components in corporate defaults in 41 countries between 1980Q1–2014Q4. Therefore, the data covers both, the global financial crisis and euro area sovereign debt crisis. The authors apply a high-dimensional nonlinear non-Gaussian state space model and find that macro and default-specific world factors are a primary source of default clustering across countries. Further they find that defaults cluster more than implied by shared exposures to macro factors. This finding indicates that other factors also play a significant role so the conclusion of the authors. Finally they reveal a correlation between deviations of systematic default risk from macro fundamentals and net tightening bank lending standards for all firms. This leads to the final conclusion that bank credit supply and systematic default risk are inversely related.

The second conference day started with the third academic stream concentrating on “Credit Analysis and Ratings”. *Mike Qinghao Mao* (Erasmus University Rotterdam), *Greg Nini* (Drexel University), and *Laura Xiaolei* (Peking University) analyze in the paper “Customer Risk and Corporate Financial Policy: Evidence from Receivables Securitization” the effect of customer risk on corporate financial policy. They provide novel evidence about the existence of such an effect through a channel of receivables securitization. They work with data on asset backed securitization (ABS) collected from firm SEC filings and match these firms with their principal customer firms. Their central finding is that customer firm credit risk negatively affects the leverage level of the special purpose entity (SPE) and also SPE financing capacity in an ABS. According to the authors the significant impact of customer risk on ABS outcomes highlights the feature of credit risk separation between the securitized assets in ABS and firm remaining assets. Finally, they find that higher concentration risk of receivables leads to lower SPE leverage and financing capacity.

*Zahn Bozanic* (The Ohio State University) and *Pepa Kraft* (NYU Stern School of Business) analyze in the paper “Qualitative Risk and Corporate Financial policy: Evidence from Receivables Securitization” the impact of qualitative inputs on credit risk assessments. While they acknowledge that credit ratings are determined by both quantitative and qualitative inputs, the authors identify an explicit overlap of studies focusing on quantitative models of credit risk, and far less analysis about the impact of soft or qualitative adjustments on the output of credit risk models. The authors examine whether and how credit analysts employ borrowers’

credit risk relevant qualitative disclosure in making their credit risk assessments and conclude that credit analysts effectively impound this information into their credit ratings. In addition the paper indicates that the soft, but not hard, adjustments are the mechanism by which the information in borrowers' qualitative disclosure is impounded into the rating. The authors further examine the effect of the credit risk relevant information extracted from qualitative disclosure on the informativeness of credit ratings. They find that credit rating downgrades that involve soft adjustments or greater amounts of qualitative disclosure are more informative than those that do not. However, this observed increase in informativeness diminished after the Regulation Fair Disclosure exemption was repealed by the Dodd-Frank Act whereby legal liability for credit rating agencies increased.

In the paper "Follow the money: Investor Trading around Investor-Paid Credit Rating Changes" *Utpal Bhattacharya* (Hong Kong University of Science and Technology), *Kelsey D. Wei* (University of Texas at Dallas), and *Han Xia* (University of Texas at Dallas) study the influence of investor-paid credit ratings on the investment behavior and performance of institutional investors. The focus on institutional investor is due to the fact that they are the ultimate consumers of credit ratings. The authors identify a group of institutional investors who significantly trade on ratings issued by EJR – an investor-paid rating agency – by using institutional equity trading data. The so called EJR followers outperform non-followers, and show improved trading performance after becoming followers, so the conclusion of the paper. This result suggests that EJR's advice can provide followers with an informational advantage over other important trading signals on the equity market.

The second keynote session on Friday was characterized by an interesting mix of topics and personalities. Elod Takas, Senior Economist at the Bank for International Settlement BIS, introduced the conference audience to the world of emerging market bonds. He pleaded for a countercyclical (economic) thinking. The analysis of the surging debt securities issuance in emerging markets led Takas to the conclusion that investors enjoy the easy life and good returns in good times and are forced to think in bad times when options are limited. Thus, his advice is to think before one is forced to it by events. The actuality of the low interest environment and the following challenging environment for all actors in the financial markets was a commonality with the second speaker, Thomas Wiedmer, Alternate Member of the Governing Board of the Swiss Na-

tional Bank SNB. The explosiveness of this topic and the current tense situation on the currency markets were reflected in a very lively discussion after the presentation. In his speech Thomas Wiedmer among other things explained the measures taken in Switzerland to control cyclical risks for the stability of the financial system as for example the counter cyclical buffer activated by the SNB.

Steven Ongena, Professor of Banking at the University of Zurich and author of numerous publications in the top-rated finance journals, took the audience back into the world of sophisticated empirical academic research. He presented a research project analyzing the importance of stand-alone ratings of financial institutions. Stand-alone ratings only include bank's intrinsic financial strength and do not, as all-in ratings, incorporate state support. He concluded that bank stand-alone ratings seem to matter in the market. Firstly, a refinement in bank stand-alone ratings by Fitch seemingly leads to ratings inflation; secondly, the refinement leads to a surprise in ratings explained by bank size, sovereign, and country affiliation.

In the fourth stream "CDS & Bond Pricing", the following works caught participants' attention. *Marc Arnold* (University of St. Gallen) presented his paper "The Impact of Centrally Cleared Credit Risk Transfer on Banks' Lending Discipline". He analyzes the effect of the introduction of central clearing in the credit risk transfer market on a loan originating bank's lending behavior. The applied model indicates that central clearing reduces the lending discipline due to the fact that only standardized contracts are centrally cleared. In addition the author finds that the impact on the lending discipline crucially depends on the regulatory design of central clearing with respect to capital requirements, disclosure standards, risk retention, and access to uncleared credit risk transfer. Finally, he concludes that the lending discipline has a significant influence on the effect of central clearing on system risk.

In the paper "The Value of Creditor Control in Corporate Bonds" *Peter Feldhutter* (London Business School), *Edie Hotchkiss* (Boston College), and *Oguzhan Karakas* (Boston College) analyze the impact of a shift of control rights from shareholders to creditors as firm credit quality declines on corporate bond pricing. A major output of the paper is a new measure to demonstrate the premium in bond prices that is related to creditor control. Thereby the authors estimate the premium in bond prices as the difference in the bond price and an equivalent synthetic bond without control rights that is constructed using CDS contracts. In ac-

cordance with the insight of the authors that credit default swap (CDS) prices reflect the cash flows of the underlying bonds, but not the control rights. The main finding is that the premium increases as firm credit quality decreases and around important credit events such as defaults, bankruptcies, and covenant violations. The authors find the greatest increase in the premium for bonds most pivotal to changes in control. On the other side changes in bond and CDS liquidity do not appear to drive increases in the premium so the conclusion of the paper.

The dynamic relationship between credit risk and liquidity in the sovereign bond market in the context of the European Central Bank (ECB) interventions is the subject of the paper “Sovereign Credit Risk, Liquidity and ECB Intervention: Deus ex machina” by *Loriana Pelizzon* (Ca’ Foscari University of Venice and Goethe University Frankfurt), *Marti G Subrahmanyam* (NYU Stern School of Business), *Davide Tomio* (Copenhagen Business School), and *Jun Uno* (Waseda University). The authors apply their analysis on a detailed, quote-level dataset of liquidity measures obtained from the largest interdealer market for Italian government bonds. Their main finding is the observation that changes in credit risk, as measured by the credit default swap (CDS) spread, generally drive the liquidity of the market. The relationship is identified as stronger and tighter when the CDS spread is above 500 basis points. The authors point out that this threshold was estimated endogenously and can be ascribed mainly to changes in margins and collateral. Additionally the paper demonstrates that the long-term refinancing operations intervention by the ECB weakened the sensitivity of the liquidity provision by the market makers to changes in the Italian government’s credit risk, by providing them with vastly expanded funding liquidity.

Finally, the authors identify an important influence of market-wide and dealer-specific funding liquidity measures in the determination of the market liquidity for Italian government bonds.

The last stream “Risk Analysis” completes the academic program with a series of papers aiming to break new soil in risk analysis. *Terry Benzschawel* (Citigroup Global Markets), *Liang Fu* (Oakland University), and *Austin Murphy* (Oakland University) focus in the paper “Systematic Risk and Yield Premiums in the Bond Market” on systematic risk of bonds. They show that traditional measures of bond systematic risk based on unadjusted past returns have very large downward biases. Firstly, the authors develop an improved method for calculating the market betas of credit instruments and then find in an empirical evaluation that yield



spreads tend to be highly related to such estimates of systematic risk. The calculated betas, along with yields, enable an estimation of the overall price of risk that is found to be useful in predicting future returns on the aggregate market. The authors conclude that these ex-ante systematic risk premiums are negatively related to past market returns on bonds and positively associated with past market volatility.

“Financial Crisis, Debt Financing, and Default Risk” is the title of *Wan-Chien Chiu’s* (University of Glasgow), *Juan Ignacio Peña’s* (Universidad Carlos III de Madrid) and *Chih-Wei Wang’s* (National Sun Yat-sen University) paper examining the mechanism through which a financial crisis affects the default risk of real economy firms. They find a stronger negative effect of financial crisis on default risk for firms with strong dependence on bank financing than for firms with no such dependence. On the other side firms relying solely on financing from public debt markets experience no significant increase in default risk. Further the authors find that the increase in default probabilities, due to a decrease in bank lending, is only significant for firms with low credit quality. On the other side firms dependent on bank financing completely offset adverse impacts stemming from supply shocks in bank lending by substituting bank loans with publicly traded debt. Finally, the paper assumes that all these findings suggest that the bank supply shock theory helps explain the transmission channel of shocks from the financial sector to the real economy.

The evaluation and empirical test of the information value for measures of systemic conditions is the main aim of *John M. Dooley* (Federal Reserve Bank of Cleveland), *Dieter Gramlich* (Baden-Wuerttemberg Cooperative State University), *Mikhail V. Oet* (Case Western Reserve University and Federal Reserve Bank of Cleveland), and *Stephen J. Ong* (Federal Reserve Bank of Cleveland) in the paper “Evaluating the information value for measures of systemic conditions”. They point out that timely identification of coincident systemic conditions and forward-looking capacity to anticipate adverse developments are critical for macroprudential policy. A missing evaluation methodology and missing empirical tests for the information value of coincident measures, despite clear recognition of these factors in literature, are the starting point of this paper. The authors evaluate the information value for measures of systemic conditions, and empirically assess this information value for several alternative measures of US systemic conditions. They find substantial differences among the measures, of which the Cleveland Financial Stress

Index shows best-in-class identification performance. In terms of forecasting performance, Kamakura's Troubled Company Index, Cleveland Financial Stress Index, and Goldman Sachs Financial Conditions Index show moderately stable Usefulness metrics over time.

The lively discussions throughout the two conference days confirmed the significance of the current research and the need for ongoing research in the area of credit analysis and risk management. Seven years have passed since the outburst of the financial crisis, but the impacts of the crises and the need for adequate means against further crises are still pervasive in literature as well as in daily business. Besides the unresolved crises academics and practitioners are challenged by the fast-paced environment of today's global financial network. The current particular situation on the financial markets with globally uniquely low interest rates and the development of new financial products call for sophisticated but practicable models and effective regulation, alongside with well-designed incentive schemes.

The 4<sup>th</sup> International Conference on Credit Analysis and Risk Management encouraged the exchange of knowledge and experiences among academics and practitioners and therefore contributed to the addressing of weaknesses and raising awareness for future challenges in the field of credit analysis and affiliated areas.

We are looking forward to the next Basel Workshop on Credit Risk in 2017!