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2nd International Conference on Credit Analysis and Risk Management 2013 in Basel – Challenging the Establishment

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In September 2013, the 2nd International Conference on Credit Analysis and Risk Management, the Basel Workshop on Credit Risk, was hosted in Basel, Switzerland. Jointly organized by the University of Applied Sciences Northwestern Switzerland and the Universities of Basel, Hohenheim, Oakland, Regensburg, and St. Gallen, the conference was the second in this set-up after the first event was organized in 2011 by the Oakland University, USA. The conference series is intended to establish a discussion platform on credit analysis and related topics for both academia and banking practice alike. In the course of the program, more than 70 international academics and practitioners gathered in Basel for two days to discuss keynotes and latest academic research categorized in the streams Ratings, Regulation, CDS & Bond Pricing, Relationship Banking, and Credit Portfolio Models.

Various keynote speakers from different backgrounds started the conference and opened the floor for debate by providing hands-on insights from practitioner's and regulators perspectives: Armin Landerer, Head of Corporate Banking at Basel Cantonal Bank, opened the conference and elaborated on developments and trends in Credit Risk Management from a Commercial Bank's point of view in the Swiss banking environment. Imène Rahmouni-Rousseau, representing the Financial Stability Board, gave an overview on the FSB work agenda and its link to credit risk followed by a lively discussion with the audience. The speech of Markus Heusler, CEO of RSN Risk Solution Network AG, contributed to the topic by a presentation on rating model development for SME from an out-

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sourcing company's perspective, including pitfalls and lessons learned over the last ten years.

Klaus Duellmann from Deutsche Bundesbank elaborated in his speech on the impact of Basel III on the International Banking System and perfectly rounded off the picture in adding the central bank's perspective to the before stated FSB and banks' points of view. Finally, Jens Kuttig, Partner at zeb/rolfes.schierenbeck.associates, ended the keynote roundtable with the presentation of innovative trends in credit risk transfer and possible answers to the question where the secondary markets for credit risk might head to.

In the course of the academic program, 15 selected authors had the chance to present their latest research papers, each followed by a lively discussion with the audience. Based on the submitted abstracts of the presented academic papers, the subsequent section provides a brief overview on the topics covered during the two conference days:

The first stream covered predominantly rating-related topics and featured three contributions. In their paper "Forecasting Distress in European SME Portfolios" *Dimitra Michala, Theoharry Grammatikos* and *Sara Ferreira Filipe* (all from University of Luxembourg) develop distress prediction models for non-financial small and medium enterprises (SMEs) using a dataset from eight European countries over the period 2000–2009. The authors examine idiosyncratic and systematic covariates and find that macro conditions and bankruptcy codes add predictive power to their models. Moreover, industry effects usually demonstrate significance but provide only small improvements. The paper contributes to the literature in several ways: First, using a sample with many micro companies, it offers unique insights into European small businesses. Second, it explores distress in a multi-country setting, allowing for regional- and country-level comparisons. Third, the models can capture changes in overall distress rates and co-movements during economic cycles.

Sebastian Löhr (University of Hannover) and his co-authors *Arndt Claussen* (University of Hannover), *Daniel Rösch* (University of Regensburg) and *Harald Scheule* (University of Technology, Sydney) analyze in their paper "Valuation of Systematic Risk in the Cross-section of Credit Default Swap Spreads" the pricing of systematic risk factors in credit default swap contracts in a two-stage empirical framework. In the first pass, they estimate contract-specific sensitivities to several systematic risk factors by time-series regressions, using quoted credit default swap (CDS) spreads of 339 U.S. entities from 2004 to 2010. They find that the

credit market climate, the cross-market correlation and the market volatility serve to explain CDS spread changes. In the second pass, they examine by cross-section regressions whether the contract-specific sensitivities to these systematic risk factors are priced in the cross-section of swap contracts, hereby controlling for individual risk factors such as credit ratings, liquidity and leverage. The authors find that their basic risk factors explain about 83 % of the CDS spreads prior to the crisis and about 90 % during the crisis.

In "An Empirical Analysis of Priced Systematic Risk on Bonds and Market Segmentation" *Terry Benzschawel* (Citi Bank), *Liang Fu* and *Austin Murphy* (both from Oakland University, Rochester) investigate the existence of segmentation in the market for fixed-income securities. Evidence is found of higher risk-adjusted returns being required for bonds making larger contributions to the risk of pure debt portfolios over the 2003–2011 interval. Significant abnormal returns existed for diversified investors taking long (short) positions on bonds with higher (lower) pure bond betas.

In the stream Regulation, three authors focused on regulatory aspects of credit risk. *Edward Altman* (New York University), *Francesca Campolongo* (European Commission), *Janko Cizel* (presenting author) and *Herbert Rijken* (both from University of Amsterdam) presented their article titled "Estimating the Probability of Default of the Western European Banks". In this paper the authors propose the novel methodology to produce long-term probabilities of default (PD) for the European listed and non-listed banks. The methodology relies on the observation that during times of financial turmoil, market valuation of banks to a large extent reflects the credit quality fundamentals. The authors estimate the distressed market-to-book model for the listed European banks, and apply the model to the non-listed banks to produce the implied distressed market-to-book ratios. Finally, they use the linking function constructed from about 1'500 bank failures in the U.S. to produce the expected default frequency for the entire spectrum of European banks.

Mike Mariathasan (University of Oxford) and *Ouarda Merrouche* (The Graduate Institute, Geneva, and CEPR) presented their paper "The manipulation of Basel Riskweights" as a contribution to the session on regulation. In their paper, the authors examine the relationship between banks' approval for the internal ratings-based (IRB) approaches of Basel II and the ratio of risk weighted assets over total assets. Analyzing a panel of 115 banks from 21 OECD countries that were eventually ap-

proved for applying the IRB to their credit portfolio, they find that risk-weight density is lower once regulatory approval is granted. The effect persists when controlled for different loan categories, and the authors provide evidence showing that it cannot be explained by flawed modeling, or improved risk-measurement alone. Consistent with theories of risk-weight manipulation, they find the decline in risk-weights to be particularly prevalent among weakly capitalized banks, when the legal framework for supervision is weak, and in countries where supervisors are overseeing many IRB banks. The authors conclude that part of the decline in reported riskiness under IRB results from banks' strategic risk-modeling.

Ren-Raw Chen (Fordham University) and his co-authors *William Filonuk* (Bank of New York), *Dilip K. Patro* (Office of the Comptroller of the Currency) and *An Yan* (Fordham University) also analyze regulatory impacts in the credit context and presented their paper "Valuing Financial Assets with Liquidity Discount: An Implication to Basel III": The unprecedented financial crisis in 2007–8 and the largest bankruptcy in U.S. history prompted the expedited regulation in the financial industry. A new Basel Accord has been proposed to further regulate the main risk that caused the crisis – liquidity risk. In a recent paper, Chen (2012)[1] presents a liquidity discount model where financial securities can be evaluated with substantial discounts at the presence of a liquidity squeeze in the market place. In the presented paper, the authors adopt this model to evaluate a selection of 23 largest U.S. financial institutions (assets over $100 billion) to investigate the liquidity impact during the crisis period. The authors calibrate the model to market information such as market capitalization and volatility. They find that the model can provide significant predictive power of a firm's liquidity healthiness.

In the stream CDS & Bond Pricing, the following works caught participants' attention. "Liquidity premium in CDS market" is the title of the paper presented by *Kuate Kamga* (Goethe University Frankfurt) and his co-author *Christian Wilde* (Goethe University Frankfurt). The authors develop a state-space model to decompose bid and ask quotes of CDS into two components, fair default premium and liquidity premium. This approach gives a better estimate of the default premium than mid quotes, and it allows to disentangle and compare the liquidity premium earned by the protection buyer and the protection seller. In contrast to other

[1] *Chen*, R-R., 2012, "Valuing a Liquidity Discount," Journal of Fixed Income, 1 Winter 2012.

studies, the model is sparse while still allowing for correlation between liquidity and default premia, which is supported by empirical evidence. The model is implemented and applied to a large data set of 118 CDS for a period ranging from 2004 to 2010. The authors find evidence that (1) the liquidity premium widens for the protection seller and the protection buyer in absolute terms during the crisis, (2) the protection buyer receives a larger liquidity premium than the protection seller, (3) during the crisis, the share of the liquidity premium earned by the protection seller increases, in particular for non-financials (4) this is at the cost of the protection buyer, since the relative liquidity premium of the protection buyer decreases strongly after the beginning of the financial downturn, while that of the protection seller hardly changes, and (5) protection sellers generally require a lower liquidity premium for financial names than non-financial names. To the knowledge of the authors, this is the first paper that attempts to explain the liquidity premium of the protection seller relative to the liquidity premium of the bidder during the financial crisis.

In the paper "Default Probabilities and Interest Expenses of Privately Held Firms" authors *Jin-Chuan Duan* (National University of Singapore), *Baeho Kim* (Korea University Business School), *Changki Kim* (Korea University), *Woojin Kim* (Seoul National University) and *Donghwa Shin* (Princeton University) estimate term structures of default probabilities for private firms using Korean data comprising 1,440 default events from 29,894 firms between 1999 and 2011. They then study whether the reported interest expenses are reflective of the estimated default term structure. Each private firm's default likelihood is characterized by a forward intensity model employing both macro risk factors and firm-specific attributes derived from financial statements. Although private firms have no traded stock prices, the authors devise a way of obtaining a public-firm equivalent distance-to-default by projection, which references the distance-to-defaults of public firms with comparable firm attributes. Statistical tests indicate that the fitted model provides accurate multi-period forecasts of defaults for both financial and non-financial private firms. The used methodology can be directly applied by commercial lenders in charging appropriate interest rates upon lending decisions for different future periods.

The paper "The Correlation Puzzle: The Interaction of Bond and Risk Correlation" presented by *Sebastian Bethke* and co-authored by *Alexander Kempf* and *Monika Trapp* (all from University of Cologne) deals with

diversification benefits, which depend on the correlation between assets, and the fact that asset correlation increases when it is most needed. The authors examine bond correlation using a broad sample of U.S. corporate bonds and find bond correlation to be higher during the financial crisis in 2008. Increased bond correlation results from higher correlation between corporate bond risk factors. Risk factor correlation in turn increases when investor sentiment worsens. This suggests that corporate bond investors change their perception of risk factors, which results in higher risk factor correlation and finally higher bond correlation.

The fourth stream displays latest research on Relationship Lending, exploring aspects of information asymmetries in the lending process. The paper "Hidden Gems and Borrowers with Dirty Little Secrets: Investment in Soft Information, Borrower Self-selection and Competition" was presented and written by *Reint Gropp* (Goethe University Frankfurt), *Christian Gruendl* (EBS Business School) and *Andre Guettler* (Ulm University). This paper empirically examines the role of soft information in the competitive interaction between relationship and transaction banks. Soft information can be interpreted as a private signal about the quality of a firm that is observable to a relationship bank, but not to a transaction bank. The authors show that borrowers self-select to relationship banks depending on whether their privately observed soft information is positive or negative. Competition affects the investment in learning the private signal from firms by relationship banks and transaction banks asymmetrically. Relationship banks invest more; transaction banks invest less in soft information, exacerbating the selection effect. Finally, the authors show that firms where soft information was important in the lending decision were no more likely to default compared to firms where only financial information was used.

The paper "Should Defaults Be Forgotten? Evidence from quasi-experimental variation in removal of negative consumer credit information" by *Marieke Bos* (Stockholm University) and *Leonard Nakamura* (Federal Reserve Bank of Philadelphia) deals with the fact that around the globe, credit bureaus restrict the length of time during which negative credit information can be retained. By exploiting a quasi-experimental variation in retention times of negative credit information, the authors find that a prolonged retention time increases the need for and access to credit and reduces the likelihood to default. In both regimes, less than 27 percent of individuals default again within two years after removal, suggesting that only a minority is inherently high risk or, alternatively, removal

of credit arrears induce borrowers to exert greater effort. Either interpretation raises the possibility that forgetting defaults is welfare enhancing.

In "The Hidden Costs of Control – Evidence from Small Business Lending" the authors *Martin Brown* (University of St. Gallen), *Matthias Schaller* (University of St. Gallen), *Simone Westerfeld* (University of Applied Sciences FHNW) and *Markus Heusler* (RSN Risk Solution AG) use proprietary data on 3,360 credit assessments by 340 loan-officers at six banks and analyze how internal control affects the credit rating process. They document a positivity bias of control: Loan officers propose better ratings for their clients when they know that the rating is subject to internal approval. The evidence suggests that this positivity bias is driven by strategic behavior: Loan officers inflate proposed ratings in reaction to past downward corrections by their current approver. Moreover, experienced loan officers inflate those parameters of a credit rating which are least likely to be corrected by approvers. Overall, the authors find that internal control does not improve the informational efficiency of the credit assessment process.

Finally, the stream Credit Portfolio Models completes the academic program with a series of papers aiming to break new soil in modeling credit portfolio risk. *Xin Zhang* (VU University Amsterdam), *Bernd Schwaab* (European Central Bank) and *André Lucas* (Duisenberg School of Finance) presented a paper titled "Conditional Probabilities and Contagion Measures for Euro Area Sovereign Default Risk". The authors propose a novel empirical framework to assess the likelihood of joint and conditional failure for Euro area sovereigns. Their model is based on a dynamic skewed-t copula which captures all the salient features of the data, including skewed and heavy-tailed changes in the price of CDS protection against sovereign default, as well as dynamic volatilities and correlations to ensure that failure dependence can increase in times of stress. The authors apply the framework to Euro area sovereign CDS spreads from 2008 to mid-2011. The results reveal significant time-variation in risk dependence and considerable spill-over effects in the likelihood of sovereign failures. They also investigate distress dependence around a key policy announcement by Euro area heads of state on May 9, 2010, and demonstrate the importance of capturing higher-order time-varying moments during times of crisis for the correct assessment of interacting risks.

In the paper "Specification Risk and Calibration Effects of a Multifactor Credit Portfolio Model" by *Gregor Dorfleitner* (University of Regens-

burg), *Matthias Fischer* (University of Erlangen-Nürnberg) and *Marco Geidosch* (University of Regensburg) the authors point out a crucial source of specification risk when calibrating a typical industry-type, Merton-based credit portfolio model. In addition to equity prices and asset values, which are the classical choices, the authors consider credit default swap (CDS) spreads and Expected Default Frequencies (EDF, from Moody's KMV) as alternatives. Based on 40 large European companies from different industries, they calibrate a macroeconomic factor model with an OLS regression analysis for each specification and calculate the corresponding economic capital. The findings are: (1) on average 2 to 3 risk factors are needed to adequately model creditworthiness on the obligor level, (2) stock market variables are the most important risk factors, (3) model-implied credit correlation is extremely sensitive to the choice of the proxy for creditworthiness and (4) only the EDF specification leads to less economic capital as compared to regulatory capital according to Basel II while it is exceeded substantially by all other specifications. In particular, credit correlation in the CDS specification by far exceeds any estimate mentioned in the literature. Most importantly, the authors show that the economic capital of their sample portfolio can be reduced by 78 %, depending on which variable to choose as proxy for creditworthiness.

The paper "Concentration risk in SME credit portfolios: the role of banks' portfolio composition policy and risk appetite" presented by *Michel Dietsch* (Université de Strasbourg) and co-authored by *Henri Fraisse* (Banque de France) and *Joël Petey* (Université de Strasbourg) focuses on particular aspects of SME financing in Europe and the appropriateness of current risk weights for SME lending. Knowing that risk weights depend strongly on asset correlations, the object of this paper is to estimate the potential for credit risk concentration arising from correlated defaults of small firms. The measurement of concentration risk needs to take into account borrowers' heterogeneity. One way to proceed is to extend the standard asymptotic single factor framework by introducing additional factors of systematic risk varying between groups of borrowers. Using a generalized linear mixed model, the paper extends the standard single-factor credit risk model to a multi-factor framework taking into account size and industry effects. The paper uses the French Credit Register and the rating histories of more than 400.000 French SMEs, covering the period from 2003 to 2011. Provided by the Banque de France ratings system, the sample allows considering the real portfolios of the five major banking groups in France. This paper shows that despite

comparable portfolios in terms of size and industry distributions, there are sizeable differences in terms of economic capital across banking groups. The authors investigate whether such differences could be attributed to concentration of credit risk on specific size segments or industries or, on the contrary, are the result of different risk appetite levels across banks at the portfolio level.

Without exception, all of these recent works provide significant contributions to the understanding of credit analysis and risk management, and clearly demonstrate the need for ongoing research in this area. Given the fast-paced environment of today's global financial network, sophisticated but practicable models and effective regulation, alongside with well-wrought incentive schemes are more important than ever in order to address the currently imminent challenges. There was broad consent among all the participants that the recent and ongoing global financial crisis has exposed a weakness in credit analysis in the financial system. By encouraging the exchange of knowledge from multiple perspectives, the conference contributed to addressing these 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!