

## **Rating performance and agency incentives of structured finance transactions**

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### **Background and aims of project**

The global financial crisis (GFC) led to an unprecedented and unexpected increase of impairment and loss rates for securitisations (also known as structured finance transactions). The disappointment of investors manifested in the criticism of models applied by credit rating agencies (CRAs). Examples are VECTOR from Fitch rating agency (see Fitch Ratings 2006), CDOROM from Moody's rating agency (see Moody's Investors Service 2006) and CDO Evaluator from Standard and Poor's rating agency (see Standard & Poor's 2005). Similar critique has been put forward after the South East Asian Crisis of 1997 by Leot et al. (2008).

Securitisations involve the sale of assets into bankruptcy-remote special purpose vehicles, which are funded by investors of different seniorities (tranches). Based on the nature of the securitised asset portfolios, important transaction types include asset-backed securities, collateralized debt obligations, home equity loan-backed securities and mortgage-backed securities.

Two main streams exist in literature on the measurement of financial risks of securitisations. The first stream focuses on the pricing of structured finance transactions where the central issue is to explain observed market prices such as credit spreads of credit default swap indices. Longstaff & Rajan (2008) and Hull & White (2004) apply a risk-neutral pricing framework to develop pricing techniques for these spreads.

The second stream is concerned with the modelling and estimation of the risk characteristics of the underlying asset portfolio, which generally comprises loans without relying on market prices. Merton (1974), Leland (1994), Jarrow & Turnbull (1995), Longstaff & Schwartz (1995), Madan & Unal (1995), Leland & Toft (1996), Jarrow et al. (1997), Duffie & Singleton (1999), Shumway (2001), McNeil & Wendin (2007) and Duffie et al. (2007) address the default likelihood. Dietsch & Petey (2004) and McNeil & Wendin (2007) model the correlations between default events. Carey (1998), Acharya et al. (2007), Pan & Singleton (2008), Qi & Yang (2009) and Grunert & Weber (2009) develop economically motivated empirical models for recoveries using explanatory co-variables. Altman et al. (2005) model correlations between default events and loss rates given default.

Within this stream, credit ratings are often used to explain risk. The existing literature focuses exclusively on corporate bond issuers, corporate bond issues and sovereigns. Examples are Radelet & Sachs (1998), Ederington & Goh (1993), Dichev & Piotroski (2001), Miu & Ozdemir (2002) and Purda (2007). No studies analyse ratings for structured finance transactions.

It is the aim of the proposed project to analyse cross-sectional and time-series characteristics of ratings, implied impairment rate estimates and realized impairment rates of asset portfolio securitisations. The focus will be on the question whether CRA structured finance ratings (from now on referenced as 'ratings') are inaccurate and may have been causal for the GFC.

### **Description of Approach**

The hypotheses of the proposed research project are based on the current discussion in literature. No contribution analyses the following hypotheses empirically:

- H1a: Ratings represent the average asset quality of the asset portfolio;

- H1b: Ratings represent structured finance transaction characteristics such as resecuritisation status, subordination level and transaction cash flow structure;
- H2: Ratings include time varying information;
- H3a: Rating standards have not declined over time;
- H3b: Ratings predict impairment risk;
- H4: Ratings indicate low risk in origination years and high risk in monitoring years.

H1a addresses characteristics of the asset portfolio. Rajan et al. (2008) find that securitisation risk models omit 'soft' information. This implies that the CRA ratings, relying on such models, mis-evaluate the average credit quality of the asset portfolio. Crouhy et al. (2008) suggest that CRAs did not monitor raw data, were tardy in recognizing the implications of the declining state of the sub-prime market for the ratings of monoline insurers.

H1b addresses the tranching structure of securitisations and the current discussion on the appropriate specification of the dependence structure (also known as correlations) of various assets in a portfolio (compare Hull 2008 and Hellwig 2008). The probability distribution as well as the percentiles of losses associated with the pool are particularly sensitive to the correlations in the underlying asset pool.

H2 identifies the degree to which business cycles are included into CRA risk models. Franke & Krahen (2008) argue that sensitivities to macroeconomic factors may be higher for securitised tranches than for corporate bonds.

H3a relates to a hypothesis suggested by various authors (e.g., Crouhy et al. 2008) that lending standards have declined in recent years. Blume et al. (1998) present a similar hypothesis for corporate bond issuers. Rajan et al. (2008) analyze individual securitised sub-prime loans and assess the performance of the FICO score and loan-to-value ratio for the prediction of mortgage default events. Downing et al. (2008) present evidence for declining subordination levels for commercial MBSs.

H3b addresses the information degree of credit ratings. Hellwig (2008) argues that the omission of systematic factors related to real-estate prices such as interest rates and the availability of housing finance may have led to an overoptimism of valuations and ratings. Such expectations may be adjusted in an economic downturn.

H4 addresses a potential conflict of interest of rating agencies. Crouhy et al. (2008) argue that CRA fees are paid by issuers. This may imply that the credit quality measured by CRAs and CRA fee revenue are positively correlated. However, CRAs publish default and rating migration tables, which are used to calibrate ratings to metric risk measures. Thus, a systematic 'rating for fee' policy would be noticed and priced by investors when analysing the financial risk in relation to ratings. As a result, CRAs may have an incentive to assign i) low risk ratings in origination years to increase fee revenue and ii) high risk ratings in monitoring years to maintain stable default and rating migration performance measures.

The hypotheses will be tested by applying standard logit and random effect logit models

$$P(Y_{it} = 1) = \Phi(\alpha + \beta x_{it-1} + \gamma z_{it})$$

where the dependent variable  $y_{it}$  identifies past impairment events and the independent variables include i) observable idiosyncratic and systematic information ( $x$ , i.e., credit ratings and other

observable information not included in credit ratings) and ii) random idiosyncratic and systematic variables ( $z$ , i.e., unobservable information).

For example in the instance of H1a, dummy variables which identify the various asset portfolio types will be included next to ratings. The significance of these dummy variables may imply that rating agencies do not accurately measure the average asset quality of the asset portfolio. Similar models will be developed to test the other hypotheses.

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