

References

- Abramowitz M, Stegun I (1972) Handbook of mathematical functions: with formulas, graphs, and mathematical tables, 10th edn. Dover, New York
- Acerbi C (2002) Spectral measures of risk: a coherent representation of subjective risk aversion. *J Bank Fin* 26(7):1505–1518
- Acerbi C (2004) Coherent representations of subjective risk-aversion. In: Szegő G (ed) *Risk measures for the 21st century*. Wiley, Chichester, pp 147–207
- Acerbi C, Scandolo G (2008) Liquidity risk theory and coherent measures of risk. *Quant Fin* 8(7):681–692
- Acerbi C, Tasche D (2002a) Expected shortfall: a natural coherent alternative to value at risk. *Econ Notes* 31(2):379–388
- Acerbi C, Tasche D (2002b) On the coherence of expected shortfall. *J Bank Fin* 26(7):1487–1503
- Acerbi C, Nordio C, Sirtori C (2001) Expected shortfall as a tool for financial risk management. Working Paper. Accessed <http://arxiv.org>
- Acharya VV, Hasan I, Saunders A (2006) Should banks be diversified? Evidence from individual bank loan portfolios. *J Bus* 79(3):1355–1412
- Albanese C, Lawi S (2004) Spectral risk measures for credit portfolios. In: Szegő G (ed) *Risk measures for the 21st century*. Wiley, Chichester, pp 209–226
- Altman E, Resti R, Sironi A (2005) Loss given default: a review of the literature. In: Altman E, Resti R, Sironi A (eds) *Recovery risk – the next challenge in risk management*. Risk Books, London, pp 41–59
- Andersen L, Sidenius J (2005a) CDO pricing with factor models: survey and comments. *J Credit Risk* 1(3):71–88
- Andersen L, Sidenius J (2005b) Extensions to the Gaussian copula: random recovery and random factor loadings. *J Credit Risk* 1(1):29–70
- Artzner P, Delbaen F, Eber J-M, Heath D (1997) Thinking coherently. *Risk* 10(11):68–71
- Artzner P, Delbaen F, Eber J-M, Heath D (1999) Coherent measures of risk. *Math Fin* 9(3):203–228
- Bank M, Lawrenz J (2003) Why simple, when it can be difficult? Some remarks on the Basel IRB approach. *Kredit Kapital* 36(4):534–556
- Basel Committee on Banking Supervision (2001a) Basel II: The New Basel capital accord, Second Consultative Paper. Bank for International Settlements, Basel
- Basel Committee on Banking Supervision (2001b) Basel II: The New Basel capital accord: an explanatory note. Bank for International Settlements, Basel
- Basel Committee on Banking Supervision (2003a) Basel II: The New Basel capital accord, Third Consultative Paper. Bank for International Settlements, Basel
- Basel Committee on Banking Supervision (2003b) Quantitative impact study 3 – Overview of global results. Bank for International Settlements, Basel

- Basel Committee on Banking Supervision (2004a) Background note on LGD quantification. Bank for International Settlements, Basel
- Basel Committee on Banking Supervision (2004b) Bank failures in mature economies. BCBS Working Paper No. 13. Bank for International Settlements, Basel
- Basel Committee on Banking Supervision (2004c) International convergence of capital measurement and capital standards – a revised framework. Bank for International Settlements, Basel
- Basel Committee on Banking Supervision (2005a) International convergence of capital measurement and capital standards – a revised framework, Updated November 2005, Bank for International Settlements, Basel
- Basel Committee on Banking Supervision (2005b) Workshop ‘Concentration risk in credit portfolios’: background information. Bank for International Settlements, Basel. <http://www.bis.org/bcbs/events/rtf05background.htm>. Accessed 18 Aug 2009
- Basel Committee on Banking Supervision (2005c) Workshop ‘Concentration risk in credit portfolios’: selected literature on concentration risk in credit portfolios. Bank for International Settlements, Basel. <http://www.bis.org/bcbs/events/rtf05biblio.htm>. Accessed 18 Aug 2009
- Basel Committee on Banking Supervision (2006) Studies on credit risk concentration: an overview of the issues and a synopsis of the results from the research task force project. BCBS Working Paper No. 15, Bank for International Settlements, Basel
- Basel Committee on Banking Supervision (2009a) History of the Basel Committee and its membership. Bank for International Settlements, Basel. <http://www.bis.org/bcbs/history.htm>. Accessed 18 Aug 2009
- Basel Committee on Banking Supervision (2009b). Range of practices and issues in economic capital modelling. Bank for International Settlements, Basel
- Behr A, Kamp A, Memmel C, Pfingsten A (2007) Diversification and the banks’ risk-return-characteristics – evidence from loan portfolios of German banks. Discussion Paper, Series 2: Banking and Financial Studies, Deutsche Bundesbank (5)
- Berger AN, Demsetz RS, Strahan PE (1999) The consolidation of the financial services industry: causes, consequences, and implications for the future. *J Bank Fin* 23(2–4):135–194
- Berger AN, Hunter WC, Timme SG (1993) The efficiency of financial institutions: a review and preview of research past, present, and future. *J Bank Fin* 17(2–3):221–249
- Berger PG, Ofek E (1996) Bustup takeovers of value-destroying diversified firms. *J Fin* 51(4): 1175–1200
- Billingsley P (1995) Probability and measure, 3rd edn. Wiley, New York
- Black F, Cox JC (1976) Valuing corporate securities: some effects of bond indenture provisions. *J Fin* 31(2):351–367
- Black F, Scholes M (1973) The pricing of options and corporate liabilities. *J Polit Econ* 81(3): 637–654
- Bluhm C, Overbeck L (2007) Structured credit portfolio analysis, baskets and CDOs. CRC, Boca Raton, FL
- Bluhm C, Overbeck L, Wagner C (2003) An introduction to credit risk modeling. CRC, London
- Brand L, Bahar R (2001) Corporate defaults: will things get worse before they get better? S&P Special Report, pp 5–40
- Bronshstein IN, Semendyayew KA, Musiol G, Muehlig H (2007) Handbook of mathematics, 5th edn. Springer, Heidelberg
- Burtschell X, Gregory J, Laurent J (2007) Beyond the Gaussian copula: stochastic and local correlation. *J Credit Risk* 3(1):31–62
- Carr P, Geman H, Madan D (2001) Pricing and hedging in incomplete markets. *J Fin Econ* 62(1): 131–167
- Céspedes J, de Juan Herrero J, Kreinin A, Rosen D (2006) A simple multi-factor “factor adjustment” for the treatment of diversification in credit capital rules. *J Credit Risk* 2(3):57–85
- Cifuentes A, O’Connor G (1996) The binomial expansion method applied to CBO/CLO analysis, Special report. Moody’s Investor Service, New York

- Cifuentes A, Wilcox C (1998) The double binomial method and its application to a special case of CDO structures, Special report. Moody's Investor Service, New York
- Cifuentes A, Murphy E, O'Connor G (1996) Emerging market collateralized bond obligations: an overview, Special report. Moody's Investor Service, New York
- Committee of European Banking Supervisors (2006). Technical aspects of the management of concentration risk under the supervisory review process. CEBS, London
- Credit Suisse Financial Products (1997). CreditRisk+ – A credit risk management framework. Credit Suisse, London.
- Crosbie P, Bohn JR (1999) Modeling default risk. KMV Corporation, San Francisco, USA
- Crouhy M, Galai D, Mark R (2001) Risk management. McGraw-Hill, New York
- Davis M, Lo V (2001) Infectious defaults. *Quant Fin* 1(4):382–387
- DeLong G (2001) Stockholder gains from focusing versus diversifying bank mergers. *J Fin Econ* 59(2):221–252
- Demsetz RS, Strahan P (1997) Diversification, size, and risk at bank holding companies. *J Money Credit Bank* 29(3):300–313
- Deng S, Elyasiani E, Mao C (2007) Diversification and the cost of debt of bank holding companies. *J Bank Fin* 31(8):2453–2473
- Denis DJ, Denis DK, Sarin A (1997) Agency problems, equity ownership, and corporate diversification. *J Fin* 52(1):135–160
- Deutsche Bundesbank (2006) Konzentrationsrisiken in Kreditportfolios. *Monatsbericht* 58(6):35–54
- Deutsche Bundesbank (2009) Credit register of loans of €1.5 million or more. http://www.bundesbank.de/bankenaufsicht/bankenaufsicht_kredit_evidenz.en.php. Accessed 11 Dec 2009
- Diamond D (1984) Financial intermediation and delegated monitoring. *Rev Econ Stud* 51(3):393–414
- Diamond DW, Dybvig PH (1983) Bank runs, deposit insurance, and liquidity. *J Polit Econ* 91(3):401–419
- Dietsch M, Petey J (2002) The credit risk in SME loans portfolios: modeling issues, pricing, and capital requirements. *J Bank Fin* 26(2):303–322
- Duffie D, Singleton KJ (2003) Credit risk: pricing, measurement, and management. Princeton University Press, Princeton, USA
- Düllmann K (2006). Measuring business sector concentration by an infection model. Discussion Paper, Series 2: Banking and financial studies. Deutsche Bundesbank (3)
- Düllmann K (2007) Measuring concentration risk in credit portfolios. In: Christodoulakis G, Satchell S (eds) *The analytics of risk model validation*. Academic, Amsterdam, pp 59–78
- Düllmann K, Erdelmeier M (2009) Stress testing german banks in a downturn in the automobile industry. Discussion Paper, Series 2: Banking and Financial Studies. Deutsche Bundesbank (2)
- Düllmann K, Masschelein N (2007) A tractable model to measure sector concentration risk in credit portfolios. *J Fin Serv Res* 32(1):55–79
- Düllmann K, Scheule H (2003) Asset correlation of German corporate obligors: its estimation, its drivers and implications for regulatory capital. Working Paper. <http://www.defaultrisk.com>
- Düllmann K, Trapp M (2005) Systematic risk in recovery rates – an empirical analysis of U.S. corporate credit exposures. In: Altman E, Resti A, Sironi A (eds) *Recovery risk – the next challenge in credit risk management*. Risk Books, London, pp 235–252
- Düllmann K, Küll J, Kunisch M (2008) Estimating asset correlations from stock prices or default rates – Which method is superior? Discussion Paper, Series 2: Banking and financial studies, Deutsche Bundesbank (4)
- Egloff D, Leippold M, Vanini P (2007) A simple model of credit contagion. *J Bank Fin* 31(8):2475–2492
- Elizalde A, Repullo R (2007) Economic and regulatory capital: what is the difference? *Int J Central Bank* 3(3):87–117
- Embrechts P, McNeil A, Straumann D (2002) Correlation and dependence in risk management: properties and pitfalls. In: Dempster MAH (ed) *Risk management: value at risk and beyond*. Cambridge University Press, Cambridge, pp 176–223

- Emmer S, Tasche D (2005) Calculating credit risk capital charges with the one-factor model. *J Risk* 7(2):85–103
- EU (2006) Directive 2006/48/EC of the European Parliament and of the Council of 14 June 2006 Relating to the taking up and pursuit of the business of credit institutions (Recast). Official Journal of the European Union
- Federal Deposit Insurance Corporation (2007) Risk-based capital standards: advanced capital adequacy framework. Federal Register, Financial Institution Letters 72(235)
- Finger C (1999) Conditional approaches for CreditMetrics portfolio distributions. *CreditMetrics Monit* 1:14–33
- Finger C (2001) The one-factor CreditMetrics model in the New Basel capital accord. *RiskMetrics J* 2(1):9–18
- Föllmer H, Schied A (2002) Convex measures of risk and trading constraints. *Fin Stochast* 6(4): 429–447
- Franke J, Härdle W, Hafner C (2004) *Statistics of financial markets: an introduction*. Springer, Heidelberg
- Frittelli M, Rosazza Gianin E (2002) Putting order in risk measures. *J Bank Fin* 26(7):1473–1486
- Frye J (2000) Depressing recoveries. *Risk* 13(11):108–111
- German Council of Economic Experts (2008) *Die Finanzkrise meistern – Wachstumskräfte stärken*. Annual Report 2008/09, GCEE, Germany
- Giesecke K, Weber S (2006) Credit contagion and aggregate losses. *J Econ Dyn Control* 30(5): 741–767
- Gordy MB (2000) A comparative anatomy of credit risk models. *J Bank Fin* 24(1–2):119–149
- Gordy MB (2001) A risk-factor model foundation for rating-based capital rules. Working Paper. Board of Governors of the Federal Reserve System, Washington, DC
- Gordy MB (2003) A risk-factor model foundation for rating-based capital rules. *J Fin Intermediation* 12(3):199–232
- Gordy MB (2004) Granularity adjustment in portfolio credit risk measurement. In: Szegö G (ed) *Risk measures for the 21st century*. Wiley, New York, pp 109–121
- Gordy MB, Heitfield E (2000) Estimating factor loadings when ratings performance data are scarce, Technical Report. Board of Governors of the Federal Reserve System, Washington, DC
- Gordy MB, Heitfield E (2002) Estimating default correlations from short panels of credit rating performance data. Working Paper. Board of Governors of the Federal Reserve System, Washington, DC
- Gordy MB, Howells B (2006) Procyclicality in Basel II: can we treat the disease without killing the patient? *J Fin Intermediation* 15(3):395–417
- Gordy MB, Lütkebohmert E (2007) Granularity adjustment for Basel II. Discussion Paper, Series 2: Banking and financial studies, Deutsche Bundesbank (1)
- Gouriéroux C, Laurent J, Scaillet O (2000) Sensitivity analysis of values at risk. *J Empir Fin* 7(3–4):225–245
- Greenbaum SI, Thakor AV (1995) *Contemporary financial intermediation*. Dryden, Fort Worth
- Grundke P (2003) *Modellierung und Bewertung von Kreditrisiken*. Dt. Univ.-Verl, Wiesbaden
- Grundke P (2008) Regulatory treatment of the double default effect under the New Basel accord: how conservative is it? *Rev Manag Sci* 2(1):37–59
- Grunert J, Volk A (2008) Die Bedeutung der Ausfalldefinition bei der Berechnung der Recovery Rate von Unternehmenskrediten. *Finanzbetrieb* 10(5):317–326
- Gup BE (2000) *The new financial architecture: banking regulation in the 21st century*. Quorum Books, Westport, USA
- Gupton GM, Finger CC, Bhatia M (1997) *CreditMetrics™ – Technical document*. Morgan Guarantee Trust Co, New York
- Gürtler M, Heithecker D, Hibbeln M (2008a) Concentration risk under Pillar 2: when are credit portfolios infinitely fine grained? *Kredit Kapital* 41(1):79–124

- Gürtler M, Hibbeln M, Olboeter S (2008b) Design of collateralized debt obligations: the impact of target ratings on the first loss piece. In: Gregoriou GN, Ali P (eds) *The credit derivatives handbook*. McGraw-Hill, New York, pp 203–228
- Gürtler M, Hibbeln M, Vöhringer C (2010) Measuring concentration risk for regulatory purposes. *J Risk* 12(3):69–104
- Hahn F (2005) The effect of bank capital on bank credit creation. *Kredit Kapital* 38(1):103–127
- Hamerle A, Rösch D (2005a) Bankinterne Parametrisierung und empirischer Vergleich von Kreditrisikomodellen. *Die Betriebswirtschaft* 65(2):179–196
- Hamerle A, Rösch D (2005b) Misspecified copulas in credit risk models: how good is Gaussian? *J Risk* 8(1):41–59
- Hamerle A, Rösch D (2006) Parameterizing credit risk models. *J Credit Risk* 2(4):101–122
- Hammarlid O (2004) Aggregating sectors in the infectious defaults model. *Quant Fin* 4(1):64–69
- Hansen M, Ramadurai K, Merritt R, Linnell I, Olert J, Jennings S (2009) Basel II's proposed enhancements: focus on concentration risk. Credit Market Research, Fitch Ratings
- Hartmann-Wendels T, Pfingsten A, Weber M (2007) *Bankbetriebslehre*, 4th edn. Springer, Berlin
- Heitfield E, Burton S, Chomsisengphet S (2006) Systematic and idiosyncratic risk in syndicated loan portfolios. *J Credit Risk* 2(3):3–31
- Heithecker (2007) *Aufsichtsrechtliche Kreditportfoliomodelle: Eine modelltheoretische Analyse der Kreditrisikomessung unter Basel II*. dissertation.de, Berlin
- Hellwig M (1995) Systemic aspects of risk management in banking and finance. *Swiss J Econ Stat* 131(4):723–738
- Henking A, Bluhm C, Fahrmeir C (2006) *Kreditrisikomessung: Statistische Grundlagen, Methoden und Modellierung*. Springer, Berlin
- Hull JC (2006) *Options, futures, and other derivatives*, 6th edn. Prentice Hall, Upper Saddle River, NJ
- Jarrow R, Turnbull S (1995) Pricing options on financial securities subject to credit risk. *J Fin* 50(1):53–85
- Joint Forum (2008) Cross-sectoral review of group-wide identification and management of risk concentrations. Bank for International Settlements, Basel
- Joint Forum (2009) Joint Forum History, Bank for International Settlements. <http://www.bis.org/bcbs/jfhistory.htm>. Accessed 18 Aug 2009
- Jorion P (2001) *Value at risk*, 2nd edn. McGraw-Hill, New York
- Kamp A, Pfingsten A, Porath D (2005) Do banks diversify loan portfolios? a tentative answer based on individual bank loan portfolios. Discussion Paper, Series 2: Banking and financial studies, Deutsche Bundesbank (3)
- Koyluoglu HU, Hickman A (1998a) A generalized framework for credit portfolio models. Working Paper, <http://www.defaultrisk.com>
- Koyluoglu HU, Hickman A (1998b) Reconcilable differences. *Risk* 11(10):56–62
- Laurent J, Gregory J (2005) Basket default swaps, CDOs and factor copulas. *J Risk* 7(4):103–122
- Longstaff FA, Schwartz ES (1995) A simple approach to valuing risky fixed and floating rate debt. *J Fin* 50(3):789–819
- Lopez J (2004) The empirical relationship between average asset correlation, firm probability of default, and asset size. *J Fin Intermediation* 13(2):265–283
- Markowitz H (1952) Portfolio selection. *J Fin* 7(1):77–91
- Markowitz H (1959) *Portfolio selection: efficient diversification of investments*. Wiley, New York
- Martin R, Wilde T (2002) Unsystematic credit risk. *Risk* 15(11):123–128
- Merton RC (1973) Theory of rational option pricing. *Bell J Econ Manag Sci* 4(1):141–183
- Merton RC (1974) On the pricing of corporate debt: the risk structure of interest rates. *J Fin* 29(2):449–470
- Miller SL, Childers DG (2004) *Probability and random processes: with applications to signal processing and communications*, 2nd edn. Academic, Amsterdam
- Morinaga S, Shiina Y (2005) Underestimation of sector concentration risk by mis-assignment of borrowers. Working Paper, Tokyo

- Neu P, Kühn R (2004) Credit risk enhancement in a network of interdependent firms. *Physica A Stat Mech Appl* 342(3–4):639–655
- Overbeck L (2000) Allocation of economic capital in loan portfolios. In Frank WH, Stahl G (eds) *Measuring risk in complex stochastic systems*. Springer, New York, pp 1–17
- Overbeck L, Stahl G (2003) Stochastic essentials for the risk management of credit portfolios. *Kredit Kapital* 36(1):52–81
- Petrov V (1996) *Limit theorems of probability theory: sequences of independent random variables*. Oxford University Press, Clarendon
- Phillips RJ, Johnson RD (2000) Regulating international banking: rationale, history, and future prospects. In: Gup BE (ed) *The new financial architecture: banking regulation in the 21st century*. Quorum Books, Westport, pp 1–21
- Pitman J (1999) *Probability*. Springer, New York
- Pykhtin M (2003) Unexpected recovery risk. *Risk* 16(8):74–78
- Pykhtin M (2004) Multi-factor adjustment. *Risk* 17(3):85–90
- Pykhtin M, Dev A (2002) Analytical approach to credit risk modelling. *Risk* 15(3):26–32
- Rau-Bredow H (2002) Credit portfolio modelling, marginal risk contributions, and granularity adjustment. Working Paper, Würzburg
- Rau-Bredow H (2004) Value at risk, expected shortfall, and marginal risk contribution. In: Szegö G (ed) *Risk measures for the 21st century*. Wiley, Chichester, pp 61–68
- Rau-Bredow H (2005) Unsystematic credit risk and coherent risk measures. Working Paper, Würzburg
- Roussas GG (2007) *Introduction to probability*. Academic, Amsterdam
- Rowland T, Weisstein EW (2009) Complex residue, from mathworld – a Wolfram web resource. <http://mathworld.wolfram.com/ComplexResidue.html>. Accessed 18 Aug 2009
- Saunders A (1987) The interbank market, contagion effects and international financial crises. In: Portes R, Swoboda AK (eds) *Threats to international financial stability*. Cambridge University Press, Cambridge, pp 196–232
- Schönbucher P (2003) *Credit derivatives pricing models: models, pricing and implementation*. Wiley, Chichester
- Schroeck G (2002) *Risk management and value creation in financial institutions*. Wiley, Hoboken
- Schuermann T (2005) What do we know about loss given default? In: Altman E, Resti A, Sironi A (eds) *Recovery risk – the next challenge in risk management*. Risk Books, London, pp 3–24
- Seidman L, Litan R, White L, Silverberg S (1997) Lessons of the eighties: what does the evidence show. Federal Deposit Insurance Corporation, <http://www.fdic.gov/bank/historical/history/vol2/panel3.pdf>. Accessed 18 Aug 2009
- Servaes H (1996) The value of diversification during the conglomerate merger wave. *J Fin* 51(4): 1201–1225
- Spiegel MR (1999) *Schaum's outline of theory and problems of complex variables: with an introduction to conformal mapping and its applications*. McGraw-Hill, New York
- Szegö G (2002) Measures of risk. *J Bank Fin* 26(7):1253–1272
- Tarantola A (2005) *Inverse problem theory and methods for model parameter estimation*. Society for Industrial Mathematics, Philadelphia, USA
- Tasche D (2006a) *Anwendungen der Stochastik in der Bankenaufsicht*. Lecture Notes, Frankfurt University. <http://www-m4.ma.tum.de/pers/tasche>. Accessed 18 Aug 2009
- Tasche D (2006b) Measuring sectoral diversification in an asymptotic multi-factor framework. *J Credit Risk* 2(3):33–55
- Vasicek OA (1987) *Probability of loss on loan portfolio*. KMV Corporation, San Francisco, USA
- Vasicek OA (1991) *Limiting loan loss probability distribution*. KMV Corporation, San Francisco, USA
- Vasicek OA (2002) Loan portfolio value. *Risk* 15(12):160–162
- Weiss NA (2005) *A course in probability*. Addison-Wesley, Boston, USA

- Weisstein EW (2009a) Delta function, from MathWorld – a Wolfram Web resource. <http://mathworld.wolfram.com/DeltaFunction.html>. Accessed 18 Aug 2009
- Weisstein EW (2009b) Leibniz identity, from MathWorld – a Wolfram web resource. <http://mathworld.wolfram.com/LeibnizIdentity.html>. Accessed 18 Aug 2009
- Wilde T (2001) Probing granularity. *Risk* 14(8):103–106
- Wilde T (2003) Derivatives of VaR and CVaR. Working Paper, CSFB
- Winton A (1999) Don't put all your eggs in one basket? diversification and specialization in lending. Working Paper, <http://www.ssrn.com>
- Zhou C (2001) The term structure of credit spreads with jump risk. *J Bank Fin* 25(11): 2015–2040