

# LIST OF PUBLICATIONS

MICHEL DENUIT

Institut de Statistique  
UCL  
Rue des Wallons, 6  
B-1348 Louvain-la-Neuve, Belgium

`michel.denuit@uclouvain.be`

September 11, 2007

## Contents

<b>1</b>	<b>Books</b>	<b>2</b>
<b>2</b>	<b>Articles in International Peer-Reviewed Scientific Journals</b>	<b>2</b>
<b>3</b>	<b>Articles in National Peer-Reviewed Scientific Journals</b>	<b>8</b>
<b>4</b>	<b>Articles in Professional Insurance/Actuarial Journals</b>	<b>12</b>
<b>5</b>	<b>Collective works</b>	<b>13</b>
5.1	Direction of collective works . . . . .	13
5.2	Contribution to collective works . . . . .	13
<b>6</b>	<b>Articles in Conference Proceedings</b>	<b>14</b>
<b>7</b>	<b>Reports</b>	<b>15</b>
7.1	Actuarial Education Reports . . . . .	15
7.2	Research reports submitted for publication . . . . .	15
7.3	Consulting reports . . . . .	16

## 1 Books

1. Denuit, M., Maréchal, X., Pitrebois, S., & Walhin, J.-F. (2007). Actuarial Modelling of Claim Counts: Risk Classification, Credibility and Bonus-Malus Systems. Wiley, New York.
2. Denuit, M., & Robert, C. (2007). Actuariat des Assurances de Personnes: Modélisation, Tarification et Provisionnement. Collection Audit-Actuariat-Assurance, Economica, Paris.
3. Denuit, M., Dhaene, J., Goovaerts, M.J., & Kaas, R. (2005). Actuarial Theory for Dependent Risks: Measures, Orders and Models. Wiley, New York.
4. Delwarde, A., & Denuit, M. (2005). Construction de Tables de Mortalité Périodiques et Prospectives. Collection Audit-Actuariat-Assurance, Economica, Paris.
5. Denuit, M., & Charpentier, A. (2005). Mathématiques de l'Assurance Non-Vie. Tome II: Tarification et Provisionnement. Collection Economie et Statistique Avancées, Economica, Paris.
6. Denuit, M., & Charpentier, A. (2004). Mathématiques de l'Assurance Non-Vie. Tome I: Principes Fondamentaux de Théorie du Risque. Collection Economie et Statistique Avancées, Economica, Paris.
7. Kaas, R., Goovaerts, M.J., Dhaene, J., & Denuit, M. (2001). Modern Actuarial Risk Theory. Kluwer Academic Publishers, Dordrecht.

*Translated in Chinese and published by Science EP. A translation in Russian will be available soon.*

## 2 Articles in International Peer-Reviewed Scientific Journals

1. Denuit, M. (2007). Comonotonic approximations to quantiles of life annuity conditional expected present values. Insurance: Mathematics and Economics.
2. Courtois, C., & Denuit, M. (2007). Moment bounds on discrete expected stop-loss transforms, with applications. Methodology and Computing in Applied Probability.
3. Courtois, C., & Denuit, M. (2007). Local moment matching and s-convex extrema. ASTIN Bulletin.
4. Courtois, C., & Denuit, M. (2007). On immunization and s-convex extremal distributions. Annals of Actuarial Science.

5. Denuit, M., & Frostig, E. (2007). Comparison of dependence in factor models with application to credit risk portfolios. *Probability in the Engineering and Informational Sciences*.
6. Boucher, J.-Ph., & Denuit, M. (2007). Credibility premiums for the zero-inflated Poisson model and new hunger for bonus interpretation. *Insurance: Mathematics and Economics*.
7. Denuit, M. (2007). Distribution of the random future life expectancies in log-bilinear mortality projection models. *Lifetime Data Analysis*.
8. Boucher, J.-Ph., Denuit, M., & Guillén, M. (2007). Models for insurance claim count with time dependence based on generalisations of Poisson and Negative Binomial distributions. *Variance*.
9. Delwarde, A., Denuit, M., & Partrat, Ch. (2007). Negative Binomial version of the Lee-Carter model for mortality forecasting. *Applied Stochastic Models in Business and Industry*.
10. Boucher, J.-Ph., Denuit, M., & Guillén, M. (2007). Risk classification for claim counts: A comparative analysis of various zero-inflated mixed Poisson and hurdle models. *North American Actuarial Journal*.
11. Courtois, C., & Denuit, M. (2007). Convex bounds on multiplicative martingales, with applications to pricing in incomplete markets. *Insurance: Mathematics and Economics*.
12. Delwarde, A., Denuit, M., & Eilers, P. (2007). Smoothing the Lee-Carter and Poisson log-bilinear models for mortality forecasting: A penalized log-likelihood approach. *Statistical Modelling* 7, 29-48.
13. Denuit, M., Frostig, E., & Levikson, B. (2007). Supermodular comparison of time-to-ruin random vectors. *Methodology and Computing in Applied Probability* 9, 41-54.
14. Cossette, H., Delwarde, A., Denuit, M., Guillot, F. & Marceau, E. (2007). Pension plan valuation and dynamic mortality tables. *North American Actuarial Journal* 11, 1-34.
15. Denuit, M., & Frostig, E. (2007). Association and heterogeneity of insured lifetimes in the Lee-Carter framework. *Scandinavian Actuarial Journal* 107, 1-19.
16. Denuit, M., Devolder, P., & Goderniaux, A.-C. (2007). Securitization of longevity risk: Pricing survivor bonds with Wang transform in the Lee-Carter framework. *Journal of Risk and Insurance* 74, 87-113.
17. Denuit, M., & Dhaene, J. (2007). Comonotonic bounds on the survival probabilities in the Lee-Carter model for mortality projections. *Computational and Applied Mathematics* 203, 169-176.

18. Denuit, M., Goderniaux, A.-C., & Scaillet, O. (2007). A Kolmogorov-Smirnov type test for shortfall dominance against parametric alternatives. *Technometrics* 49, 88-98.
19. Courtois, C., & Denuit, M. (2007). Bounds on convex reliability functions with known first moments. *European Journal of Operational Research* 177, 365-377.
20. Pitrebois, S., Denuit, M., & Walhin, J.-F. (2006). An actuarial analysis of the French bonus-malus system. *Scandinavian Actuarial Journal* 2006.5, 247-264.
21. Courtois, C., Denuit, M., & Van Bellegem, S. (2006). Discrete s-convex extremal distributions: Theory and applications. *Applied Mathematics Letters* 19, 1367-1377.
22. Pitrebois, S., Denuit, M., & Walhin, J.-F. (2006). Multi-event bonus-malus scales. *Journal of Risk and Insurance* 73, 517-528.
23. Denuit, M., & Frostig, E. (2006). Heterogeneity and the need for economic capital in the individual model. *Scandinavian Actuarial Journal* 2006(1), 42-66.
24. Frostig, E., & Denuit, M. (2006). Monotonicity results for portfolios with heterogeneous claims arrival processes. *Insurance: Mathematics & Economics* 38, 484-494.
25. Denuit, M., Purcaru, O., & Van Keilegom, I. (2006). Bivariate archimedean copula modelling for censored data in nonlife insurance. *Journal of Actuarial Practice* 13, 5-32.
26. Boucher, J.-Ph., & Denuit, M. (2006). Fixed versus random effects in Poisson regression models for claim counts: a case study with motor insurance. *ASTIN Bulletin* 36, 285-301.
27. Denuit, M., Dhaene, J., Goovaerts, M., Kaas, R., & Laeven, R. (2006). Risk measurement with the equivalent utility principles. *Statistics and Decision* 24, 1-25.
28. Brouhns, N., Denuit, M., & Van Keilegom, I. (2005). Bootstrapping the Poisson log-bilinear model for mortality projection. *Scandinavian Actuarial Journal*, 212-224.
29. Czado, C., Delwarde, A., & Denuit, M. (2005). Bayesian Poisson log-bilinear mortality projections. *Insurance: Mathematics & Economics* 36, 260-284.

30. Walhin, J.-F., & Denuit, M. (2005). On the pricing of Top & Drop Excess of Loss covers. *Journal of Actuarial Practice* 12, 137-156.
31. Pitrebois, S., Denuit, M., & Walhin, J.-F. (2005). Bonus-malus systems with varying deductibles. *ASTIN Bulletin* 35, 261-274.
32. Denuit, M., & Lambert, Ph. (2005). Constraints on concordance measures in bivariate discrete data. *Journal of Multivariate Analysis* 93, 40-57.
33. Denuit, M., & Lang, S. (2004). Nonlife ratemaking with Bayesian GAM's. *Insurance: Mathematics and Economics* 35, 627-647.
34. Cebrian, A., Denuit, M., & Scaillet, O. (2004). Testing for concordance ordering. *ASTIN Bulletin* 34, 151-173.
35. Denuit, M., & Scaillet, O. (2004). Nonparametric tests for positive quadrant dependence. *Journal of Financial Econometrics* 2, 422-450.
36. Denuit, M., Lefèvre, Cl., & Picard, Ph. (2003). Polynomial structures in order statistics distributions. *Journal of Statistical Planning and Inference* 113, 151-178.
37. Brouhns, N., Guillén, M., Denuit, M., & Pinquet, J. (2003). Bonus-malus scales in segmented tariffs with stochastic migration between segments. *Journal of Risk and Insurance* 70, 577-599.  
*Paper Awarded CAS Prize for the best article published in JRI during 2003.*
38. Purcaru, O., & Denuit, M. (2003). Dependence in dynamic claim frequency credibility models. *ASTIN Bulletin* 33, 23-40.
39. Cebrian, A., Denuit, M., & Lambert, Ph. (2003). Generalized Paréto fit to the Society of Actuaries' large claims database. *North American Actuarial Journal* 7, 18-36.
40. Pitrebois, S., Denuit, M., & Walhin, J.-F. (2003). Setting a bonus-malus scale in the presence of other rating factors: Taylor's work revisited. *ASTIN Bulletin* 33, 419-436.
41. Denuit, M., Lefèvre, Cl., & Mesfioui, M. (2003). On spline approximation for bivariate functions of increasing convex type. *Revue d'Analyse Numérique et de Théorie de l'Approximation* 32, 145-159.
42. Denuit, M., & Müller, A. (2002). Smooth generators of integral stochastic orders. *Annals of Applied Probability* 12, 1174-1184.

43. Denuit, M., Genest, Ch., & Marceau, E. (2002). Criteria for the stochastic ordering of random sums, with actuarial applications. *Scandinavian Actuarial Journal*, 3-16.
44. Denuit, M. (2002). S-convex extrema, Taylor-type expansions and stochastic approximations. *Scandinavian Actuarial Journal*, 45-67.
45. Denuit, M., Lefèvre, Cl., & Utev, S. (2002). Measuring the impact of dependence between claims occurrences. *Insurance: Mathematics and Economics* 30, 1-19.
46. Dhaene, J., Denuit, M., Goovaerts, M.J., Kaas, R., & Vyncke, D. (2002). The concept of comonotonicity in actuarial science and finance: Theory. *Insurance : Mathematics and Economics* 31, 3-33.  
*Paper placed in the top 1% within its field according to the Essential Science Indicators (2005 ranking).*
47. Dhaene, J., Denuit, M., Goovaerts, M.J., Kaas, R., & Vyncke, D. (2002). The concept of comonotonicity in actuarial science and finance: Applications. *Insurance : Mathematics and Economics* 31, 133-161.
48. Brouhns, N., Denuit, M., & Vermunt, J.K. (2002). A Poisson log-bilinear approach to the construction of projected lifetables. *Insurance : Mathematics and Economics* 31, 373-393.
49. Kaas, R., Dhaene, J., Vyncke, D., Goovaerts, M.J., & Denuit, M. (2002). A simple proof that comonotonic risks have the convex largest sum. *ASTIN Bulletin* 32, 71-80.
50. Denuit, M., Lefèvre, Cl., & Scarsini, M. (2001). On s-convexity and risk aversion. *Theory and Decision* 50, 239-248.
51. Denuit, M., & Genest, Ch. (2001). An extension of Osuna's model for stress caused by waiting. *Journal of Mathematical Psychology* 45, 115-130.
52. Denuit, M., & Van Bellegem, S. (2001). On the stop-loss and total variation distances between compound sums. *Statistics and Probability Letters* 53, 153-165.
53. Denuit, M., Dhaene, J., & Ribas, C. (2001). Does positive dependence between individual risks increase stop-loss premiums? *Insurance: Mathematics and Economics* 28, 305-308.
54. Denuit, M. (2001). Laplace transform ordering of actuarial quantities. *Insurance: Mathematics and Economics* 29, 83-102.

55. Bermudez, L, Denuit, M., & Dhaene, J. (2001). Exponential bonus-malus systems integrating a priori risk classification. *Journal of Actuarial Practice* 9, 84-112.
56. Denuit, M., Lefèvre, Cl., & Shaked, M. (2000). On the theory of high convexity stochastic orders. *Statistics and Probability Letters* 47, 287-293.
57. Denuit, M., Lefèvre, Cl., & Shaked, M. (2000). Stochastic convexity of the Poisson mixture model, with applications in actuarial sciences. *Methodology and Computing in Applied Probability* 2, 231-254.
58. Cossette, H., Denuit, M., & Marceau, E. (2000). Impact of dependence among multiple claims in a single loss. *Insurance: Mathematics and Economics* 26, 213-222.
59. Denuit, M., Lefèvre, Cl. & Shaked, M. (2000). S-convex approximations. *Advances in Applied Probability* 32, 994-1010.
60. Denuit, M., Lefèvre, Cl., & Utev, S. (1999). Stochastic orderings of convex/concave-type on an arbitrary grid. *Mathematics of Operations Research* 24, 835-846.
61. Denuit, M., Lefèvre, Cl., & Utev, S. (1999). Generalized stochastic convexity and stochastic ordering of mixtures. *Probability in the Engineering and Informational Sciences* 13, 275-291.
62. Bassan, B., Denuit, M., & Scarsini, M. (1999). Variability orders and mean differences. *Statistics and Probability Letters* 45, 121-130.
63. Denuit, M., Lefèvre, Cl., & Mesfioui, M. (1999). On s-convex stochastic extrema for arithmetic risks. *Insurance: Mathematics and Economics* 25, 143-155.
64. Denuit, M. (1999). Time stochastic s-convexity of claim processes. *Insurance: Mathematics and Economics* 26, 203-211.
65. Denuit, M., De Vylder, F.E., & Lefèvre, Cl. (1999). Extremal generators and extremal distributions for the continuous s-convex stochastic orderings. *Insurance: Mathematics and Economics* 24, 201-217.
66. Denuit, M., Genest, Ch., & Marceau, E. (1999). Stochastic bounds on sums of dependent risks. *Insurance: Mathematics and Economics* 25, 85-104.
67. Denuit, M., & Vermandele, C. (1999). Lorenz and excess-wealth orders, with applications in reinsurance theory. *Scandinavian Actuarial Journal*, 170-185.

68. Dhaene, J., & Denuit, M. (1999). The safest dependence structure among risks. *Insurance: Mathematics and Economics* 25, 11-21.
69. Denuit, M., Lefèvre, Cl., & Mesfioui, M. (1999). A class of bivariate stochastic orderings with applications in actuarial sciences. *Insurance: Mathematics and Economics* 24, 31-50.
70. Denuit, M., Lefèvre, Cl., & Mesfioui, M. (1999). Stochastic orderings of convex-type for discrete bivariate risks. *Scandinavian Actuarial Journal*, 32-51.
71. Denuit, M. (1999). Discussion of “Bounds for actuarial present values under the fractional independence age assumption” by Werner Hürlimann. *North American Actuarial Journal* 3, 76-79.
72. Denuit, M. (1999). The exponential premium calculation principle revisited. *ASTIN Bulletin* 29, 215-226.
73. Denuit, M., & Cornet, A. (1999). Premium calculation with dependent time-until-death random variables: the widow’s pension. *Journal of Actuarial Practice* 7, 147-180.
74. Denuit, M., Lefèvre, Cl., & Shaked, M. (1998). The s-convex orders among real random variables, with applications. *Mathematical Inequalities and Their Applications* 1, 585-613.
75. Denuit, M., & Vermandele, C. (1998). Optimal reinsurance and stop-loss order. *Insurance: Mathematics and Economics* 22, 229-233.
76. Denuit, M., & Lefèvre, Cl. (1997). Some new classes of stochastic order relations among arithmetic random variables, with applications in actuarial sciences. *Insurance: Mathematics and Economics* 20, 197-214.
77. Denuit, M. (1997). A new distribution of Poisson-type for the number of claims. *ASTIN Bulletin* 27, 229-242.

### **3 Articles in National Peer-Reviewed Scientific Journals**

1. Delwarde, A., Denuit, M., Devolder, P., & Maréchal, X. (2007). Prix de rentes: de la réglementation aux “fair value”. *Revue Générale des Assurances et des Responsabilités*.
2. Boucher, J.-Ph., & Denuit, M. (2007). Crédibilité linéaire bivariée utilisant le nombre de périodes avec réclamations: modèles de Poisson, modèles à barrière et modèles gonflés à zéro. *Assurances et Gestion des Risques*.

3. Boucher, J.-Ph., & Denuit, M. (2007). Duration dependence models for claim counts. *German Actuarial Bulletin - Blätter DGFVM* 28, 29-45.
4. Ledoux, J.-L., & Denuit, M. (2007). Capitalisation de l'usufruit: tables Ledoux 2007. *Revue du Notariat Belge* 3007, 174-187.
5. Bolance, C., Denuit, M., Guillen, M., & Lambert, Ph. (2007). Greatest accuracy credibility with dynamic heterogeneity: The Harvey-Fernandes model. *Belgian Actuarial Bulletin*.
6. Denuit, M., Frostig, E., & Levikson, B. (2006). Shifts in interest rate and common cause model for coupled lives. *Belgian Actuarial Bulletin* 6, 1-4.
7. Delwarde, A., Denuit, M., Guillen, M., & Vidiella, A. (2006). Application of the Poisson log-bilinear projection model to the G5 mortality experience. *Belgian Actuarial Bulletin* 6, 54-68.
8. Biffis, E., & Denuit, M. (2006). Lee-Carter goes risk-neutral: An application to the Italian annuity market. *Giornale dell'Istituto Italiano degli Attuari* 69, 33-53.  
  
*Paper awarded the 2006 Giuseppe Ottaviani Prize in Insurance.*
9. Denuit, M., Genest, C., & Mesfioui, M. (2006). Calcul de bornes sur la prime en excédent de perte de fonctions de risques dépendants en présence d'information partielle sur leurs marges. *Annales des Sciences Mathématiques du Québec* 30, 63-78. (An English version entitled "Stop-loss bounds on functions of possibly dependent risks in the presence of partial information on their marginals" is available as Working Paper 04-01, Institut des Sciences Actuarielles, Université Catholique de Louvain, Louvain-la-Neuve, Belgium).
10. Pitrebois, S., Walhin, J.-F., & Denuit, M. (2006). How to transfer policyholders from one bonus-malus scale to the other? *German Actuarial Bulletin - Blätter DGFVM* 27, 607-618.
11. Denuit, M., & Goderniaux, A.-C. (2005). Closing and projecting lifetables using log-linear models. *Bulletin of the Swiss Association of Actuaries*, 29-49.
12. Delwarde, A., & Denuit, M. (2005). Sur les méthodes de conversion d'une rente en un capital. *Revue Générale des Assurances et des Responsabilités* 2005.9, 14036/1-10.

13. Pitrebois, S., Denuit, M., & Walhin, J.-F. (2004). Bonus-malus scales in segmented tariffs: Gilde & Sundt's work revisited. *Australian Actuarial Journal* 10, 107-125.
14. Magis, C., Denuit, M., & Walhin, J.-F. (2004). Une proposition de tables prospectives pour le marché belge des rentes. *Belgian Actuarial Bulletin* 4, 23-43.
15. Purcaru, O., Guillén, M., & Denuit, M. (2004). Linear credibility models based on time series for claim counts. *Belgian Actuarial Bulletin* 4, 62-74.
16. Magis, C., Denuit, M., & Walhin, J.-F. (2004). La mortalité, un phénomène en pleine mutation: quelle solution pour le marché des rentes? *Bulletin Français d'Actuariat* 6, 43-75.
17. Magis, C., Denuit, M., & Walhin, J.-F. (2004). La TPRV française: dépassée? *Bulletin Français d'Actuariat* 6, 11-42.
18. Delwarde, A., Kachakhidze, D., Olié, L., & Denuit, M. (2004). Modèles linéaires et additifs généralisés, maximum de vraisemblance local et méthodes relationnelles en assurance sur la vie. *Bulletin Français d'Actuariat* 6, 77-102.
19. Denuit, M., Pitrebois, S. & Walhin, J.-F. (2003). Tarification automobile sur données de panel. *Bulletin of the Swiss Association of Actuaries*, 51-81.
20. Delwarde, A., & Denuit, M. (2003). Importance de la période d'observation et des âges considérés dans la projection de la mortalité selon la méthode de Lee-Carter. *Belgian Actuarial Bulletin* 3, 1-21.
21. Brouhns, N., & Denuit, M. (2003). Actuarial modelling of longitudinal claims data through GAMM's: some methodological results. *German Actuarial Bulletin - Blätter DGFVM* 26, 25-39.
22. Denuit, M., & Dhaene, J. (2003). Simple characterizations of comonotonicity and countermonotonicity by extremal correlations. *Belgian Actuarial Bulletin* 3, 22-27.
23. Pitrebois, S., Denuit, M., & Walhin, J.-F. (2003). Fitting the Belgian Bonus-Malus system. *Belgian Actuarial Bulletin* 3, 58-62.
24. Cebrian, A., Denuit, M., & Lambert, Ph. (2003). Analysis of bivariate tail dependence using extreme value copulas: An application to the SOA medical large claims database. *Belgian Actuarial Bulletin* 3, 33-41.

25. Cossette, H., Denuit, M., & Marceau, E. (2002). Distributional bounds for functions of dependent risks. *Bulletin of the Swiss Association of Actuaries*, 45-65.
26. Purcaru, O., & Denuit, M. (2002). On the dependence induced by frequency credibility models. *Belgian Actuarial Bulletin* 2, 73-79.
27. Brouhns, N., & Denuit, M. (2002). Risque de longévité et rentes viagères. I. Evolution de la mortalité en Belgique de 1880 à nos jours. *Belgian Actuarial Bulletin* 2, 26-48.
28. Brouhns, N., & Denuit, M. (2002). Risque de longévité et rentes viagères. II. Tables de mortalité prospectives pour la population belge. *Belgian Actuarial Bulletin* 2, 49-63.
29. Brouhns, N., & Denuit, M. (2002). Risque de longévité et rentes viagères. III. Elaboration de tables de mortalité prospectives pour la population assurée belge, et évaluation du coût de l'antisélection. *Belgian Actuarial Bulletin* 2, 64-72.
30. Purcaru, O., & Denuit, M. (2002). On the stochastic increasingness of future claims in the Bühlmann linear credibility premium. *German Actuarial Bulletin - Blätter DGFVM* 25, 781-793.
31. Brouhns, N., Denuit, M., & Vermunt, J.K. (2002). Measuring the longevity risk in mortality projections. *Bulletin of the Swiss Association of Actuaries*, 105-130.
32. Denuit, M., & Dhaene, J. (2001). Bonus-Malus scales using exponential loss functions. *German Actuarial Bulletin* 25, 13-27.
33. Cossette, H., Denuit, M., Dhaene, J., & Marceau, E. (2001). Stochastic approximations for present value functions. *Bulletin of the Swiss Association of Actuaries*, 15-28.
34. Denuit, M., Dhaene, J., Le Bailly de Tillegem, C. & Teghem, S. (2001). Measuring the impact of a dependence among insured lifelengths. *Belgian Actuarial Bulletin* 1, 18-39.
35. Denuit, M., & Lambert, Ph. (2001). Smoothed NPML estimation of the risk distribution underlying Bonus-Malus systems. *Proceedings of the Casualty Actuarial Society* 88, 142-174.
36. Denuit, M. (2000). Stochastic analysis of duplicates in life insurance portfolios. *German Actuarial Bulletin - Blätter DGFVM* 24, 507-514.

37. Denuit, M., & Cornet, A. (1999). Sur la hauteur du chargement implicite contenu dans l'hypothèse d'indépendance: l'assurance "solde restant dû". *Bulletin of the Swiss Association of Actuaries* 1999(1), 65-80.
38. Denuit, M. (1999). Bases techniques de l'assurance-vie individuelle en Belgique. *Revue Générale des Assurances et des Responsabilités* 72(4), 13078/1-13078/11.
39. Denuit, M., Dhaene, J., & Van Wouwe, M. (1999). The economics of insurance: a review and some recent developments. *Bulletin of the Swiss Association of Actuaries*, 137-175.
40. Denuit, M., & Lefèvre, Cl. (1997). Stochastic product orderings, with applications in actuarial sciences. *Bulletin Français d'Actuariat* 1, 61-82.

## 4 Articles in Professional Insurance/Actuarial Journals

1. Denuit, M., & Devolder, P. (2006). Titrisation et assurance. *Reacfin Newsletter* 2, 2-4.
2. Delwarde, A., Denuit, M., Devolder, P., & Maréchal, X. (2006). Prix de rentes: de la réglementation aux "fair value". *Reacfin Newsletter* 1, 2.
3. Mahy, S., & Denuit, M. (2006). Découpage géographique par zone de Voronoï en assurance automobile. *actu-L* 5, 37-50.
4. Limpens, V., & Denuit, M. (2006). Modélisation semi-markovienne du risque en crédit logement dans le cadre de Bâle II. *actu-L* 5, 21-36.
5. Delwarde, A., & Denuit, M. (2006). Construction de tables de mortalité d'expérience. *Monde de l'Assurance* 2006.3, 22-27.
6. Denuit, M., & Walhin, J.-F. (2005). La conversion en rente: le nouvel arrêté royal est entré en vigueur. *Monde de l'Assurance* 2005.8, 19-21.
7. Denuit, M. (2005). Quand la différenciation tarifaire est-elle techniquement justifiée? *Monde de l'Assurance, Dossier spécial* 2005.1, 1-8.
8. Pitrebois, S., Denuit, M., & Walhin, J.-F. (2003). Echelles bonus-malus : Questions d'actualité. *Monde de l'Assurance* 324, 1-12 (Dossier spécial).
9. Pitrebois, S., Denuit, M., & Walhin, J.-F. (2003). Marketing et systèmes bonus-malus. *actu-L* 3, 89-105.
10. Nivarlet, Ch., Denuit, M., & Walhin, J.-F. (2003). Méthodes modernes de tarification des assurances hospitalisation. *actu-L* 3, 59-88.

11. Magis, C., Denuit, M., & Walhin, J.-F. (2003). Au-delà de Chain-Ladder: Les méthodes stochastiques de réservation. *actu-L* 3, 31-58.
12. Brouhns, N., & Denuit, M. (2002). Rentes viagères: Des bases réglementaires totalement dépassées. *Monde de l'Assurance* 304, 18-21.
13. Brouhns, N., Denuit, M., Masuy, B., & Verrall, R. (2002). Ratemaking by geographical area in the Boskov and Verrall model: A case study using Belgian car insurance data. *actu-L* 2, 3-28.
14. Pitrebois, S., De Longueville, Ph., Denuit, M., & Walhin, J.-F. (2002). Etude de techniques IBNR modernes. *actu-L* 2, 29-62.
15. Brouhns, N., Delfosse, Ph., Delwarde, A., & Denuit, M. (2002). Assurances de groupes ou fonds de pension. Liquidation en rentes: oui, mais à quel prix? *Monde de l'Assurance* 319, 25-28.
16. Denuit, M., Pitrebois, S., & Walhin, J.-F. (2001). Méthodes de construction de systèmes bonus-malus en RC auto. *actu-L* 1, 7-38.

## 5 Collective works

### 5.1 Direction of collective works

1. Encyclopedia of Quantitative Risk Assessment (2007). Brian Everitt & Ed Melnick (Editors-in-Chief), 4-Volume Set, 2400 pages.  
In charge of the Insurance/Actuarial Risk Section.
2. Encyclopedia of Actuarial Science (2004). Jozef Teugels & Bjorn Sundt (Editors-in-Chief), 3-Volume Set, 1944 pages.  
In charge of the Insurance Economics Section (with Marco Scarsini).

### 5.2 Contribution to collective works

1. Boucher, J.-Ph., Denuit, M., & Guillén, M. (2007). Modelling of insurance claim count with hurdle distribution for panel data. In "Advances in Mathematical and Statistical Modeling", Statistics for Industry and Technology series, Birkhäuser Boston.
2. Denuit, M., & Dhaene, J. (2004). Dependent Risks. In "Encyclopedia of Actuarial Science", edited by J.L. Teugels and B. Sundt, Wiley, pp. 464-471.
3. Denuit, M., & Müller, A. (2004). Convexity. In "Encyclopedia of Actuarial Science", edited by J.L. Teugels and B. Sundt, Wiley, pp. 362-364.
4. Denuit, M., & Müller, A. (2004). Stochastic orderings. In "Encyclopedia of Actuarial Science", edited by J.L. Teugels and B. Sundt, Wiley, pp. 1606-1610.

5. Brouhns, N., Delwarde, A., & Denuit, M. (2002). Méthodes d'élaboration de tables de mortalité prospectives, ou comment tarifier des rentes viagères lorsque la mortalité évolue. In "Tables de mortalité Prospectives - Prospective Sterftetafels", Association Royale des Actuaires Belges.

## 6 Articles in Conference Proceedings

1. Denuit, M. (2007). Projected life tables: Stochastic inequalities and dependence. Proceedings of the AMASES 2007 Conference, September 3-7, 2007, Lecce, Italy.
2. Boucher, J.-Ph., Denuit, M., & Guillen, M. (2006). Modelling of insurance claim count with hurdle distribution for panel data. Proceedings of the International Conference on Mathematical and Statistical Modelling in Honor of Enrique Castillo, June 28-30, 2006, Spain.
3. Courtois, C., Denuit, M., & Van Bellegem, S. (2005). Discrete s-convex extrema, with applications in actuarial science. Proceedings of the "3rd Actuarial and Financial Mathematics Day", Brussels, pages 35-46.
4. Delwarde, A., Denuit, M., Guillen, M., & Vidiella-i-Anguera, A. (2005). Application of the Poisson log-bilinear projection model to the G5 mortality experience. Proceedings of World Risk and Insurance Economics Congress (WRIEC) 7-11 August 2005, Salt Lake City, Utah, USA.
5. Denuit, M., & Purcaru, O. (2004). How to deal with correlated risks in actuarial science? Proceedings of the "2nd Actuarial and Financial Mathematics Day", Brussels, pages 21-34.
6. Dhaene, J., Wolthuis, H., Denuit, M., & Goovaerts, M.J. (2002). Risk and savings contracts. Transactions of the 27th International Congress of Actuaries, Cancun, Mexico, March 17-22.
7. Denuit, M., & Lefèvre, Cl. (2001). Stochastic s-(increasing) convexity. In Generalized Convexity and Generalized Monotonicity, pp.167-182, N. Hadjisavvas, J.E. Martinez-Legaz & J.-P. Penot Editors, Lecture Notes in Economics and Mathematical Systems 502, Springer, New York. (Proceedings of the 6th International Symposium on Generalized Convexity / Monotonicity, Karlovassi, Samos, Greece, August 30 - September 3 1999)
8. Denuit, M. (1997). Sur la détermination du nombre de composantes dans un modèle de mélange fini. Actes de la 18ème Rencontre Franco-Belge de Statisticiens, 11-15.
9. Denuit, M., Lefèvre, Cl., & Picard, Ph. (1997). Familles de polynômes remarquables, statistique d'ordre et fonctions de répartition. Actes des XXIXèmes Journées de Statistique de l'A.S.U., 327-330.

## 7 Reports

### 7.1 Actuarial Education Reports

1. Denuit, M., & Dhaene, J. (1999). Education Project KVBA-ARAB Universities. Report to the Directorial Board of the Royal Society of Belgian Actuaries.
2. Denuit, M., & Dhaene, J. (2000). Towards an Internationally Recognized Actuarial Qualification in Belgium. Report to the President of the Royal Society of Belgian Actuaries.
3. Denuit, M., Dhaene, J., & Van Wouwe, M. (2002). Linking a university-based actuarial education system to a professional organisation: The Belgian case. Report to the Education Committee of the International Actuarial Association.
4. Denuit, M., & Devolder, P. (2003). Harmonisation européenne de la structure des études supérieures (3-5-8, Bologne ou BaMa). Opportunité ou menace pour les sciences actuarielles en Belgique? Rapport au Président du Comité Education de l'Association Royale des Actuaire Belges.

### 7.2 Research reports submitted for publication

1. Biffis, E., Denuit, M., & Devolder, P. (2005). Stochastic mortality under measure changes. Working Paper 05-14, Institut des Sciences Actuarielles, Université Catholique de Louvain, Louvain-la-Neuve, Belgium.
2. Devolder, P., & Denuit, M. (2006). Continuous time stochastic mortality and securitization of longevity risk. Working Paper 06-02, Institut des Sciences Actuarielles, Université Catholique de Louvain, Louvain-la-Neuve, Belgium.
3. Dhaene, J., Denuit, M., & Vanduffel, S. (2006). Positive dependence decreases the diversification benefit. Working Paper 06-11, Institut des Sciences Actuarielles, Université Catholique de Louvain, Louvain-la-Neuve, Belgium.
4. Courtois, C., & Denuit, M. (2006).  $S$ -convex extremal distributions with arbitrary discrete support. Working Paper 06-10, Institut des Sciences Actuarielles, Université Catholique de Louvain, Louvain-la-Neuve, Belgium.
5. Delwarde, A., & Denuit, M. (2006). On a Poisson GLM variant of Chain-Ladder for claim counts. Working Paper 06-12, Institut des Sciences Actuarielles, Université Catholique de Louvain, Louvain-la-Neuve, Belgium.

6. Denuit, M. (2006). The diversification theorem restated: A brief comment. Working Paper 06-14, Institut des Sciences Actuarielles, Université Catholique de Louvain, Louvain-la-Neuve, Belgium.
7. Boucher, J.-Ph., Denuit, M., & Guillén, M. (2006). Independent and correlated random effects for hurdle models applied to panel count data. Working Paper 06-19, Institut des Sciences Actuarielles, Université Catholique de Louvain, Louvain-la-Neuve, Belgium.
8. Boucher, J.-Ph., Denuit, M., & Guillén, M. (2006). Zero-inflated Poisson models for panel data. Working Paper 06-20, Institut des Sciences Actuarielles, Université Catholique de Louvain, Louvain-la-Neuve, Belgium.
9. Frostig, E., & Denuit, M. (2007). Ruin probabilities and optimal capital allocation for heterogeneous life annuity portfolios. Working Paper 07-01, Institut des Sciences Actuarielles, Université Catholique de Louvain, Louvain-la-Neuve, Belgium.
10. Denuit, M., & Frostig, E. (2007). Prudential rules for life annuity pricing and reserving. Working Paper 07-02, Institut des Sciences Actuarielles, Université Catholique de Louvain, Louvain-la-Neuve, Belgium.
11. Denuit, M., & Frostig, E. (2007). Life insurance mathematics with random life tables. Working Paper 07-07, Institut des Sciences Actuarielles, Université Catholique de Louvain, Louvain-la-Neuve, Belgium.
12. Denuit, M. (2007). Weakness of the actuarial equivalence principle for personal injury and fatal accidents compensation. Working Paper 07-09, Institut des Sciences Actuarielles, Université Catholique de Louvain, Louvain-la-Neuve, Belgium.
13. Denuit, M. (2007). Life annuities with stochastic survival probabilities: A review. Working Paper 07-10, Institut des Sciences Actuarielles, Université Catholique de Louvain, Louvain-la-Neuve, Belgium.

### **7.3 Consulting reports**

1. Denuit M. & Pinquet J. (2001). Produits multigaranties: techniques de réévaluation des risques en cours. (Etude réalisée pour Winterthur Europe). Consulting Report CR0103, Institut de statistique, UCL.
2. Brouhns N., Delwarde A. & Denuit M. (2002). Méthodes d'élaboration de tables de mortalité prospectives, ou comment tarifier des rentes viagères lorsque la mortalité évolue (Etude réalisée pour l'Association Royale des Actuaires Belges).
3. Brouhns, N., & Denuit M. (2004). Datawarehouse des pensions du secteur public: Analyse des besoins externes. (Projet SSTC AG/10/077, SPP Politique scientifique).

4. Delwarde, A., & Denuit M. (2004). Mortalité des pensionnés du secteur public: Analyse actuarielle et démographique. (Projet SSTC AG/10/078, SPP Politique scientifique).
5. Denuit, M., & Maréchal, X. (2004). BM-builder User's Guide. Reacfin SA, Spinoff de l'Institut des Sciences Actuarielles de l'UCL, Louvain-la-Neuve, Belgique.
6. Denuit, M., & Goderniaux, A.-C. (2004). Loss distribution approach for operational risk: Analysis of the Euroclear Bank Historical Internal Losses Data and ORX Database. Reacfin SA, Spinoff de l'Institut des Sciences Actuarielles de l'UCL, Louvain-la-Neuve, Belgique.
7. Delwarde, A., & Denuit, M. (2005). Méthodes relationnelles en assurance vie (étude réalisée pour SCOR Vie). Reacfin SA, Spinoff de l'Institut des Sciences Actuarielles de l'UCL, Louvain-la-Neuve, Belgique.
8. Denuit, M. (2005). Tarification VAM: aspects méthodologiques et construction d'un zonier (étude réalisée pour MAIF). Reacfin SA, Spinoff de l'Institut des Sciences Actuarielles de l'UCL, Louvain-la-Neuve, Belgique.
9. Denuit, M., Maréchal, X., & Closon, J.-P. (2005). Etude relative aux coûts potentiels liés à une éventuelle modification des règles du droit de la responsabilité médicale. Phase II: Développement d'un modèle actuariel et premières estimations. KCE Reports - Centre Fédéral d'Expertise des Soins de Santé, Volume 16B.  
Available from <http://www.centredexpertise.fgov.be>
10. Denuit, M., & Delwarde, A. (2005). Loss distribution approach for operational risk: Analysis of the 1999-2004 Euroclear Bank Historical Internal Losses Data and ORX Database. Reacfin SA, Spinoff de l'Institut des Sciences Actuarielles de l'UCL, Louvain-la-Neuve, Belgique.
11. Delwarde, A., & Denuit, M. (2005). Fair Value in Life Insurance. Actutilitaire FVLI V.1.1 User's Guide. Reacfin SA, Spinoff de l'Institut des Sciences Actuarielles de l'UCL, Louvain-la-Neuve, Belgique.
12. Maréchal, X., Denuit, M., Vinck, I., & Closon, J.-P. (2006). Etude relative aux coûts potentiels liés à une éventuelle modification des règles du droit de la responsabilité médicale. Phase III: Affinement des estimations. KCE Reports - Centre Fédéral d'Expertise des Soins de Santé, Volume 35B.  
Available from <http://www.centredexpertise.fgov.be>
13. Denuit, M., & Maréchal, X. (2007). Market Cycles Modeling (étude réalisée pour AXA International). Reacfin SA, Spinoff de l'Institut des Sciences Actuarielles de l'UCL, Louvain-la-Neuve, Belgique.

14. Maréchal, X., Denuit, M., Vinck, I., & Closon, J.-P. (2007). Indemnisation des dommages résultant de soins de santé - Clé de répartition entre le Fonds et les assureurs. KCE Reports - Centre Fédéral d'Expertise des Soins de Santé.

Available from <http://www.centredexpertise.fgov.be>