

**The Working Group on Risk, with the support of the group BFA (SFdS) & Institut des Actuaire (IA), has the pleasure to invite you to the Seminar by:**

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**Dr. Yahia SALHI**

ISFA, Chaire "Management de la Modélisation", BNP PARIBAS Cardif

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**Thursday, November 14, 2013 at 12:30 pm**  
**EEE - ESSEC La Défense – room 103**

**Partial Splitting of Longevity and Financial Risks: The Longevity Nominal Choosing Swaptions**

In this paper, we introduce a new structured financial product: the so-called Longevity Nominal Chooser Swaption (LNCS). Thanks to such a contract, insurers could keep pure longevity risk and transfer a great part of interest rate risk underlying annuity portfolios to financial markets. Before the issuance of the contract, the insurer determines a confidence band of survival curves for her portfolio. An interest rate hedge is set up, based on swaption mechanisms. The bank uses this band as well as an interest rate model to price the product. At the end of the first period (e.g. 8 to 10 years), the insurer has the right to enter into an interest rate swap with the bank, where the nominal is adjusted to her (re-forecasted) needs. She chooses (inside the band) the survival curve that better fits her anticipation of future mortality of her portfolio (during 15 to 20 more years, say) given the information available at that time. We use a population dynamics longevity model and a classical two-factor interest rate model to price this product. Numerical results show that the option offered to the insurer (in terms of choice of nominal) is not too expensive in many real-world cases. We also discuss the pros and the cons of the product and of our methodology. This structure enables insurers and financial institutions to remain in their initial field of expertise.

This is a joint work with H. Bensusan, N. El Karoui and S. Loisel



**YOU HAVE THE ANSWER**

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<http://crear.essec.edu/working-group-on-risk/meeting-schedule-2013-2014>

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**Dr. Yahia SALHI**, is a research associate with BNP Paribas Cardiff Chair "Management de la Modélisation" and maître de conférence associé at ISFA, Univ. Lyon 1. His main research fields include detection of abrupt changes and longevity risk.

