### On the spectral measure of risk in holding stocks in the long run Zsolt Bihary, Péter Csóka and Gábor Kondor

For long-term investors (pension funds, target-date funds, and young investors), it is vital to know how risky it is to hold stocks in the long run. The paper focuses on spectral risk measures calculated as a weighted average of exposures, with higher weights given to higher losses. Setting the exposures to mean the difference between the risk-free deposit and the stock price allows the related spectral risk measure to be seen as how much on average the investor will regret investing in a stock, rather than in a risk-free deposit. The 2018 findings of Bihary, Csóka and Szabó show analytically that the holding risk of stocks decreases over a longer term and may even become negative. However, numerical calculations show that the wait will be at least one hundred years before the risk becomes tolerable.

# Manager incentives-based model of corporate hedging Zsolt Bihary and Barbara Dömötör

The study explains the diversity of corporate hedging behaviour through a simple model. The hedging ratio is obtained by maximizing the expected utility, which is a combination of corporate-level utility and a component that models the incentives for the financial manager. If the financial manager has no other incentive than to maximize the utility based on total corporate profit, the results of classic models are obtained, whereby hedging has two components: pure hedge and the speculation component. In an unbiased forward market, this suggests the wisdom of a full hedge for the exposure. If the financial manager expects that her/his evaluation will be based exclusively on the financial profit, being risk averse, he decides not to hedge at all. The hedging ratio depends on the relative weight of these contrary effects. To confirm the results, the authors investigated the hedging ratio of Hungarian large corporations. They found that firms which apply hedge accounting hedge more, but the difference was insignificant, due to the small sample size.

### PORTFOLIO ALLOCATION IN CASE OF FAILURE RISK IN THE PRESENCE OF LIMITED LIABILITY

Zsolt Bihary and Attila András Víg

The model concerns dynamic portfolio optimization. Risky assets follow a jump-diffusion process with negative jumps, while the non-risky assets take the form of a deterministic bank deposit. Optimization is restricted in the literature to strategies where the value of the portfolio cannot become negative. This paper departs from this tradition in allowing for strategies that may lead to default. The investor in the model used here assumes limited liability, so that in case of default, not only his entire wealth is lost, but the creditor also suffers a loss. To compensate, the creditor demands a risk premium, which is treated here endogenously. If the risk aversion parameter is sufficiently low, the inclusion of limited liability explains the existence of strategies with high leverage. Realistic examples of where these are optimal are given. With large jumps, optimal leverage depends discontinuously on the model parameters.

#### THE INFLUENCE OF PREVIOUS EMPLOYMENT ON WAGES

István Boza and Virág Ilyés

The paper's main aim is to measure whether previous co-working relationships have an effect on starting wages and tenure after they find a new job – according to channels described in referral theory. The empirical part of the analysis rests on administrative panel data that covers half the Hungarian population's monthly labour data for 2003–2011. The paper's main contribution is to show that positive effects of referral on both wages and tenure lengths exist and that their main source is the differences in unobservable factors among referred applicants and the control group. It is shown how a person can make a 2.5% gain in wages relative to that person and to counterparts, through being referred to a job, and that this advantage persists for about three years. Such peer effects are greater when the referee and the applicant are closer in occupational rank, with the former having a better occupation.

#### Modelling debt relief using cooperative game theory Péter Csóka

Creditors often give debt relief to firms (or countries, states, individuals or other organizations). The question is how to distribute the asset value of the firm to the creditors and to the firm itself. Csóka and Herings (2017) model the problem using transferable utility cooperative games, called liability games. This paper illustrates liability games and their properties and argues that Shapley value can also be used as a liability rule. The main novelty of liability games compared with standard bank-ruptcy games is that in the former the firm is also a player. It can end up with a strictly positive pay-off even in an insolvency case, i. e. a bailout can happen. In this sense, the cooperative game-theory model of debt relief can be seen as one of the models for the soft budget constraint syndrome.

## Numerical methodology in the basic insurance requirements of clearing houses

Sára Kata Ladoniczki and Kata Váradi

Several new regulations have appeared since the crisis of 2008, aimed at increasing the transparency of the financial system and ensuring its stability. This was necessary because one of the causes of the crisis was an insufficient regulatory environment, whereby significant market participants had accumulated large, speculative, leveraged OTC derivative transactions, on which they suffered huge losses. These unregulated transactions further deepened the crisis. As a regulatory response, EMIR in the EU and the Dodd-Frank Act in the United States increased the role of central counter-parties on financial markets. The main goal of the article is to present a few central European counter-parties' initial margin calculation methods, from the viewpoint of EMIR regulation. The advantages and disadvantages of these are shown from different aspects.

#### Income and production calculations in a macro approach Tamás Mellár

The prime purpose of the study is to examine the extent to which macroeconomic-level income ratios correspond to the contribution of production factors to GDP in the Hungarian economy. It is concluded that a comparison of factor incomes and factor productivities cannot establish clearly which factor is exploited or over-rated. The problem arises because production-function accounting does not allow accurate determination of the marginal productivity of labour and capital. This all draws attention to a long-established, but not widely acknowledged notion that the neoclassical (Cobb–Douglas-type) production function is not well founded either theoretically or empirically.

### Designing pension-benefit schedules when longevities increase with wages

András Simonovits

The designers of public pension systems frequently neglect to consider that higher earners statistically live longer, and possibly also retire later. Since this difference has recently been rising steeply, this omission is less and less tolerable, especially with a non-financially defined contribution system (NDC). The paper studies three simple connected pension models, to show how the redistribution from low earners to the high earners can be reduced or reversed. Our answers are either to mix NDC and flat benefit or reduce the weight of wage indexation in benefits. It is an open question how the neglected behavioural reactions (lower share of NDC implies lower labor supply and greater tax evasion) and the occasionally manifested real-wage jumps influence the social welfare.