

Cambridge/Princeton Conference

Yacine Aït-Sahalia, “Modelling Financial Contagion with Mutually Exciting Jump Processes”

Discussant: Mardi Dungey

Abstract: Adverse shocks to stock markets propagate across the world, with a jump in one region of the world seemingly causing an increase in the likelihood of a different jump in another region of the world. To capture this effect mathematically, we introduce a model of asset return dynamics involving mutually exciting processes. In the model, a jump in one region of the world or one segment of the market increases the intensity of jumps occurring both in the same region (self-excitation) as well in other regions (cross-excitation). The model generates the type of jump clustering that is observed empirically. Jump intensities then mean-revert until the next jump. We develop and implement an estimation procedure for this model. We find that most US jumps get reflected quickly in other markets, while there is little statistical evidence for the reverse.

Sule Alan, “Do Disaster Expectations Explain Household Portfolios?”

Discussant: Jakub Jurek

Abstract: It has been argued that rare economic disasters can explain most asset pricing puzzles. If this is the case, perceived risk associated with a disaster in stock markets should be revealed in household portfolios. That is, the framework that solves these pricing puzzles should also generate quantities that are consistent with the observed ones. This paper estimates the perceived risk of disasters (both probability and expected size) that is consistent with observed portfolios and consumption growth between 1983 and 2004 in the United States. I find that the disaster probabilities that justify life cycle profiles of stock market participation, equity shares and consumption growth are in the neighborhood of 4 percent per year. The estimated disaster probabilities vary across cohorts without any systematic pattern. Older cohorts expect such financial disasters to be more devastating. I also find that participation costs are not needed to match observed participation probabilities once disaster expectations are allowed.

Amir Amel-Zadeh (with Geoff Meeks, Judge Business School), “Bank Failure, Market-to-market and the Financial Crisis”

Discussant: Hyun Shin

Abstract: This paper analyses the role of bank failure in financial crisis: both actual failure and the impact on behaviour of potential failure. It compares five criteria for failure: one economic, two legal and two regulatory. It is clear from this comparison that balance sheet valuations of assets are in almost all cases crucial in these definitions, and so the choice between current market (“fair value”) or other valuations can be decisive in whether a bank fails. If balance sheet variables are marked to market, vicious circles can develop in falling markets as banks seek to comply with Basel bank regulation and shrink their balance sheets to avert failure: this can intensify the cycle. Also bank decisions to trade assets or liabilities may, in thin markets, have externalities - as one bank’s market transaction affects the valuations in another bank’s balance sheet. Pressures have therefore developed on accounting regulators to relax fair value rules. However, we argue that a retreat by the accounting regulators from fair value would mask exposure to risk under the Basel 2 arrangements of bank regulators. Moreover, some of the most prominent bank failures cannot, at first sight, be attributed to fair value accounting: we show that Northern Rock, the first UK bank to experience a run since 1866, was balance sheet solvent, even on a fair value basis.

Markus Brunnermeier (with M. Oehmke), “Maturity Rat Race”

Discussant: Ana Babus

Abstract: We develop a model of endogenous maturity structure for institutions that borrow from multiple creditors. Our analysis leads to two main insights. First, we show that a *maturity rat race* can occur: As the fundamental value of an institution’s investments deteriorates, an individual creditor has an

incentive to shorten the maturity of its own loan to the institution, allowing him to adjust his financing terms or pull out before other creditors can. This, in turn, causes all other lenders to shorten their maturity as well, leading to excessively short-term financing. Second, an institution can get caught in a *short-term financing trap*. Even when an efficient long-term financing equilibrium exists, there can also be an inefficient equilibrium, in which all financing is short-term. Overall, firms are exposed to unnecessary rollover risk.

Harrison Hong, (with Ing-Haw Cheng and and José Scheinkman): “Yesterday’s Heroes: Compensation and Creative Risk-Taking”

Discussant: Sule Alan

Abstract: We investigate the link between compensation and risk-taking among finance firms during the period of 1992-2008. First, there are substantial fixed cross-firm differences in total executive compensation residualized for firm size. Second, residual pay is correlated with pricebased risk-taking measures including firm beta, return volatility, tail cumulative return performance, and the sensitivity of firm stock price to the ABX subprime index. Third, compensation is also weakly correlated with balance-sheet based risk-taking measures such as holdings of non-GSE mortgage-backed securities and book leverage. Fourth, these risk-taking measures are correlated with short-term pay even controlling for long-term incentives such as insider ownership. Finally, compensation and risk-taking are not related to governance variables but covary with stock turnover---a proxy for speculative investor activity. It appears that crossfirm variation in short-termism and risk-taking is more likely due to heterogeneous investor preferences than to mis-governance.

Tianhui Michael Li (with L.C.G.Rogers), “A Doubly Bayesian Approach to the Equity Premium Puzzle”

Discussant: Jianqing Fan

Abstract: This is not just another paper proposing yet another solution to the Equity Premium Puzzle (EPP). While we do postulate an economic model with parameter uncertainty, this paper is also methodological. Our model is an extension of the Lucas Tree Model with a representative Bayesian agent progressively learning an uncertain parameter in the distribution of dividend growth as it is reported. Despite the complexity, we are able to derive closed form expressions for the stock and bond prices. We adapt Bayesian algorithms (Markov Chain Monte Carlo or MCMC) popular in the machine learning literature to infer parameter values of our Bayesian economic model. MCMC has the benefit of automatically learning the most likely parameter values across the whole parameter space and exploiting the dynamic and static information in the data rather than a few arbitrarily chosen moments. Our MCMC algorithm finds very plausible values for the coefficient of relative risk aversion ($R < 1.5$ for the Shiller's data and $R < 4$ for Mehra and Prescott's) and matches it.

Elena Medova, “Individual Asset Liability Management”

Discussant: Harrison Hong

Abstract: A recent discussion of the future of life-cycle saving and investment posed the question: “Can computer-based personal financial planning models that conform to the principles of economics be both helpful and commercially viable?” The heterogeneity of personal financial plans and the interplay between economic considerations and individual aspirations make the problem of personal finance one of the most challenging in economics. At the heart of personal finance problems lies the fundamental consumption/investment problem which has been studied by some of the best minds in economics and finance. Samuelson (1948) devoted much of his early work to communicating the practical implications of economics for household decision making. Modigliani and Brumberg (1954) proposed the life-cycle hypothesis based on the relationship between saving and consumption over a lifetime. Then Samuelson (1969) and Merton (1969) formulated relationships between consumption and portfolio allocation in

terms of expected returns and volatilities in order to maximize total lifetime utility. Kahneman and Tversky (1979) introduced a utility function which applies to gains and losses from financial assets and emphasized the qualitative aspects of decisions made by individuals. In spite of the importance of the life-cycle investment and saving problem for the rapidly growing aging populations of the developed nations, there is relatively little academic research focused on personal finance. Advice to individuals is mainly based on the expertise of financial planning professionals which continues to be “a domain of common sense, which is not the same thing as good sense”. As computing power has advanced, solutions to personal financial planning problems have turned to new technologies. The two most notable examples, both within the asset liability framework are the Home Account which is based on stochastic programming methodology and ESPlanner which uses dynamic programming techniques. In this article we describe a third example, the *individual* Asset Liability Management (*i*ALM) tool which advances the dynamic stochastic programming approach further. The system handles many aspects of an individual investor’s circumstances and generates an optimal life-long financial plan. Our focus is the functionality of *i*ALM. The basic concepts behind its implementation are given in section 2, but the technical details, which are vast, are omitted. In section 3, typical family data (household “profiles”) are used to illustrate how *i*ALM’s solutions depend on the personal preferences of individuals such as retirement age, priorities of major consumption goals and numerous other factors. These inputs to the problem influence optimal investment and saving decisions, set the household’s varying attitude to risk over time and define the feasibility of goal achievement. Experimenting with variations of preferences expressed in the data inputs shows that *i*ALM emulates behavioral patterns. We believe that the optimization results using *i*ALM support many empirical observations from behavioral finance. In the future, such systems can help families to identify sustainable spending levels for retirement, which is of paramount importance for the ever-expanding retired populations of the world.

John Mulvey, “Dynamic Portfolio Theory: The Role of Replication Strategies for Private Equity”

Discussant: Michael Dempster

Abstract: We show that private equity returns in the buyout domain can be largely replicated by trading a basket of sector-level exchange-traded funds with moderate leverage. The strategy combines optimization and fundamental valuation via the Bakshi-Chen model. Our index provides an investible benchmark, as well as a potential forecasting or hedging tool for portfolio managers. The ability to rebalance and protect capital is especially valuable during turbulent conditions.

Hamid Sabourian (with Andreas Park, University of Toronto), “Herding & Contrarian Behaviour in Financial Markets”

Discussant: Wei Xiong

Abstract: Rational herd behavior and informationally efficient security prices have long been considered to be mutually exclusive but for exceptional cases. In this paper we describe the conditions on the underlying information structure that are necessary and sufficient for informational herding and contrarianism. In a standard sequential security trading model, subject to sufficient noise trading, people herd if and only if, loosely, their information is sufficiently dispersed so that they consider extreme outcomes more likely than moderate ones. Likewise, people act as contrarians if and only if their information leads them to concentrate on middle values. Both herding and contrarianism generate more volatile prices, and they lower liquidity. They are also resilient phenomena, although by themselves herding trades are self enforcing whereas contrarian trades are self-defeating. We complete the characterization by providing conditions for the absence of herding and contrarianism.

Hyun Shin (with J. Danielson and J. Zigrand), “Risk Appetite and Endogenous Risk”

Discussant: John Eatwell

Abstract: Market volatility reflects traders’ actions, while their actions depend on perceptions of risk. Equilibrium volatility is the fixed point of the mapping that takes perceived risk to actual risk. We solve

for equilibrium stochastic volatility in a dynamic setting where risk neutral traders operate under Value-at-Risk constraints. We derive a closed form solution for the stochastic volatility function in the benchmark model with a single risky asset. Even though the underlying fundamental risks remain constant, the resulting dynamics generate stochastic volatility through traders' reactions in equilibrium. Volatilities, expected returns and Sharpe ratios are shown to be countercyclical. If the purpose of financial regulation is to shield the financial system from collapse, then basing regulation on individually optimal risk management may not be enough.

Ronnie Sircar (with C. Harris and S. Howison), "Games with Exhaustible Resources"

Discussant: Chris Rogers

Abstract: We study N-player repeated Cournot competitions that model the determination of price in an oligopoly where firms choose quantities. These are nonzero-sum (ordinary and stochastic) differential games, whose value functions may be characterized by systems of nonlinear Hamilton-Jacobi-Bellman partial differential equations. When the quantity being produced is in finite supply, such as oil, exhaustibility enters as boundary conditions for the PDEs. We analyze the problem when there is an alternative, but expensive, resource (for example solar technology for energy production), and give an asymptotic approximation in the limit of small exhaustibility. We illustrate the two-player problem by numerical solutions, and discuss the impact of limited oil reserves on production and oil prices in the duopoly case.

Vanessa Smith (with Nikolaos Demiris, Agricultural University of Athens), "On the Epidemic of Financial Crises"

Discussant: Yacine Aït-Sahalia

Abstract: The frequency and intensity of financial crises witnessed in the past decades is of growing concern to policymakers. Questions are increasingly raised about the nature of these crises, and the policies needed both to prevent them from occurring in the first place and, once occurred, to limit their severity and contagious spread to other countries. Naturally, any discussion of the appropriate policy response must be based on an analytical understanding of contagion, as given by a model of that phenomenon. The contagion literature does not directly model the inherent dependencies involved in the spread of crises. We argue that a transmission model may be more appropriate, and we propose a stochastic process from epidemic theory where the population of countries is explicitly structured and the crisis can be transmitted both locally and globally. The approach is illustrated using historical data. The results indicate an increasing trend for global transmission over time. Policy implications are also addressed via a naturally implied control mechanism.