Project summaries

Project A6: Strategic Risk in Experimental Games

Subproject A6 studies the determinants of risk and uncertainty that are due to strategic interaction. It consists of two parts. In the first part, which is entitled "Uncertainty and Information", fundamental questions of decision-making with strategic risk and bounded rationality are addressed by measuring and modeling the relationship between strategic risk and bounded rationality. In the second part, entitled "Sequential Mechanisms and Choice between Mechanisms", the role of strategic uncertainty in centralized and decentralized markets is studied.

Project A7: Accounting and Cost of Capital

The goal of this project is to explore the impact of financial accounting information on the cost of capital. While prior analytical research focuses on the valuation role of financial accounting when investigating this link, we will develop and test a model which captures both the valuation role and the contracting role of accounting. The validity of this model will then be tested empirically using international accounting and capital market data. We expect the results from this project to explain some of the existing conflicting evidence about the interplay of public information in capital markets and the cost of capital.

Project A8: The Dynamics of Regulatory Risk

For the next funding period, the project intends to extend its analysis of regulatory risk by taking a dynamic perspective. Attention is to be devoted to identifying possible approaches toward modeling dynamic regulatory risk, which subsequently allows us to study its causes and effects on optimal regulation. Equipped with appropriate micro-economic models, the project then intends to explore how economic agents respond and manage regulatory risk. The analysis is to be conducted from both the pragmatic and the optimal approach to regulation. It focuses on commitment problems by the regulator as a natural cause of regulatory risk in a dynamic environment. With its dynamic perspective the project intends to contribute to some specific problems which the literature on dynamic regulation addresses. In particular, it explores the implications of regulatory risk on the optimal frequency of regulatory reviews and the problem of regulatory capture by firms

Project A9: The Local Incidence of Shocks – The Role of Labor Supply

Structural changes since the mid-1980s have increased the risk in the labor market for various demographic groups, and the understanding of adjustment processes has become highly relevant. To date, however, there is only scarce evidence on how workers adjust to labor demand shocks on the micro level. We will use micro-level data and identification strategies that rely on social experiments to determine the specific nature of adjustment mechanisms. A9 collaborates with B3 (Real Estate) in the molecule "The Local Incidence of Shocks". This collaboration allows us to consider the importance of different channels of adjustment, particularly, interactions between the labor and the housing market.

Project A11: Securitization and Equilibrium Risk Transfer

The general objective of our project is to develop novel modeling approaches to analyze price dynamics, investment decisions and optimal risk sharing rules in financial markets under limited transparency and asymmetric information. Our research will respond to challenges coming from the analysis of (i) alternative trading venues with limited pre-trade transparency such as dark pools; (ii) investment decisions under asymmetric information such as delegated portfolio Management problems; (iii) markets at the interface of finance and insurance. The main methods we use are equilibrium theory and principal-agent games.

Project A12: Contextual Influences on Risk Perception in Investment Decisions

Economic decisions are often characterized by risk and uncertainty. Therefore the perceptions of risk and return are central factors affecting economic behavior. Such factors are largely influenced by the context of

the choice situation. In the proposed project we will test if individuals neglect the correlation between returns of different investments when making portfolio allocations and how risk processing differs between the gain and the loss domain.

Project A13: Risk Allocation with Derivatives by Corporations

This project examines risk allocation within and between corporations from three different angles. In the first part of the project we ask why managers speculate with derivatives in the context of a firm's risk management program. In the second part of the project will examine the interaction of derivatives strategies across firms and how the competitive environment affects this relation. In the third part of the project we examine why firms issue credit sensitive debt, and thus use this instrument to manage the firm's own credit risk exposure.

Project A14: Statistical inference methods for assessing the genetic basis of risk preferences

Subproject A14 is concerned with the development of statistical inference methods for analyzing genetics and neuroimaging (in particular: functional magnetic resonance imaging) data. Multiple test procedures are developed for massive-multiple test problems for which external prior information about the (hierarchical) structure of the system of hypotheses and/or dependency structures in the sample space is available. Applications comprise the detection of genetic and neurophysiological factors influencing risk preferences in humans utilizing a large cohort data base.

Project B1: Dynamic Semiparametric Modelling

High-dimensional data arises in financial statistics, in neuro-economics and in the analysis of the independence of market variables. An analysis of data such as this in a dynamic context requires low dimensional representation with flexible factor structures. We investigate semiparametric factor models and their applications on various economic scenarios. This specifically concerns investment behaviour, the functional components of distribution spreads, dynamic implied correlations, biomarking of risk adjustment and systemic risk.

Project B2: Brand Evaluation and the Assessment of Brand Strategies

This project aims at developing models to evaluate risky brand strategies at the consumer level and to estimate the performance implications of brands at the company level. We regard risky brand strategies as strategies which, if they fail, can seriously depreciate brand value and company value in total. The research was centered on three major problems. First, methods to evaluate brand strategies in general are affected by unobservable variables and measurement errors. The methodology to control for these factors was applied and improved. Second, we showed how unexpected impact factors of brand value can be assessed. Especially, we analyzed which kind of forces determine brand value and which factors can improve or destroy company brand value. Third, we investigated how brand value is affected by unexpected events in the product line at the individual customer level. We addressed the key research questions of our project in several separate papers.

Project B3: The Local Incidence of Shocks – the Role of Real Estate

We collaborate with project A9 in the molecule "The local incidence of shocks". Most economic shocks are absorbed locally, mainly through labor markets (expertise of A9), real estate markets (our expertise) and their interaction. We investigate empirically (1) how households and regions adjust to shocks via these two markets and (2) how this determines who bears the consequence of the shocks. As adjustment may take time we work with a long-run perspective. Our data comes from two "natural experiments" providing exogenous shocks: the drawdown of U.S. bases in West Germany and the division and reunification of Germany.

Project B5: Structural Methods in Risk Modeling

One of the major approaches to econometric modeling is given in form of conditional equations. Examples include median or quantile regression, instrumental variables (IV) approach, conditional moment restrictions (CMR).The classical statistical theory faces a numbers of challenges raised by modern applications: small sample size and high dimension of the parameter space, possible model misspecification, choice of a regularization parameter. The ultimate goal of the project is in developing a novel approach to model estimation and inference which also includes a choice of the regularization parameters.

Project B8: Econometric Modeling of Volatility, Liquidity and Trading Risks

Recent developments in global equity trading create new types of trading risks and empirical effects. This project deals with the resulting consequences for liquidity and volatility as well as their quantitative assessment. On the one hand, we will analyze the effects of trading under limited pre-trade transparency, e.g., via hidden orders or trading in dark pools, and will shed some light on their implications for liquidity risks, market quality and trading strategies. Secondly, we will construct preferably efficient estimators for time-varying (co-)variances, large-dimensional portfolio risks and jump risks utilizing high-frequency orderbook data.

Project B10: Dynamic Copula Models

More general dependencies than normal can be described by the concept of copulae. The class of hierarchical Archimedean copulae (HAC) combines the advantage of dimension reduction and simple numerical methods for determining the structure. In this project, we study time varying HACs and their applications to various risk bearing scenarios. These include water flood level and interdependencies of risk factors. The success of the project will result from cooperation with mathematical studies on e.g. convergence of HACs and arising in the analysis from agricultural and climatological problems.

Project B11: Non- and Semiparametric Techniques for Euler Equations and Risk Measurement

Tractable and precise empirical estimates and forecasts are central to both, understanding of individual attitudes and management of risks in financial markets. In both areas, technical challenges of the data could so far only be addressed at the cost of efficiency or even consistency. We develop novel econometric smoothing techniques which allow for an improved empirical assessment in these situations. These comprise estimates of the full shape of the marginal utility function on the one hand and efficient estimates and forecasts of spot volatility and intra-day high-dimensional portfolios as well as systemic risk contributions on the other.

Project C7: Macroeconomic Risk in Labor and Financial Markets

Subproject C7 investigates the influences of micro- and macroeconomic risk on labor and capital markets. First, it seeks to understand how institutions arise in less than ideal economic settings to intermediate small and large risks for households, firms and other agents. Examples are the behavior of labor unions, labor supply and total factor productivity fluctuations, the demand for equity by financial institutions under imperfect competition and incomplete intermediation, and regional labor and product markets in monetary unions. Second it strives to develop new numerical methods designed to identify more precisely the role played by nonlinearities and risk in DSGE models.

Project C10: Macroeconomic Consequences of Strategic Uncertainty

Neoclassical equilibrium theory neglects agents' uncertainty about other agents' behavior. We develop modeling devices for strategic uncertainty in environments that are most relevant for macroeconomics. We analyze whether extrinsic information affects behavior, how beliefs about others' beliefs are formed, and how strategic uncertainty affects optimal lender-of-last-resort policies and measures to prevent financial crises.

Project C11: Weather Risk Management

Weather constitutes an important macroeconomic risk that affects a wide range of industries and the frequency and intensity of extreme weather events is expected even to increase. On the other hand, new markets have emerged on which weather risks can be exchanged and which support the development of risk management strategies. Against this background the overall objective of this project to assess the magnitude and the importance of weather related economic risks and to explore options to treat these risk with financial instruments. We focus on the agribusiness and the energy sector.

Project C12: Inference for Jump Models and Inverse Problems

Jump processes reflect important empirical features in economics like shocks or surprise elements. In this project we study statistical inference methods for jumps on different time scales and for different observed quantities. In particular, option prices are calibrated to infer on expectations of macro shocks in the market within the next weeks, multivariate intraday data is analysed to disentangle (co)jumps and continuous (co)volatility movements under microstructure noise and ultra-high-frequency tick data models based on point processes are studied.

Project C14: Expectations Management of Central Banks and the Financial Crisis

This project investigates how the expectations management of central banks affects the behavior of macroeconomic and financial variables before and during the crisis. In three working areas, the focus is on the quantitative forward guidance of monetary policy, the anchoring of inflation expectations and the impact of monetary policy on the trading behavior in asset markets. In all these areas, we will further develop and apply recent methods of time series econometrics in order to shed more light on the role of monetary policy for the dynamics and volatility of interest rates, inflation and asset prices.

Project INF: Research Data Center (RDC)

The main objective of the INF project (RDC) is providing IT support to all CRC-projects. Local and guest researchers benefit from the large pallet of RDC-services including: maintenance of network, data storage and exchange facilities; providing hardware and software solutions for centralized high-performance computing; providing access to the wide range of financial and economic data resources. Among our databases are both well-known and widely acknowledged (Bloomberg, Datastream), as well as unique and specific (Lobster, Daily Temperature in China) ones. Students also benefit from diverse multimedia learning resources offered by the RDC.