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Whenever a colleague and good friend leaves for taking on new tasks one feels a loss. So we do after David Audretsch decided to return to Indiana University as of September 2009. This makes for a significant change in our Institute, the most important news we have to report for the period 2008 – 2009. It means an abrupt end to the impressively successful development of the Entrepreneurship, Growth and Public Policy Group that David directed. We gratefully look back and acknowledge how much he and his group have contributed to making the Institute a place of bustling, high-end research activities, while we do not yet know what is going to happen with the third unit of the Institute in the future.

As much as for the EGP, the two years on which we report here have also been a highly productive period for the other two units, the Strategic Interaction Group and the Evolutionary Economics Group. A large number of publications, of conference activities, of visitors, and the further intensifying cooperation with the Friedrich Schiller University, particularly the Graduate College The Economics of Innovative Change, and other institutions document the progress we have been able to make. Our interdisciplinary activities have gained further momentum in the Jena Graduate School Human Behaviour in Social and Economic Change and the International Max Planck Research School on Adapting Behavior in a Fundamentally Uncertain World. Integrated in this framework, we do not only educate a remarkable number of first rate doctoral students who have a quite heterogeneous disciplinary background. We also do so in an interdisciplinary faculty including colleagues from psychology, sociology, political science, law, and others.

The research efforts and the research output the three groups have generated over the two years are recorded in more detail in this booklet. As good scientists we are, of course, never content with what has been achieved and look for possibilities to further enhance our performance. We trust that our scientific networks spanning all over the world and our international advisory board will stimulate and help us in this endeavor.

Jena, March 2010

Ultra Witt
Managing Director
2009-2010
2 Research

2.1 Entrepreneurship, Growth and Public Policy Group (EGP)

2.1.1 Research Profile

Entrepreneurship is a process of change. In a rapidly globalizing economy, as the pace of change accelerates, entrepreneurship, or its absence, becomes increasingly prominent. Yet, research on entrepreneurship is dispersed across a broad spectrum of academic disciplines. The purpose of the Entrepreneurship, Growth and Public Policy Division of the Max Planck Institute of Economics is to provide a locus for systematic interdisciplinary scholarly research on entrepreneurship and to develop an intellectual framework and approach integrating and building entrepreneurship into a bona fide field of scholarship. In particular, three questions are addressed:

- What are the determinants of entrepreneurial activity?
- What is the impact of entrepreneurship on performance and growth?
- What is the role of public policy?

Entrepreneurship spans a number of traditional units of analysis. At its base, entrepreneurship focuses on the decisions and actions of individuals. These individuals may act alone or within the context of a group. It can be studied using a firm-level or industry sector approaches, or centered on governmental and non-profit organizations. Spatial approaches, analyzing cities, regions and countries are also used. Thus, the links between society and entrepreneurship are analyzed using a wide variety of scholarly approaches. The goal for research undertaken by this group is a unified and coherent scholarly field of entrepreneurship creating actionable knowledge for business leaders and policy makers.

The prevalent model of economic growth over the past fifty years considered growth to be accumulation of capital and labor. This paradigm is no longer appropriate: production shifted to increasingly knowledge intensive goods. Correspondingly, the macroeconomic model of growth adapted and knowledge has been endogenized. The intellectual breakthrough contributed by this extended growth theory was the recognition that investments in knowledge and human capital endogenously generate economic growth through the spillover of knowledge. However, questions remain as to how and why spillovers occur. The missing link is the mechanism converting knowledge into economically relevant innovations.

Entrepreneurship typically involves the application of knowledge created in one context to market opportunities in another context. Thus, entrepreneurial activity by individuals, firms, and regions can account for the transformation of inventions to marketable innovations hence new products. It also represents at least one mechanism constituting the missing link in the spillover process. Thus, entrepreneurship is one of the engines of economic and social development throughout the world. The purpose of the research unit is to undertake an explicit focus on the interdisciplinary nature of entrepreneurship. This research agenda, which examines the process of change, consist of three elements.

The first is to identify the factors that shape the amount of entrepreneurial activity at the individual, organizational, and regional level. For example, in a number of empirical studies we show the importance of university and publicly funded research institute spillovers for entre-
entrepreneurial location. In particular, we study the strategies that are used by scientists to commercialize research results and inventions, factors that promote or impede those commercialization activities, as well as regional or national differences. In addition to our public sector research, related studies examine personal and organizational factors that promote entrepreneurial behavior among employees of private-sector companies.

The second aspect focuses on the impact of entrepreneurship on economic and business performance and growth. For example, in a number of studies we show that new ventures with access to both knowledge spillovers and financial resources show higher economic performance than ventures which do not have this access. In particular, we empirically research those firms which have higher survival rates, abnormal returns on the stock market, and higher growth rates in employees. Moreover, we investigate the impact of interorganizational alliances and networks on strategic decision making in new ventures and new venture performance.

The final aspect concerns the provision of both a theoretical and empirical framework highlighting those aspects of entrepreneurship that can serve as a guiding light to direct policy makers in understanding the debates. Just as the classical model of economic growth focused the policy debate on the policies facilitating investments in capital and access to labor, the endogenous growth model has shifted the policy focus to investments in knowledge. In contrast, focusing on the role of entrepreneurship may suggest a very different set of policy instruments to promote economic growth and employment generation that are distinct from the instruments implied by the growth models mentioned above. This includes research on entrepreneurship-relevant input factors, but also policies which together create an environment conducive for entrepreneurial activities on regional, national, and international levels.

2.1.2 Research Topics

Entrepreneurship Capital in Germany
Can science measure the role of entrepreneurship empirically? That is, can science quantify the impact of entrepreneurship on economic performance? Do different types of entrepreneurship differ in their impact? Moreover, what variables actually have an influence on entrepreneurial behavior and at which extent? These questions are at the core of a research project that is based at the EGP group at the Max Planck Institute.

The empirical research has been based on data from Germany. To measure the impact of entrepreneurship on economic performance, EGP uses a production function that we augment with entrepreneurship as production factor. The procedure is laid out in Audretsch and Keilbach (2008). This is a natural extension of the more established empirical literature on endogenous growth (e.g. Romer, 1996) and is therefore easily tractable. Entrepreneurship in this research is expressed as the number of startups in each German county relative to the county’s population. This captures the main impact of entrepreneurial activity, the startup of new firms – with results showing that entrepreneurial activity is stronger in agglomerated areas. It also finds that there are strong entrepreneurial clusters, mainly around Munich, Frankfurt, Hamburg, the Ruhr region and Berlin. Also the Eastern German regions around Leipzig and Jena/Erfurt show strong entrepreneurial activity.

A closer look reveals though that eastern Germany is dominated by what we termed low-tech industries, i.e. industries with low or no R&D activity (such as the retail and the hospitality industry). This pattern can be considered as typical for a formerly centrally planned country, where the infrastructure in these industries is underdeveloped as compared to Western Germany. However, these industries are subject to lower growth rates and higher failure rates than R&D oriented industries. They therefore have a lower potential to create new employment. Our empirics provide
evidence that entrepreneurship in general has a strong positive impact on the regional economic performance. Performance has been expressed as regional economic output (GDP) on one side and the growth of GDP per worker (labor productivity) on the other side.

On a more detailed level, we found evidence that low-tech entrepreneurship has a stronger effect on the level of GDP, however a weaker effect on the growth rate of regional labor productivity. The immediate effect of high-tech entrepreneurship on GDP is lower; however, its impact on the growth rate is stronger. The next step is to investigate which variables drive rather high-tech entrepreneurship and which variables rather drive low-tech entrepreneurship. To do so, we regress a number of regionally distributed variables against the different types of entrepreneurship. Two variables should be mentioned here. One is the Impact of the regional unemployment rate. High regional unemployment is positively correlated with low-tech start-ups while it is negatively correlated with high-tech entrepreneurship. Hence high-unemployment regions have a stronger potential for low-tech but a weak potential for high-tech startups. At the same time, a high R&D intensity leads to a high rate of high-tech startups but has no influence on low-tech startups.

Taken together, these findings suggest strong policy implications. Apparently, regions with high unemployment should rather focus on the creation and survival of low-tech firms instead of trying to foster the establishment of a high-tech cluster in the first place. Such an attempt will become meaningful as soon as the regional economic situation is sound again. Once this is the case, the way to high-tech startups goes via the establishment of a strong R&D-intensity by incumbent firms and universities.

Recent Work
Acs/Audretsch/Strom (eds.): Entrepreneurship, Growth and Public Policy, New York, Cambridge University Press, 2009. While the public policy community has turned to entrepreneurship to maintain, restore, or generate economic prosperity, the economics profession has been remarkably taciturn in providing guidance for public policy for understanding the links between entrepreneurship and economic growth as well as for framing and weighing policy issues and decisions. The purpose of this volume is to provide a lens through which public policy decisions involving entrepreneurship can be guided and analyzed. It provides insights from leading research concerning the links between entrepreneurship, innovation, and economic growth that shed light on implications for public policy. The book makes clear both how and why small firms and entrepreneurship have emerged as crucial to economic growth, employment, and competitiveness as well as the mandate for public policy in the entrepreneurial society.

Audretsch/Dohse/Niebuhr: Cultural Diversity and Entrepreneurship: A Regional Analysis for Germany, The Annals of Regional Science, forthcoming. In this paper we investigate the determinants of entrepreneurial activity in a cross section of German regions for the period 1998-2005. Departing from the knowledge spillover theory of entrepreneurship, the focus of our analysis is on the role of the regional environment and, in particular, knowledge and cultural diversity. Our main hypothesis is that both, knowledge and diversity, have a positive impact on new firm formation. As the determinants of regional firm birth rates might differ considerably with respect to the necessary technology and knowledge input of new businesses, we consider start-ups at different technology levels. The regression results indicate that regions with a high level of knowledge provide more opportunities for entrepreneurship than other regions. Moreover, while sectoral diversity tends to dampen new firm foundation, cultural diversity has a positive and highly significant impact on technology oriented start-ups. This suggests that the diversity of people is more conducive to entrepreneurship than the diversity of firms. We conclude that regions characterized by a high level of knowledge and cultural diversity form an ideal breeding ground for technology oriented start-ups.
Audretsch/Keilbach: The Localization of Entrepreneurship Capital: Evidence from Germany, Regional Science, forthcoming. Whereas initially physical capital and later, knowledge capital were viewed as crucial for growth, more recently a very different factor, entrepreneurship capital, has emerged as a driving force of economic growth. In this paper, we define a region’s capacity to create new firms start-ups as the region’s entrepreneurship capital. We then investigate the local embeddedness of this variable and which variables have an impact on this variable. Using data for Germany, we find that knowledge-based entrepreneurship capital is driven by local levels of knowledge creation and the acceptance of new ideas, indicating that local knowledge flows play an important role. Low-tech entrepreneurship capital is rather increased by regional unemployment and driven by direct incentives such as subsidies. All three measures are locally clustered, indicating that indeed, entrepreneurship capital is a phenomenon that is driven by local culture, and is therefore locally bounded.

Acs/Audretsch/Carlsson/Braunerhjel: The Knowledge Spillover Theory of Entrepreneurship, Small Business Economics, Vol. 32, No. 1, January 2009, 15-30. Contemporary theories of entrepreneurship generally focus on the recognition of opportunities and the decision to exploit them. Although the entrepreneurship literature treats opportunities as exogenous, the prevailing theory of economic growth suggests they are endogenous. This paper advances the microeconomic foundations of endogenous growth theory by developing a knowledge spillover theory of entrepreneurship. Knowledge created endogenously results in knowledge spillovers, which allow entrepreneurs to identify and exploit opportunities.

Audretsch/Keilbach: Resolving the Knowledge Paradox: Knowledge-Spillover Entrepreneurship and Economic Growth, Research Policy, Vol. 37, No. 10, 1697-1705, December 2008. The knowledge paradox suggests that high levels of investment in new knowledge do not necessarily and automatically generate the anticipated levels of competitiveness of growth. In particular, knowledge investments do not automatically translate into balanced growth and competitiveness. The purpose of this paper is to explain why knowledge investments are inherently unbalanced, so that the competitiveness and growth ensuing from knowledge are not equally spread across individuals, firms, and spatial units of observation, such as regions and countries. Based on a data set linking entrepreneurial activity to growth within the context of German regions, this paper shows that entrepreneurship serves a conduit of knowledge spillovers.

Entrepreneurial Decision Making
This project investigates the decision policies of entrepreneurs as well as managers and employees of entrepreneurial companies. Decisions analyzed include a variety of topics, such as alliance formation, internationalization, project termination, opportunity exploitation, resource allocation, employee participation in corporate entrepreneurship projects, and entrepreneurial motivation. Two research streams are pursued.

First, the major research stream of the project analyzes antecedents of important entrepreneurial decisions. Studies are mostly (but not exclusively) based on an experimental approach, specifically conjoint analysis. For example, regarding alliance decisions, Patzelt et al. (2008) use a conjoint design to investigate how financial slack, resource availabilities, and environmental conditions impact entrepreneurs’ decision to seek new alliance partners. Patzelt and Shepherd (2008) focus on the persistence of underperforming alliances and showed that trust and control interdependently motivate managers of entrepreneurial companies to continue with alliances even in the face of negative feedback on alliance performance. Further, in one study conjoint methodology was applied to analyze how the structure of and communication within entrepreneurial networks influence their decision to allocate further resources to unsuccessful R&D projects (Patzelt et al., 2009). Moreover, in three studies the project focuses on the entrepreneurial motivation of
employees, specifically how incentives influence employees’ motivation to join corporate entrepreneurship projects. Here, we find that project success probabilities, job and pay risk, profit sharing, and effort conjointly impact employees’ decision policies and motivation (Monsen et al., 2009a; Monsen et al., 2009b; Schweizer et al., 2008). Finally, two recent papers focus on the role of entrepreneurial emotions – specifically, passion, excitement, stress, and fear of failure – in entrepreneurs’ opportunity exploitation decisions (Klaukien et al., 2009a; Klaukien et al., 2009b).

The second research stream of this project investigates organizational and individual outcomes of entrepreneurial decisions. Studies are based on both, survey data and secondary data from existing data bases. For instance, a recent project investigates how the composition of alliance portfolios of young biotechnology firms influences their innovative output. The results highlight the central role of the firm’s technological capabilities in mitigating the risks of upstream and downstream alliances for product innovation (Häussler et al., 2009).

Another study uses an identity perspective to analyze how the pursuit of an entrepreneurial career influences individuals’ experience of negative emotion and shows that, on average, entrepreneurs experience fewer negative emotions than employees, contingent on their regulatory coping behaviors (Patzelt and Shepherd, 2009). Finally, a current project investigates how termination decisions for unsuccessful projects in the biotechnology industry impact firm performance, and how this negative influence can be buffered by particular organizational characteristics (Bürger et al., 2009).

Recent Work

Bürger/Patzelt/Urbig/Schweizer: Buffering the failure of new product development projects: A multi-level approach, Working Paper, 2009. While the impact of firm-specific resources on successful new product development (NPD) in high technology firms is well documented and there is some research on stock market reactions to positive NPD outcomes, the impact of firm-specific capabilities on stock market responses to failures has received much less attention. Based on resource-based arguments, we extend existing product development literature by focusing on the impact that a venture’s financial, innovative and managerial resources have on market value when NPD projects fail – a frequent phenomenon in practice. Using a unique dataset on 179 NPD failures of biopharmaceutical firms listed on the NASDAQ Biotechnology index, our findings emphasize that these effects differ significantly depending on the development stage in which the NPD fails in. Our results highlight the importance of cross-level effects in explaining the impact of NPD failures and suggest a potential downside of signaling organizational excellence to investors.

Häussler/Patzelt/Zahra: Strategic alliances and product development in new technology firms: The moderating effect of technological capabilities, under review, 2009. High technology new firms have used strategic alliances to gain access to knowledge, resources and capabilities but given their inexperience and limited resources, these firms are vulnerable to their more established partners’ opportunism. This raises the question: How can firms maximize the benefits of these alliances while reducing their risks? We draw on the capabilities perspective to propose that the impact of upstream, horizontal, and downstream alliances on product development depends on the degree of specialization of their technological capabilities. Using a database of biotechnology firms, the results support this argument even when different types of strategic alliances are considered.

Klaukien/Patzelt/Shepherd: Work stress and entrepreneurs’ decisions to exploit opportunities, 2009 (under review). How do stress and trait-like affect trigger action at work? Drawing on affect-as-information theory we propose that work stress influences individuals’ decisions to act, but that this effect is contingent on their trait-like affective state. We use a field experiment
with 80 entrepreneurs to show that work stress triggers entrepreneurs’ decisions to exploit new business opportunities. This relationship between work stress and opportunity exploitation is less positive when entrepreneurs display high levels of fear of failure. Our results provide insights into the role of stress and affect in a context of high uncertainty (entrepreneurship), and help to understand variance in individuals’ reactions to stress. We discuss the implications of these finding for affect-as-information theory and the theory on proactive behaviors.

Klaukien/Shepherd/Patzelt: Does passion influence excitement? An empirical study of entrepreneurs’ decisions to opportunity-exploitation, 2009 (under review). Passion for work is a strong driver of action. We propose that both harmonious and obsessive passion can trigger action but this effect is contingent on the experience of more transient affective states, specifically excitement. In a field experiment with 90 entrepreneurs we find that harmonious and obsessive passion drive entrepreneurs toward the decision to act to exploit an opportunity, and that the positive relationship between obsessive passion and the decision to exploit is more positive with higher levels of experienced excitement. Our results show that a long-lasting affective state (entrepreneurs’ passion for work) and a short-term affective state (their level of excitement) interdependently impact the decision to act (exploit an entrepreneurial opportunity).

Monsen/Patzelt/Saxton: Beyond simple utility: Incentive design and trade-offs for corporate employee-entrepreneurs. Entrepreneurship Theory and Practice, 31, 105-130, 2010. To strengthen the theoretical foundations of incentive system design for corporate entrepreneurship, we develop a moderated model of new venture participation, integrating financial, risk, and effort factors to more comprehensively understand the limits of economic utility maximization theory. We make explicit the trade-offs and opportunity costs for corporate employee-entrepreneurs. We use a conjoint field experiment to collect data on 1952 decisions made by 61 corporate employees to test how risk and effort moderate an employee’s decision to participate in a new corporate venture. We find that these factors do interact to affect the choice to engage in corporate entrepreneurship projects.

Monsen/Saxton/Patzelt: Risk, effort, reward, and participation in corporate entrepreneurship: The moderating effects of motivation, Working Paper, 2009. We integrate research from entrepreneurship, occupational choice, and employee involvement literatures to explain what encourages participation in new corporate ventures. We propose that an employee’s basic decision to participate in a corporate venture project is based on the expected utility of the project’s incentive package, and that these perceptions are moderated by personal motivations to make that decision, as explained by the concept of valence in expectancy theory. We test our hypotheses through a conjoint-based experiment with 61 part-time MBA students. Our results show that venture characteristics, personal motivations, and interaction effects should be considered in designing new corporate ventures.

Patzelt/Lechner/Klaukien: Networks and the decision to persist with underperforming R&D projects, Journal of Product Innovation Management, forthcoming. Drawing on aspiration level theory and the networks literature this article develops a model toward decision makers’ persistence with underperforming R&D projects based on the perceived properties of their personal network. The assumption is that positive feedback from network partners motivates persistence, and that this effect is multiplied when the decision makers’ network is larger and denser, when network ties are predominantly strong, and when communication frequency within the network is high. The model is tested by a field experiment and conjoint methodology. Analysis of 1632 persistence decisions nested within 51 scientists responsible for R&D projects reveals that more positive feedback enhances persistence of underperforming R&D projects, and that this effect becomes stronger with increasing network size, network density, and communication frequency. These findings extend the project management literature by focusing on the
social environment of the decision maker as one so far neglected factor in empirical studies on persistence decisions. Moreover, this study is among the first to investigate contingency relationships between feedback received from network partners and network structure. Finally, while most studies have emphasized that individuals and organizations can profit from their engagements in social networks, this article suggest a potential dark side of networks by showing that networks can encourage decision makers to persist with their investment in an underperforming – and potentially failing – project. These results can help project managers involved in networking activities to better understand the effects of these activities on their decision policies, and thus draw better and more accurate decisions. Second, this study provides insights into how organizational strategy with respect to dissemination of R&D results and involvement of the organization’s R&D managers in the scientific community influences the persistence of underperforming R&D projects, and thereby the organization’s R&D expenditures. This can facilitate top managers to design financial controls and allocate financial resources to managers of underperforming R&D projects in line with the organization’s networking strategy.

Patzelt/Shepherd: The decision to persist with underperforming alliances: The role of trust and control, Journal of Management Studies 45, 1217-1243, 2008. We draw on theories of persistence to develop a model of alliance managers’ decisions towards persisting in underperforming alliances based on their concomitant consideration of the control and trust in those alliances. We test the model using experimental data based on 2,816 decisions nested within 88 alliance managers. We find that output, behavioral and social control, competence and goodwill trust, and interactions between trust and control variables significantly explain alliance managers’ decisions to persist in underperforming alliances. We discuss the implications of these findings for the control, trust and strategic alliance literatures.

Patzelt/Shepherd: Negative emotions of an entrepreneurial career: Self-employment and regulatory coping behaviors, Journal of Business Venturing, doi:10.1016/j.jbusvent.2009.08.002, 2009. Although we know a great deal about the positive relationship between self-employment and the experience of positive emotions such as passion, excitement, happiness, satisfaction, and flow, there is some research that suggests that the self-employed may be more susceptible than employees to negative emotions such as stress, fear of failure, loneliness, mental strain, and grief. We draw on the literature on role requirements to develop a model of career pursuit based on individuals’ willingness and abilities to regulate these emotions. Using a nation-wide survey of more than 2,700 US citizens we show that over and above the effects of positive emotions, the self-employed experienced fewer negative emotions than those who are employed, contingent on their regulatory coping behaviors. We discuss implications of these results for the literature on entrepreneurial emotions.

Patzelt/Shepherd/Deeds/Bradley: Financial slack and venture managers’ decisions to seek a new alliance, Journal of Business Venturing 23, 465-481, 2008. We examine two distinct perspectives to analyze the role of financial slack in the decisions of technology venture managers to seek strategic alliances. According to the capabilities perspective, financial slack provides managers with the ability to maximize the benefits from acquiring missing capabilities through alliance formation, whereas according to the resource dependence perspective, financial slack buffers the managers’ motivations to seek alliances as a reaction to external environmental scarcity. Drawing on an experimental design and data on 1632 decisions nested within 51 managers, we find support for a combined perspective demonstrating that managerial discretion in the form of financial slack moderates how internal capabilities and context encourage managers to seek alliances. We discuss implications of our work for the alliance literature.

Schweizer/Monsen/Patzelt: Anreize und Motivation für unternehmerisches Handeln in etablierten Firmen [Incentives and Motivation for entrepreneurial Action in Established

**Regional and Urban Economics**

The commercialization of knowledge by turning new ideas into marketable products is an important part of the innovation process influencing economic growth. At the individual level, entrepreneurs are known to be the agents driving this process. In order to provide proper policy guidance for which steps should be taken to increase outcomes like innovation or entrepreneurship, it requires a deeper understanding of the factors that actually drive the decision to start a business at the individual level, e.g. individual human and social capital endowment, and how factors and policies might influence innovation and entrepreneurship on an aggregate regional level.

Unfortunately, correlation is often confused with causation which bears the risk of inefficiently allocating public money. For instance, the preference of highly skilled and innovative individuals for cultural amenities might suggest leveraging culture to enhance urban or regional economic growth. This strategy seems especially promising in light of studies that illustrate the concentration of both bohemians and highly skilled and innovative individuals in prospering cities. However, it could just as easily be the other way around, that is, that a concentration of high human capital individuals who have not only an appreciation for artistic output, but the money to indulge in that taste, attracts bohemians. Therefore, policies intended to improve regional economic growth by providing more cultural amenities may be putting the cart before the horse.

To avoid such problems of reverse causality, we need to confirm the causal effect of factors that appear to drive observed outcomes. If we can confirm and, if possible, quantify the causal relationship between certain input factors and an observed outcome, the established if-then-relationship eventually allows us to evaluate existing policies and, if necessary, recommend more efficient new policies. Pursuing these goals leads to the following three research fields in regional and urban economics where the application of econometric identification strategies enables us to identify causal relationships:

- Identification of factors that drive entrepreneurship and innovation on the regional level, e.g. agglomeration effects
- Identification of factors that drive entrepreneurship and innovation at the individual level, e.g. cognitive, non-cognitive, and social skills
- Evaluation of policies aiming to influence entrepreneurship and innovation, e.g. cluster policies.

**Recent Work**

Falck/Heblich/Kipar: *Incumbent Innovation and Domestic Entry*, Small Business Economics, doi:10.1007/s11187-009-9219-1, 2009 (forthcoming). This paper analyzes the escape-entry incentive for innovation by incumbent firms. The threat posed by the possibility of leading-edge firms...
entering the market influences incumbent innovation. To overcome problems of endogeneity, we apply an instrumental variable approach to analyze a rich firm-level dataset (1987–2000) for Germany. We find evidence that domestic entry has a negative effect on incumbent product innovation, a strong indication of new entrants’ comparative advantage in commercializing new ideas. By contrast, domestic entry has a positive effect on incumbent process innovations. This latter effect is also known as escape-entry effect.

Audretsch/Falck/Heblich: Who’s Got the Aces Up His Sleeve? Functional Specialization of Cities and Entrepreneurship. Annals of Regional Science, doi:10.1007/s00168-009-0353-0, 2009 (forthcoming). This paper combines the empirical finding of a functional specialization of cities with regional dynamics. We distinguish between cities dominated by headquarters and service firms (urban agglomerations), those with large stand-alone production plants in one sector (industrial agglomerations), and cities with integrated smaller firms (industrial districts). Based on German data, we find differing dynamics across these three city types. Cities that host basic research or integrated incumbents are more conducive to entrepreneurial activity, whereas the opposite is true of industrial agglomerations. Urban agglomerations dominated by headquarters with only administrative functions and the service sector are not very entrepreneur-friendly, either. However, although this type of city provides few externalities for startups in manufacturing, they could very well provide opportunities for service sector startups.

Bönte/Falck/Heblich: The Impact of Regional Age Structure on Entrepreneurship, Economic Geography, 85(3), 2009. Empirical studies based on individual data have found an inverse U-shaped relationship between age and the decision to start a business. Other studies have shown that becoming an entrepreneur is a regional event, with potential entrepreneurs benefiting from their local networks. This article links both strands of literature by introducing age-specific peer effects. Using changes in the age distribution of the population of western German regions over time, we found-in accordance with microlevel analyses-an inverse U-shaped relationship between the regional age structure and start-up activity in a region. Moreover, our findings suggest that the age-specific likelihood of becoming an entrepreneur changes with the size of the age cohort, pointing to the existence of age-specific peer effects.

Falck/Heblich/Patzelt: Entrepreneurship Policy and Regional Entrepreneurship: German Expellees as a Natural Experiment, 2009 (under review). This paper presents an empirical approach to analyze the effect of entrepreneurship policy on entrepreneurship at the regional level. The German Federal Expellee Law introduced in 1953 was aimed to stimulate entrepreneurship among ethnic German expellees (Heimatvertriebene) who were forced to leave their homeland after WWII. These individuals were exogenously distributed across German regions, thereby providing a quasi-natural experiment that allows us to compare Heimatvertriebenes’ probability to start a business to that of their local counterparts. Our analysis is focused to the federal state of Baden-Wurttemberg which covered a French and an American occupational zone after WWII. As these zones differed in their expellee policy, we find considerably variation in the share of expellees within a similar institutional framework. Controlling for the level of entrepreneurship before WWII and the occupational zones’ policies, we find that the Federal Expellee Law indeed triggered entrepreneurship among Heimatvertriebenes.

Falck/Fritsch/Heblich: Bohemians, Human Capital, and Regional Economic Growth, Ifo Working Paper Series No. 2715, 2009. Do regional amenities contribute to explaining the unequal distribution of highly-qualified people across space which then influences economic growth? This paper applies an IV approach using the geographic distribution of bohemians prior to the industrial revolution in Germany as instrument to identify a causal relationship. As bohemian concentrations primary indicated a competition for prestige between courts and not economic prosperity, the instrument is independent of current regional economic development.
Instrumenting concentrations of highly-skilled people today with the proximity to exogenous concentrations of bohemians, the observed local average treatment effect suggests a positive, indirect impact of bohemians on regional economic development.

Bauernschuster/Falck/Gold/Heblich: *The Shadows of the Past – How Implicit Institutions Influence Entrepreneurship*, Jena Economic Research Papers 2009-044, 2009. This paper investigates the impact of implicit institutions on the decision to become an entrepreneur. Implicit institutions are here defined as mindsets that have developed as the result of norms and traditions and we expect they will have an influence on risk attitudes and opportunity recognition. We conduct a natural experiment based on Germany’s recent history and compare individuals born and raised in the former socialist East Germany (GDR) with their West Germany (FRG) counterparts. Our analysis confirms the expected difference in values between individuals from East and West Germany and also shows that these differences influence the probability of being self-employed. In the process of our analysis, we also sketch the ongoing economical transition process in East Germany, which severely disturbs a proper analysis of the institutional differences from a macro-perspective.

Falck/Heblich/Lüdemann: *Identity and Entrepreneurship*, CESifo Working Paper No. 2661, 2009. We incorporate the concept of social identity into a stylized model of occupational choice and analyze whether an individual's identity affects his or her decision to become an entrepreneur. We argue that an entrepreneurial identity results from an individual's socialization. This could be parental influence but, as argued in this paper, also peer influence. To test this empirically, we apply instrumental variable approaches to PISA data. Our findings suggest that having an entrepreneurial peer group has a positive effect on an individual's entrepreneurial intentions. Regarding entrepreneurial parents, we find a positive effect that cannot only be explained by ownership succession of the family business.

Audretsch/Falck/Feldman/Heblich: *Entrepreneurship in Context: Regional Innovation Regimes*, 2009 (under review). This paper posits that regions provide locational factors that determine the industry structure and with it entrepreneurial opportunities whose exploitation influences regional innovation and dynamics. To test this interrelation between regional regimes and entrepreneurial activities, we classify 74 West German regions by their endowments with locational factors. We then analyze the local employees' group-specific propensity to start a business within the framework of count data models. The empirical results suggest the distinct existence of entrepreneurial regional regimes with a high propensity to start a business and routinized regional regimes with a lower propensity to generate entrepreneurial activity.

Falck/Heblich: *Modern Location Factors in Dynamic Regions*, European Planning Studies, 16(10) 2008, 1385-1403. Globalization has had an enormous impact on traditional industrial structures. It almost seems that everything is everywhere the same. And yet, in reality, some regions in a single industrialized country enjoy rapid economic growth while others are downsizing or stagnating. Thus there must be some remaining regional competitive advantages—even in the Age of Globalization. This paper engages in a quest to discover what these modern location factors might be and how and why they are necessary in creating dynamics and regional growth. In doing so, we link the driving forces behind these modern location factors with regional performance and eventually arrive at a concept of a regional lifecycle and its key dynamics. Using data that paint a comprehensive picture of industry and regional development in Germany we try to find empirical evidence for our approach.

Falck/Fritsch/Heblich: *The Apple Doesn’t Fall Far From the Tree: Location of Start-Ups Relative to Incumbents*, ESiFo Working Paper Series No. 2715, 2008. New firm location decisions, relative to incumbents may be based on a choice between two types of advantages: natural advantages or those that arise from social embeddedness, the latter of which may particularly
include knowledge spillovers. We analyze the relative importance of geographically bounded location factors based on data from 103 manufacturing industries across 327 West German and 111 East German districts. Our micro-geographic analysis reveals that the two parts of the country vary in their pattern of new firm location. In East Germany, only 5 percent of the industries reveal start-up localization patterns beyond what natural advantages would suggest compared to 40 percent in West Germany.

Bauernschuster/Falck/Heblich: **Occupational Choice and Social Contacts Across Regions**, Jena Economic Research Papers 2008-079, 2008. This paper tests the importance of social contacts on entrepreneurship. To measure differences in the interconnectedness of social contacts, we compare rural and agglomerated areas. A smaller community size in rural areas generates greater network closure. Agents’ neighborhoods are more likely to overlap, which intensifies social contacts and thus facilitates resource mobilization. Analyzing the impact of social contacts across regions, we find that greater network closure increases the likelihood of being an entrepreneur by 1.9 to 14.2 percentage points, depending on the number of underlying social contacts. These results remain robust after applying matching techniques and concentrating on young entrepreneurs.

Falck/Heblich/Kipar: **The Extension of Clusters: Differences-in-Difference Evidence from the Bavarian State-Wide Cluster Policy**, Jena Economic Research Papers 2008-073, 2008. If one cluster increases local competitiveness, can politicians, by interlinking clusters, achieve an even better effect at the state level? To answer this question, the paper analyzes the Cluster Initiative introduced in 1999 by the Bavarian State Government. The purpose of the initiative was to create a Bavarian-wide innovation network in support of state-wide knowledge flows. Using a difference-in-differences approach, we find that introducing the Bavarian-wide cluster policy increased the likelihood of innovation by a firm in the targeted industry by 4 to 7 percentage points. However, this effect is mainly driven by large firms’ increased likelihood to innovate.

Eisingerich, Falck, Heblich, Kretschmer: **Cluster Innovation along the Industry Lifecycle**, Economic Research Papers 2008-070, 2008. Industrial clusters develop regionally along the industry’s lifecycle and typically exist over many product generations. In order to maintain their innovativeness, they have to develop and adjust along the industry lifecycle. We conduct 142 depth face-to-face interviews in clusters across two continents to examine the drivers of a cluster’s innovativeness along the industry lifecycle. The results from our interviews suggest that the impact of key drivers of cluster innovativeness change depending on the stage of a cluster’s underlying industry lifecycle. Classifying clusters as either being adolescent (information technology, biotechnology) or mature (automotive, chemicals), our regression analyses show a changing influence of cluster patterns along the industry lifecycle on a firm’s innovativeness. Specifically, we analyze the impact of interorganizational network strength, openness, university collaboration, and intrapreneurship on radical innovation across adolescent and mature clusters. Implications for research and policy makers are discussed.

Bauernschuster/Falck/Heblich: **The Impact of Continuous Training on a Firm’s Innovations**, CESifo Working Paper No. 2258, 2008. Keeping up with rapid technological change necessitates constant innovation. Successful innovation depends on both incumbent workers’ knowledge, based on experience, and knowledge about the latest technologies, along with the skills needed to implement them. Both of these knowledge-based elements of innovation can be attained through moderate labor force turnover in combination with continuous training. Based on German micro data, we find empirical evidence in support of training leading to innovation within a multivariate regression framework. However, when instrumenting training by the existence of a union’s contract or a works council this impact disappears.
**Financial Constraints of Entrepreneurs**

New and small firms create employment and are often very innovative. Despite their importance, small firms face difficulties in accessing capital and credit markets for finance. Research shows that these constraints can be decreased if appropriability and feasibility of innovation can be signaled to the financiers. Yet, that is limited only to venture capitalists. Therefore, the focus of this research is to understand: Information asymmetries between banks and small firms. It is proposed that informational differences persist across regions and these govern availability of debt capital. The current status of the project is to create a measure of regional financial systems and its influence on entrepreneurial finance.

**Recent Work**

Audretsch/Boente/Mahagaonkar: *Financial Signaling by Innovative Nascent Entrepreneurs*, CEPR Discussion paper series DP7165; Jena Economic Research Papers Series 2009-012; Schumpeter School discussion papers SDP 2009-001. External finance is central for nascent entrepreneurs, people in the process of starting new ventures. We argue that nascent entrepreneurs use patents and prototypes in order to signal their ability to appropriate the returns from their innovation as well as the project’s feasibility. Our analysis of 900 nascent entrepreneurs finds that patents and prototypes increase the likelihood of obtaining equity finance. Thus, if signals are credible, innovation positively impacts external financing. Interestingly, entrepreneurs in planning versus early start-up stage portray different signaling effects, indicating that the relation between finance and innovation depends on the stage of a start-up lifecycle.

Mahagaonkar: *Regional Financial System and the Financial Structure of Small Firms*, Jena Economic Research Paper #2009-011. The capital structure of firms is known to be different not only due to firm characteristics but also to the sources of capital. Therefore, there is a need to understand the supply side effects on a firm’s capital structure. A small firm’s choice of financing sources may be limited by the supply-side financial endowment of the region. Small firms are known to be heavily reliant on internal finance and the quantity and price channels are expected to drive usage of debt. Our findings on 2000 small firms in England show that the quantity and price channels might work only for supply of very local capitals. Firms tend to prefer internal finance when semi-local or national institutions show higher commercial operational distance in their region. These results point out that semi-local and national institutions tend to drive away usage of debt due to monitoring costs or credit rationing, while very local institutions increase the usage of debt through quantity or price channels.

Qiu/Mahagaonkar: *Testing the Modigliani-Miller theorem directly in the lab: a general equilibrium approach*, Jena Economic Research Paper #2008-056. In this paper, we experimentally test the Modigliani-Miller theorem. Applying a general equilibrium approach and not allowing for arbitrage among firms with different capital structure, we are able to address a question fundamental to the valuation of firms: does capital structure affect the value of the firm? If so, how? We find that, consistent with the Modigliani-Miller theorem, experimental subjects well recognized the increased systematic risk of the equity with increasing leverage and accordingly demanded higher rate of return. Yet, this adjustment was not perfect: subjects underestimated the systematic risk of low leveraged equity whereas overestimated the systematic risk of high leveraged equity, resulting in a U shape weighted average cost of capital.

**University Entrepreneurship**

As policy makers and scholars turn towards new models of growth in a knowledge economy, one area of growing importance is how universities can generate, disseminate and transform a system of inventors into innovators. There are large amounts of public resources invested in univer-
tities to produce new inventions and further the frontier of knowledge for its labor force. Yet, one of the underlying assumptions of this broad investment, previously held by policy makers and scholars, is there is not necessarily a tangibly high rate of return on this public investment. The purpose of this EGP research area is to empirically show how and why the entire ecosystem of the Humboldtarian University System is transforming from the increasingly anachronistic Ivory Tower model of universities into a much more robust and dynamic piston of direct economic growth and innovation for regions.

The current stage of university evolution, which began twenty to thirty years ago, has created a new university system where newly established applied sciences begin to bud. Applied sciences, such as Bionanotechnology, are created due to demand from the private sector. Moreover, these new fields of research have resulted in complimentary institutions to help transform inventions more quickly into innovations and, therefore, economic growth. This metamorphosis creates institutions such as university technology transfer offices, development research parks or even university-backed venture capital. Not only are there institutional changes, but indeed, the primary conduit of knowledge, the professor, is changing. Several of our recent studies indicate that university professors not only start firms, but also perform exceptionally well with initial public offerings in stock markets. Indeed, this is a far cry from the 20th century Humboldtarian model of a university where knowledge is explicitly generated for the sole purpose of knowledge and safely stored within its Ivory Tower. The evolution of how and why the university and its actors commercialize are becoming an important factor for economic growth, social welfare and knowledge generation and this evolution remains a maiden topic for both scholars and public policy makers.

Recent Work
Fritsch/Slavtchev: Determinants of the Efficiency of Regional Innovation Systems, Regional Studies, doi:10.1080/00343400802251494, 2009. This paper analyses differences in the efficiency of regional innovation systems. Alternative measures for the efficiency of regional innovation systems based on the concept of a knowledge production function are discussed. The empirical findings suggest that spillovers from within the private sector as well as from universities and other public research institutions have a positive effect on the efficiency of private sector research and development. It is particularly the intensity of interactions between private and public sector research and development that increases the efficiency. It is found that regions dominated by large establishments tend to be less efficient than regions with a lower average establishment size.

Göktepe-Hultén/Mahagaonkar: Inventing and Patenting Activities of Scientists: In the Expectation of Money or Reputation? Journal of Technology Transfer, 2009. We propose that scientists use patents/invention disclosures as signals to gain reputation than financial benefits. Based on a newly created dataset on the commercial activities among 2,500 scientists affiliated with 67 institutes of the German Max Planck Society, we explore the relation between the expectations of scientists concerning the outcomes of commercial activities and the likelihood of their patenting and disclosure behaviors. We find that expectation of gaining financial benefits are not related with the patenting activities of scientists without industrial cooperation. Instead, their expectation to gain/increase reputation through commercial activities is correlated with their patenting and disclosures activities. This may in turn also increase the possibility to gain academic promotion, financial benefits through industrial collaboration etc., rather than the immediate personal financial gains.

Aldridge/Audretsch: Scientist Commercialization as a Conduit of Knowledge Spillovers, Annals of Regional Science, Vol. 43 (4), 2009, 897-905. This paper examines how institutional,
locational and individual characteristics of university scientists influence patent inventions. The paper illustrates why and how some scientists combine scientific and commercial creativity in the context of their regional location and the particular type of institution where the scientist is employed. Using a dataset of 1,683 individual scientists, over a 7-year period, the paper estimates the impact of their patenting propensity. The paper uses the Carnegie Classification of Universities, location and scientists human capital and applies a logit analysis to determine which aspects affect a scientist's propensity to patent.

Krabel/Mueller: What drives scientists to start their own company? An empirical investigation of Max Planck Society scientists. Research Policy, 38(6), p.947-956, 2009. Studies on academic spin-off companies have shown that the researchers’ scientific potential, experience and established networks with other scientists or companies affect entrepreneurial activity. Most studies investigate official data such as patents and citations or qualitatively study a research group or spin-off formation. Only a few studies focus on the individual scientist. Our study fills this gap by analyzing survey interviews of 2604 scientists working for the Max Planck Society in Germany. Our empirical results indicate that the entrepreneurial activities of scientists heavily depend on patenting activity, entrepreneurial experience, and personal opinions about the benefits of commercializing research and close personal ties to industry.

Cognition of Entrepreneurial Employees
While we know a fair amount how entrepreneurs think and what motivates them to start new businesses, we know relatively little why individual employees to act entrepreneurially on behalf of their employer. In particular, what internal and external factors motivate individual employees to participate in an innovative and risky new corporate venture? In particular, what internal cognitive and external contextual factors drive their decisions to actively participate in entrepreneurship or not? This has implications both for new small companies, who are looking to attract and hire new employees so they can grow, as well as for large established companies, who are looking either to start new entrepreneurial business units or to create an organizational culture of entrepreneurship.

In one set of studies, we examine the internal drivers of entrepreneurial decision making and how they relate to future entrepreneurial action. Based on the aggregated insights from economics and psychology related to multiple sources of efficacy and locus of control, we introduce the Theory of Mixed control, a model of compound-risk perception. This theory considers outcome expectancies as being composed of expectancies regarding three distinct sources of risk (self, others, and chance). This reflects that entrepreneurship is a complex and dynamic activity, involving multiple sources of risk. Beliefs about the efficacy of these elements are weighted by the degree to which these elements are perceived to control the outcome. The interaction of efficacy and control beliefs is therefore at the core of our theory. In a series of empirical survey-based studies we have already demonstrated that our theory can predict general optimism as well as a variety of job attitudes. Currently we are examining the potential of our theory to predict entrepreneurial actions of students and employees in private industry as well as the commercialization interests of research scientists.

Recent Work
Urbig/Monsen/Boss&Boss: When More Control Can Lead to Less Positive Job Attitudes: Self-Efficacy versus Social Support (work in progress). We propose and test a theory of moderating effects of control beliefs on the influence of self-efficacy and instrumental social support on job satisfaction, turnover intention, and emotional exhaustion. We extend previous research by hypothesizing that a stronger internal locus of control at the workplace not only positively mod-
erates self-efficacy, but also negatively moderates the influence of social support. Survey data from 970 full-time hospital employees confirms significant interaction effects with substantial effect sizes. The interactions are of similar magnitude but of the opposite sign for self-efficacy and social support.

Urbig/Monsen: **Optimistic, but not in Control: Life-Orientation and the Theory of Mixed Control**, Jena Economic Research Paper #2009-013. Why are some people more optimistic about their life than others? Literature on locus of control suggests that optimism is associated with the belief that one’s life outcomes are controlled by internal factors, such as ability, instead of external factors, such as powerful others or chance. Furthermore, some authors suggest that internal control beliefs interact with self-efficacy beliefs regarding their effects on outcome expectancies and thus optimism. We argue that it is not only self-efficacy that interacts, but efficacy beliefs about external factors, too. We further hypothesize that the effect of perceiving internal rather than external control on dispositional optimism depends on the difference between efficacy beliefs regarding internal and external factors. Since people can influence other people to be helpful, i.e., take proxy control, but are unlikely to influence chance, we extend this internal-versus-external view and suggest that the difference between perceived control by others and perceived control by chance affect dispositional optimism. In fact, we hypothesize that the effect of perceiving that it is other people who are in control, rather than chance, depends on the difference between efficacy beliefs regarding others and chance. A first empirical survey-based test produces substantial support for our theory. This is the first time control-efficacy interaction effects are shown for dispositional variables and for the three-dimensional construct of locus of control. We replicate a gender effect on correlations of dispositional optimism with self-reported risk taking and observe a gender effect for one of our new hypotheses.

Urbig: **A Short Measure of Generalized Beliefs in One’s Own Performance, Social Support, and Good Luck.** Jena Economic Research Paper #2008-020, 2008. Self-efficacy, which can be defined as optimism about one’s own ability to exercise required actions, has received a lot of attention in research on entrepreneurs’ and managers’ decision making. This attention led to the development of corresponding measurement instruments. However, there is no equivalent measure of the more general personal optimism that jointly captures on equivalent bases abilities and other sources of uncertainty, which one might be more or less optimistic about. I develop a measurement instrument of four dimensions of personal optimism: ability optimism (self-efficacy), rivalry optimism (being better than others), chance optimism (being a lucky devil or fearing of bad-luck), and social support optimism (others help and support me and are trustworthy). Correlations between subscales are intuitive and backed by theory. I replicate corresponding results from previous studies that used different measures, e.g. life-orientation (LOT-R), self-efficacy (NGSE), and social optimism at the societal level from the POSO scale. This new personal optimism measurement instrument is very much like the life-orientation test (LOT-R), but it provides more insights regarding the structure of optimism. Whenever self-efficacy or control beliefs are of interest, the ARCS or ACS scales should be used to control for complementary world beliefs. I also illustrate the special role of one item in NGSE, which in contrast to all other NGSE items refers to a comparative instead of an absolute judgment.

Monsen/Urbig: **Perceptions of Efficacy, Control and Risk: A Theory of Mixed Control**, in: A. Carsrud & M. Brännback (Eds.), Understanding the entrepreneurial mind: Opening the black box, New York: Springer, 259-291, 2009. Based on the aggregated insights of the existing theories related to multiple sources of efficacy and locus of control, we introduce the theory of mixed control, a model of compound-risk perception. This theory considers outcome expectancies as being composed of expectancies regarding three distinct sources of risk (self, others, and chance). This reflects that entrepreneurship is a complex and dynamic activity, involving
multiple sources of risk. Beliefs about the efficacy of these elements are weighted by the degree to which these elements are perceived to control the outcome. The interaction of efficacy and control beliefs is therefore at the core of our theory. Further, we discuss that risks are not only subjectively perceived but can be endogenous and depend on future decisions and actions of the entrepreneur.

In a second set of studies, we experimentally investigate employee decisions to participate in new entrepreneurial ventures inside established corporations. Drawing on insights from the research literature on entrepreneurship, occupational choice, and human resource management, we apply utility maximization theory, expectancy theory, and social identity theory to understand the direct role of external rewards, effort, risk and uncertainty and the moderating impact of external financial rewards, internal motivation, and the interaction of individual and organizational identity. In a series of metric conjoint-based experiments with employees in Germany and the U.S., we find that these factors do interact to affect an employee’s choice to engage in new corporate entrepreneurial ventures. Based on our findings, we expect to be able to make recommendations not only for improved corporate new venture programs in large established firms, but also regarding the selection and compensation of employees in new start-up firms.

Recent Work
Monsen/Saxton/Hornsby: Uncertainty and Participation in Corporate Entrepreneurship: The Moderating Effects of Person, Organization, and Social Identity (work in progress). Experimental studies of employee decisions to participate in new corporate ventures have focused on risk-related factors. Entrepreneurial decisions, however, are more often made under conditions of uncertainty rather than risky certainty. Therefore, using risk-related theories, including agency, utility maximization, and expectancy theories, can be limiting. Focusing on the concept of uncertainty, we follow a new trend in corporate entrepreneurship studies and examine corporate venture opportunities from the social identity perspective to better explain an employee’s willingness to accept more uncertainty and act more entrepreneurially for their employer. We experimentally manipulate five types of corporate venture uncertainty: reward, team, time, strategy, and structure. In our metric conjoint-based experiment, participants evaluate 32 corporate venture opportunities following an orthogonal fractional-factorial design and complete questionnaires on their entrepreneurial career preferences, their organizational identification and their firm’s entrepreneurial orientation. Controlling for framing biases, respondents are either informed that management has asked them to participate or that management has sent an email to the entire company asking for volunteers. We analyze the data with hierarchical linear modeling. To date, we have data from 126 full-time employees, 110 of which are part-time MBA students. Part-time MBA students have been used as respondents in past studies, however, this is one of the first studies to compare both groups. Overall, our current results confirm the uncertainty aversion hypothesis as well as the moderating role of social identity. In particular, our findings suggest that a personal desire to be an entrepreneur and a strong identification with one’s employing organization can moderate and mitigate the impact of uncertainty on an employee’s participation in new corporate ventures. This study contributes to a growing literature on individual-organizational interactions and their impact on the design of and participation in corporate new ventures.

Monsen/Patzelt/Saxton: Beyond Simple Utility: Incentive Design and Tradeoffs for Corporate Employee-Entrepreneurs, Entrepreneurship Theory & Practice, 31, 105–130, 2010. To strengthen the theoretical foundations of incentive system design for corporate entrepreneurship, we develop a moderated model of new venture participation, integrating financial, risk, and effort factors to more comprehensively understand the limits of economic utility maximi-
zation theory. We make explicit the trade-offs and opportunity costs for corporate employee-entrepreneurs. We use a conjoint field experiment to collect data on 1952 decisions made by 61 corporate employees to test how risk and effort moderate an employee’s decision to participate in a new corporate venture. We find that these factors do interact to affect the choice to engage in corporate entrepreneurship projects.

Schweizer/Monsen/Patzelt: *Anreize und Motivation für unternehmerisches Handeln in etablierten Firmen* [Incentives and Motivation for Entrepreneurial Action in Established Firms], Zeitschrift für betriebswirtschaftliche Forschung, 60(11), 2008, 671–692.

### Entrepreneurship in Developing Countries

While an emerging body of literature confirms the positive impact of entrepreneurship in developed countries, entrepreneurship is rarely present in the academic debate of development economics. Entrepreneurship in low income countries is often treated a residual comprising of individuals who are unable to enter formal labor markets. This research project provides fresh perspectives of the entrepreneurial processes in developing countries. The research project focuses on the following topics:

- The nexus between the entrepreneur, the firm, and the region. Does spatial location simultaneously determines individuals’ entrepreneurial choice and the quality of new firms entering a region?
- The relative positioning of entrepreneurs in the welfare distribution and the economic returns to occupational choice
- The dynamics of entrepreneurial choice over space and time. Do individuals with greater human capital choose entrepreneurship when a closed economy opens and integrates with global markets?
- The role that cultural factors such as religion and caste system play in entrepreneurial decision making
- How does entrepreneurship in developing countries contrast with entrepreneurship in developed countries?

**Recent Work**

Keilbach/Tamvada/Audretsch (eds.): *Entrepreneurship and Economic Growth: Lessons in Policy and Industry Innovations from Germany and India*, International Studies in Entrepreneurship Series, New York: Springer, 2008. Academic research on developed countries has scientifically evaluated the role of entrepreneurship on economic growth, market expansion, commercializing innovation, and reducing unemployment. In this research, it has consistently been shown that regions or industries with higher rates of entrepreneurship show higher levels of innovation and economic growth. Consequently, most European and other developed countries are realizing the potential of entrepreneurship by introducing policy measures to strengthen their entrepreneurship capital. The literature on entrepreneurship and innovation, however, has largely ignored developing countries, despite the positive results from policy initiatives and new venture investments in India, China, and elsewhere. This volume aims to bridge this gap by bringing together research by eminent scholars in Germany and India, whose in-depth analysis of entrepreneurship, innovation, and economic development in their respective countries reveals fundamental commonalities. Covering such timely issues as R&D and labor policies, demographics, and new venture financing, and including case examples from the chemical, biotech, and IT industries, the authors offer rich insights on the entrepreneurial process. The volume concludes with a discussion of the global implications for entrepreneurship research, education, investment, and policymaking.
Audretsch/Tamvada: The Distribution of Firm Startup Size across Geographic Space, CE-PGR Discussion Paper no. 6846. Center for Economic Policy Research, London, 2008. A growing body of literature shows that geographic location plays an important role in influencing economic phenomena. Despite the renewed interest in economic geography, the existing literature on the firm size distribution (FSD) has ignored the impact of geographic location. A wave of recent studies has examined the determinants and evolution of FSD (Cabral and Mata, 2003; Angelini and Generale 2008, AER) and a component of this literature has focused on the size of the new firm start-ups. However, while the impact of firm-specific and industry-specific characteristics on size of new firms has been analyzed, the role of geographic location has been largely neglected. Using Bayesian semi-parametric geoadditive models, we estimate geographic location as a micro-determinant of firm start-up size. The estimations based on a comprehensive database of firm start-ups in India suggest that the size distribution of new firms exhibits distinct regional patterns, even after controlling for firm and industry characteristics. These residual spatial patterns are found to be attributable, to some extent, to the level of economic and financial development in the regions.

Coad/Tamvada: The Growth and Decline of Small Firms in Developing Countries, Papers on Economics and Evolution, Max Planck Institute of Economics, 2008-08. Empirical work on micro and small firms has focused on developed countries. The little work that exists on developing countries is all too often based on small samples taken from ad hoc questionnaires. The census data we analyze are fairly representative of the structure of small business in India. Consistent with prior research on developed countries, size and age have a negative impact on firm growth in the majority of specifications. The decision to export is a double-edged sword: if successful it can accelerate the growth of successful firms, but it can also increase the probability of decline. While proprietary ownership results in faster growth, enterprises managed by women are less likely to grow and more likely to decline. Although many small firms are able to convert knowhow into commercial success, we find that many others do not have any technical knowledge and some are unable to use it to their benefit.

Tamvada: Entrepreneurship and Welfare, Small Business Economics, WIDER Research Paper 2009/21. We examine returns to entrepreneurship using a standard measure of welfare, the per capita consumption expenditure. Using quantile regressions, we find welfare hierarchy in occupations. The results suggest that, across the welfare distribution, entrepreneurs who employ others have the high-test returns in terms of consumption, while those entrepreneurs who work for themselves, that is, self-employed individuals, have slightly lower returns than the salaried employees. However, self-employment entails higher returns than casual labour and an escape from poverty.

Tamvada: The Dynamics of Self-employment in Developing Countries: Evidence from India, mimeo, Max Planck Institute of Economics, 2009. We examine the spatio-temporal dynamics of self-employment in India using geoadditive models and pseudo panel techniques. We test the claim of Iyigun and Owen (1999) that individuals invest in professional human capital and not in entrepreneurial human capital as an economy develops. The results suggest that in non-agriculture, higher education decreases the likelihood of individuals choosing self-employment over time; however, it has an opposite effect in agriculture. While increases in land possessed increase the likelihood of self-employment choice in agriculture, individuals with small land holdings are more likely to transition into self-employment in non-agriculture. Belonging to a backward class has a negative effect on self-employment choice in both sectors; however, the effect has increased in non-agriculture and remained stable in agriculture. The geoadditive models suggest that the propensity to be self-employed has decreased across most spatial units, although there are few pockets where self-employment is rising again.
Tamvada: The Geography and Determinants of Entrepreneurship, Jena Economic Research Papers Discussion Paper, 2008-026. Entrepreneurship literature (Parker 2004) has rarely considered spatial location as a micro-determinant of occupational choice, although there are compelling reasons to posit that spatial location influences economic behavior. Using Bayesian semiparametric methodologies and geoadditive techniques, we examine spatial location as a micro-determinant of self-employment choice of Indians, in addition to standard determinants such as age, gender and education. The empirical analysis suggests the presence of spatial occupational neighborhoods and a clear north-south divide in self-employment choice in India when individuals of agricultural and nonagricultural sectors are considered together; however, such spatial patterns are less pronounced when individuals in nonagriculture alone are considered in the analysis. These residual spatial patterns are found to be inversely related to the per-capita GDP of the region. The results further suggest nonlinear relationships between age, wealth and the probability of self-employment.


2.1.3 List of Publications

Aldridge, Taylor

Audretsch, David
Resolving the knowledge paradox: Knowledge-spillover entrepreneurship and economics growth, Research Policy, 37(10), 2008, 1697–1705 (together with M. Keilbach).
Institutions as Key to Competitiveness and Performance, Socio-Economic Review, Advance Access, 6 (4), August 2008, 775–779.


Emergence of the Entrepreneurial Society, Business Horizons, 52(5), 2009, 505–511.


La Societ Imprenditoriale, i nodi Marsilio Editori, April 2009. (Italian translation of The Entrepreneurial Society).


Rethinking the Role of the University for the Entrepreneurial Society, in: Eberhard Bohne, Charles Bonser, Tony Bovaird and Suzanne Piotrowski (eds.), Adapting Universities to the Global Society – A Transatlantic Perspective, 4, LIT Verlag, 2009, 93–110.


The Enable Program in the European Policy Content, Jena Economic Research Papers # 2008-052 (together with H. Grimm).


Beckmann, Iris


Breugst, Nicola


Buerger, Robin

Desai, Sameeksha
Transnational Ethnic Groups and Conflict: The Zaghawa in Chad and Sudan, Conflict Trends, 10(2), 2008, 25–29 (together with J. Sany).

Goektepe-Hultén, Devrim
Academic Inventors and Research Groups: Entrepreneurial Cultures at Universities, Science and Public Policy, 35(9), 657–667.

Gold, Robert
Corporate Social Responsibility. Eine Win-Win-Strategie für Unternehmen und Regionen, IHK für Niederbayern in Passau (Hrsg.), 2008 (together with S. Heblich).
Heblich, Stephan
Wirtschaftspolitik in Peripheren Regionen, Duncker & Humblot, 2008, Heft 553 (together with O. Falck).
Entrepreneurship Policy and Regional Entrepreneurship: German Expellees as a Natural Experiment, 2009 (together with O. Falck and H. Patzelt).
The Apple Doesn’t Fall Far From the Tree: Location of Start-Ups relative to Incumbents, Jena Economic Research Papers #2008-082 (together with O. Falck and M. Fritsch).
Klaukien, Anja

Krabel, Stefan
The Internationalization of Science and its Influence on Academic Entrepreneurship, Jena Economic Research Papers #2009-026 (together with D. S. Siege and V. Slavtchev).

Mahagaonkar, Prashanth

Monsen, Erik


Patzelt, Holger


Slavtchev, Viktor


Determinants of the Efficiency of Regional Innovation Systems, Regional Studies, doi: 10.1080/00334340802251494 (together with M. Fritsch).

Proximity and the transfer of academic knowledge. Evidence from the spatial pattern of the industry linkages of East German professors, forthcoming.

The Internationalization of Science and its Influence on Academic Entrepreneurship, Jena Economic Research Papers #2009-026 (together with D. S. Siege and S. Krabel).

Tamvada, Jagannadha Pawan


Urbig, Diemo


Welpe, Isabell


Zimmermann, Jörg

2.2 Strategic Interaction Group (ESI)

2.2.1 Research Profile

*Game theory is social science:* Although there are exceptions, traditional economics is predominantly an application of optimization theory to economic decision problems. Consequences from this are the neglect of interactive decisions, i.e. game-theoretical calculations and the dominance of the rationality hypothesis.

Today, theoretical economics and in particular microeconomics is extremely rich, so that simplifying preconceptions are not an option any more. Although traditional microeconomics - which overlaps with business administration and management science - presumes rationality, optimal decision making and resulting recommendations were not the only focus. Rather market outcomes resulting from rational behavior were investigated. The typical question in economics is then: Which market rules would imply market results that correspond to superordinate objectives - as, for example, the overall economic efficiency - in the best possible way? The corporate regulatory policy corresponds to the economic regulatory policy: if one looks for the best corporate remuneration system or concept of success assignment to profit centers, for instance, or to design corporate structures to achieve the business targets in the best possible way. Since labor division can be achieved both, by means of exchange on markets and within enterprises (see Coase, 1937), it should not surprise that for markets and enterprises similar designs emerge. Game theory has influenced the modern development of economics and management science, in addition, it crucially fertilizes other social sciences like philosophy, political science, social psychology and sociology. The extremely normative position that orthodox game theory as well as the richness of game theoretical modelling techniques - e.g. the modelling sequential decisions as well as individual information conditions - is not undisputed. The assumptions of game theoretical methods in theoretical economics and management science lead to a methodological standardization and thus, finally, to the overcoming of an unreasonable separation. Economists and management scientists, who avail themselves of game theoretical methods, would be usually assigned to fundamental research due to the extreme rationality demands and the empirically often not clearly ascertainable game structures, while applied game theory enriches practice often only terminologically. By its mathematical tradition the spreading of game theory contributed naturally also to the rise of quantitative methods in economics. If certain circumstances can now be proven mathematically in a rigorous way, this shows only that we reached a high stage of maturation. Whether rational behavior can be justified as result of evolution and learning processes is discussed, not only in evolutionary game theory, but also in similar form in evolutionary biology.

*Experimental Economics:* Experimental observations on strategic interaction often contradict game theoretical predictions, if one presumes the assumptions on utility functions that suggest themselves, like players are only interested in their own monetary earnings. In experimental research one often reacts to such observations by broadening the definition of the utility function in an ad hoc way, i.e., one repairs the game theoretical model of an experimental situation in order to bring game theoretical predictions and experimental observations in agreement. This can be subsumed by game fitting and the neoclassical repair shop.

A different tradition aims at explaining experimental results by behavioral theories that account for the boundedness of human cognition and information processing. One takes the road less traveled: observing real behavior and trying to model it. According to this we concentrate on sequential decision making when designing experiments. But, above all, we try to model the dynamics of human cognition and decision making to test these models empirically.
2.2.2 Research Topics

= Bounded Rationality

It is based on our understanding that:
– the rational choice approach yields many insights and a fascinating lingua franca for all social sciences and serves a serious philosophical demand, namely to define perfect rationality with and without strategic interaction,
– individual or even common rationality can be expected, if at all, only for rather simple choice tasks due to our cognitive limitations.

Our basic attempt of formally defining and experimentally testing bounded rationality tries:
– not to rule out rationality but to include it as an unlikely border case of bounded rationality, e.g. for rather simple decision tasks without strategic interaction,
– to further develop – in the light of experimental findings – the satisficing approach with its three component processes of aspiration formation, search for satisficing options, and possibly aspiration adaptation in a more rigorous way.

In our view, such an approach is very much needed since any attempt to improve decision behavior by learning, teaching, and consulting must consider the cognitive limitations of the advised and since naïve behavior, e.g. use of heuristics, may be totally inadequate.

Recent Work

Berninghaus/Güth/Levati/Qiu: *Satisficing in sales competition: experimental evidence* (under review). In a duopoly market, aspiration levels express how much sellers want to earn given their expectations about the other’s behavior. We augment the sellers’ decision task by eliciting their profit aspiration. In a first experimental phase, whenever satisficing is not possible, sales choices, point beliefs, or aspiration levels have to be adapted. This allows us to investigate which of these three aspects individuals revise more often. In a second phase, testing the absorption of satisficing, participants are free to select non-satisficing sales profiles. The results reveal that most participants are satisficers who tend to adjust aspiration levels, if they cannot be satisfied.

Fellner/Güth/Maciejovsky: *Satisficing in financial decision making – a theoretical and experimental approach to bounded rationality*, Journal of Mathematical Psychology 53, 2009, 26–33. We apply the theoretical construct of bounded rationality to an investment game, allowing participants to invest their monetary endowment in riskless bonds and risky assets. In our experiment, we elicit aspiration levels from participants: one captures a subsistence threshold, the other a success threshold. Participants can be classified according to these aspirations and the corresponding investment behavior. We differentiate between potential and actual satisficing. By presupposing specific cardinal utility functions, we also relate the bounded rationality approach to the traditional rational choice model.

Güth: *(Non)Behavioral Economics – A Programmatic Assessment*, Journal of Psychology, 216(4), 2008, 245–254. Economic theory has evolved without paying proper attention to behavioral approaches, especially to social, economic, and cognitive psychology. This has recently changed by including behavioral economics courses in many doctoral study programs. Although this new development is most welcome, the typical topics of the behavioral economics courses like aversion theories and simple adaptive (learning or evolutionary) dynamics are not truly behavioral. More specifically, we question whether neoclassical repairs or game fitting exercises as well as more or less mechanic adaptation processes qualify as behavioral approaches. To avoid criticizing without offering alternatives, we suggest some truly behavioral concepts, especially the satisficing approach.

Güth: Satisficing and (un)bounded rationality- A formal definition and its experimental validity, Journal of Economic Behavior and Organization (in press). Based on exogenously given or idiosyncratically expected scenarios satisficing is formally defined and shown to include rationality as an unlikely border case. Our approach suggests new ways of defining risk attitudes and has been applied to risky choice problems and (stochastic) market games. Contrary to revealed preferences where one infers goals from observed choices, the experimental tests do not only elicit choice behavior but also aspirations and, if necessary, idiosyncratic expectations.

Güth/Kliemt: Comments on Vernon Smith’s – Theory and Experiment: What are the Questions? Journal of Economic Behavior and Organization 73, 2010, 44–48. When commenting on Vernon Smith’s inspiring paper, we first argue that game theory in its reasoning about knowledge tradition is not truly behavioral and try to categorize different approaches. We then go on by considering specific topics, discussed by Vernon Smith, before concluding with some methodological reflections.

Güth/Levati/Ploner: An Experimental analysis of satisficing in saving decisions, Journal of Mathematical Psychology 53, 2009, 265–272. Uncertainty of one’s future is the essential problem of saving decisions. Unlike previous experimental studies, we capture this crucial uncertainty by a scenario-based satisficing approach. Decision makers first form aspirations for a few relevant scenarios, and then search for consumption plans guaranteeing these aspirations. Our aim is to investigate whether agents make satisficing choices and, if so, how satisficing relates to optimality. We find that satisficing allocations can be reached easily when aspirations are incentivized, although aspiration levels are rather far from what optimality suggests.

Güth/Levati/Ploner: Satisficing in strategic environments: A theoretical approach and experimental evidence, Journal of Socio-Economics (in press). The satisficing approach is generalized and applied to finite n-person games. We formally define the concept of satisficing and propose a theory that allows satisficing players to make optimal decisions without being equipped with any prior. We also review some experiments on strategic games illustrating and partly supporting our theoretical approach.

Güth/Levati/Ploner: Is satisficing absorbable? An experimental study, Journal of Behavioral Finance 9 (2), 2008, 95–105. We experimentally investigate whether the satisficing approach is absorbable, that is, whether it still applies when participants become aware of it. In a setting where an investor decides between a riskless bond and either one or two risky assets, we familiarize participants with the satisficing calculus applied to specific portfolio selection tasks. After experimenting with this calculus repeatedly, participants can either continue using it or select their portfolio freely. The results reveal some absorbability of the satisficing approach in the simpler two-state setting, whereas more complexity renders the satisficing heuristics more difficult and their absorption less likely.
Güth/Levati/Ploner: *Satisficing and prior-free optimality in price competition: a theoretical and experimental analysis*, Economic Inquiry (in press). We apply a model of satisficing to oligopoly markets with price competition. Sellers have profit aspirations reflecting their conjectures about their competitors’ behavior and search for a price guaranteeing these aspirations. Since it seems implausible that people have detailed priors on the others’ actions, we postulate that sellers entertain multiple conjectures to which no probabilities can be assigned. This allows us to propose a theory of prior-free optimality and to examine experimentally whether people comply with it. We find that decision makers have difficulties in making prior-free optimal choices. Most are content to just satisfice, although ways to aspire to more ambitious profits were obviously available.


Li: *Narrow Framing and Source Preference: An Experimental Investigation on the Stock Market Non-Participation Puzzle* (work in progress). This project investigates the potential role of narrow framing (Tversky & Kahneman, 1981) and source preference (Fox & Tversky, 1995) on explaining the stock market participation puzzle (Mankiw & Zeldes, 1991): Even though the stock market has high average returns, many individuals are reluctant to allocate any money to it. A series of experiment will be conducted to distinguish these two competing hypotheses.

Li/Wyer: *Shopping Momentum Effect: An Experimental Investigation* (work in progress). Shopping momentum refers to the phenomenon that we are more likely to make further purchase when an initial purchase is made. The experimental evidence of shopping moment effect has been recently reported in Dhar et al (2007). The purpose of this study is to investigate the underlying mental process.

Matthey/Dwenger: *Don’t aim too high: the potential costs of high aspirations* (under review). The higher our aspirations, the higher the probability that we have to adjust them downwards when forming more realistic expectations later on. This paper shows that the costs induced by high aspirations are not trivial. We first develop a theoretical framework to identify the factors that determine the effect of aspirations on expected utility. Then we present evidence from a lab experiment on the factor that the theoretical analysis finds to be crucial: the adjustment of reference states to changes in expectations. The results suggest that the costs of high aspirations can be significant, since reference states do not adjust quickly to new expectations. We use a novel, indirect approach that allows us to infer the determinants of the reference state from observed behavior, rather than to rely on self-reports.

Matthey: *Yesterday’s expectation of tomorrow determines what you do today – the role of reference dependent utility from expectations*, Jena Economic Research Papers #2008-003. The paper introduces the concept of adjustment utility, that is, reference-dependent utility from expectations. It offers an explanation for observed preferences that cannot be explained with existing models, and yields new predictions for individual decision making. The model gives a simple explanation for, e.g., why people are reluctant to change their plans even when these turn out to be unexpectedly costly; people’s aversion towards positive but false information, which cannot be explained with previous models; and the increasing acceptance of risks when people get used to them.

Matthey: *On the Formation and Manipulation of Reference States* (Jena Economic Research Papers # 2008-44 as Manipulating Reference States: The Effect of Attitudes on Utility). Experimental and empirical evidence shows that the utility an individual derives from a certain state depends on the reference state she compares it to. According to economic theory, this reference state is determined by the past, present and future outcomes of either the individual herself or her reference group. The experiment described in this paper suggests that, in addition,
reference states depend to a significant degree on non outcome-relevant environmental factors. It shows that reference states - and hence utility - can relatively easily be manipulated without changing people’s outcomes.

Matthey: Do public banks have a competitive advantage?, European Journal of Finance (forthcoming). Public banks are often blamed to possess an unfair competitive advantage in the form of lower funding costs due to a state guarantee on their deposits. However, public and private banks tend to differ not only in their funding costs, but also in the way they deal with borrowers in financial distress. The model presented in this paper shows that if banks differ in these two characteristics, a separation of borrowers may result, with public banks lending to risky firms and private banks lending to safe firms. This separation can explain differences in the lending behavior and performance of public and private banks as observed in the market. Interestingly, the separation may persist even when funding costs are equal, implying that an abolition of state guarantees will not necessarily lead to identical performance of the two types of banks.

Ortmann/Prokosheva/Rydval/Hertwig: How Certain Is the Uncertainty Effect, Experimental Economics (forthcoming). We replicate three pricing tasks of Gneezy, List and Wu (2006) for which they document the so called uncertainty effect, namely that people value a binary lottery over non-monetary outcomes less than other people value the lottery’s worse outcome. Unlike the authors who implement a verbal lottery description, we use a physical lottery format which rules out any misinterpretation of the lottery structure. Contrary to Gneezy, List and Wu, we systematically observe that subjects’ willingness to pay for the lottery is significantly higher than other subjects’ willingness to pay for the lottery’s worse outcome.

Ortmann/Ostatnicky/Rydval: Three Very Simple Games and What It Takes to Solve them, Journal of Economic Behavior & Organization 72(1), 2009, 589–601. We study the nature of dominance violations in three minimalist dominance-solvable guessing games, featuring two or three players choosing among two or three strategies. We examine how subjects’ reported reasoning translates into their choices and beliefs about others’ choices, and how reasoning and choices relate to their measured cognitive and personality characteristics. Only about a third of our subjects reason in accord with dominance; they always make dominant choices and almost always expect others to do so. By contrast, around 60% of subjects describe reasoning processes inconsistent with dominance, yet a quarter of them actually make dominant choices and a fifth of them expect others to do so. Dominance violations seem to arise mainly due to subjects misrepresenting the strategic nature of the guessing games. Reasoning errors are more likely for subjects with lower ability to maintain and allocate attention, as measured by working memory, and for subjects with weaker intrinsic motivation and premeditation attitudes.

Levati/Uhl/Zultan: An Experimental test of the absent-minded driver ”paradox”. Absent-mindedness is a special case of imperfect recall, in which a single history can include more than one decision node in a player’s information set. In other words, the player does not remember whether she’s faced the same decision before or not. Piccione and Rubinstein (1997a, 1997b) claim that absentmindedness leads to time inconsistencies. When reaching the information set, the player forms beliefs over the current decision node, and, under absentmindedness, optimizing with regard to these beliefs may not be consistent with the optimal strategy as calculated beforehand. In response, Aumann, Hart and Perry (1997) argue that these apparent time inconsistencies are resolved when optimization at the information set is carried out with respect to the strategy at the current decision node only. The current paper explores this issue from a descriptive point of view. We study whether absentminded subjects exhibit time inconsistencies when making payoff-relevant decisions in the lab. Absentmindedness is generated in two ways. In one treatment, subjects play many, similar games, as in Deck and Sarangi (2009). In the other treatment the subjects decisions are randomly matched with the decision nodes within the informa-
tion set. The results provide evidence for time inconsistencies in all treatments. We find that a behavioral principal best explains the behavioral patterns in the data.

**Search and Learning**

Many important decisions involve complex search tasks. Famous examples are people searching for a partner or house, and firms searching for employees. In these decisions, choices have to be made without detailed knowledge of the market, that is, without being able to judge the quality of candidates yet to come.

In controlled laboratory experiments, we analyze how people deal with and learn in such complex tasks, and analyze the different factors that influence their behaviour. In particular, we investigate the sources and forms of boundedly rational search behaviour, e.g., satisficing, non-monetary concerns and cognitive limitations.

**Recent Work**

Matthey/Rydval: **Secretary Search under the Microscope** (work in progress). We analyze individual behavior in a secretary search problem. Our experimental design allows us to directly observe individual search strategies, rather than inferring them from stopping times as in earlier studies. The results suggest that subjects’ search is i) too short on average, confirming previous findings, ii) very heterogeneous, both across and within subjects, and iii) influenced by perceived regularities in the sequences of applicants that subjects encounter. Overall, subjects deviate from the optimal strategy in many different ways, in some cases with substantial consequences for expected payoffs.

Matthey: **Less is more: The influence of aspirations and priming on well-being**, Journal of Cleaner Production (forthcoming). If resource consumption is to be reduced through economic de-growth, individuals in industrialized countries may have to accept a reduction in their consumption levels. In democratic societies, implementing this process requires the consent of a majority of the population. However, as long as people have high reference levels of consumption, lower consumption will induce feelings of loss, and hence evoke resistance. This paper summarizes recent experimental evidence on some of the factors that determine the utility costs involved in decreasing consumption. The results suggest that the acceptance of economic de-growth would be facilitated if people’s material aspirations were moderated, and the extent to which material achievements are emphasized in our daily environment were reduced.

An analysis of the financial and economic crisis that developed during 2008 suggests that it will not contribute to either of these points. Rather, by increasing the public’s focus on the economic sphere even beyond pre-crisis levels, it may lead to a further decrease in the acceptance of de-growth policies in the population.

Matthey/Kasser: **Values and Purchasing Behaviour** (work in progress). We study the relation between people’s goals and values and their consumption of organic food products. We first assessed subjects’ goals using the Aspiration Index (Kasser and Ryan, 1993). Then subjects participated in an experimental supermarket offering organic and conventional food products. Before the subjects actually made their purchases, half of them were asked to reflect on their values and the influence of these values on their consumption decisions. The results suggest that activating subjects’ values affects their organic consumption, the sign depending on the activated value. It also strengthens the link between subjects’ goals and their purchase decisions.
**Indirect Evolution**

Most broadly, this is an attempt to combine the ideas of:
- the shadow of the future (one selects an action purely because of its anticipated future consequences) as in orthodox economics and
- the shadow of the past (one uses an action purely because it has been good in the past) as in orthodox evolutionary biology.

More specifically, it allows to:
- combine (un)boundedly rational deliberation and dynamic adaptation (learning and evolutionary selection),
- endogenously derive the rules of the game, e.g. the preferences, beliefs, or the timing of moves which otherwise requires a commonly known, all encompassing game structure where the rules for later decisions are implied by earlier choices.

This topic is partly explored as a very general philosophical approach (mainly together with Hartmut Kliemt) and partly used to illustrate and explain certain phenomena like the existence of non-monetary concerns, polymorphic populations, and formal (legal, economic) institutions.

**Recent Work**

Büchner/Güth/Miller: *Conventions for Selecting among Conventions – An Evolutionary and Experimental Analysis*, Journal of Evolutionary Economics (in press). Conventions can be narrowly interpreted as coordinated ways of equilibrium play, i.e., a specific convention tells all players in a game with multiple strict equilibria which equilibrium to play. In our view, coordination often takes place before learning about the games. Thus, one has to coordinate on a prescribing principle of equilibrium selection. For the subclass of 2x2-bimatrix games with two strict equilibria we analyze the evolutionary stability of various such principles. In our experiment, we allow participants to first coordinate before playing various games. Based on between-subjects treatments, participants do this behind a complete (they know neither their role nor the game parameters), a partial (they know either their role or the game parameters), a partial (they know either their role or the game parameters) or with no ignorance (they know their role and the game parameters).

Berninghaus/Güth/Kliemt: *Pull, push or both? Indirect Evolution in Economics and Beyond*, International Journal of Game Theory (forthcoming). The issue that is addressed in this paper can be introduced in the following terms: When there is a formal relationship between two interpretations, like the rationalistic conscious maximization and evolutionary interpretations of Nash equilibrium, then one can say, ‘Oh, this is an accident, these things really have nothing to do with each other.’ Or, one can look for a deeper meaning. In my view, it’s a mistake to write off the relationship as an accident. (Aumann, 1998, 192).

Gehrig/Güth/Levinsky: *On Insider Trading and Belief Evolution*, Journal of Evolutionary Economics (forthcoming). In a market with stochastic demand with seller competition at most one seller can acquire costly information about demand. Other sellers entertain idiosyncratic beliefs about the market demand and the probability that an informed seller is trading in the market. These idiosyncratic beliefs co-evolve with the potential insider’s inclination to acquire information. True demand expectations (in the Bayesian sense) are not evolutionarily stable when beliefs, via revelation, can be used to commit to more aggressive behavior. The commitment effect fades away in large markets and has the same direction for both strategic substitutes and complements. Whether one observes an insider in the long run depends on information costs. For strategic substitutes insider activity benefits the whole population whereas the uninformed sellers could gain even more than the insider.

If the (un)trustworthy are rare, people will talk about them, making their detection more reliable and/or less costly. When, however, both types appear in large numbers, detecting (un)trustworthiness will become considerably more difficult and possibly too costly to provide a positive feedback supporting preferences underlying trustworthy behavior. We analyze how the composition of a population of trustworthy, respectively, untrustworthy individuals evolves if the cost and reliability of type detection depend on the population composition.

Güth/Llorente/Ziegelmeyer: Asymmetric Information without Common Priors: An Indirect Evolutionary Analysis of Quantity Competition, Journal of Evolutionary Economics (conditional acceptance). The common prior assumption justifies private beliefs as posterior probabilities when updating a common prior based on individual information. We dispose of the common prior assumption for a homogeneous oligopoly market with uncertain costs and firms entertaining arbitrary priors about other firms’ cost-type. We show that true prior beliefs can not be evolutionarily stable when truly expected profit measures (reproductive) success.

Experimental Evidence and Theoretical Explanations of Fairness

Here we continue the tradition of our earlier research, e.g. the earlier and later ultimatum experiments, by

- exploring new fair division games like the Yes- or No-game (the responder does not know the offer when vetoing), the Charity Game (a rich dictator chooses whether and to what extent he wants to help, and a poor recipient can improve his situation - but never overcome his relative disadvantage - by engaging in effort, whose effect depends on chance), or the Generosity Game (the proposer can offer more or less to the responder but does not gain or suffer from generosity);
- propagating equity theory and its refinement (e.g. as in Güth, 1988 and 1994) rather than by aversion theories (see Güth, 2008).

Recent Work

Becker/Miller: Promoting Justice by Treating People Unequally, Experimental Economics, Vol. 12-4, 2009, 437–449. Which inequalities among individuals are considered unjust? This paper reports the results of an experiment designed to study distributive choices dealing with arbitrarily unequal initial endowments. In a three-person distribution problem where subjects either know or do not know their endowments, we find impartial behavior to be a stable pattern. Subjects either compensate for initial inequalities fully or not at all in both conditions, and they do so more often when they do not know their endowment than when they know it. Moreover, the type and the size of the good to be distributed also affect the frequency of impartial behavior.

Buitrago/Güth/Levati: On the relation between impulses to help and causes of neediness: An experimental study, Journal of Socio-Economics 38, 2009, 80–88. A novel two-person charity game, related to the Samaritan’s Dilemma [Buchanan, J.M., 1975. The samaritan’s dilemma. In: Phelps, E.S. (Ed.), Altruism, Morality and Economic Theory. Russel Sage Foundation, New York, pp. 71–85], is used to experimentally investigate the relation between helpers’ behavior and poor recipients’ reaction to aid. We distinguish two treatments differing in whether the causes of neediness are verifiable or not. Helping behavior does not vary significantly between treatments, but is positively correlated with dictator giving, suggesting idiosyncratic attitudes to help. Needy subjects are unaffected by anticipated help, but react optimally to chance.
Aguiar/Becker/Miller: Impartiality and its biases (work in progress). Over centuries philosophers have thought of ways to define and methods to achieve impartiality. In essence impartial decisions, in contrast to partial ones, are based on objective criteria, unbiased and free of prejudice. However, we argue that this is practically not always true. We compare the two main impartiality-inducing methods experimentally, the Rawlsian veil of ignorance and the Smithian impartial spectator. In the context of a distribution game with arbitrary unequal endowments, we let subjects distribute an additional pie under both conditions. Doing so, we focus on one principle of justice, equality, and study subjects’ compensating behavior. We find that decisions are influenced by the risk attitude and the size of inequalities. Moreover, we observe favoritism by spectators when they share certain characteristics with the stakeholders.

Chew/Li: Altruism and Reciprocity of Buddhist Monks: Evidence from Behavioral Game Experiments in Southern India (work in progress). We conduct a set of double-blind within-subject behavioral game experiments with Buddhist monks in southern India, including dictator, ultimatum, jealousy, and trust game. The Buddhist monks are more altruistic than other non-monk subjects reported in the literature. They also display a distinct kind to unkind reciprocity attitude, instead of the conventional attitude of unkind to unkind. Within subject analysis of choices made across the games shows that the subjects follow the golden rule as a moral principle. These results are incompatible with the implications of theoretical models based on inequality aversion, quasi-maximin preference, and intention-based reciprocity.

Güth: The generosity game and calibration of inequity aversion, Journal of Socio-Economics (forthcoming). In the Generosity Game the agreement payoff of the proposer is fixed whereas that of the responder can be varied by the proposer who chooses the pie size. Increasing the pie size increases the (generosity of the) offer by the same amount. We define a unit-square class of Generosity Games by weakening the payoff consequences resulting from a veto by the responder and discuss how the dictator variants can be used to test inequity aversion parameters. Experimental findings, however, so far question inequity aversion as a dominant motive and thus discourage such attempts of assessing its parameters.

Güth/Levati/Ploner: The impact of payoff interdependence on trust and trustworthiness, German Economic Review 9(1), 2008, 87–95. In one-shot investment games where each player’s payoff is a convex combination of own and other’s profit, we measure trust by the amount given to the trustee and trustworthiness by the amount returned to the trustor by the trustee. Does the degree of payoff interdependence increase both trust and trustworthiness or one but not the other or neither of them? According to our experimental data, trust remains unaffected by the extent of interdependence whereas trustworthiness reacts positively to it.

Güth/Levati/Ploner: Making the world a better place: experimental evidence from the generosity game, Jena Economic Research Papers #2009-071. We study ultimatum and dictator experiments where the first mover chooses the amount of money to be distributed between the players within a given interval, knowing that her own share is fixed. Thus, the first mover is faced with scarcity, but not with the typical trade-off between her own and the other’s payoff. Removing the trade-off inspires significant generosity, which is not affected by the second mover’s veto power. On the whole our results confirm heterogeneity in behavior, but point to efficiency concerns as the predominant motive.

Jian Li/Robin Chark/King King Li/Brooks King-Casas/Geng Li/Edward Yang/Rami Zwick/Soo Hong Chew/Read Montague: Neural Representation of the Influence of Culture in a Trust Game: An fMRI Experiment involving Chinese and American Subjects (work in progress). This project investigates the underlying mental process via brain responses, using functional magnetic resonance imaging (fMRI), when individuals are interacting with others coming from...
different culture. Subjects in Houston were matched with subjects from Hong Kong to play the trust game while their brains were being scanned.

Conte/ Moffatt: *The Pluralism of Fairness Ideals: A Comment*, Quaderni DPTEA (2009), 162 (under review). A recent paper by Cappelen et al. (2007) reports on the estimation of a finite mixture model of fairness using experimental data. Their estimation approach is based on a choice model. However, we argue strongly that since the data is not choice data, it should not be modelled as such. We adopt a different approach: modelling the decision variable directly, while incorporating the upper censoring, which is prominent in the data. We reach different conclusions from Cappelen et al. (2007): although we agree that Strict Egalitarians are the dominant type, we find that Libertarians barely exist. Our overall conclusion is that the practice of treating continuous data, or interval data, as if it were choice data is not innocuous, since it can lead to very different predictions. This conclusion is likely to be relevant to other contexts in which the decision variable is quantitative.

Zapechelnyuk /Zultan (2008). *Altruism, Partner Choice, and Fixed-Cost Signaling*. Discussion Paper #483. The Center for Rationality, The Hebrew University of Jerusalem. We consider a multitype population model with unobservable types, in which players are engaged in the ‘mutual help’ game: each player can increase her partner’s fitness at a cost to oneself. All individuals prefer free riding to cooperation, but some of them, helpers, can establish reciprocal cooperation in a long-term relationship. Such heterogeneity can drive cooperation through a partner selection mechanism under which helpers choose to interact with one another and shun non-helpers. However, in contrast to the existing literature, we assume that each individual is matched with an anonymous partner, and therefore, stable cooperation cannot be achieved by partner selection per se. We suggest that helpers can signal their type to one another in order to establish long-term relationships, and we show that a reliable signal always exists. Moreover, due to the difference in future benefits of a long-term relationship for helpers and non-helpers, the signal need not be a handicap, in the sense that the cost of the signal need not be correlated with type.

Conte/ Moffatt: *Econometric Modeling of Fairness* (work in progress).

**Theoretical and Experimental Studies in Industrial Organization**

Here the topics include:

– institutional aspects of labor markets and intra-firm conflicts as, for instance, principal-agent relationships

– simultaneous analysis of intra-firm conflicts and inter-firm competition

– market competition

– environmental problems

– tournaments etc.

Often the theoretical models, propagated in the literature, are not experimentally implementable without deception, e.g. by pretending an infinite horizon or a normal distribution. The situations thus have to be modeled anew and the solutions have to be derived for such models in order to compare them to the theoretical benchmarks.

**Recent Work**

Berninghaus/Bleich/Güth: *Wage Flexibility in Ongoing Employment Relations - An Experiment with a Stochastic Labor Market* in: Franz, Ramser, Stadler (eds.), Schriftenreihe des Wirtschaftswissenschaftlichen Seminars Ottobeuren, Bd. 37, 2008, 171–192, Mohr Siebeck: Tübingen. If the future market wage is uncertain, engaging in long-term employment is risky, with the risk depending on how regulated the labor market is. In our experiment long-term employment can result either from offering long-term contracts or from repeatedly and mutually opting
for rematching. Treatments differ in how regulations restrict the employer’s flexibility in adapting the employment contract to changes of the market (wage). All treatments allow for longer contract duration as well as for mutually opting to be rematched. Effort is chosen by employees after a contract is concluded. Treatments vary from no flexibility to no restriction at all. Will more (downward) flexibility be used in ongoing employment but reduce efficiency? If so, deregulation may weaken rather than promote labor market efficiency. And will regulation crowd out long-term employment, either in the form of long-term contracts or voluntary rematching?

Berninghaus/Bleich/Güth: Going on the Long Race? – Employment Duration and (De) Regulation of Experimental Stochastic Labor Markets, Jena Economic Research Papers # 2009–094. If the future market wage is uncertain, engaging in long term employment is risky, with the risk depending on how regulated the labor market is. In our experiment long-term employment can result either from offering long term contracts or from repeatedly and mutually opting for rematching. Treatments differ in how regulations restrict the employer’s flexibility in adapting the employment contract to changes of the market (wage). All treatments allow for longer contract duration as well as for mutually opting to be rematched. Effort is chosen by employees after a contract is concluded. Treatments vary from no flexibility to no restriction at all. Will more (downward) flexibility be used in ongoing employment but reduce efficiency? If so, deregulation may weaken rather than promote labor market efficiency. And will regulation crowd out long-term employment, either in the form of long-term contracts or voluntary rematching?

Fischer/Güth/Köhler: Effects of Profitable Downsizing on Collective Bargaining in: Franz, W., Güth, W., Ramser, H.J., Stadler, M. (Hrsg.), Schriftenreihe des Wirtschaftswissenschaftlichen Seminars Ottobeuren, Bd. 38, 2009, 223–251, Mohr Siebeck: Tübingen. Our two main research questions are: 1. How do wage demands of the remaining workforce react to the decision of the firm to fire their colleagues, and how does this compare to the reaction to the decision, despite monetary incentives, not to do so? 2. To what degree can these effects be related to (indirect) reciprocity or emotions?

Güth/Häger/Kirchkamp/Schwalbach: Testing Forbearance Experimentally – Duopolistic Competition of Conglomerate Firms (work in progress). Like Feinberg and Sherman (1985) we test experimentally whether conglomerate firms, i.e., firms competing on multiple structurally unrelated markets, can effectively limit competition. Our more general analysis assumes differentiated rather than homogeneous products and distinguishes strategic substitutes as well as complements to test this forbearance hypothesis. Rather than only a partners design we also explore a random strangers design to disentangle effects of forbearance and repeated interaction. Surprisingly, conglomerate firms do not limit competition, they rather foster it. More in line with our expectations we find more cooperation in complement markets than in substitute markets and also more cooperation in a partners than in a strangers matching.

Güth/Kröger/Maug: Bargaining under large risk – an experimental analysis, New Zealand Economic Papers, vol. 43/2, 2009, 105–129. We experimentally study behavior in bargaining situations under large risks. To implement realistic risks involved in the field, we calibrate the experimental parameters from an environment involving substantial variation in profits, the motion picture industry. The leading example is the production of a movie that may give rise to a sequel, so actors and producers negotiate sequentially. We analyze the data in light of alternative behavioral approaches to understanding bargaining behavior under large risk.

Güth/Levinsky/Pull/Weisel: Tournaments and piece rates revisited: A theoretical and experimental study (work in progress). In usual tournaments two or more agents, either individual or teams of employees, compete for a fixed bonus. We speak of premium incentives when the reward for the best performing agent(s) is not fixed but increasing in the firm’s success. We derive the equilibrium of a tournament on premium incentives assuming an experimentally
implementable, non-Normal noise distribution. In the experiment always two agents compete and each principal employs three such pairs of employees. Agents repeatedly face the same principal but are randomly rematched with another agent in each round. The experimental findings qualitatively confirm the theoretical results.

Güth/Paul: **Downsizing the Labor Force by Low and High Profit Firms – An Experimental Analysis**, Jena Economic Research Papers #2008-087. One may hope to capture the behavioral and emotional effects of downsizing the labor force in rather abstract settings as an ultimatum game (see Fischer et al. (2008)), or try to explore downsizing in its more natural principal-agent scenario with a labor market background. We pursue the latter approach and test experimentally whether downsizing occurs whenever (game) theoretically predicted and whether effort reactions question its profitability. Our main findings are that downsizing seems to happen less often than predicted and that its frequency does not depend on whether, theoretically, its gains are rather large or small. Interestingly, we also find strong evidence that piece-rate offers are used in a suboptimal way.

Güth/Pull/Stadler: **Intra-firm Conflicts and Interfirm Competition**, Jena Economic Research Papers #2009-007. We study interaction effects between intra-firm conflicts and interfirm competition on a duopolistic market with seller firms employing one or more agents and implementing tournament incentives. We show that inter-firm competition leads to higher incentive intensity, higher efforts and output levels but lower profits.

Güth/Pull/Stadler: **Shouldn’t We be Generous? Three-Person Generosity Game Experiments** (work in progress). In generosity Games (Güth, 2009) the payoff proposal is partly given and partly determined by the proposer’s choice of the pie size. Earlier results for two-person generosity games show that participants care more for efficiency than for equity. In the three-person generosity games equity for two players is exogenously either imposed or excluded. Does this crowd in, respectively crowd out efficiency or equity seeking? Unlike the three-person ultimatum games (Güth and Van Damme, 1999) the third player is not just a dummy but can reject what is given to him. Treatments rely on a 2x3 factorial design differing in whether the responder or the dummy is the residual claimant and in whether the proposer receives more, the same, or less than the other player with an exogenously given agreement payoff.

Hossain/Li: **Intrinsic and Extrinsic Motivations in Labor Market: An Experimental Investigation** (work in progress). Standard economic analysis often assumes that an increase in extrinsic rewards, for example financial incentives, will motivate individuals to exert more efforts. Recent experimental evidences suggest that the introducing extrinsic motivation may crowd out intrinsic motivations, hence leading to a lower effort. This paper tests the crowding out effect hypothesis in the context of labor market.

Kube/Goerg/Zultan: **Treating Equals Unequally - Incentives in Teams, Workers’ Motivation and Production Technology.** Journal of Labor Economics, (forthcoming). The importance of fair and equal treatment of workers is at the heart of the debate in organizational management. In this regard, we study how reward mechanisms and production technologies affect effort provision in teams. Our experimental results demonstrate that unequal rewards can potentially increase productivity by facilitating coordination, and that the effect strongly interacts with the exact shape of the production function. Taken together, our data highlight the relevance of the production function for organization construction and suggest that equal treatment of equals is neither a necessary nor a sufficient prerequisite for eliciting high performance in teams.

Klor/Winter/Zultan: **Incentive Reversal in Teams.** Winter (2009) has shown the existence of an intriguing phenomenon of incentive reversal. Namely, in some situations, an increase in rewards for all agents in a team can result in a decrease in the set of agents who exert effort in
equilibrium, due to positive externalities between agents. We test the predictions of the model in two experiments to find that incentive reversal indeed occurs in real behavior. In a natural environment the effect size is moderated by behavioral considerations such as reciprocity.

Fischer/Steiger: Exploring the effects of unequal, secretive pay (work in progress). We investigate the use and the effects of wage discrimination in an environment where the agents’ effort decision have positive a positive spill-over on the other parties return. In a controlled laboratory experiment, we implement various scenarios with information on other players payoffs and available choices. In particular we varied information on fellow agents’ wages and the intentionality of wage offers (either chosen by the principal or selected at random). We neither observed that principals shied away from discrimination nor that subjects react negatively to it. On the contrary, the treatment condition which allows for both, intentionality and observability of discrimination mirrored strong learning effects towards the game theoretic predicted behavior. However, we could observe was a negative reaction towards intentional low payment and that intentionality of the wage decision promotes learning on behalf of both, principals and agents.

Kurino: House Allocation with Overlapping Agents: A Dynamic Mechanism Design Approach Jena Economic Research Papers #2009-075. Many real-life applications of house allocation problems are dynamic. For example, in the case of on-campus housing for college students, each year freshmen apply to move in and graduating seniors leave. Each student stays on campus for a few years only. A student is a “newcomer” in the beginning and then becomes an “existing tenant.” Motivated by this observation, we introduce a model of house allocation with overlapping agents. In terms of dynamic mechanism design, we examine two representative static mechanisms of serial dictatorship (SD) and top trading cycles (TTC), both of which are based on an ordering of agents and give an agent with higher order an opportunity to obtain a better house.

We show that for SD mechanisms, the ordering that favors existing tenants is better than the one that favors newcomers in terms of Pareto efficiency. Meanwhile, this result holds for TTC mechanisms under time-invariant preferences in terms of Pareto efficiency and strategy-proofness. We provide another simple dynamic mechanism that is strategy-proof and Pareto efficient.


Halonen-Akatwijuka/Regner: Digital Technology and the Allocation of Ownership in the Music Industry (work in progress) We apply the property rights theory of Grossman-Hart-Moore in the music industry and study the optimal allocation of copyright between the artists who create music and the labels who promote and distribute it. Digital technology opens up a role for new intermediaries. We find that entry of online distribution businesses occurs only if they are sufficiently more productive in distribution than the incumbent label. Furthermore, entry leads to a change in bargaining positions and it can become optimal for the copyright to be shifted from the label to the artist.


Economics of Transportation

Recent Work
Otsubo/Rapoport: Vickrey’s model of traffic congestion discretized, Transportation Research Part B 42, 2008, 873–889. Vickrey’s seminal analysis of urban traffic congestion assumes a continuum of commuters acting selfishly and a continuous strategy space. We propose a discrete version of his model that assumes a finite number of commuters and a discrete strategy space.
We then present an algorithm for numerically computing a symmetric mixed-strategy equilibrium solution for the discrete model and compare it with the deterministic equilibrium solution for the continuous model due to Arnott et al. [Arnott, R., de Palma, A., Lindsey, R., 1990. Economics of a bottleneck. Journal of Urban Economics 27 (1), 111–130]. We report significant discrepancies in travel costs and distributions of departure time between the two solutions that slowly decrease as the number of commuters increases. We then propose and exemplify two extensions of the discrete model that allow for an uncertain number of commuters and an alternative mode of transportation not subject to congestion.

Otsubo: Bottleneck congestion and modal split: An experimental study (work in progress). This study reports results of the laboratory experiment intended to investigate the departure time and mode choice behavior of commuters in a simple traffic network that comprises a road with a single bottleneck and a railway in parallel running a common origin with a common destination. Each commuter independently and privately chooses a mode of transportation she prefers to use as well as a time of departure so as to minimize her own travel cost. This situation is formulated as a non-cooperative bottleneck congestion game in strategic form with a finite and commonly known number of identical commuters and a discrete strategy space. A symmetric mixed-strategy equilibrium is invoked as a benchmark prediction to identify behavioral regularities, if any, of financially motivated subjects in a controlled laboratory environment. Experimental results show that systematic and replicable patterns of departure decision on the aggregate level are coupled with heterogeneous patterns of departure decision on the individual level and that convergence of the aggregate behavior towards equilibrium play is achieved even though more subjects deviate from equilibrium play over time.

= Public Good Experiments

On the Motivations to Voluntarily Contribute
There exists a substantial body of evidence showing that in complete information settings individuals contribute voluntarily to public goods even when material self-interest renders free-riding their dominant strategy.

In a first line of research we try to disentangle the various explanations for the observed non self-interested behavior as well as to provide novel ways to test conditional cooperation. Based on a random-utility model specification, we also develop a relationship between a player’s beliefs about others’ behavior and his contribution plans, and use this relationship to identify the player’s most likely preference type.

In a more recent line of research, we examine whether the typically observed voluntary contribution phenomenon extends to linear voluntary contribution mechanisms where the value of the public good is ex-ante unknown to potential contributors.

Recent Work
Fischbacher/Güth/Levati: Crossing the point of no return (work in progress). In a public goods game agents receive private or common signals regarding the point of no return, meaning that if total contributions fall below this point, all payoffs are drastically reduced. Thus, an individual faces the usual conflict between free-riding incentives and efficiency seeking above the point of no return, while she incurs the risk of almost ruining everybody by crossing the point. We compare the symmetric equilibrium benchmark for the case of common signals as well as of independent and identically distributed signals with experimentally observed contribution behavior.
González/González/Levati: **Logit estimation of conditional cooperation in a repeated public goods experiment.** Elicited beliefs are used in a parsimonious random-utility model that explains conditionally-cooperative, opportunistic, and altruistic patterns of behavior typically observed in repeated two-person public good experiments. Under standard assumptions, a latent class mixed logit specification with three sub-populations is shown to capture well heterogeneity in individual contribution levels over time, while also accommodating for different degrees of heteroscedasticity. The estimation results indicate that the majority of players in a public goods game are strongly conditional cooperators, with smaller fractions of the population leaning to opportunistic or altruistic behavior.

Koukoumelis/Levati/Weisser: **Leading by words: a voluntary contribution experiment with one-way communication**, Jena Economic Research Papers 2009-106. In this paper, we study a voluntary contribution mechanism with one-way communication. The relevance of one person’s words is assessed by assigning exogenously the role of the ‘communicator’ to one group member. Contrary to the view that the mutual exchange of promises is necessary for the cooperation-enhancing effect of communication, we find that, compared to a standard voluntary contribution mechanism with no communication, one-way communication significantly increases contributions and renders them stable over time. Moreover, the positive effects of one-way communication persist even when communication is one-shot.

Levati/González: **Planning ahead: Eliciting intentions and beliefs in a public goods game** (under review). In a two-person finitely repeated public goods experiment, we use intentions data to interpret individual behavior. Based on a random-utility model specification, we develop a relationship between a player’s beliefs about others’ behavior and his contribution plans, and use this relationship to identify the player’s most likely preference type. Our estimation analysis indicates that players are heterogeneous in their preferences also at the intentional level. Moreover, our data show that deviations from intended actions are positively related to changes in beliefs, thereby suggesting that people are able to plan.

Levati/Fiore/Morone: **Voluntary contributions with imperfect information: An experimental study**, Public Choice 138(1), 2009, 199–216. This paper uses a two-person linear voluntary contribution mechanism with stochastic marginal benefits from a public good to examine the effect of imperfect information on contributions. Estimates of individual risk preferences are obtained using data from second-price auctions over lotteries. The results show that limited information about the value of the public good significantly lowers average contributions in all periods but the last. Moreover, the results support the interpretation that subjects bid as if they were risk averse, and suggest that as if risk-averse behavior is negatively correlated with willingness to contribute.

Levati/Zultan: **Cycles of conditional cooperation in a real-time voluntary contribution mechanism**, Jena Economic Research Papers #2009-029. This paper provides a new way to identify conditional cooperation in a real-time version of the standard voluntary contribution mechanism. Our approach avoids most drawbacks of the traditional procedures because it relies on endogenous cycle lengths, which are defined by the number of contributors a player waits before committing to a further contribution. Based on hypothetical distributions of randomly generated contribution sequences, we provide strong evidence for conditionally cooperative behavior. Moreover, notwithstanding a decline in contributions, conditional cooperation is found to be stable over time.

Levati/Morone: **Voluntary contributions with risky and uncertain marginal returns: the importance of the minimal value**, Jena Economic Research Papers #2009–062. Previous research indicates that risky and uncertain marginal returns from a public good lower contributions significantly. This paper presents experimental results showing that this effect depends on
the employed parameterization. More specifically, if the value of the marginal per capita return under the worst state of nature allows for some efficiency gains, then the presence of risk and uncertainty about the public good’s value is not detrimental to cooperation. Our findings cast doubt on the view that risk and uncertainty, per se, weaken people’s willingness to contribute.

Böhm/Steiger: Joint production - Individual evaluation (work in progress). We investigate a two-stage game that combines intergroup and inter-individual interactions. In the first stage individuals can invest in a joint group project. On the second stage participants compete individually for a prize. We vary the design along two dimensions: composition of the second round group and the monetary relevance of the first round. The first factor shows to be important. When participants expect not to be matched with first round group members, willingness to contribute in the first round is high.

Volunteer’s Dilemmas

Recent Work
Otsubo/Rapoport: Dynamic volunteer’s dilemmas over a finite horizon: An experimental study, Journal of Conflict Resolution 52, 2008, 961–984. Volunteer’s dilemmas that evolve over time are presented and modeled as noncooperative n-person games in extensive form with symmetric players, discrete time, finite horizon, and complete information. Volunteering is costly, thereby giving rise to free riding. Reflecting on the observation that in many naturally occurring social dilemmas it is beneficial to volunteer earlier than later, the model assumes that the payoff to the volunteer and the (higher) payoff to each of the nonvolunteers decrease monotonically over time. The authors construct symmetric and asymmetric subgame perfect equilibria to the game. An experimental study shows that financially motivated subjects who are rewarded contingent on their performance volunteer more readily when the cost of volunteering is relatively low; that they largely fail to coordinate on any of the asymmetric equilibria in which only a single subject volunteers immediately; that they volunteer, on average, earlier than predicted; and that they vary considerably from one another in their inclination to free ride.

Risk Attitude

Understanding the Relationship between Risk Attitudes and Other-regarding Concerns
When an individual’s action affects both, her own and other individuals’ payoffs, the actor often exhibits other-regarding preferences. Most previous studies have formulated other-regarding concerns simply in terms of the expected payoff levels of other individuals. What is distinctive in our research is the attempt to account for risk attitudes not only with respect to own payoffs (which is common) but also with respect to others’ payoffs. Specifically, we aim to engage the following research questions: How strong are other-regarding concerns in situations involving exogenous risk both for oneself and others? How do attitudes toward own and others’ risk interact? Are such attitudes different when strategic uncertainty is introduced? We then move one step further by taking into account idiosyncratic private and social time preferences, i.e., when own and/or another person’s rewards are delayed.

Recent Work
own payoffs only. However, the alternatives faced by a decision maker often involve risk about others’ payoffs as well. Motivated by the importance of other-regarding preferences in social interactions, this paper explores idiosyncratic attitudes toward own and others’ risk. We elicit risk attitudes in an experiment involving choices with and without strategic interaction. Regardless of the choice situation, the results do not support any relation between risk attitudes and other-regarding concerns.

Güth/Levati/Ploner: On the social dimension of time and risk preferences: An experimental study, Economic Inquiry 46(2), 2008, 261–272. When explaining risk taking, intertemporal allocation, and distributing behavior, economists rely on risk, time, and other-regarding preferences but offer no guidance on how these three crucial aspects are interrelated. We report on an experiment exploring such interrelation. For this sake, we compare evaluations of several prospects, each of which allocates certain or risky and immediate or delayed payoffs to the actor and to another participant. We find that individuals are self-oriented as to social allocation of risk and delay and other-regarding with respect to expected payoffs.

Güth/Levati/Ploner: Let me see you! A video experiment on the social dimension of risk preferences, Jena Economic Research Papers #2007-005. Previous studies have shown that decision makers are less other-regarding when their own payoff is risky than when it is sure. Empirical observations also indicate that people care more about identifiable than unidentifiable others. In this paper, we report on an experiment designed to explore whether rendering the other identifiable - via a short speechless video - can affect the relation between other-regarding concerns and attitudes toward social risk. For this sake, we elicit risk attitudes under two treatments differing in whether the actor can see the other or not. We find that seeing the other does not affect behavior significantly: regardless of the treatment, individuals are mainly self-oriented as to social allocation of risk, though they are other-regarding with respect to expected payoff levels.

Source Preference

Recent Work
Chark/Hong/Li/ Songfa: Source Preference and Ambiguity Aversion: Models and Evidence from Behavioral and Neuroimaging Experiments, in D. Houser and K. McCabe (eds.), Neuroeconomics, Advances in Health Economics and Health Services Research, Vol. 20, 2008, 179–201, Emerald Insight. This experimental economics study using brain imaging techniques investigates the risk-ambiguity distinction in relation to the source preference hypothesis (Fox & Tversky, 1995) in which identically distributed risks arising from different sources of uncertainty may engender distinct preferences for the same decision maker, contrary to classical economic thinking. The use of brain imaging enables sharper testing of the implications of different models of decision-making including Chew and Sagi’s (2008) axiomatization of source preference. This is the first neuroimaging study of the source preference hypothesis using a design which can discriminate among decision models ranging from risk-based ones to those relying on multiple priors.

Chark/Hong/Li/ Songfa: Source Preference and Ambiguity Aversion: Evidence from Laboratory and Field Experiments (work in progress). Source preference (Fox & Tversky, 1995) is the preference for taking risks arising from one source of uncertainty over those from another. We experimentally test the source preference hypothesis by eliciting individual’s valuations towards even-chance lotteries arising from different sources. Results from the laboratory and field experiments reveal that both student subjects and professional investors have higher valuation towards lotteries contingent on more familiar sources. These findings support the source preference interpretation and rejects models based on global probabilistic sophistication or multiple priors.
Risk Attitude and Belief Updating

Recent Work
Qiu/Steiger: Understanding Risk Attitudes in two Dimensions: An Experimental Analysis, Jena Economic Research Papers #2009-006. It is a common tradition in to order risk aversion by fitting the best EU model with CRRA utility to individual data, and then using the CRRA index for each individual as an index of risk aversion. Prospect theory has demonstrated the empirical deficiencies of EU and has introduced probability weighting as an additional component to better model risk attitudes. By examining both dimensions in a controlled laboratory experiment, we found two dimensions of risk to bear quite different characteristics. Our main result is that utility and probability weighting show now significant correlation. Though, most individuals exhibit concave utility and convex probability weighting. This suggests that both dimensions are necessary for the assessment of risk attitude. In addition, only for probability weighting was correlated with educational background and decision time.

Qiu/Steiger: Relating Risk Attitudes and Probability Updating: An Experimental Study (work in progress). Understanding individual beliefs is vital to understand choices. However, the proper method of belief elicitation has been challenged due to the impact of risk attitude on proper scoring rules like the Quadratic Scoring rule (QSR). Though traditional economic theory treats theory probability updating and risk attitude are unrelated concepts, an impact has often been claimed. We study the impact of probability perception (i.e. weighting) on reported beliefs. We elicit risk attitude and belief updating in separate environments. For risk attitude we employ the trade-off method that allows for a separate elicitation of utility and probability weighting. Belief updating is incentivized using the Quadratic Scoring rule QSR. We then use elicited risk attitudes to ‘correct’ reported beliefs, which greatly improves the accuracy of predictions. Probability weighting is identified as the major source of distortion in reported beliefs. We also evaluate the remaining bias and find a relation to the familiarity to mathematical background.

Hewig/Miltner/Qiu/Steiger: Risk Attitude in the fMRT (work in progress). Despite extensive studies, the nature of risk attitude remains disputed. While expected utility theory captures risk assessment through changes in marginal utility, cumulative prospect theory adds the weighting of probabilities. By examining neurological reactions to risk assessment tasks we strive to gain further insights on the dimension of risk attitude and their relation.

Conte/Moffatt/Botti/Di Cagno/D’Ippoliti: A Test of the Rational Expectations Hypothesis using data from a Natural Experiment: Quaderni DPTEA, 161. Data on contestants’ choices in Italian Game Show Affari Tuoi are analysed in a way that separates the effect of risk attitude (preferences) from that of beliefs concerning the amount of money that will be offered to contestants in future rounds. The most important issue addressed in the paper is what belief function is actually being used by contestants. The parameters of this function are estimated freely along with the parameters of a choice model. Separate identification of the belief function and preferences is possible by virtue of the fact that at a certain stage of the game, beliefs are not relevant, and risk attitude is the sole determinant of choice. The rational expectations hypothesis is tested by comparing the estimated belief function with the true offer function which is estimated using data on offers actually made to contestants. We find that there is a significant difference between these two functions, and hence we reject the rational expectations hypothesis. However, when a simpler rule-of-thumb structure is assumed for the belief function, we find a correspondence to the function obtained from data on actual offers. Our overall conclusion is that contestants are rational to the extent that they make use of all available relevant information, but are not fully rational because they are not processing the information in an optimal way. The importance of belief-formation is confirmed by the estimation
of a mixture model which establishes that the vast majority of contestants are forward-looking as opposed to myopic.

Conte/Hey: **Assessing Multiple Prior models of Behaviour under Ambiguity**: (work in progress).

**Risk Attitude in Individual Decision Making**

**Recent Work**


Conte/Hey/Moffatt: **Mixture models of choice under risk**, Journal of Econometrics, in press. This paper is concerned with estimating preference functionals for choice under risk from the choice behaviour of individuals. We note that there is heterogeneity in behaviour between individuals and within individuals. By “heterogeneity between individuals” we mean that people are different, in terms of both their preference functionals and their parameters for these functionals. By “heterogeneity within individuals” we mean that the behaviour may be different even by the same individual for the same choice problem. We propose methods of taking into account all forms of heterogeneity, concentrating particularly on using a Mixture Model to capture the heterogeneity of preference functionals.

Botti/Conte/Di Cagno/C. D’Ippoliti: **Lab and framed lab versus natural experiments: Evidence from a risky choice experiment**: Research in Economics, 63(2009), 282–295. Some recent papers have studied data from TV game shows to examine the behaviour of individuals towards risk. It is generally agreed that data from these shows are useful in detecting individual risk aversion in the field, with both “real life” subjects and incentives. Field experiments also include some interesting reality features that could affect individuals’ behaviour and possibly lead to different findings. This paper aims at investigating lab versus field evidence in risk taking attitudes, especially controlling for framing effects. To assess whether the behaviour of subjects in the field is consistent with that of experimental subjects, we designed an experiment to mimic (with experimental rewards and subjects) the rules of a well-known Italian TV game show, Affari Tuoi, in two different settings: a traditional lab setting, where the game was played individually (109 subjects) (Treatment 1); and a framed lab, in which the experiment was replicated in the Italian public television (RAI) studio where the show was actually recorded, with a smaller sample of undergraduate students (33) and in the presence of an audience (Treatment 2). Our comparison between the two different settings aims at establishing whether the presence of an audience, or of a situation that reproduces the stress that contestants must experience in the TV studio, can affect experimental subjects’ choices. We did not find any significant evidence of framing effects: students behave in a similar way in the two lab settings, responding essentially to incentives. Comparing the risk attitudes shown by experimental subjects in the two lab treatments with those exhibited by the contestants in the field, we found that contestants in the TV show are generally more risk averse than students in the lab.

Botti/Conte/Di Cagno/C. D’Ippoliti: **Risk Attitude in Real Decision Problems**, The B. E. Journal of Economic Analysis & Policy: Vol. 8: Iss. 1(Advances), Article 6. We use data from 298 showings of the television program Affari Tuoi, which involves contestants making decisions between risky prospects with possible prizes of up to half a million euros, to estimate three models of decision-making under risk: Expected Utility, Rank-Dependent Expected Utility and Regret-Rejoice. We find that Regret-Rejoice does not significantly improve upon Expected Utility, while Rank-Dependent outperforms it. Interestingly, we find that the CARA specification fits significantly better than the conventionally-adopted CRRA specification. Crucially, we find
a significant role for unobserved heterogeneity, implying that our estimates provide more superior estimates of risk attitude and of probability weighting than other studies.

Social Preferences

The Driving Forces of Other-regarding Behaviour

We depart from established outcome-based models that attempt to explain other-regarding behaviour with distributional preferences regarding the payoffs of self and others, e.g., Bolton and Ockenfels (2000), Fehr and Schmidt (1999).

In one strand existing intentions-based models (Rabin 1993, Dufwenberg and Kirchsteiger 2004, Charness and Dufwenberg 2006) are tested with field data, in the laboratory and with survey data.

In another strand we develop a model that integrates psychological components (cognitive dissonance (Festinger 1954)) and test it in the laboratory.

Recent Work

Behrens/Güth/Kliemt/Levati: Games that doctors play: Two-layered agency problems in a medical system, in A. Mehler and U. Cantner (eds.), Dimensions of Public Economics: Strategies and Policies Facing Uncertainty and Market Failure, forthcoming. Medical doctors act as agents of their patients by either treating them directly or referring them to other more or differently specialized doctors, who thereby become agents of agents. The main aim of this paper is to model central aspects of such two-layered agency relations in the medical sector. On the basis of our model, we draw some tentative conclusions concerning policy issues. In particular, we suggest relying on a strict separation of roles between diagnostic and therapeutic agents with counseling practitioners acting as gate-keepers of the medical system.

Güth/Levati/Ploner: Social identity and trust – An experimental investigation, Journal of Socio-Economics, 2008, 37, 1293–1308. We experimentally examine how group identity affects trust behavior in an investment game. In one treatment, group identity is induced purely by minimal groups. In other treatments, group members are additionally related by outcome interdependence established in a prior public goods game. Moving from the standard investment game (where no group identity is prompted) to minimal group identity to two dimensional group identity, we find no significant differences in trust decisions. However, trust is significantly and positively correlated with contribution decisions, suggesting that social trust is behaviorally important.

Güth/Ploner/Regner: Determinants of In-group Bias: Is Group Affiliation Mediated by Guilt-Aversion? Journal of Economic Psychology 30, 2009, 814–827. In-group favoritism in social dilemma situations is one of the main findings of studies in Social Identity Theory. We investigate what causes the in-group bias: is it due to mere group affiliation or, alternatively, is guilt-aversion a possible explanation? We induce group membership in a minimal group setting, observe in-/out-group transfers and elicit respective beliefs. We find that mere group affiliation explains a substantial part of the bias, but we also find evidence in favor of guilt-aversion as a source of motivation.

Harth/Regner: Guilty Into Anger? Social Interaction in a Repeated Trust Game (work in progress). This paper investigates the link between guilt and anger in social interaction. Building on the idea of emotions as dynamic responses to the social context, we predicted that the effect of guilt on cooperation would be only short-lived, and that guilt could translate into angry behaviour depending on an opponent’s behaviour. Participants played a repeated trust game (8 rounds). We varied whether they were confronted with a guilt inducing message (guilt manipu-
lation: yes vs. no) and whether they received feedback about the opponent’s behavioural decisions (feedback: yes vs. no). Supporting our hypotheses, the results suggest that those in the guilt condition felt greater guilt and showed more cooperation in the beginning of the game. However, they were more likely to show non-cooperative behaviour during the final rounds when the opponent did not cooperate. These findings highlight the importance of considering the dynamics of the social context for emotion research.

Regner/Harth: Other-regarding behaviour: Testing guilt- and reciprocity-based models (work in progress). Other-regarding behaviour in social dilemmas is an established finding in the lab and the field. It is less clear what actually drives this behaviour. The literature can be distinguished into outcome-based and intentions-based models of social preferences. The latter use the framework of psychological games and incorporate (perceived) kindness instrumented by beliefs and actions into the utility function.

We test the robustness of two types of intentions-based models (guilt aversion and reciprocity). In addition to incentivised elicitation of first- and second-order action beliefs, we assess participants’ sensitivity to feel guilt, and their attitude towards acting reciprocal. In game 1 (guilt aversion) both second-order beliefs and sensitivity of guilt seem to explain the decision of participants. Game 2 data is also in line with the intentions-based model (reciprocity). Second-order beliefs are highly significant and sensitivity to negative reciprocity also has a significant effect on the behaviour of trustees. The evidence in favour of an effect of positive reciprocity is marginal, though.


Regner: Why Consumers Pay Voluntarily? Evidence from Online Music (work in progress). At the online music label Magnatune customers can pay what they want for albums, as long as the payment is within a given price range ($5–$18). On average customers pay $8.20, far more than the minimum of $5 and even higher than the recommended price of $8. We further analyse payment behaviour using survey responses received from 236 frequent Magnatune customers. Their answers about the size of payments are in line with the pattern known from real transactions. The qualitative data gives insights about the actual motivation of customers. Reciprocity appears to be the major driver for generous payments.

Regner: Social Preferences? Google Answers! Jena Economic Research Papers #2009-035. We analyse pricing, effort and tipping decisions in the online service ‘Google Answers’. While users set a price for the answer to their question ex ante, they can additionally give a tip to the researcher ex post. In line with the related experimental literature we …find evidence that tipping is motivated by reciprocity, but also by reputation concerns among frequent users. Moreover, researchers seem to adjust their effort based on the user’s previous tipping behaviour. An efficient sorting takes place when enough tip history is available. Users known for tipping in the past receive higher effort answers, while users with an established reputation for non-tipping tend to get low effort answers. In addition, we analyse how tipping is adopted when the behavioural default is not to tip and estimate minimum levels for the fraction of genuine reciprocator and imitator types.

Regner/Barria: Do Consumers Pay Voluntarily? The Case of Online Music. Journal of Economic Behavior and Organisation (forthcoming). The paper analyses the payment behaviour of customers of the online music label Magnatune. Customers may pay what they want for albums, as long as the payment is within a given price range ($5–$18). Magnatune’s comprehensive pre-purchase access facilitates music discovery and allows an informed buying decision setting it apart from conventional online music stores. On average customers pay $8.20, far more than the minimum of $5 and even higher than the recommended
price of $8. We analyse the relationship between artists/labels and customers in online music. We consider social preferences, in particular concerns for reciprocity. The resulting sequential reciprocity equilibrium corresponds to the observed pattern of behaviour. We conclude that Magnatune's open contracts design can encourage people to make voluntary payments and may be a viable business option.

Regner/Riener: Determinants of Voluntary Payment Behaviour – A Field Experiment (work in progress).

Regner/Riener: Effects of Group Affiliation and Observability in Microfinance (work in progress).

Koppel/Regner: Voluntary Payment and Donations in the Field (work in progress).

Hugh-Jones/Katsanidou/Riener: Motivations behind intergroup conflict: The Case of the Greek Riots-An experimental study of Greek students after the 2008 riots. We report a laboratory experiment on student discrimination against out-groups in the context of the December 2008 riots in Greece, after the killing of a 15-year-old student by a special police agent. In order to test theories of why people participate in costly collective action against political opponents, and even opt for violent acts, we examine students’ allocations between themselves and others, including police, in modified Dictator games, allowing us to test theories of discrimination on behavior with real payoff consequences. Various treatments examined the effect of in-group norms among students, and priming from media reports, on discrimination. We find that cues in the environment increase discrimination. However, contrary to existing research, in-group norms do not increase discrimination, perhaps due to the diversity of the student identity. A correlation of discrimination with attitudes towards the riots themselves provides a laboratory test of the frame alignment theory of mobilization. Laboratory behaviour was correlated with self-reported participation in demonstrations, supporting the external validity of our measure.

Behavioral Economics in E-Commerce
Other-regarding behavior is a consistent finding of lab and field experiments in behavioral economics. I am interested in the implications these theoretical findings may have on online interaction. What are the effects on online industries such as the music industry or digital media in more general terms? And as online interaction becomes increasingly social or personal – by way of innovative communication technologies – what does that mean for our online payment behaviour?

Recent Work
Regner/Barria/Pitt/Neville: An Artist Life-Cycle Model for Digital Media Content: Strategies for the Light Web and the Dark Web. Electronic Commerce Research and Applications (forthcoming). This paper surveys and categorises emerging digital media business models. We apply the customer activity-cycle of Vandermerwe (2000) to the consumption of digital media. Our analysis of the business models takes the pre-, during- and postconsumption phase of the cycle into account (by deriving the parameters exposure and convenience of use) and considers cost aspects as well (compliance and administrative costs). We distinguish between two polar environments for digital media: the Dark Web with content created by the masses and the Light Web with content created by big media. Thus, we develop an artist life-cycle model in which different business models appear to be optimal at different stages of an artist’s career. Voluntary-based models seem to be ideal for newcomers in the Dark Web, DRM- and complements-based models are the likely choice of established artists in the Light Web. Established artists might change their approach again using voluntary-based or complements-based models when they retire.
Regner/Barria/Pitt/Neville: **Governance of Digital Content in the Era of Mass Participation.** Electronic Commerce Research (forthcoming). The realm of digital media is undergoing fundamental changes as it moves from mass media to an era of mass participation. This emergence of content created by the masses requires to re-consider the conventional intellectual property rights framework. Free content and protected content co-exist (in the Dark/Light Web). We propose an alternative environment for the governance of digital content. It incorporates psychological aspects into its economics framework. Multiagent systems play an important role in order to create an infrastructure that makes the voluntary-based environment sustainable. We propose a platform based on an open contracts design that encourages voluntary payments. Peer-based reputation and recommendation mechanisms as well as socio-emotive instruments facilitate norm-adherence in this online environment. They leverage the efficiency of alternative voluntary payment models based on fairness concerns and reciprocity. The envisioned platform matches Dark Web content to consumers who value it highly, provides Dark Web content creators with a basic reward for their work and reduces the infringement of protected content in the Dark Web.

**Theoretical and Experimental Studies in Applied Microeconomics**

**Finance**

*Recent Work*

Gehrig/Güth/Levinsky/Popova: **On the evolution of professional consulting.** Journal of Economic Behavior and Organization, forthcoming. In the experimental scenario several agents repeatedly invest in \( n \geq 2 \) state-specific assets. The evolutionarily stable and equilibrium (Blume and Easley, 1992) portfolio for this situation requires to distribute funds according to the constant probabilities of the various states. The different treatments endow none, one, three, or all subjects in groups of eight investors each with probability information. Will investments follow the theoretical benchmark or the \( 1/n \)-heuristic of equal investments in all assets? Further, will agents with probability information be asked and paid for advice on how to invest? Although investment does not converge as predicted, portfolios of informed agents reflect the probabilities of states, and even uninformed agents do not invest according to the \( 1/n \)-heuristic. Advice is demanded and readily paid for. Surprisingly, clients do not always follow the recommendation. Competition among advisors reduces their fees as expected.

**Environmental Policy & Sustainability**

Management of natural resources and environmental goods is a challenging field which requires behavioral as well en environmental understanding. The idea that policy can reverse market failure through the creation of new markets or market-like incentives rests on the presumption of rational behavior. We analyze the forces that drive individual consumption behavior, in particular the influence of reference states and of people’s values. We take a broad interest in assessments of consumers’ welfare, normative theories like cost-benefit analysis and various fairness considerations relating to environmental management. We also focus on the development of stated-preference methods to assess consumer welfare.

*Recent Work*

Carlsson/Kataria: **Assessing Management Options for Weed Control with Demanders and Non-Demanders in a Choice Experiment.** Land economics, 84, 2008, 517–528. The yellow floa-
ting heart is a water weed causing nuisance problems in Swedish watercourses. An economic analysis where various management options are considered is required. Using a choice experiment, we estimate the benefits of a weed-management program and perform a cost-benefit analysis. In order to be able to distinguish between those who have a demand for a program from those who do not, we introduce a way to distinguish demanders from non-demanders in the choice experiments. Using a simple cost-benefit rule, we find that cutting the weed in certain places in the lake can be justified.

Kataria: *Willingness to Pay for Environmental Improvements in Hydropower Regulated Rivers*, Energy Economics 31/1, 2009, 69–76. This paper uses a choice experiment to estimate how Swedish households value different environmental improvements for the hydropower regulated rivers. We obtained clear evidence that Swedish households have preferences for environmental improvement in hydropower regulated waters, at least when the cost is relatively low. Remedial measures that improve the conditions for all of the included environmental attributes i.e. fish, benthic invertebrates, river-margin vegetation and birds were found to have a significant welfare increasing impact. The results can be of value for the implementation of the Water Framework Directives in Sweden, which aims to reform the use of all surface water and ground water in the member states.

Kataria/Larsén: *Social Marketing and the Environment – An Empirical Evaluation of the Campaign for Battery Collection in Sweden*. Journal of Resources, Conservation and Recycling 53/8, 2009, 429–433. The use of information campaigns in order to influence peoples’ behaviour and attitude is often referred to as social marketing. In spite of their popularity, social marketing campaigns have rarely been evaluated using quantitative methods. In this study, an information campaign concerning the collection of batteries in Sweden is evaluated using data from the time period 1998–2005. The results of the econometric model suggest that increased expenditure on information campaigns has a positive and statistical significant impact on the collection of batteries. The findings of this study may be used in future cost-efficiency evaluations where social marketing is compared with other measures aiming to increase battery collection.

Kataria/Elofsson/Hasler: *Distributional Assumptions in Chance Constrained Programming Models of Stochastic Water Pollution*. Environmental Modelling & Assessment (forthcoming). In the water management literature both the normal and log-normal distribution are commonly used to model stochastic water pollution. The normality assumption is usually motivated by the central limit theorem, while the log-normality assumption is often motivated by the need to avoid the possibility of negative pollution loads. We utilize the truncated normal distribution as an alternative to these distributions. Using probabilistic constraints in a cost-minimization model for the Baltic Sea, we show that the distribution assumption bias is between 1% and 60%. Simulations show that a greater difference is to be expected for data with a higher degree of truncation. Using the normal distribution instead of the truncated normal distribution leads to an underestimation of the true cost. On the contrary, the difference in cost when using the normal versus the lognormal can be positive as well as negative.

Carlson/Kataria/Lampi/Löfgren/Sterner: *Climate Policy and Fairness - are people impartial?* (work in progress). This paper focuses on ordinary citizens’ preferences considering different effort sharing rules how to share the costs of climate policy among countries. We also study whether people’s preferences of fairness are more dependent on which countries are affected than on the sharing rules per se and consequences of them. We do that by conducting a choice experiment with two different treatments; one where the respondents were informed about the country names and one where the country names were replaced with generic labels. We find that regardless the treatment, respondents prefer most the effort sharing rule where all countries are allowed to emit an equal amount per person and least the rule based on emission reduction
proportional to historical emissions. However, the absolute values of WTPs are always larger in the treatment with country names. We conclude that people’s preferences of fair allocation is dependent on whether they are able to relate the consequences of effort sharing rules to specific countries or not.

Kataria/Shogren: Violation of Preference Axioms in Stated Preference Studies – a closer look at avoidable noise and bias in welfare estimates (work in progress). We test how a choice experiment (CE) model derived under standard preference axioms performs if the consumers contrary to this have incomplete preferences or thick indifference curves. Monte-Carlo Simulations shows that part-whole values relative to each other are more sensitive to bias than the estimated total WTP.

Carlsson/Kataria/Lampi: Do EPA administrators recommend environmental policies that citizens want? Jena Economic Research Papers #2009-057. We investigate whether Swedish Environmental Protection Agency (EPA) administrator recommendations regarding improvements in environmental quality differ from citizen preferences. The scope and significance of the possible difference are assessed by conducting identical choice experiments on a random sample of Swedish citizens and a random sample of administrators working at the Swedish EPA. The experiment concerns two environmental quality objectives: a Balanced Marine Environment and Clean Air. The EPA administrators were asked to choose the alternatives they would recommend as a policy, while the citizens were asked to act as private persons. We find that the rankings of attributes differ between the two groups and that the willingness to pay (WTP) obtained from the choices made by the administrators is higher for five out of the seven attributes, and in some cases the difference between the WTPs is not only significant but also substantial. We also asked the administrators to motivate their choices in the experiment, and the main motive was ecological sustainability.

Carlsson/Lampi/Kataria: Dealing with ignored attributes in choice experiments on valuation of Sweden’s environmental quality objectives. Working Papers in Economics No. 289, Department of Economics, University of Gothenburg. Using a choice experiment, this paper investigates how Swedish citizens value three environmental quality objectives. In addition, a follow-up question is used to investigate whether respondents ignored any attributes when responding. The resulting information is used in the model estimation by restricting the individual parameters for the ignored attributes to zero. When taking the shares of respondents who considered both the environmental and the cost attributes (52–69 percent of the respondents) into account, then the WTPs for each attribute change if the respondents who ignored the attributes have a zero WTP. At the same time, we find evidence that not all respondents who claimed to have ignored an attribute really did. However, the most commonly ignored non-monetary attributes always have the lowest rankings in terms of WTP across all three environmental objectives. Thus, our results show that instead of ignoring, respondents seem to put less weight on the attributes they claimed to have ignored.

Carlsson/Kataria/Lampi/Löfgren/Sterner: Climate Policy and fairness: A study on how people’s willingness to pay for greenhouse gas reductions in a certain country depends on how costs are distributed globally (work in progress). This paper presents a cross-country comparison for Sweden, U.S.A and China of willingness to pay for reducing CO2 and tests for distributive preferences.

Carlsson/Kataria/Lampi/Levati: Education and Decision-making – Evidence from a voluntary contribution experiment comparing several student groups (work in progress). In this study we aim to compare several student groups and elicit the effect of education on the trade-off between anthropocentric and ecocentric values. More specifically, we test if certain groups of students are more likely to restrict the preference satisfaction choice of humans in favor to
nature, and to what extent such behavior is fostered by education. Our sample is unique in
the sense that it consists of students that in a program of environmental social science, with a
number of specializations including in economics, political science, human geography, business
administration and human ecology. However, when the students begin the program they have
not opted for a specialization, instead the first year is common for all students. This gives us the
opportunity to compare first year students that have not decided on their specialization with
student in the second and third year.

Economics of Happiness

Recent Work
Kataria/Regner: Does television viewing have a negative impact on individual happiness? –
Re-examining the evidence of a persuasive story (work in progress). In a recently published ar-
ticle Bruni and Stanca (2008) suggest that television viewing has a negative impact on life satis-
faction. In this note we argue that the empirical approach they use to reach their conclusions is
problematic and re-exam their analysis. In a large cross-country comparison we find that indi-
viduals in 12 of the 38 countries (32%) had a life satisfaction score that was significantly higher,
if they watched TV less than 3 hours in an average weekday. The difference for these 12 coun-
tries between the group that watched TV more than 3 hours compared to the group that showed
highest life satisfaction was on average 0.38 (on a self-reported scale from 1 to 10). Estimating
a microeconomic life satisfaction function, however, we find no support for the claim that tele-
vision viewing in general has a negative impact on individual happiness. We also conclude that
there is a substantial cross-country heterogeneity which needs to be taken into account when
concluding about televisions effect on life satisfaction.

Bankruptcy & Liability Limits

Recent Work
Robe/Steiger: Limited Liability Rules, Financial Innovation and Capital Structure Com-
plexity (work in progress). We analyze the consequences of the legal limits of liability regime
on the financing structure. The analysis suggests that limiting liability calls for more com-
plex financing instruments to atone diminished incentives. We use a standard agency model
of investment financing under moral hazard, in which it is optimal for active shareholders to
have unlimited liability. Because of the threat of harsh penalties, firms can finance investment
with a plain combination of straight debt and limited-liability external equity as long as active
shareholders themselves retain unlimited liability. The availability of more complex financial
instruments such as warrants no longer make unlimited liability imperative. Warrants help
compensate arms-length investors for a greater likelihood of default. We complement the anal-
ysis with a review of historic choices of liability regimes. Even though both regimes coexisted
at most times and unlimited liability is present still today. Results suggest that while for the
major part of entrepreneurial projects limited liability with more complex financial structures
seem to provide sufficient incentives. Yet, when moral hazard problems are severe unlimited
liability is still key to the realization.

Robe/Steiger: Human Capital and the Toughness of Consumer Bankruptcy Law (work in
progress). We assess the need for consumer debt release legislation when the government bal-
cances the borrower’s short- and long-term effort incentives. Within a multi-period model of con-
sumer financing under moral hazard and uncertainty, we show that legally-mandated bankrupt-
cy rules are necessary to maximize the overall social surplus. The generosity of this protection
decreases with the borrower’s observable income potential. Our results help explain the recent introduction of consumer debt release in Continental Europe as well as key features of the 2005 U.S. consumer bankruptcy law reform.

Robe/Steiger/Michel: Penalties and Optimality in Financial Contracts: Taking Stock (work in progress). A popular view of limited liability in financial contracting is that it is the result of societal preferences against excessive penalties. The view of most financial economists is instead that limited liability merged as an optimal institution when, in the absence of a clear limit on economic agents’ liability, the development of some economic activities might have been thwarted. Viewing the institution from the perspective of optimal legal system design allows us to better understand the current debate on it.

We present a broad history of penalties in financial contracts to highlight the interactions between technology, legal environments, purpose of the financial relationship, and contractual provisions. We show that harsh monetary and non-pecuniary penalties are not mere relics from a bygone era and, at the same time, that limited liability is far from a recent institution. We then discuss trade-offs associated with legal mandates of either unlimited or limited liability, both for the contracting parties and for the rest of Society.

Steiger: Ex-Ante vs. Ex-Post in Personal Bankruptcy Proceedings, (MPI working paper #2006-177. Amidst a sharp increase in household debt levels, many countries have substantially reformed their consumer bankruptcy regulations. I first classify the mechanisms triggered by current U.S. and European bankruptcy regulations and then evaluate these mechanisms within a hidden action model. I analyze the consumer’s incentives prior to distress and during a ‘repayment period’ following bankruptcy, appraising the capacity of existing regulations to implement those conflicting objectives. Though the institution of debt release provides adequate bankruptcy regulation ex-post, the prospect of debt release also distorts the debtor’s choices prior to distress. I propose alternative regulations that provide superior incentives, minimizing the overall distortions at both dates.

(Experimental) Law and Economics

Recent Work
Parisi/Steiger/Tor: Efficient Breach of Contract: An Experimental Analysis (work in progress). In this study we investigate experimentally efficient breach of contract under expectation damages and specific performance. We contrast breaches due to losses with those due to gains. We suspect that more breaches will occur for losses than for gains. Moreover, we expect more generous agreements under expected damages than with specific performance.

Public Choice & Policy

Recent Work
Hugh-Jones: Constitutions and Policy Comparisons: Direct and Representative Democracy When States Learn From Their Neighbours. Journal of Theoretical Politics (2010) 21(1): 25–61. Voters in democracies can learn from the experience of neighbouring states: about policy in a direct democracy (‘policy experimentation’), about the quality of their politicians in a representative democracy (‘yardstick competition’). Learning between states creates spillovers from policy choice, and also from constitutional choice. I model these spillovers in a simple principal-agent framework, and show that voter welfare may be maximized by a mixture of representative and direct democratic states. Because of this, empirical work examining voter welfare under direct democracy may need to be reinterpreted. Also, I show that the optimal mix of constitutions cannot always be achieved in a constitutional choice equilibrium involving many states.
Hugh-Jones: **Sophisticated Voting on Competing Ballot Measures: Spatial Theory and Evidence**, British Journal of Political Science, forthcoming. Are voters sophisticated? Rational choice theories of voting assume they are. Students of voting behaviour are more doubtful. This article examines voting in a particularly demanding setting: direct democratic elections in which two competing proposals are on the ballot. It develops a spatial model of voting and proposal qualification with competing proposals. If voters are naive, then competing proposals can be used to block the direct democratic route to change, but, if voters vote strategically, competing proposals can bring outcomes closer to the median voter. Voting intention data from California polls provides evidence that some votes are cast strategically even in these demanding circumstances. However, the level of strategic voting appears to be affected by the nature of the election campaign.

Hugh-Jones/Reinstein: **Secret Santa: Anonymity, Signaling, and Conditional Cooperation**, Jena Economic Research Papers #2009-048. Costly signaling of commitment to a group has been proposed as an explanation for participation in religion and ritual. But if the signal’s cost is too small, freeriders will send the signal and behave selfishly later. Effective signaling may then be prohibitively costly. If the average level of signaling in a group is observable, but individual effort is not, then freeriders can behave selfishly without being detected, and group members will learn about the average level of commitment among the group. We develop a formal model, and give examples of institutions that enable anonymous signaling, including ritual, religion, music and dance, voting, charitable donations, and military institutions. We explore the value of anonymity in the laboratory with a repeated two-stage public goods game with exclusion. When first-stage contributions are anonymous, subjects are better at predicting second-stage behavior, and maintain a substantially higher level of cooperation.

Hugh-Jones: **Internal and external political competition**, Jena Economic Research Papers #2009-067. All rulers face political competition, both from rivals within their state, and from other states to which their subjects may exit. In a simple model, both kinds of competition are substitutes. Internal competition (democracy) benefits citizens by allowing them to replace rent-seeking rulers. But it also weakens these rulers’ incentives to invest. External competition forces rent-seeking rulers to invest so as to prevent migration. As a result, citizens are less willing to fight for democracy, and rulers are less eager to oppose it, when external competition is high. In a panel of countries, there are fewer changes towards democracy when states have low GDP relative to their neighbours.

Zapechelnik/Zultan: **Job Market Signaling and Job Search**, Discussion Paper #488. The Center for Rationality, The Hebrew University of Jerusalem. The high cost of searching for employers borne by prospective employees increases friction in the labor market and inhibits formation of efficient employer-employee relationships. It is conventionally agreed that mechanisms that reduce the search costs (e.g., internet portals for job search) lower unemployment and improve overall welfare. We demonstrate that a reduction of the search costs may have the converse effect. We consider a labor market in which workers can either establish a long-term relationship with an employer by being productive, or shirk and move from one employer to the next. In addition, the workers can signal to a potential employer their intention to be productive. We show that lower search costs lead to fewer employees willing to exert effort and, in a separating equilibrium, to more individuals opting to stay completely out of the job market and remain unemployed. Furthermore, we show that lower search costs not only deteriorate the market composition, but also impair efficiency by leading to more expensive signaling in a separating equilibrium.
Methods

Experimental Methods
By now laboratory experiments are a widely accepted method in economic research. Their reliability and relevance depends on some crucial assumptions like the independence of observations between experiments, proper understanding and credibility of the instructions, and the replicability of the results. A first study tests the independence of observations between experiments involving social dilemmas, and whether the number of past participations in such experiments affects people’s contribution rates.

Recent Work
Güth/Kliemt/Levati: Over-Stylizing experimental findings and theorizing with sweeping generality, in: Michael Baermann, Bernd Lahno (eds.), 2009, Perspectives in Moral Science. Contributions from Philosophy, Economics, and Politics in Honour of Hartmut Kliemt, Frankfurt: Frankfurt School Verlag, pp. 239–229. Human decision making is a process guided by different and partly competing motivations that can each dominate behavior and lead to different effects depending on strength and circumstances. “Over-stylizing” neglects such competing concerns and context-dependence, although it facilitates the emergence of elaborate general theories. We illustrate by examples from social dilemma experiments and inequality aversion theories that sweeping empirical claims should be avoided.

Levati/Mietinnen/Rai: The notion of control and experimental designs (work in progress). Most experimental studies use either a between-subjects design or a within-subjects design. We discuss the weaknesses of both these designs with respect to their inability to provide a controlled environment in the laboratory. A simple alternative design is proposed which overcomes some problems of these designs. Moreover, the proposed design does not suffer from any problem which is not already present in either the within-subjects or the between subjects design. We report the results from an experiment using the proposed design to answer some questions that have attracted continued attention in the literature on trust games.

Matthey/Regner: On the independence of observations between experiments, Jena Economic Research Papers # 2009-074. In experimental economics there exists a lively debate about the independence of observations. Although opinions on the issue differ widely, all concerns regard the independence of subjects’ behavior within one session or experiment. This paper attempts to shed some light on the independence of observations between experiments, if they are generated by the same subjects.

We analyze experiments with an allocation decision and find that participation in previous experiments tends to increase the amount subjects allocate to themselves. Hence, independence between experiments cannot be presumed if subjects participate repeatedly. The finding has implications for the interpretation of previous allocation decision results and deserves attention when running future experiments.

Econometric modelling

Recent Work

Buscha/Conte: A Bivariate Ordered Probit Estimator with Mixed Effects (work in progress). In this paper we discuss the derivation and application of a bivariate ordered probit model with mixed effects. The estimator estimates the distribution of the effect (gamma) of an endogenous
ordered variable on an explanatory ordered variable. By allowing gamma to vary over the sample population our estimator offers a more flexible parametric setting to recover the causal effect of an endogenous effect in an ordered choice setting. We use Monte Carlo simulation to examine the performance of our proposed estimator and apply this to a relevant example from the UK education literature.

## Other Topics

### Cooperative Game Theory

**Recent Work**
- Brink/Levínský/Zeleny: The balanced solution for cooperative transferable utility games (work in progress).

### Social Networks & Learning

**Recent Work**
- Bracht/Koessler/Winter/Ziegelmeyer: Fragility of Information Cascades: An Experimental Study Using Elicited Beliefs, Experimental Economics (conditional acceptance). This paper examines the occurrence and fragility of information cascades in two laboratory experiments. One group of low informed participants guess sequentially which of two states has been randomly chosen. In a matched pairs design, another group of high informed participants make similar guesses after having observed the guesses of the low informed participants. In the second experiment, participants’ beliefs about the chosen state are elicited. Bayesian rationality predicts the emergence of information cascades in the group of low informed participants and the systematic collapse of these cascades in the group of high informed participants. In line with the existing experimental evidence, we find that the behavior of low informed participants is qualitatively in line with Bayesian rationality which implies that information cascades systematically emerge in our experiments. The tendency of low informed participants to engage in cascade behavior increases with the number of identical guesses. Our main finding is that information cascades are not fragile. One-third of laboratory cascades are broken by high informed participants and the empirical probability of collapse averages to about 15% for the situations where five or more identical guesses are observed. Participants’ elicited beliefs are strongly consistent with their own behavior and suggest that the more identical guesses participants observe the more they believe in the state favored by those guesses.
- Güth/Levati/von Wangenheim: Shared interest versus repeated interaction: an experiment studying voluntary social exchange, Rationality and Society, forthcoming. Relations of mutual interdependence have been regarded as necessary for human cooperation to evolve. However, many studies in the social science indicate that repeated interaction suffices to establish cooperation. We examine this issue by means of a voluntary social exchange experiment where mutually interdependent players coexist with merely dependent ones. We systematically vary the degree of mutual interdependence and the length of the time horizon. According to our data, repetition of interactions is crucial for fostering cooperation, although people remain attentive to mutual interdependencies.
- Güth/Llorente/Ziegelmeyer: Inconsistent Incomplete Information: A Betting Experiment, Jena Economic Research Papers #2009-043. We study two person-betting games with incon-
sistent commonly know beliefs, using an experimental approach. In our experimental games, participants bet against one another, each bettor choosing one of two possible outcomes, and payoff odds are known at the time bets are placed. Bettors’ beliefs are always commonly known. Participants play a series of betting games, in some of which the occurrence probabilities of the two outcomes differ between bettors (inconsistent beliefs) while in others the same occurrence probabilities prevail for both bettors (consistent beliefs). In the betting games with consistent commonly knowledge beliefs, we observe that participants refrain from betting. In the betting games with inconsistent commonly known beliefs, we observe significant betting rates and the larger the discrepancy between the two bettors’ subjective expectations the larger the volume of bets. Our experimental results contrast with the existing evidence on zero-sum betting games according to which participants’ irrational inclination to bet is difficult to eliminate.


This paper studies the impact of belief elicitation on informational efficiency in experimental parimutuel betting markets with asymmetrically informed bettors. In one treatment, groups of eight participants play twenty repetitions of a sequential betting game. The second treatment is identical, except that bettors are observed by eight other participants who assess the winning probabilities of each potential outcome. In the third treatment, the same individuals make bets and assess the winning probabilities of the outcomes. Odds consistent with a favorite-longshot bias are observed in the first and second treatments, but not in the third treatment. Information aggregation is better in the third than in the other two treatments, and contrarian betting is almost completely eliminated by the belief elicitation procedure. Submitting beliefs improves betting decisions and making bets improves the accuracy of stated beliefs.

Levin/Peck/Ziegelmeyer: Coordination Failures in Dynamic Parimutuel Betting Markets (work in progress).

March/Ziegelmeyer: Behavioral Social Learning, 2009 (work in progress)

Pantz/Ziegelmeyer: Cooperative Networks: Theory and Experimental Evidence, Journal of Public Economics (under revision). We consider a modified pure public good game characterized by a pre-play negotiation stage, on which pairs of players can form binding cooperation commitments. As the introduced mechanism only supports pairwise rather than more inclusive commitments, it does not implement the efficient outcome. We theoretically derive the incentive compatible and efficient cooperative networks and evaluate the behavioral efficacy of the suggested mechanism to promote and stabilize cooperation. We present the results of two experiments. The first implemented environment follows the standard procedures for the voluntary contributions mechanism and establishes that neither repetition with an unknown end nor voluntary costly monitoring are behaviorally sufficient to induce cooperative outcomes. In the second experiment we introduce the pairwise commitment mechanism and we observe aggregate cooperation rates beyond those observed in the first experiment whatever the monitoring cost but also beyond the rates supported by the formation of incentive compatible networks when individual monitoring is relatively cheap. Groups differ largely in their ability to make use of the pairwise commitment mechanism: while some groups converge to full cooperation by managing to coordinate on the formation of efficient networks over time, both networks and cooperation rates unravel in other groups. An extended version of our theoretical setting with inequity averse players in the form suggested by Fehr and Schmidt (1999) captures the stylized facts of both experiments.

Pantz/Ziegelmeyer: Collaborative Networks in Experimental Triopolies, International Economic Review (under revision). This paper experimentally investigates the interdependence bet-
tween market competition and endogenously emerging inter-firm collaboration. We restrict attention to arrangements resulting from bilateral collaboration agreements that typically characterize real world applications in which the activity concerned is a core activity of the partnering firms and risk sharing, contract enforcement and protection of proprietary knowledge are central issues. We rely on a baseline model by Goyal and Joshi (2003) which formalizes the strategic formation of collaborative networks between firms that are competing on the same product market. This model predicts strategically stable patterns of inter-firm collaboration which are empirically observed but have been ruled out in the previous theoretical literature. In a two-stage game, firms decide to form bilateral collaboration links, whose formation is costly but reduces marginal production costs, before they compete in quantity on the market. We report the results of a series of experiments. The first experiment is designed as a straightforward theory-test simulating a one-shot interaction. We manipulate the cost of link formation in different treatments. Our data almost perfectly match the predictions for both stages whenever the link formation costs are extreme and the predicted networks symmetric (empty or complete networks). In the case of intermediate link formation costs where the predicted networks are asymmetric, subjects rarely form asymmetric networks. When they do, observed and predicted quantities are less in accordance than for symmetric networks. Collusion cannot account for the observed behavior. In our second experiment we reject the conjecture that these findings are driven out by experience in a setting in which we increase the implemented number of repetitions of the two-stage game.

Finally, in our third experiment we reduce the complexity of the setting by transforming the original two-stage game into a one-stage game where the formation of inter-firm networks directly determines firms’ payoffs. These are derived from assumed equilibrium market outputs on the here absent competition stage. In this case, observed networks coincide with the predicted ones indicating that experimental subjects’ limited capacity to foresee the outcomes of the market stage may be driving the earlier discrepancies.

Conte/Di Cagno/Sciubba: Strategies in Social Network Formation, Birkbeck Working Papers in Economics & Finance, BWPEF 0905. We run a computerised experiment of network formation where all connections are beneficial and only direct links are costly. Players simultaneously submit link proposals; a connection is made only when both players involved agree. We use both simulated and experimentally generated data to test the determinants of individual behaviour in network formation. We find that approximately 40% of the network formation strategies adopted by the experimental subjects can be accounted for as best responses. We test whether subjects follow alternative patterns of behaviour and in particular if they: propose links to those from whom they have received link proposals in the previous round; propose links to those who have the largest number of direct connections. We find that together with best response behaviour, these strategies explain approximately 75% of the observed choices. We estimate individual propensities to adopt each of these strategies, controlling for group effects. Finally we estimate a mixture model to highlight the proportion of each type of decision maker in the population.
2.2.3 List of Publications

Becker, Alice
Bidding in common value fair division games: The winner’s curse or even worse?, Jena Economic Research Papers #2009-090 (together with T. Brüänner).

Büchner, Susanne
Conventions for Selecting Among Conventions – An Evolutionary and Experimental Analysis, forthcoming in: Journal of Evolutionary Economics (together with W. Güth and L.M. Miller).

Chlaß, Nadine

Conte, Anna

Doghmi, Ahmed

Güth, Werner

Optimal gelaufen, einfach zufrieden oder unüberlegt gehandelt? – Zur Theorie (un)eingeschränkt rationalen Entscheidens (Thünen Lecture), Perspektiven der Wirtschaftspolitik, 10 (special issue), 2009, 75–100.


The Impact of Payoff Interdependence on Trust and Trustworthiness, German Economic Review, 9(1), 2008, 87–95 (together with M.V. Levati and M. Ploner).


Conventions for Selecting Among Conventions – An Evolutionary and Experimental Analysis, forthcoming in: Journal of Evolutionary Economics (together with S. Büchner and L.M. Miller).

Comment on Cristina Bicchieri and Alex Chavez: Behaving as Expected: Public information and Fairness Norms, forthcoming in ZiF-Mitteilungen (together with H. Kliemt).


Satisficing and prior-free optimality in price competition. forthcoming in: Economic Inquiry (together with M.V. Levati, and M. Ploner).


Games that Doctors Play: Two-layered agency problems in a medical system, forthcoming in: Dimensionen Öffentlichen Wirtschaftens, Dimensions of Public Economics – Strategies and
Policies Facing Uncertainty and Market Failure (eds. Annette Mehler and Uwe Cantner) Uni Jena, Festschrift in honor of Prof. R. Windisch (together with J. Behrens, H. Kliemt, and M.V. Levati).


Making the world a better place: experimental evidence from the generosity game, Jena Economic Research Papers #2009-071 (together with M.V. Levati, and M. Ploner).


Hugh-Jones, David


Internal and external political competition, Jena Economic Research Papers #2009-067.

Kataria, Mitesh

Koukoumelis, Anastasios

Kurino, Morimitsu

Levati, Maria Vittoria
The Impact of Payoff Interdependence on Trust and Trustworthiness, German Economic Review, 9(1), 2008, 87–95 (together with W. Güth and M. Ploner).
Satisficing and prior-free optimality in price competition, forthcoming in: Economic Inquiry (together with W. Güth, and M. Ploner).
Shared interest versus repeated interactions: an experiment studying voluntary social exchange’ Rationality and Society (together with W. Güth and G. von Wangenheim).
Games that Doctors Play: Two-layered agency problems in a medical system, forthcoming in: Dimensionen Öffentlichen Wirtschaftens, Dimensions of Public Economics – Strategies and Poli-


Planning ahead: Eliciting intentions and beliefs in a public goods game. Games and Economic Behavior, under revision (together with L. González).

Downsizing the Labor Force by Low and High Profit Firms - An Experimental Analysis, Jena Economic Research Papers #2008-087 (together with Ch. Paul).


Voluntary contributions with risky and uncertain marginal returns: the importance of the minimal value, Research Papers #2009-062 (together with A. Morone).

Making the world a better place: experimental evidence from the generosity game, Jena Economic Research Papers #2009-071 (together with W. Güth and M. Ploner).

Levinský, René


Li, King King


Matthey, Astrid

Do public banks have a competitive advantage?, forthcoming in: European Journal of Finance. Less is more: The influence of aspirations and priming on well-being, forthcoming in: Journal of Cleaner Production.


Miettinen, Topi

Otsubo, Hironori

Qui, Jianying
Unique Bid Auction Games, Jena Economic Research Papers #2009-005 (together with A. Rapoport, B. Kim, and W. E. Stein).
Understanding the Two Components of Risk Attitudes: An Experimental Analysis, Jena Economic Research Papers #2009-088 (together with E.-M. Steiger).

Popova, Vera

Regner, Tobias
Rydval, Ondřej

Steiger, Eva-Maria
Relating the two Dimensions of Risk Attitudes: An Experimental Analysis, Jena Economic Research Papers #2009-006 (together with J. Qiu).
Understanding the Two Components of Risk Attitudes: An Experimental Analysis, Jena Economic Research Papers #2009-088 (together with J. Qiu).

Tobias Uske

Weiland, Torsten

Ziegelmeyer, Anthony
2.3 Evolutionary Economics Group (EVO)

2.3.1 Research Profile

Processes of change occurring in the economy at the institutional, technological and commercial level are not only adaptive responses to exogenous shocks. Economic change has evolutionary character where it is driven from inside the economy by human inventiveness in problem solving and its multitude of motivations. The transformations of production and governance regimes thus brought about have shifted the constraints under which the economy operates. The consequences for economic growth, employment, and consumption are particularly visible in the longer term historical record. Research conducted in the Evolutionary Economics Group focuses on these systematic, endogenously caused forms of economic change and their consequences:

– The long-term transformation of the production technology with its effects on the changing division of labor, on employment, on income distribution (nationally and globally) and on the environment; the long term changes in the quality of human labor and its ever-rising knowledge requirements; the role of knowledge and energy in a naturalistic perspective on the economic accumulation process.

– The growth and qualitative change of consumption and the role of innovations in it; the learning processes in consumption based on “basic wants” and the knowledge of consumption technology; the implications of variable individual preferences for the way economic states and processes can be normatively assessed, given that traditionally, normative economics is based on the assumption of given and fixed preferences.

– Imitation, substitution, and clustering in industries; life cycle patterns in firms and industries and their regional distribution; the role of entrepreneurship and social models in the development and growth of firms, industries, and regional economic agglomerations.

– The emergence and change of economically relevant institutions in interaction with the newly developing technologies and their commercial potential; the dynamic interplay between informal and formal institutions; the implications of evolutionary change of institutions for economic growth and development.

The general principles applied by the Evolutionary Economics Group to the explanation of these phenomena are those of self-organization and evolution. As a consequence, many established abstraction strategies informed by the needs of the comparative-statics of the theory of economic value have to be rethought and adapted and the historical record of the changes in institutions, production, and consumption has to be acknowledged.

2.3.2 Research Topics

= Behavioral Theory of Changing Preferences and Consumer Behavior

Research focuses here on the behavioral explanation of subjective values and preferences in terms of innate needs, culturally contingent, learnt wants, and the intervening role of selective cognitive reflection. The theoretical framework is used to investigate:

– changing consumer preferences and the emergence of consumption norms;
– the effect of product innovations on consumption patterns;
– the implications of the plasticity of preferences for environmental policies;
– economic growth and qualitative change of consumption expenditures;
– implications of changing consumption patterns on industrial development and industry structure.
Theoretical considerations are appraised through case studies, such as those analyzing consumption of sugar, footwear, tourism, household appliances, food, etc. To empirically test our theoretical hypotheses and to uncover empirical regularities we mainly use econometric methods based on nonparametric techniques. We investigate how the income-expenditure relationship (Engel curves) changes over time and across different cultures and economies, such as industrialized and developing countries.

Our approach aims to account for empirical phenomena like satiation processes and market saturation and strengthens our understanding of economic growth by focusing on the forces of income growth driven changes of demand.

Recent Work
Buenstorf G. and C. Cordes: Can sustainable consumption be learned? A model of cultural evolution, Ecological Economics, 67, 2008, 646–657. This paper shows how sustainable consumption patterns can spread within a population via processes of social learning even though a strong individual learning bias may favor environmentally harmful products. We present a model depicting how the biased transmission of different behaviors via individual and social learning influences agents’ consumption behavior. The underlying learning biases can be traced back to evolved cognitive dispositions. Challenging the vision of a permanent transition toward sustainability, we argue that green consumption patterns are not self-reinforcing and cannot be locked in permanently.

Chai, A. and A. Moneta: Engel curves, Journal of Economic Perspectives, forthcoming. This paper revisits Ernst Engel’s (1857) original article in which he systematically investigated the relationship between consumption expenditure and income. While he is mainly remembered today for the discovery of Engel’s law, we highlight how Engel addressed in a particular way the issue of the relation between statistical empirical analysis and economic theorizing. Inspired by an inductive methodology, Engel’s method to infer empirical regularities made no a priori assumption on the estimated functional form and anticipates many aspects of current non-parametric regression methods. Furthermore, Engel devised a quasi-behavioral theory of consumption centered on the concept of wants to justify and explain his empirical results which he used to assess population living standards. Although incomplete, Engel’s consumption theory tackles a much neglected issue in consumption theory: what accounts for the manner in which consumption patterns change as income rises.

Chai, A. and A. Moneta: Comparing shapes of Engel curves, Economics Bulletin, 29(2), 2008, 1164–1170. We measure how different the shapes of Engel curves are across 59 commodity groups. The same analysis is carried out for their derivatives and variances. While Engel curves possess a relatively homogeneous shape, significantly more heterogeneity is present in derivatives and when particular sub-classes of income are considered.

Chai, A. and A. Moneta: Satiation, escaping satiation, and structural change: some evidence from the evolution of Engel curves, Papers on Economics and Evolution #0818, 2009. Certain properties of Engel curves have been linked to the occurrence of structural change in the economy (Pasinetti 1981, Metcalfe et al. 2006, Saviotti 2001). From an empirical perspective, however, very little has been done to examine (i) whether indeed satiation is a general property of Engel curves; (ii) whether the rate at which Engel curves converge to satiation may significantly change over time; and (iii) how stable Engel curves are across time such that it may be appropriate to use them to make predictions about structural change. Using data from the UK Family Expenditure Survey, this paper examines these three issues.

Coad, A.: On the distribution of product price and quality, Journal of Evolutionary Economics, 19(4), 2009, 589–604. We investigate the structure of demand by focusing on the dis-
tribution of prices within narrowly-defined classes of goods. We observe considerable heterogeneity products that are functionally similar but presumably of different ‘quality’ may sell at very different prices. We analyze distribution of prices for bottles of wine, used cars, houses in London and week-long holidays in Majorca, and observe in each case that the the resulting distribution is more skewed than the lognormal but less skewed than a Pareto distribution. We then present a theoretical model whereby products can distinguish themselves along multiple hedonic dimensions of ‘performance’, with these product attributes being random variables subject to multiplicative interactions. Variations of this model can reproduce a lognormal price distribution and a Pareto distribution as lower and upper bound benchmarks (respectively).

Coad, A., P. de Haan, and J.S. Woersdorfer: Consumer support for environmental policies, an application to purchases of green cars, Ecological Economics, 68 (7), 2009, 2078–2086. This paper focuses on how consumer motivation can be tapped in order to encourage the adoption of cleaner technologies. Consumers are heterogeneous — they may be guided by intrinsic motivation or extrinsic motivation. While information provision policies (such as the energy label for cars) may be effective in encouraging certain consumers to adopt green cars, financial incentive schemes (such as subsidies or fines) may be more persuasive for extrinsically-motivated consumers. We develop a dynamic theory of adoption of environmental innovations, in which information-provision policies are followed by financial incentives (first ‘carrot’, then ‘stick’ incentives). Analysis of a survey dataset of Swiss households observes considerable heterogeneity in terms of support of information-provision or financial incentive policies, in line with our conjectures. Our results will be of particular interest to policymakers interested in guiding consumers towards cleaner technologies.

Cordes, C.: Changing your role models: social learning and the Engel curve, Journal of Socio-Economics, 38 (6), 2009, 957–965. By relating Engel curves and social learning, we explain the existence of differently shaped Engel curves – an interesting phenomenon in the theory of demand. A formal approach to cultural learning within a population of consumers accounts for some cognitive foundations of these demand patterns. We find that a changing influence of an individual’s role models due to her increasing income, which entails new reference groups providing social identity, leads to the diffusion of new consumption behaviors. Thereby, the resulting Engel curves’ shape depends on the underlying learning dynamics. The approach contributes to an explanation of structural change and economic development.

Cordes, C.: The role of biology and culture in Veblenian consumption dynamics, Journal of Economic Issues, 43 (1), 2009, 115–141. This paper incorporates aspects of humans’ evolved cognition into a formal model of cultural evolution and scrutinizes their interactions with population-level processes. It is shown how the biased transmission of different kinds of behavior via cultural learning processes influences agents’ consumption behavior. Thereby, the model’s learning dynamics are capable of generating typical Veblenian consumption dynamics. Based on these insights, the paper then scrutinizes the role of humans’ biological heritage and Darwinian concepts in the development of economic theories in general. Moreover, the relation of the ontological basis of biological and cultural evolution is addressed.

Manig, C. and A. Moneta: More or better? Quality versus quantity in food consumption, Max Planck Institute of Economics, Jena: Papers on Economics and Evolution #0913, 2009. As people become richer they get the opportunity of consuming more but also qualitatively better goods. This holds for a basic commodity like food as well. We investigate food consumption in Russia, taking into account both expenditure and nutrition value in terms of calories. We analyze how food consumption patterns change with increasing income by estimating both “quantity Engel curves” and “quality Engel curves”. The former describe the functional dependence of calories consumed on total expenditure. The latter trace out the dependence of
price per calorie as a proxy for quality on total expenditure. We compare income elasticities of quantity with income elasticities of quality. In these Russian data for years 2000-2002 the reaction of quality to changes in income is significantly stronger than the reaction of quantity to income changes suggesting that Russian households tend to choose higher quality food items as income rises.

Windrum, P., T. Ciarli, and C. Birchenhall: Consumer heterogeneity and the development of environmentally friendly technologies, Technological Forecasting and Social Change 76(4), 2009, 533–551. The paper examines the effect of heterogeneous consumer demand on the generation and diffusion of environmentally benign technology paradigms. The history of the shift from horse-based to car-based transport provides the basis for an empirically grounded multi-agent model of sequential technology competitions. Firms compete on price, product quality, and the environmental sustainability of their products, and improve their market position through product innovation. The trajectory of product innovation is shaped by the distribution of heterogeneous consumer preferences with regards to quality, price, and the environmental impact of consumption. The distribution of consumer preferences determines whether cleaner designs are developed within a technology paradigm, whether new, more environmentally benign paradigms are developed, and whether these new paradigms replace older, environmentally harmful technology paradigms.

Windrum, P., T. Ciarli, and C. Birchenhall: Environmental impact, quality, and price: Consumer trade-offs and the development of environmentally friendly technologies, Technological Forecasting and Social Change, 76(4), 2009, 552–566. The paper examines the effect of heterogeneous consumer trade-offs - between environmental performance, quality of service characteristics, and price - on the generation and diffusion of environmentally benign technology paradigms. We find that the direction, timing, and environmental impact of new paradigms is shaped by the distribution of consumer trade-offs. Of key importance are the initial distributions of consumer preferences, and how those distributions evolve over time. This has serious implications environmental pollution, and for policy makers seeking to influence the ‘greening’ of consumer demands.

Witt, U.: Symbolic consumption and the social construction of product characteristics, Structural Change and Economic Dynamics, forthcoming. As recognized since long, consumption serving to signal social status, group membership, or self-esteem is a socially contingent activity. The corresponding expenditures are motivated mainly by the symbolic value they have for transmitting the signal. However, this presupposes some form of social coordination on what are valid, approved symbols. Unlike consumption not serving signaling purposes, the technological characteristics of the goods and services consumed may be secondary – what counts is their socially agreed capacity to function as a symbol. The paper discusses in detail the cognitive underpinnings of social agreement on consumption symbols and a model of their spontaneous emergence.

Woersdorfer, J.S.: When do social norms replace status-seeking consumption? An application to the consumption of cleanliness, Metroeconomica, 61(1), 2010, 35–67. Interdependencies in consumer behavior stem from either status-seeking consumption or compliance with social norms. This paper analyzes how a consumption act changes from a means to signal the consumer’s status to a means of norm compliance. It is shown that such a transformation can only be understood when consumer motivations other than social recognition are taken into account. We depict norm emergence as a learning process based on changing associations between a specific consumption act and widely shared, non-subjectivist consumer needs. Our conjectures are illustrated by means of a case study: the emergence of the cleanliness norm in the 19th century.
Normative Implications of the Behavioral Theory of Preferences

We try to enrich the behavioral basis of welfare economics by replacing the rationality-based axiomatic structure, that proves unable to clarify normative issues brought up by the fact that preferences tend to be inconsistent and variable over time.

A first set of questions examines, from a general contractarian perspective, the normative dimension of changing preferences. Is it possible to construct a non-axiomatic, empirically informed contractarian toolset which may be used in the development of practical policy advice? Given what we know about the factors driving preference learning, in particular the structure and satiation dynamics of human wants, what does it tell us about human welfare? Does an empirically informed account of welfare provide the tools to deal with the problem of adaptive preferences, without resorting to ‘objectivist’ accounts of well-being?

The second set of questions deals with alternative concepts and measures of well-being resulting from a behavioral evolutionary approach to normative economics. This involves a reconstruction of sensory utilitarianism and a modern reinterpretation of its notion of happiness; psychologically informed subjective well-being measures, and a behavioral evolutionary enrichment of Sen's capabilities and functionings approach. The different welfare concepts implied are then used to discuss the normative relevance of adaptation and satiation processes and of how the innovativeness of economies affects individual and social welfare.

Recent Work

Binder, M.: Elements of an Evolutionary Theory of Welfare, London: Routledge, forthcoming. It has always been an important task of economics to assess individual and social welfare. In theoretical welfare economics, the measuring rod for welfare is the satisfaction of the given and fixed preferences of the individual. Behavioural economics has brought to light a fundamental problem of this view by pointing to inconsistencies and context dependencies of the preferences revealed in human behaviour. From this results a vexing problem for normative economics: if preferences are no longer consistent, the question emerges whether they can still fulfil their role as a measuring rod for welfare, or whether a different measuring rod should be found.

This monograph contributes to a train of thought that proposes, in a Benthamite spirit, to go beyond the level of preference and turn to the hedonistic foundations of utility as a measuring rod for welfare. Its aim is to provide welfare theory with stronger behavioural foundations. A second goal lies in an explicitly evolutionary focus, connecting welfare with a dynamic theory of preference learning. While preferential change is a major welfare-theoretic challenge from an evolutionary point of view, it has a broader relevance and extends to welfare economics in general. Within an overarching framework of an evolutionary theory of welfare, two hedonistic notions of well-being are suggested, based on insights from various behavioural and neurosciences. The normative implications of such an account are explored, with an emphasis on welfare dynamics that relate to changes in ‘enjoyment’ and ‘suffering’ such as hedonic adaptation effects. Other important phenomena discussed concern normative distinctions based on different satiation patterns of preferences as well as a behaviourally informed understanding of the conditions under which preference formation is ‘autonomous’.

The advantages of such an approach are threefold. First, the groundwork is laid for the resulting welfare implications by basing the positive parts of this work on empirically well-established assumptions. Second, the informational basis of such a welfare concept is considerably broadened and a purely formal, subjectivistic stance avoided. Third, the approach is decidedly evolutionary, shedding new light on the normative implications of different preference learning dynamics. Preference and enjoyment dynamics are coherently integrated, thus connecting strands
of literature that have so far been discussed largely separately. In consequence, a more realistic account of human behaviour is given.

Binder, M.: Some considerations regarding the problem of multidimensional utility, Friedrich-Schiller University, Jena: Jena Economic Research Papers, #2009–099. The concept of utility is often used in ambiguous ways in economics, from having substantive psychological connotations to being a formal placeholder representing a person’s preferences. In the accounts of the early utilitarians, it was a multidimensional measure that has been condensed during the marginalist revolution into the unidimensional measure we know today. But can we compare different pleasures? This paper assesses the evidence from psychology and neurosciences on how to best conceive of utility. It turns out that empirical evidence does not favor a view of multidimensional utility. This does not eliminate the possibility to make a normative argument supporting a multidimensional notion of utility.

Binder, M. and T. Broekel: Applying a non-parametric efficiency analysis to measure conversion efficiency in Great Britain, Friedrich-Schiller University, Jena: Jena Economic Research Papers #2009–100. In the literature on Sen’s capability approach, studies focussing on the empirical measurement of conversion factors are comparatively rare. We add to this field by adopting a measure of conversion efficiency that captures the efficiency with which individuals convert their resources into achieved functioning. We use a nonparametric efficiency procedure borrowed from production theory and construct such a measure for a set of basic functionings, using data from the wave 2006 of the British Household Panel Survey (BHPS). In Great Britain, 49.88% of the individuals can be considered efficient while the mean of the inefficient individuals reaches one fifth less functioning achievement. An individual’s conversion efficiency is positively affected by getting older, being self-employed, married, having no health problems and living in the London area. On the other hand, being unemployed, separated/divorced/widowed and (self-assessed) disabled decrease an individual’s conversion efficiency.

Binder, M. and A. Coad: An examination of the dynamics of happiness using vector autoregressions, Max Planck Institute of Economics, Jena: Papers on Economics & Evolution #0904. We use a panel vector autoregressions model to examine the coevolution of changes in happiness and changes in income, health, marital status as well as employment status for the British Household Panel Survey (BHPS) data set. This technique allows us to simultaneously analyze the impact of the aforementioned factors on each other. We find that increases in happiness are associated with subsequent increases in income, marriage, employment, and health variables, while increases in these life-domain variables (except health) tend to be followed by decreases in happiness in subsequent periods, suggesting adaptation dynamics in all domains. These findings are quite robust to different model specifications.

Schubert, C.: Is novelty always a good thing? Towards an evolutionary welfare economics, Max Planck Institute of Economics, Jena: Papers on Economics & Evolution #0903, 2009. Schumpeter’s and Hayek’s view of market coordination as being not about efficiency, but about endogenous change and never-ending discovery has been increasingly recognized even by the mainstream of economics. Underlying this view is the notion of creative learning agents who bring about novelty. We argue that apart from the challenges it poses for positive theorizing, novelty (be it technological, institutional or commercial) also has a complex normative dimension that standard welfare economics is unsuited to deal with. We show that welfare economics has to be reconstructed on the basis of evolutionary-naturalistic insights into the way human agents bring about, value and respond to novelty-induced change.

Schubert, C.: Darwinism in economics and the evolutionary theory of policy-making, Max Planck Institute of Economics Jena: Papers on Economics and Evolution #0910, 2009. According to the advocates of a “Generalized Darwinism” (GD), the three core Darwi-
nian principles of variation, selection and retention (or inheritance) can be used as a general framework for the development of theories explaining evolutionary processes in the socio-economic domain. Even though these are originally biological terms, GD argues that they can be re-defined in such a way as to abstract from biological particulars. We argue that this approach does not only risk to misguide positive theory development, but that it may also impede the construction of a coherent evolutionary approach to “policy implications”. This is shown with respect to the positive, instrumental and normative theories such an approach is supposed to be based upon.

Schubert, C.: Welfare creation and destruction in a Schumpeterian world, Max Planck Institute of Economics Jena: Papers on Economics and Evolution #0914, 2009. Economic change, while creating innovation and growth, at the same time generates “gales of creative destruction”. It is still largely unclear what this concept implies for the task of assessing welfare (and, correspondingly, the need for and scope of policy-making) in a novelty-generating, knowledge-based economy. By examining Joseph Schumpeter’s explicit and implicit reasoning on welfare and linking his thoughts to recent ideas, within normative economics, about how to redefine “well-being” when preferences are variable and inconsistent, we argue that in an evolving economy, well-being should not be conceptualized in static preference-satisfaction terms, but rather in partly procedural terms of “effective preference learning”.

Witt, U. and C. Schubert: Constitutional interests in the face of innovations: How much do we need to know about risk preferences? Constitutional Political Economy, 19, 203–225, 2008. In constitutional political economy, the citizens’ constitutional interests determine the social contract that is binding for the post-constitutional market game. However, following traditional preference subjectivism, it is left open what the constitutional interests are. Using the example of risk attitudes, we argue that this approach is too parsimonious with regard to the behavioral foundations to support a calculus of consent. In face of innovative activities with pecuniary and technological externalities in the post-constitutional phase, the citizens’ constitutional interests vary with their risk preferences. To determine what kind of social contract is generally agreeable, specific assumptions about risk preferences are needed.

Social Cognitive Learning, Entrepreneurship, and the Theory of the Firm
Focus is here on the organizational form of the firm and the social-cognitive dynamics driven by its growth processes entrepreneurial perspective. More in particular we explore:
– the changing characteristics of entrepreneurial leadership in growing enterprises and the accompanying transformations of corporate culture;
– how the behavior of the organization members can be shaped, motivated, and coordinated so that firms become cooperative production systems based on human social predispositions that allow to keep in check opportunism;
– how the biased transmission of cultural contents via social learning processes within the firm influences the employees’ behavior and the performance of the firm and how these biases can be influenced by entrepreneurial leadership.

Recent Work
Bhaduri, S. and H. Worch: Past experience, cognitive frames, and entrepreneurship: Some econometric evidence from the Indian pharmaceutical industry, Max Planck Institute of Economics Jena: Papers on Economics & Evolution, #0804, 2008. The theoretical literature identifies three important entrepreneurial dimensions, namely discovering new opportunities, responsiveness to uncertainty, and coordination of a firm. In the empirical literature, past experience
has been identified as having an important influence on organizational behavior. This literature, however, focuses predominantly on the impact of experience on new opportunities using a resource-based view and human capital perspective. In contrast, we draw upon the cognitive science literature to argue that past experience shapes an entrepreneur’s cognitive frame, and, hence, influences entrepreneurship in a more holistic manner. We provide econometric evidence of the impact of past experience on all three entrepreneurial dimensions from the small scale Indian pharmaceutical enterprises.

Cordes, C., P.J. Richerson, R. McElreath, and P. Strimling: A naturalistic approach to the theory of the firm: The role of cooperation and cultural evolution, Journal of Economic Behavior and Organization, Vol. 68, No. 1, 2008, 125–139. One reason why firms exist, this paper argues, is because they are suitable organizations within which cooperative production systems based on human social predispositions can evolve. In addition, we show how an entrepreneur, given these predispositions, can shape human behavior within a firm. To illustrate these processes, we will present a model that depicts how the biased transmission of cultural contents via social learning processes within the firm influence employees’ behavior and the performance of the firm. These biases can be traced back to evolved social predispositions. Humans lived in tribal scale social systems based on significant amounts of intra- and even intergroup cooperation for tens if not a few hundred thousand years before the first complex societies arose. Firms rest upon the social psychology originally evolved for tribal life. We also relate our conclusions to empirical evidence on the performance and size of different kinds of organizations. Modern organizations have functions rather different from ancient tribes, leading to friction between our social predispositions and organization goals. Firms that manage to reduce this friction will tend to function better.

Scheer, S.: The entrepreneur as business leader – Cognitive leadership in the firm. Cheltenham: Edward Elgar, 2009. An entrepreneur who decides to found a firm and to hire employees has to tackle two central problems: their employees’ coordination and motivation. Drawing on findings from cognitive, social and organizational psychology, this book sheds new light on the relevance of bounded rationality and social learning in the process of leadership. This book bridges some of the missing links that can be identified within the theory of cognitive leadership and demonstrates how its scope can be broadened by investigating group level processes, and how they can have an impact on the socialization of newcomers. Combining both theoretical and empirical explorations, this book is of great significance to anyone from a managerial or psychological background that is interested in leadership.

Witt, U.: Emergence and functionality of organizational routines – An individualistic approach, Max Planck Institute of Economics Jena: Papers on Economics and Evolution #0924. The functionality of organizational routines, i.e. the factual value for accomplishing their purposes, is an important constraint on the capabilities an organization can bring to bear on its operations. Often falling short of its potential, the actual make-up of organizational routines invites managerial attention. Of the criteria by which the functionality can be assessed, the generic one discussed in this paper is whose interests this make-up serves. This is determined by the conditions under which organizational routines emerge, particularly the cognitive and motivational attitudes of the organization members involved at this stage. By uncovering how these enhance or impair a routine’s functionality for the organization’s goals, the paper corroborates the relevance of an individualistic approach in organizational theory.

Dynamics of Firm Growth and Industry Evolution
Several research projects under this topic explore the relationships between firm performance, firm growth, and the evolution of industry structure. We seek to better understand:
– the statistical properties of the distribution of firm growth rates and their determinants;
– the regularities in entry rates, innovation activities, and firm survival in evolving industries;
– the effects of innovation dynamics, product heterogeneity, and demand structure on the number and composition of producers over the industry life cycle;
– how firm capabilities related to pre-entry experience can be identified together with their impact on firm performance and survival;
– the effects of founder-succession on strategy and firm survival;
– the interactions between private-sector firms, public research and public policy measures in sectoral and regional innovation systems;
– differences in endogenous regional sources of potential entrants explain interregional differences in entry rates (thus limiting the role of agglomeration economies);
– spin-off entrepreneurship as a key driver of spatially concentrated entry giving rise to self-augmenting regional dynamics.

Recent Work

Bottazi, G., A. Coad, N. Jacoby and A. Secchi: Corporate growth and industrial dynamics: Evidence from French manufacturing, Applied Economics, DOI 10.1080/00036840802400454. This work explores basic properties of the size and growth rates distributions of firms at the aggregate and disaggregate levels. Using an extensive dataset on French manufacturing firms, we investigate which properties of firm size distributions and growth dynamics characterize the aggregate dynamics and are, at the same time, robust under disaggregation. Our analysis is based on nonlinear robust regression methods which have never been applied before to this kind of data. The growth rates distributions we observe are well described by a Subbotin distribution with a shape parameter significantly lower than 1, suggesting a noticeable departure from the Laplace behaviour reported in previous works on Italian and the US data. At the same time, the variance of growth rates depends negatively on size and the relationship does not seem to be linear, with larger firms possibly displaying lower variability in their growth dynamics. At the disaggregate level, we observe significant heterogeneity in the firm size distributions across sectors, while the shape of the sectoral growth rates density displays a surprising degree of homogeneity.

Buenstorf, G.: Opportunity spin-offs and necessity spin-offs, International Journal of Entrepreneurial Venturing, 1, 2009, 22–40. This paper proposes a new distinction between two types of spin-offs, which is based on the events triggering spin-off formation. Spin-offs induced by newly discovered opportunities are distinguished from necessity spin-offs organised to escape deteriorating job conditions. An empirical analysis of spin-offs in the German laser industry traces differences in the performance and determinants of the two spin-off types. Necessity spin-offs are important to limit the devaluation of individual human capital by the competitive market process.

Buenstorf, G. and D. Fornahl: B2C – Bubble to cluster: The dot.com boom, spin-off entrepreneurship, and regional agglomeration, Journal of Evolutionary Economics, 19, 2009, 349–378. This article studies entrepreneurial activities emerging out of one of Germany’s most prominent dot-com firms, Intershop, a maker of e-commerce software. We show that Intershop spawned about 40 new ventures. Most spin-offs entered locally, giving rise to a small but growing software cluster and counteracting the job losses that accompanied the parent firm’s drastic downsizing after 2000. We trace the knowledge transfer from Intershop to the spin-offs and relate it to recent theorizing on the spin-off process as well as spin-off-based cluster formation. The Intershop case suggests that temporarily successful dot-coms could exert lasting effects on regional development.
Buenstorf, G. and M. Geissler: *The origins of entrants and the geography of the German laser industry*, Max Planck Institute of Economics Jena: Papers on Economics and Evolution #0814, 2008. Entry into an industry often clusters in regions where the industry is already concentrated, which is suggestive of agglomeration economies. Regional public research activities may exert another attracting force on entrants into science-based industries. Empirically these proximity effects are confounded by other influences on where entrants originate and locate. This paper begins to disentangle the effects of agglomeration, public research, and the supply of capable entrants for the German laser industry. Our findings indicate that the industry’s geography was shaped by the local availability of potential entrants rather than localization economies. The impact of public research increased over time.

Buenstorf, G. and S. Klepper: *Heritage and agglomeration: the Akron tyre cluster revisited*, The Economic Journal, 119, 2009, 705–733. We use new data on the location and background of entrants into the US tyre industry to analyse why the industry became so regionally concentrated around Akron, Ohio, a small city with no compelling advantages for tyre production. We analyse where the Ohio entrants originated and conduct various analyses of how proximity to other tyre firms affected the longevity of tyre producers. We also examine how the heritage of the Ohio entrants influenced their origin and longevity. Our findings suggest that the Akron tyre cluster grew primarily through a process of organisational reproduction and heredity rather than through agglomeration economies.

Buenstorf, G. and S. Klepper: *Submarket dynamics and innovation: The case of the U.S. tire industry*, Max Planck Institute of Economics Jena: Papers on Economics and Evolution #0915, 2009. Beginning in 1922, the rate of exit of U.S. tire producers increased sharply and the industry began a severe and protracted shakeout. Just five years earlier, the tire industry experienced a surge in entry that led to a rise of over 80% in the number of producers. We propose an explanation for this episode based on the idea of industry submarkets, which we incorporate in a model of shakeouts. We test this theory and alternative explanations for the surge in entry and exit and the shakeout using a novel data set on patenting in tires and production in the early 1920s of the cord tire, a key innovation we feature in our theory. Our analysis suggests that the development of a new submarket can open up opportunities for entry but also stimulate innovation and in the process reinforce the advantages of the leading incumbents, accentuating the shakeout of producers.

Coad, A. and W. Hölzl: *On the autocorrelation of growth*, Journal of Industry, Competition and Trade, 9(2), 2009, 139–166. This paper studies the serial autocorrelation of annual growth rates in employment for selected Austrian service industries over a 30-year rates period using quantile regression techniques. The autocorrelation of growth rates provides important information on firms growth processes. We find that the growth patterns of micro firms are strikingly different from the growth patterns of small, medium-sized and larger firms. First, we do find a positive dependency of growth on size for growing micro firms, while this relationship is negative for the other size groups. Second, growing micro firms are subject to negative autocorrelation of annual growth rates making sustained growth a very rare occurrence, while larger growing firms usually display a positive autocorrelation suggesting that high growth episodes of larger firms stretch over a longer time horizon. This indicates that the growth of micro firms in particular is characterized by a rather lumpy growth profile. Furthermore, we find that the autocorrelation patterns are asymmetric with regard to decline and growth.

Coad, A.: *The growth of firms: a survey of theories and empirical evidence*, Edward Elgar, 2009. Research into firm growth has been accumulating at a terrific pace, and Alex Coad’s survey of this multifaceted field provides a detailed, comprehensive overview of the latest developments.

Much progress has been made in empirical research into firm growth in recent decades due to factors such as the availability of detailed longitudinal datasets, more powerful computers and
new econometric techniques. This book provides an up-to-date catalogue of empirical work, as well as a coherent theoretical structure within which these new results can be interpreted and understood. It brings together a large body of recent research on firm growth from a multidisciplinary perspective, providing an up-to-date synthesis of stylized facts and empirical regularities. Numerous empirical findings and theories of firm growth are also surveyed and compared in order to evaluate their validity.

Drawing on a vast and diverse body of research, this book will prove invaluable to students, academics, policy makers and practitioners with a need to keep abreast of studies in industrial organization, firm growth and management.

Coad, A.: Firm growth and scaling of growth rate variance in multiplant firms, Economics Bulletin, 12 (9), 2008, 1–15. While Gibrat’s Law assumes that growth rate variance is independent of size, empirical work has usually found a negative relationship between growth rate variance and firm growth. Using data on French manufacturing firms, we observe a relatively low, but statistically significant, negative relationship between firm size and growth rate variance. Furthermore, we observe that growth rate variance does not decrease monotonically the more plants a firm possesses, which is at odds with a number of theoretical models.

Coad, A.: Distance to frontier and appropriate business strategy, Max Planck Institute of Economics Jena: Papers on Economics and Evolution #0807, 2008. This paper is an empirical test of the hypothesis that the appropriateness of different business strategies is conditional on the firm’s distance to the industry frontier. We use data on four 2-digit high-tech manufacturing industries in the US over the period 1972–1999, and apply semi-parametric quantile regressions to investigate the contribution of firm behavior to market value at various points of the conditional distribution of Tobin’s q. Among our results, we observe that innovative activity, measured in terms of R&D expenditure or patents, has a strong positive association with market value at the upper quantiles (corresponding to the leader firms) whereas the innovative efforts of laggard firms are valued significantly less. Laggard firms, we suggest, should instead achieve productivity growth through efficient exploitation of existing technologies and imitation of industry leaders. Employment growth in leader firms is encouraged whereas growth of backward firms is not as well received on the stock market.

Coad, A. and R. Rao: Innovation and firm growth in high-tech sectors: A quantile regression approach, Research Policy, 37 (4), 2008, 633–648. We relate innovation to sales growth for incumbent firms in high-tech sectors. A firm, on average, experiences only modest growth and may grow for a number of reasons that may or may not be related to innovative activity. However, given that the returns to innovation are highly skewed and that growth rates distributions are heavy-tailed, it may be misleading to use regression techniques that focus on the ‘average effect for the average firm’. Using a quantile regression approach, we observe that innovation is of crucial importance for a handful of ‘superstar’ fast-growth firms.

Coad, A. and R. Rao: Firm growth and R&D expenditure, Economics of Innovation and New Technology, forthcoming. We apply a panel vector autoregression model to a firm-level longitudinal database to observe the co-evolution of sales growth, employment growth, profits growth and the growth of research and development (R&D) expenditure. Contrary to expectations, profit growth seems to have little detectable association with subsequent R&D investment. Instead, firms appear to increase their total R&D expenditure following growth in sales and employment. In a sense, firms behave ‘as if’ they aim for a roughly constant ratio of R&D to employment (or sales). We observe heterogeneous effects for growing or shrinking firms, however, suggesting that firms are less willing to reduce their R&D levels following a negative growth shock than they are willing to increase R&D after a positive shock.
Coad, A., R. Rao, and F. Tamagni: *Growth processes of Italian manufacturing firms*, Friedrich-Schiller-University Jena: Jena Economic Research Papers #2008-39. We apply a reduced-form vector autoregression model to analyze the growth processes of Italian manufacturing firms, 1989–1997. We focus in particular on lead-lag associations describing the coevolution of employment growth, sales growth, growth of profits and labour productivity growth. Employment growth precedes sales growth and growth of profits, and in turn sales growth is also associated with subsequent profits growth. There appears to be little feedback of either sales or profits on employment growth, however. There is no clear association of employment growth with subsequent changes in labour productivity, although at the second lag there is a small negative association. Productivity growth, however, is positively associated with subsequent growth of employment and sales. Quantile autoregressions find asymmetries between growth processes for growing and shrinking firms.

Coad, A. and J. P. Tamvada: *The growth and decline of small firms in developing countries*, Max Planck Institute of Economics Jena: Papers on Economics and Evolution # 0808, 2008. Empirical work on micro and small firms has focused on developed countries. The little work that exists on developing countries is all too often based on small samples taken from ad hoc questionnaires. The census data we analyze are fairly representative of the structure of small business in India. Consistent with prior research on developed countries, size and age have a negative impact on firm growth in the majority of specifications. The decision to export is a double-edged sword – if successful it can accelerate the growth of successful firms, but it can also increase the probability of decline. While proprietary ownership results in faster growth, enterprises managed by women are less likely to grow and more likely to decline. Although many small firms are able to convert knowhow into commercial success, we find that many others do not have any technical knowledge and some are unable to use it to their benefit.

Fornahl D, and C. Guenther: *Persistence and change of regional industrial activities – Impact of diversification in the German machine tool industry*, European Planning Studies, forthcoming. The paper investigates stability and change of regional economic activities in the long-run. As the unit of analysis we selected the machine tool industry in West Germany for the years 1953 to 2002. We spot a strong variance in the activities between the different regions. These differences are relatively stable over time and the regional activities are rather path-dependent. Nevertheless, the paper also identifies changes in the level of activities. As the main driving factors for these changes we examine the effect of regional diversification strategies. We find that those regions pursuing a general diversification strategy have a higher likelihood to grow than regions which are specialising. Furthermore, diversification into totally new technological and product fields is only beneficial under specific circumstances based on technological and market developments. Hence, in most cases a broad diversification is superior to one focusing on new state-of-the-art technological fields.

### Structural Change, Growth and Development

Long run transformations in the structure of economies are generated by different mechanisms. We analyze some of these mechanisms from a technological (production technology, organization of production, intermediate inputs) and a demand-related (composition of consumption, income distribution) perspective. This research is structured as follows:

– we address the relevance of structural change for explaining growth rates differentials between economies, the effect of wage policy, the impact of demand changes on the division of labor;
we model the aggregation step in production theory from the microlevel to the macro level and trace on this basis how the organization of production relates to the organization of the industry and the firm organization;
we explore the changing role of the factors of in historical time.

Recent Work

Ciarli, T., A. Lorentz, M. Savona, and M. Valente: The effect of consumption and production structure on growth and distribution. A micro to macro model, Metroeconomica, 61(1), 2010, 180–218. The paper offers a theoretical analysis of long run economic growth as an outcome of structural changes. We model the microeconomic behaviour of firms in the final goods and capital sectors, and the evolution of classes of workers/consumers. We carefully craft economic behaviour onto empirical evidence, and solve the model numerically. The results illustrate the microeconomic properties of the simulated growth patterns. In particular, we observe and explain the interactions between technological change, firm organisation, income distribution, consumption behaviour and growth. We confirm the relevance and interdependence of these structural changes, and underline their microeconomic sources.

Ciarli, T., A. Lorentz, M. Savona, and M. Valente: Structural change of production and consumption: A micro to macro approach to growth and income distribution, LEM Working Paper Series 2008/07, Sant’Anna School of Advanced Studies, Pisa. We propose a theoretical model/framework for the analysis of the concomitant effects of structural changes in both production and consumption, on long run economic growth and income distribution.

To accomplish with such a broad aim, we develop an evolutionary model with agent-based micro-foundations. At the core of the model we take into account: (i) firm-level organisational structure and technological changes; (ii) the impact of technology and organisation on the structure of earnings and income of workers/consumers; and (iii) the consequent changes in consumption patterns. The model thus articulates the links between production and organisation structures on the supply side, and the endogenous evolution of income distribution and consumption patterns on the demand side.

We first analyse the model’s properties, via numerical simulations, for a given setting of the structural conditions; we graphically show that the main determinants of endogenous economic growth and take-off are the structural variables.

We then analyse the space of the parameters that determine the structural conditions; simplified scenarios are identified via numerical simulations, in which patterns of aggregate growth are obtained as an emerging property of different structures of firms’ organisation and production, functional composition of employment, income distribution and patterns of consumption. The main findings of the paper can be summarised as follows: First, firms’ organisational and earning structures affect economic growth both via the level of aggregate demand and via disparities of income structures. Second, organisational structures that induce the spur of a large number of firms organisational tiers, as well as large and uneven productivity gains embodied in capital goods, lead to higher GDP levels but are also responsible for higher income inequality. Unequal distribution, in turn, might have a negative feedback effect by slowing down GDP growth. Finally, product variety and heterogeneity in consumers preferences drastically affect the growth and distribution patterns, but both conditions must exist to be effective.

Ciarli, T., R. Leoncini, S. Montresor and M. Valente: Technological change and the vertical organisation of industries, Journal of Evolutionary Economics 18(3–4), 2008, 367–387. The vertical scope of a firm, that is, which components or segments of the production processes are kept in-house and which are outsourced, is variously considered as depending on cost and/or technological conditions. Most of the literature focuses on the incentives for an indi-
vidual firm facing exogenous competition and technological opportunities. In this paper we consider the problem from the perspective of the whole industry: in which respect firms organisational behaviour depends on the industry technological evolution and aggregate structure, and how firms innovation and organisational behaviour affect the industry structure. We build an evolutionary simulation model of an industry where competitors decide the number of internally produced components. We relate the industry average value of market outsourcing to the technological conditions prevalent in the industry. The results from the model shed light on a number of (apparently) contradictory suggestions in the economic and management literature.

Ciarli, T., R. Leoncini, S. Montresor and M. Valente: Linking technological change to organisational dynamics: some insights from a pseudo-NK model, in: R. Leoncini and Nicola De Liso, (eds.), Internationalization, technological change and the theory of the firm, Routledge: London, forthcoming. This Chapter is the first step of a broader research project which investigates industrial dynamics by focusing on how firms are able to understand and manage the knowledge about their production set. In particular, it addresses their capacity to cope with the trade-off they face between the exploration of new technological possibilities and the exploitation of those (market-mediated) opportunities they are already aware of.

The issue at stake is an important one, which is related to at least other three. The first is the interrelationship between technology and organization. In particular, the question is how innovative efforts impact on firms performance and the way in which the various aspects of innovative activity is resolved within or outside the firm’s boundaries.

The second issue is the management of strategic decisions and the way firms determine the business they are able to profitably engage into. In particular, the question is how firms, under specific behavioral assumptions, and with the availability of the material and immaterial resources they can mobilize, learn and produce new knowledge to implement efficient production processes.

Finally, there is the economic systems’ dynamics and networking. Indeed, firms coordinate their activities in many different ways, e.g. upon explicit contracts, with long-term “market” relations, or with explicit forms of co-operation, and this crucially affects their techno-economic behavior.

After discussing how these issues are related, and how this relation can be modeled, we introduce a complex agent-based model and investigate its implications by means of a set of simulation runs.

Ciarli, T., R. Leoncini, S. Montresor and M. Valente: Product architecture and firm organisation: the role of interfaces, in: P. Ahrweiler (ed.), Innovation in complex social Systems, Routledge: London, forthcoming. This paper addresses the role of interfaces in explaining the relation between product architecture and the organisational choices of firms involved in technological competition. We argue that such a relation is more complex than often claimed in the literature on the duality between product and organisational architectures, and we challenge the mirroring hypothesis. We show that the trade-off between competence building and transaction costs is a function of the product architecture, and of the interfaces that define it. We build on Ciarli et al. (2008), which proposes a pseudo – NK simulation model to explain the relation between product architecture and firm organisation, and extend the analysis to the role of interfaces. The simulation results show how the firms’ organisation vary with the number and the type of interfaces mediating the relationships between the components themselves. Our main results show that interfacing modules become the pivotal elements of technological search in non modular environments. As a consequence, interfaces are more difficult to innovate, but provide the largest returns from innovation. We thus confirm the intuition that interfaces are the
main elements in defining a product standard. Finally, we show that interfaces are likely to be produced by a small sub-set of firms, whose innovative activity turns out to have a considerable impact on the production system.

Cordes, C.: **Long-term developments in human labor and their political implications**, Review of Economic Philosophy, forthcoming. This paper provides an analysis of the qualitative changes in human labor which are in mutual dependence with the evolution of the epistemic base of technology. The role of human capabilities in long-term economic development is depicted and a taxonomy of human labor inputs is suggested. A recurrent historical pattern is identified: humans learned to successively transfer certain qualities of labor to machines. Subsequently, the requirements on labor changed, which is reflected in the complementary qualitative structure of capabilities employed in production. This approach accounts for contradictory patterns in work organization found by different strands of thinking about skill change in technological advancement. Furthermore, it is shown that these processes can trigger self-reinforcing economic developments. Some political implications are discussed.

Lorentz, A.: **Sectoral specialisation and growth rates differences among integrated economies**, Electronic Journal of Evolutionary Modelling and Economic Dynamics, forthcoming. This paper analyses the emergence of sectoral specialisation and its effects on growth rate differences providing an alternative approach to endogenous growth processes. To achieve this, we first investigate the conditions leading to sectoral specialisation as an emergent property from the dynamics generated by the model. Second, the paper investigates the relationship between specialisation patterns and growth rate differences among economies, where as well, growth rates differences are treated as an emergent property. The framework developed relies on a Kaldorian growth model with evolutionary micro-founded technical change à la Nelson and Winter (1982). The paper develops a multi-sectoral growth model. Following the Kaldorian tradition economic growth is driven by the aggregate demand dynamics, constrained by the balance of payment. Technical change modeling follows the evolutionary literature on growth and industrial dynamics. Firms production techniques are build on the accumulation of capital vintages, developed through an R&D activity. Firms and therefore economies are subject to selection mechanisms through sector-wide replicator dynamics. Two regimes emerge from the simulation, the first is linked to technology dynamics and selection mechanisms and the second is linked to the evolution of the demand structure and demand characteristics. First, specialisation emerges from the heterogeneity in technical change generated by the micro-dynamics. The latter are amplified by the inter-sector selection process provided at the macro-level through wage dynamics. These mechanisms also generate growing differences in GDP growth rates. Second, demand factors influence the concentration of production in a limited number of sectors, this even when neutralising the effect of technical change. Demand factors also exert a major effect on patterns of growth rates differences. For each regimes, specialisation is combined to growth rate differences. But when in the first regime these differences are only transitory, in the second they are permanent.

Lorentz, A. and M. Savona: **Evolutionary micro-dynamics and changes in the economic structure**, Journal of Evolutionary Economics, 38 (3–4), 2008, 398–412. This paper proposes to identify the micro-level sources for the dynamic increasing returns occurring at an aggregate level. The paper reverts to a micro model of technological change in-line with the evolutionary literature on industrial dynamics. The data generated through numerical simulations are used to identify the sources of increasing returns as measured by the Kaldor-Verdoorn Law. In this respect we also aim to provide some plausible micro-foundations to this Law. The paper shows that: (i) Dynamic increasing returns appear as an emergent property of the model; (ii) micro-characteristics of technical change, as the amplitude and the frequency of changes, as well as selection mechanisms significantly shape these increasing returns.
Lorentz, A.: **Evolutionary micro-founded technical change and the Kaldor-Verdoorn Law: Estimates from an artificial world**, Max Planck Institute of Economics Jena: Papers on Economics and Evolution #0901, 2009. This paper proposes to identify the micro-level sources for the dynamic increasing returns occurring at an aggregate level. The paper reverts to a micro model of technological change in-line with the evolutionary literature on industrial dynamics. The data generated through numerical simulations are used to identify the sources of increasing returns as measured by the Kaldor-Verdoorn Law. In this respect we also aim to provide some plausible micro-foundations to this Law. The paper shows that: (i) Dynamic increasing returns appear as an emergent property of the model; (ii) micro-characteristics of technical change, as the amplitude and the frequency of changes, as well as selection mechanisms significantly shape these increasing returns.

Witt, U. and T. Brenner: **Output dynamics, flow equilibria and structural change – A prolegomenon to evolutionary macroeconomics**, Journal of Evolutionary Economics, 18 (2), 2008, 249–260. In an evolutionary approach to macroeconomics, the market disequilibrium dynamics resulting from structural change need to be properly represented at the aggregate level. As suggested by the late F.A. Hayek, a suitable equilibrium concept required to this end as a frame of reference, is that of a flow equilibrium. The paper explores the corresponding flow dynamics that draw attention to variables not usually considered in macroeconomic theorizing. Using statistical estimates for these new variables for the West German manufacturing sector during the German unification process allows some important new insights on the relationships between structural change and macroeconomic performance.

### Complementary Conceptual and Methodological Topics

**Conceptual Foundations of Evolutionary Economics**

Evolution in general, and the evolution of the economy in particular, can be approached from different angles which imply different, and sometimes mutually incompatible, conceptual foundations. An important task for an evolutionary approach to economics is therefore to clarify what different positions have been articulated in this research field, how they differ, and – not least – how they relate to Darwinian interpretations in the sciences.

**Recent Work**

Buenstorf, G.: **Comparative industrial evolution and the quest for an evolutionary theory of market dynamics**, in: Hanappi, H. and W. Elsner (eds.), Advances in Evolutionary Institutional Economics: Evolutionary Mechanisms, Non-Knowledge and Strategy, Cheltenham: Edward Elgar, 2008, pp. 59–78. The suitability of biology as a role model for evolutionary economics has been controversial ever since the times of Veblen and Schumpeter. In the present-day evolutionary economics community, the debate centers on whether and how concepts from Darwinian evolutionary biology can be fruitfully transferred to the study of economic processes. This article suggests that, in understanding the dynamics of markets and industries, biological concepts are at best of heuristic use. The article then makes the case for an empirically grounded, bottom-up approach to evolutionary industrial economics. This approach to theory building, which might be called comparative industrial evolution, is based on empirical studies of systematically selected industries that are comparable in key dimensions. It opens up opportunities for testing the relevance, preconditions, and generality of explanatory factors in industry evolution. An illustration of the approach is subsequently given by presenting some findings on the evolution of the historical U.S. farm tractor industry.
Witt, U. (Ed.): Recent developments in evolutionary economics, Aldershot: Edward Elgar, 2008. Evolutionary economics is a vital, expanding field of research focusing on the incessant transformation of the economy and its driving forces. This book offers a selection of high quality articles that represent the recent research trends in the field, reaching from innovations, knowledge transfer, industrial dynamics, structural change, international competitiveness, and economic growth to evolutionary game theory and new applications in finance, economic geography, and ecological economics. With its broad coverage the book also highlights a variety of pressing economic problems and introduces economists and other social scientist to the evolutionary approach to explaining their causes and possible remedies.

Witt, U.: What is specific about evolutionary economics?, Journal of Evolutionary Economics, 18(5), 2008, 547–575. Ever since an evolutionary perspective on the economy has been suggested, there have been differing, and partly incommensurable, views on what specifically this means. By working out where the differences lie and what motivates them, this paper identifies four major approaches to evolutionary economics. The differences between them can be traced back to opposite positions regarding the basic assumptions about reality and the proper conceptualization of evolution. The same differences can also be found in evolutionary game theory. Achievements of the major approaches to evolutionary economics and their prospects for future research are assessed by means of a peer survey.

Witt, U.: Evolutionary economics, in: The New Palgrave Dictionary of Economics. Second Edition. Eds. Steven N. Durlauf and Lawrence E. Blume. Palgrave Macmillan, 2008. This article reviews the way of thinking about economic problems and the research agenda associated with the evolutionary approach to economics. This approach generally focuses on the processes that transform the economy from within and on their consequences for firms and industries, production, trade, employment and growth. The article highlights the major contributions to evolutionary economics and explains its key concepts together with some of their implications.

Witt, U.: Evolutionary economics and psychology, chapter 20 in: Lewis, A. (ed) The Cambridge Handbook of Psychology and Economic Behaviour, Cambridge: Cambridge University Press, 2008, pp. 493–511. Evolutionary economics is a paradigm for explaining the transformation of the economy. To achieve its goal, it needs being founded on a proper theory of economic behavior. The paper discusses these foundations. It is argued that the historical malleability of economic behavior is based on the interactions between innate behavior dispositions and adaptation mechanisms on the one hand and the limited, and always selective, cognitive and observational learning that contributes to an ever more extended and differentiated action knowledge. The implications of this interpretation are outlined in an exemplary fashion for the case of the evolution and growth of consumption.

Witt, U.: Heuristic twists and ontological creeds – A road map for evolutionary economics, in: Hanappi, H. and Elsner, W. (eds.) Advances in Evolutionary Institutional Economics: Evolutionary Mechanisms, Non-Knowledge and Strategy, Cheltenham: Edward Elgar, 2008, pp. 9–34. What is evolutionary in evolutionary economics? The present paper shows how different answers to this question correspond with, on the one hand, the particular heuristic twists by which the corresponding authors arrive at their hypotheses (e.g. by borrowing analogies from evolutionary biology). On the other hand, the answers hinge on different ontological assumption (i.e. on whether or not evolution in nature and in the economy are viewed as belonging to the same sphere of reality and, hence, as mutually dependent processes). By distinguishing these two dimensions a road map for evolutionary economics is drawn up that helps to better understand where, and why, the competing interpretations differ. In order to assess their achievements and their potential for future research, some results of an opinion poll among evolutionary economists are presented and discussed.
Novelty, Degrees of Novelty, and Epistemological Implications for Evolutionary Theories

The emergence of novelty can be seen as driving all processes of evolution. The epistemological problems implied by the emergence of novelty correlate with the non-anticipatable unfolding of the state space onto which evolutionary processes can be mapped. This makes evolution a largely unpredictable phenomenon and causes serious problems for characterizing evolution in terms of closed state-space mathematics. Given the central role novelty plays for evolution, these much neglected problems deserve more attention in disciplines like economics in which the emergence of novelty is a ubiquitous phenomenon.

Recent Work

Witt, U.: Propositions about novelty, Journal of Economic Behavior & Organization, 70, 2009, 311–320. The emergence of novelty is a ubiquitous feature in science, technology, and economic life. It is the crucial input to the growth of human knowledge. At the same time, novelty is one of the most amorphous concepts in scientific thought. Theorizing about novelty and its emergence faces notorious problems. This paper explores why this is so and what can be done to deal in a more systematic fashion with novelty. The notion of degrees of novelty is introduced, and its relationship with the concept of uncertainty is discussed. The results of the inquiry are summarized by a number of hypotheses.

Witt, U.: Novelty and the bounds of unknowledge in economics, Journal of Economic Methodology, 16:4, 2009, 361–375. Economic development and growth are driven by the emergence of new technologies, new products and services, new institutions, new policies, and so on. Important though it is, the emergence of novelty is not well understood. Epistemological and methodological problems make it a difficult research topic. They imply a bound of unknowledge (Shackle) for economic theorizing wherever novelty occurs in economic life. To make progress, this paper takes stock of the problems. The methodological consequences for causal explanations and the modeling of economics dynamics are discussed, and some possibilities for positively theorizing about novelty are outlined.

Knowledge and the Knowledge Transfer Impacting on Private-sector Innovation

The notion of knowledge and the question of how knowledge changes and grows are central in both innovation studies and the literature on technical progress. Yet there is still much to be done in order to come to grips with:

– the organizational problems arising form knowledge transfer by scientist migrating from public research to private-sector firms;
– how effective scientist entrepreneurship is in commercializing technologies developed in public research
– what empirical relationships exist between commercialization activities and individual research performance and how legal and institutional frameworks affect university patenting and commercialization
– an at least basic conceptual clarification of knowledge and the related treatment of measurement problems.

Recent Work

Buenstorf, G.: Is commercialization good or bad for science? Individual-level evidence from the Max Planck Society. Research Policy, 38, 2009, 281–292. Based on new data, this paper studies the invention disclosure, licensing, and spin-off activities of Max Planck Institute directors over the time period 1985–2004, analyzing their effects on the scientists’ subsequent publication and citation records. Consistent with prior findings, inventing does not adversely affect
research output. Mixed results are obtained with regard to commercialization activities. The analysis suggests qualifications to earlier explanations of positive relationships between inventing and publishing.

von Ledebur S., G. Buenstorf, and M. Hummel: University patenting in Germany before and after 2002: What role did the professors’ privilege play?, Friedrich-Schiller-University Jena: Jena Economic Research Papers #2009-068. We examine ownership patterns of German university-invented patents before and after the abolition of the ’professors’ privilege’ in 2002 to explore how the legal change affected patenting activities. Our data show a shift from individually-owned and firm-owned patents to university-owned patents, which becomes increasingly strong over the years. Differences in the patent experience of inventors and universities further help explain the variance in ownership patterns. Both experienced and inexperienced inventors are affected by the legal change.

Witt, U., T. Broekel and T. Brenner: Knowledge and its economic characteristics – A conceptual clarification. In: R. Arena, A. Fetré, N. Lazaric (eds.), Handbook of Knowledge and Economics, Cheltenham: Edward Elgar, forthcoming. This paper discusses several features of knowledge that are often considered crucial for characterizing the economic significance of knowledge: whether it is overtly accessible or tacit, whether it can be or is encoded or not, and whether it has public or private good character. It is argued that all these features depend similarly on the state of the knowledge technology, i.e. on how knowledge can be acquired, stored, used, and communicated. The different characteristics and the relationships between them are shown to correspond to different specifications of the technology, specifications that are not always made explicit in the literature.

Witt, U. und C. Zellner: How firm organizations adapt to secure a sustained knowledge transfer, Economics of Innovation and New Technology, 70, 2009, 311–320. To produce an effect, knowledge needs to first be acquired and expressed by a human agent. This trivial fact is a constraint on knowledge commercialization. The highly systemic nature of the decentralized production of knowledge is another constraint. This paper analyzes the nature of the two constraints and their interplay from an individualistic perspective, focusing particularly on the often neglected entrepreneurial aspects of the transfer of knowledge. It shows how the constraints are overcome by organizational adaptations inside firms and how, by these adaptations, a sustained knowledge transfer into the commercial sphere of the innovation system is secured.

The Evolution of Institutions
One of the major problems in explaining the evolution of economic institutions is to conceptualize institutions in a way that is on the one hand sufficiently abstract to capture the common features of the multitude of historical institutional forms and, on the other hand, sufficiently detailed to trace the systematic changes that can be observed. Research under this topic is trying to solve this trade-off and to provide an explanation for the evolution of institutions in the long run based on a behavioral, evolutionary approach.

Recent Work
Binder, M. and Niederle, U.-M.: Institutions as determinants of preference change: A one way relation?, in: Hanappi, H. and Elsner, W. (eds.), Advances in Evolutionary Institutional Economics: Evolutionary Mechanisms, Non-Knowledge and Strategy, Cheltenham: Edward Elgar, 2008, pp. 97–120. In recent economic literature, there has been an increasing interest in modeling preferences as endogenous. Some arguments go along the lines that institutions shape preferences. This paper suggests that adopting a more substantive concept of preferences furthers our understanding of how they systematically shape institutions. We integrate social-psychological
concepts and combine them with an account of learning. Thus, a model of the dynamic inter-relation between preferences and institutions can be developed. While institutional change can certainly be partly explained in terms of changing incentives, we offer an approach that goes beyond the standard explanation.

Witt, U.: Observational learning, group selection, and societal evolution, Journal of Institutional Economics 4 (1), 2008, 1–24. The core problem of any group selection hypothesis is the possibility that pro-social individual behavior contributing to a selection advantage for the group as a whole is potentially subject to free-riding. If group behavior and, hence, the conditions for group selection change through imitation and migration between groups, as argued in Hayek’s theory of societal evolution, the explanation of group selection needs to account for the individuals’ cognitively reflected motivation to adopt pro-social behavior in the face of free-riding. To do so a game-theoretic model is suggested that incorporates observational learning as a mechanism of acquiring, and choosing between strategies.

2.3.3 List of Publications

Barigozzi, Matteo
On the distributional properties of household consumption expenditures - The case of Italy 2009, Empirical Economics, in press and online since March 2009 (together with L. Alessi, M. Capasso, and G. Fagiolo).

Binder, Martin
An Examination of the Dynamics of Happiness Using Vector Autoregressions, Papers on Economics & Evolution #0904, 2009 (together with A. Coad).

Buenstorf, Guido
Comparative Industrial Evolution and the Quest for an Evolutionary Theory of Market Dynamics, 2008 in: Hanappi, H. and W. Elsner (eds.), Advances in Evolutionary Institutional


The origins of entrants and the geography of the German laser industry, Papers on Economics and Evolution #0814, 2008 (together with M. Geissler).


Not invented here: Technology licensing, knowledge transfer and innovation based on public research, Papers on Economics & Evolution #0920, 2009 (together with M. Geissler).


Ciarli, Tommaso


Conflict and Entrepreneurial Activity in Afghan Provinces: A Preliminary Analysis, 2009, EPS Quarterly 21(2), 2009, 4–5, 8–9 (together with S. Parto and M. Savona).


Coad, Alex
The Growth and Decline of Small firms In Developing Countries 2008, Papers on Economics and Evolution #0808 (together with J.P. Tamvada).

Cordes, Christian
How Corporate Cultures Coevolve with the Business Environment: The Case of Firm Growth

Geissler, Matthias
The origins of entrants and the geography of the German laser industry. 2008, Papers on Economics and Evolution # 0814 (together with G. Buenstorf).
Not invented here: Technology licensing, knowledge transfer and innovation based on public research Papers on Economics & Evolution #0920 (together with G. Buenstorf).

Guenther, Christina

Lorentz, André

Manig, Corinna

Moneta, Alessio
At the origins of Engel curves estimation, 2008, Papers on Economics and Evolution #0802 (together with A. Chai).

Engel Curves, Journal of Economic Perspectives, forthcoming (together with A. Chai).


**Schubert, Christian**


**Seri, Paolo**


Diffusione geografica delle sedi universitarie e sviluppo locale Knowledge impact nel caso delle Marche, 2009, eum edizioni università di macerata (together with S. Animali).

**Witt, Ulrich**


Woersdorfer, Julia Sophie

Consumer support for environmental policies: An application to purchases of green cars, 2009, Ecological Economics, 68(7), 2078–2086 (together with P. de Haan and A. Coad).

When do social norms replace status-seeking consumption? An application to the consumption of cleanliness, Metroeconomica, forthcoming.
3 Teaching in Cooperation with Friedrich Schiller University Jena and other Institutions

The Max Planck Institute of Economics has established various means to close the gap between the international standards for focal research and the qualifications of the junior scientists. Alongside several doctoral training courses, summer schools, workshops and guest lectures, the institute takes part in the recently established Jena Graduate School Human Behavior in Social and Economic Change at the Friedrich Schiller University in Jena. It is an initiative of scholars working in the broadly defined field of societal change, its sources and consequences. The major contributing disciplines are psychology, economics, sociology, applied ethics and law.

The general objectives of the Graduate School are education to excellence and the stimulation of outstanding research by providing a framework for doctoral programs in the social sciences with common standards at a top-quality international level. Programs of each of the participating disciplines are opened, and interdisciplinarity is further strengthened by a new and unique study- and research program.

Integrated in this framework, the institute has established two graduate programs in cooperation with a variety of scientific partners: the Graduate School Economics of Innovative Change and the International Max Planck Research School on Adapting Behaviour in a Fundamentally Uncertain World, coordinated at the Max Planck Institute of Economics in Jena (“IMPRS Uncertainty” or “Uncertainty School”).

3.1 DFG Graduate School: The Economics of Innovative Change

The Graduate School Economics of Innovative Change is a joint project of the Max Planck Institute of Economics and the Department of Economics at Friedrich Schiller University Jena. The program is funded by the German Science Foundation (DFG) and offers top level graduated students the opportunity to achieve a doctoral degree (Ph.D.) in economics. The Research Training Group addresses unresolved questions and problems concerning the economic dynamics of firms, markets, sectors and regions with an analytical focus on the endogenous driving forces mainly understood as the activities of invention and innovation.

Courses include economics of innovation, economic dynamics, evolutionary economics, entrepreneurship, econometrics, experimental economics, game theory, innovation and trade, labour economics, and innovation systems. Students benefit from the interaction of theoretical and empirical work and get trained in quantitative and experimental methods. Currently it offers interdisciplinary education and research opportunities to 40 outstanding young doctoral students.

Traditionally, two weeks of the IMPRS Uncertainty summer school (see below) are organized simultaneously and in cooperation with the DFG Graduate School Economics of Innovative Change.
Teaching staff
Department of Economics, Friedrich-Schiller-University Jena (FSU) / Max Planck Institute of Economics Jena (MPI Econ):
Uwe Cantner FSU (spokesman)
Andreas Freytag FSU
Michael Fritsch FSU
Werner Güth MPI Econ
Oliver Kirchkamp FSU
René Levínský MPI Econ
Peter Walgenbach FSU
Ulrich Witt MPI Econ
Hans-Walter Lorenz FSU (assoc.)

Courses for the DFG Graduate School Economics of Innovative Change given by MPI Econ-Researchers

2008
David Audretsch: Management of Places
René Levínský: Advanced Microeconomics
Ulrich Witt: Evolutionary Economics

Two Week Doctoral Training Course – Evolutionary Economics, March 2008:
Guido Buenstorf: Survival Analysis
Guido Buenstorf: Industry Development
Alexander Coad: Firm Size Econometrics
Alexander Coad: Firm Size and Growth
Christian Cordes: Social Learning and the Firms
Andre Lorentz: Agent Based Modelling
Alessio Moneta: Econometrics for Consumption and Demand
Christian Schubert: Evolutionary Welfare Theory
Christian Schubert: Evolution of Institutions
Ulrich Witt: Evolutionary Approach to Consumption
Ulrich Witt: History, Path-Dependance & Selforganization
Ulrich Witt: Evolutionary Theory of the Firm
Ulrich Witt: Evolutionary Economics – General Orientation
Ulrich Witt / Guido Buenstorf: Evolutionary Production Theory

2009
Guido Buenstorf: Economics of Science and Technology Transfer
Werner Güth, René Levínský: Applications of Game Theory
Marco Valente (University of L’ Aquila), Tommaso Ciarli, André Lorentz (MPI Econ):
Simulation Models with LSD
Ulrich Witt: Evolutionary Economics
Ulrich Witt: Consumption and Consumer Behavior
The International Max Planck Research School on Adapting Behaviour in a Fundamentally Uncertain World coordinated at the Max Planck Institute of Economics in Jena (“IMPRS Uncertainty” or "Uncertainty School") spans three disciplines: Law, Economics and Psychology. The overlap of this three research approaches is very promising to find more adequate explanations for human decision-making behavior under uncertainty. Brilliant and ambitious students from all over the world work jointly in a three years structured Ph.D. program which provides excellent research conditions and supervision.

The IMPRS Uncertainty is hosted by eight partnering institutions:

- The Max Planck Institute for Human Development, Berlin was founded in 1963, and is a multidisciplinary research institute dedicated to the study of human development and education, and their evolutionary, social, historical, and institutional contexts.

- The Max Planck Institute for Research on Collective Goods, Bonn, was founded in 1997. Its mission is to study the law, economics, and politics of collective goods, defined to encompass all those goods whose provision and enjoyment are treated as community concerns.

- The Department of Social Psychology of the Friedrich Schiller University Jena endeavors to understand and explain the development and change of the thoughts, emotions and behavior of individuals under the actual, imagined or assumed influence of others.

- The School of Economics and Business Administration of the Friedrich Schiller University Jena values a wide, scientific-based, and practical education, which is also applicable in the business world. The Jena Graduate School The Economics of Innovative Change coordinates its summer school parallel to the IMPRS Uncertainty summer school. The program is funded by the German Science Foundation (DFG) and offers the opportunity to achieve a doctoral degree (PhD) in economics for outstanding candidates.

- The Program in Cognitive Science of Indiana University brings together faculty from many departments to study cognition and information. The program is highly integrated and encourages interdisciplinary cooperation between all the participating disciplines.

- The Workshop in Political Theory and Policy Analysis at Indiana University combines teaching, research, and related activities where faculty, visiting scholars, and students participate in productive scholarship related to institutional analysis and design. Today, the Workshop is home to an extensive interdisciplinary research agenda and affiliated faculty.

- The Center for the Study of Rationality at the Hebrew University, Jerusalem was founded in 1991 and since then, its members apply game-theoretic tools to examine the processes by which individuals seek the path of maximum benefit respond to real-world situations, where individuals with different goals interact.
The Interdepartmental Centre for Research Training in Economics and Management (CIFREM) in Trento has been established by the Department of Economics and the Department of Computer and Management Science to host and organize research training activities of doctoral students, postdoctoral and other young researchers wishing to specialize in economics or management at the University of Trento.

IMPRS Uncertainty Summer Schools
The Max Planck Institute of Economics in Jena hosts the annual IMPRS Uncertainty Summer School.

IMPRS Uncertainty Summer School 2008, July 28 - August 22

Week 1

*Keynote Lecture*
How an Economic Theorist thinks about Neuroeconomics – Ariel Rubinstein (Tel Aviv University)

*Lectures*
- Antitrust Law and Economics – Christoph Engel (MPI Bonn)
- Law and Economics – Eberhard Feess (RWTH Aachen)
- Network Structures – Robin Cowan, Anthony Ziegelmeyer (University Louis Pasteur and University of Maastricht / MPI Econ)

*Joint Seminar with the Graduate School – The Economics of Innovative Change*
- Dynamic Decision Making – John Hey (University of York)

Week 2

*Lectures*
- Prospect Theory and Uncertainty – Peter Wakker (University of Rotterdam)
- Experiments and Models of Collective Behavior – Robert Goldstone (Indiana University Bloomington)
- Behavioral Labor Markets – Armin Falk, Oliver Kirchkamp (University of Bonn, FSU Jena)

*Guest Lectures*
- Cognitive Science and normative decision-making – Matthias Mahlmann (University of Zurich)
- Motivations for helping: The moderating role of group membership – Stefan Stürmer (FernUni Hagen)

Week 3

*Lectures*
- Advanced Theory of Institutions – Andreas Nicklisch (MPI Bonn)
- Cooperative Game Theory – René Levinský (MPI Jena)
- Econometric Analysis of Experimental Data – Joachim Winter (University of Munich)

*Guest Lectures*
- Introduction and Presentation of fMRI-Scanner – Wolfgang Miltner (University of Jena)
- Intertemporal Decision Making – Luigi Mittone (University of Trento)

Week 4

*Lectures*
- Advanced Innovation Economics – Uwe Cantner (University of Jena)
After the successful launch of the IMPRS Uncertainty doctoral program with its first summer school in July 2007, the expectations for the sequel were high. The second IMPRS Uncertainty Summer School was held from July 28 until August 22, 2008 at the Max Planck Institute of Economics in Jena. Just like last year, the first two weeks of the Uncertainty summer school ran simultaneously and in cooperation with the DFG Graduate School Economics of Innovative Change of the University of Jena.

The curriculum comprised 12 courses, such that three courses per week took place, which were given by members of the partnering institutions and guests. The courses were complemented by guest lectures held by invited speakers. Furthermore, students had the opportunity to work on research projects in small interdisciplinary teams under the supervision of researchers of the MPI Jena. Each group conducted an experiment and presented the status quo of their projects, once per week. Courses took place at the MPI seminar rooms as well as at the university. The overall aim of the Summer School was to stimulate the scientific discourse on decision making under uncertainty between economists, psychologists and legal scholars.

Throughout the whole four weeks, the program of the summer school gave participants the chance to take part in various “non-academic” events. Students had the opportunity to meet again or to get to know each other, to engage in scientific and non-scientific conversations and to relax from the tight schedule. Leisure activities included a guided tour around Jena – the official “city of science 2008”; various sports events, such as a rafting tour on the River Saale and a sports tournament as well as cultural highlights, such as a trip to Eisenach – the city of Martin Luther and composer Johann Sebastian Bach. Moreover, participants had the possibility to expand their scientific and social network with attending a number of external dinners and events, such as the GK farewell event in the Botanical Garden and the IMPRS farewell event in the Ricarda-Huch-Haus. During the breaks there was the possibility to do research or course work in the library or in the MPI garden, which offered shady places to escape the heat of the summer. The 2nd IMPRS Uncertainty summer school was completed by a small Graduation Ceremony.

**IMPRS Uncertainty Summer School 2009, July 26 - August 21**
As in the years before, the IMPRS Uncertainty Summer School was hosted by the Max Planck Institute of Economics in Jena.

**Week 1**
*Keynote Lecture*
Bounded Ethicality - Max Bazerman (Harvard Business School)

*Lectures*
An Introduction to Experimental Economics  Urs Fischbacher (University of Konstanz)
Workflow of Statistical Data Analysis – Oliver Kirchkamp (University of Jena)
Legal Decision-making – Niels Petersen & Emanuel Towfigh (MPI Bonn)

Joint seminars:
Investing in Capabilities under Knightian Uncertainty – John Sutton (London School of Economics)
Group Membership, Team Preferences, and Expectations – Luigi Mittone (University of Trento)
Deliberative and Nondeliberative Processes in Human Behavior – Christoph Vanberg (University of Heidelberg)

Week 2

Lectures
Leadership – Steffen Giessner (Erasmus University Rotterdam)
Biological, Psychological, and Economic Aspects of Law – Jeffrey Stake (University of Indiana, Bloomington)
Structural Equation Modeling – Friedrich Funke (University of Jena)

Guest Lectures
Joint seminar: The Origin and Growth of Industry Clusters: The Making of Silicon Valley and Detroit – Steven Klepper (Carnegie Mellon University)
Commitment, Asymmetries and Conflict in Bilateral Bargaining – Static and Dynamic Models – Topi Miettinen (Stockholm School of Economics)
Joint seminar: Economics of Science: Old and New – Ed Steinmüller (University of Sussex)

Week 3

Lectures
Working with Experimental Data – Mixed Effects Models – Oliver Kirchkamp (University of Jena)
Law from a Functional Perspective – Christoph Engel (MPI Bonn)
The Psychology of Judgment and Decision Making – Ilan Yaniv (Hebrew University)

Guest Lectures
Motivational Regulation of Automatic Affective Processing and Action: Counter–Regulation and Control-Dependency – Klaus Rothermund (University of Jena)
Homo Heuristicus: Why Biased Minds Make Better Predictions – Gerd Gigerenzer (MPI Berlin)
Context Dependency of Justice – James Konow (Loyola Marymount University)

Week 4

Lectures
Introduction to the Theory and Application of Fast and Frugal Heuristics – Konstantinos Katsikopoulos (MPI Berlin)
Basic Microeconomics – Werner Güth (MPI Econ), Matteo Ploner (University of Trento)
Estimating Preferences for Prediction – Nathaniel Wilcox (University of Huston)
Guest Lectures
Social Psychological Processes in Social Conflict – Carsten K.W. De Dreu (University of Amsterdam)
Motivational and Cognitive Processes – Carsten K.W. De Dreu (University of Amsterdam)
Damages for Losses of Chances – Urs Schweizer (University of Bonn)

In 2009 the third Summer School of the IMPRS Uncertainty started with a grand opening ceremony presenting Max Bazerman as the keynote speaker of this year’s one-month learning marathon. After having presented his thoughts on Bounded Ethicality all attending students and faculty members were enjoying our welcome BBQ at the courtyard of the old university building in Jena. More than 80 Ph.D. students, post-docs and faculty members joined the grand opening.

Just like in the last years, the first two weeks of the Uncertainty Summer School ran simultaneously and in cooperation with the DFG Graduate School Economics of Innovative Change of the University of Jena. More than 50 separate lecture units needed to be arranged such as to fit into the joint program - not to mention the joint social activities and the get-togethers during the lecture breaks.

The 3rd IMPRS Summer School facilitated basic knowledge concerning rationality, statistics, and experimental design. In this way the 2009 program integrates itself into the broader concept of the IMPRS Uncertainty schedule: one year of basic and the subsequent year of advanced courses in each field: Law, Psychology and Economics.

Again, the curriculum comprised in total of 12 courses. Hence, there were three courses per week (each consisting of 5 lecture units) given by members of the partnering institutions or invited speakers. In addition, we invited guest lecturers to present their recent work on related fields of the IMPRS Uncertainty.

An integral part of the program was the so called “Group assignment”. Up to five students worked together on interdisciplinary research projects, under the supervision of researchers of the MPI Jena. Their task was to come up with a promising research question (week 1), to design a related experiment (week 2), to conduct this experiment (week 3) – optimally with participants of the Summer School, and, subsequently, to analyze the results (week 4). Each group presented the status quo of their projects once per week in front of a greater auditorium, consisting of senior researchers of the MPIoE and the faculty of the IMPRS Uncertainty.

Even though the last day was neither warm nor sunny, we had the opportunity to celebrate the successful ending at our Farewell Party. A joint dinner at the Ricarda Huch Haus with pleasant music and company concluded this year’s Summer School. Again, the IMPRS Uncertainty Summer School brought together young and established researchers and created a stimulating work and research environment. The 4th Summer school will take place from July 26 – August 20, 2010 at the Max Planck Institute of Economics in Jena.

IMPRS Uncertainty Topic Workshops / Thesis Workshops

2nd IMPRS Topic Workshop “Making Decisions in Social Contexts”
The second topic workshop of the IMPRS Uncertainty was held in Bloomington, Indiana from September 1–3 2008. Students gained insights in the work of the researchers at the Program in Cognitive Sci-
ence, and the Workshop in Political Theory and Policy Analysis at Indiana University, Bloomington. Speakers were (among others): Lin Ostrom, Jeffrey Stake, Jerry Busemeyer, and Peter Todd. Additionally, participants were introduced to the lab of the researchers and could participate in an experiment conducted by Lin Ostrom, James Walker, and Eric Coleman.

3rd IMPRS Topic Workshop
The third topic workshop of the IMPRS Uncertainty was organized by the Doctoral School of the Interdepartmental Centre for Research Training in Economics and Management at the University of Trento from September 21–24, 2009. Participants heard talks in those fields, the IMPRS Uncertainty combines: Economics, Psychology, and Law. Speakers were (among others) Christopher L. Gilbert, Matteo Ploner, Sara Depedri, Giuseppe Bellantuono, and the speaker of the IMPRS Uncertainty Werner Güth. A poster session at the Department of Economics and a guided tour through the city of Trento and visit to the Castello del Buonconsiglio completed this workshop.

1st Thesis Workshop
The first thesis workshop was held at the Max Planck Institute for Research on Collective Goods, Bonn, from February 19 – 21, 2008. It gave IMPRS students the opportunity to present some first results of their research. 11 presentations were given in three days:

* **Tuesday, 19.2.2008**
  - **Alexander Morell:** First Steps to a Model of Price Competition with Target Rebates when Consumers are Risk Seeking in Losses
  - **Mahalakshmi Natarajan:** Market Entry Decisions in the Wild
  - **Ori Weisel:** The Effect of Punishment on Cooperation in Public Good Dilemmas with Uncertainty About Private Endowments.
  - **Nadine Bläser:** Leniency Programmes – A Behavioural Law and Economics Approach

* **Wednesday, 20.2.2008**
  - **Linan Diao:** Invest in What You Know: Performance of Portfolio Decisions Based on Recognition
  - **Katrin Schmelz:** The Russian Rules of Playing Games
  - **Charlotte Klempt:** The Impact of Procedural Fairness Considerations on Bargaining Behavior in Ultimatum Games
  - **Christoph March:** Robustness of Information Cascades to Bounded Rationality
  - **Jenny Volstorf:** Being Resentful or Short-Sighted – What is More Beneficial in a Spatial Prisoner’s Dilemma Game?

* **Thursday, 21.2.2008**
  - **Bastian Lücke:** The Distinction Between Minimal and Maximal Goals and its Impact on Explicit Negative Behaviour Towards Deviant Outgroups.
  - **Robert Böhm:** “I” Cooperate But “We” Compete – The Discontinuity Effect!
2nd IMPRS Thesis Workshop
The second IMPRS Thesis Workshop was held at the Friedrich Schiller University, School of Business and Economics in February 2009. The aim of this annual workshop is to provide feedback to all IMPRS students by the IMPRS faculty and all the other IMPRS students. 22 presentations were given in three days:

Monday 16.2.2009
Charlotte Klempt: Generosity, Greed and Gambling: What difference does asymmetric information in bargaining make?
Katrin Schmelz: Cultural Differences in Hidden Costs of Control: An Internet Experiment
Michael Kurschilgen: Fairness Ex Ante and Ex Post – Testing Copyright Law in the Lab
Jenny Volstorf: The Good, the Bad or the Rare - Memory Focus on Cooperators or Defectors?
Nadine Bläser: Leniency Programmes - A Behavioural Law and Economics Approach
Jieyao Ding: Do We Punish Intentional Violations Just Like the Accidental Ones or Do Intentions Matter? - A Cross-cultural Analysis
Stephan Tontrup: The Expressive Function of Contracts

Tuesday 17.2.2009
Matthias Uhl: The Game Within A Person
Ulrike Vollstädt: A Lab Experiment: Group Bargaining under Incomplete Information
Linan Diao: Reinforcement Learning Model and Portfolio Theory
Sebastian Krügel: Overconfidence and Volume of Trade - Part 1: Does Miscalibration affect Posterior Beliefs?
Nadine Fleischhut: Moral Judgments Under Risk and Uncertainty.
Florian Artinger: Altruistic Punishment - Emotions for Cooperation
Christoph March: Bounded Rationality in Social Learning
Lax Natarajan: Separating Ambiguity-Seeking from Overconfidence in Market Entry Decisions
Fabian Winter: The Problem of Normative Conflict

Wednesday 18.2.2009
Jan Multmeier: Making Statistical Inferences Come Natural - Representation Formats for Risks in Statistical Reasoning
Ori Weisel: Punishment, Cooperation, and Cheater Detection in “Noisy” Social Exchange
Lauri Sääksvuori: On the Emergence of Impersonal Trade and Contract Enforcement
Johannes Weissler: The Impact of a Firing Threat on Sabotage in Labor Market Tournaments
The third IMPRS Thesis Workshop will take place at Ringberg Castle in Bavaria February 15–19, 2010.
People at IMPRS Uncertainty

Werner Güth
Spokesman

Susanne Büchner

Tobias Uske
Scientific IMPRS coordinator since November 2008 (Ph.D. in Economics, 2008, Friedrich Schiller University, Jena): Incentives and Uncertainty, Game Theory, and Experimental Economics.

Doctoral Students

Linan Diao, Research Fellow (Master, Management Science and Engineer, Jilin University, China): Experimental Economics, Behavioral Finance, Agent-based Computational Finance, Portfolio Choice and Heuristics.


Charlotte Klempt, Research Fellow (Dipl. Technical Economics, University of Karlsruhe(TH)): Experimental Economics, Extrinsic & Intrinsic Motivation, Trust and Reciprocity.


Sebastian Kruegel, Master of Arts in Economics, University Of California, Fullerton, USA, January 2008: behavioral finance / behavioral economics, decision making under risk / uncertainty, investing and trading behavior.


Lauri Sääksvuori, M.Sc.(economics), University of Helsinki, 2007, Experimental economics, problems of collective action, interrelated groups, theory of mind, political economy.

Katrin Schmelz, Research Fellow (Diploma, Psychology, Friedrich Schiller University, Jena): Culture and Control Aversion.


Matthias Uhl, Research Fellow (Dipl. in Economics, 2007, University of Mainz): Economics and Philosophy, Behavioral Economics.


Guests

Thomas Brenner, Philipps-Universität Marburg, Guest Lecture: Understanding Cognitive Processes and Learning in Games – An Exemplary Analysis for the Minority Game
Kahwa Douoguih, University of Maryland, *Guest Lecture*: Entrepreneurial Effort Allocation and Market Entry: Experimental Evidence

Gerlinde Fellner, Vienna University of Economics and Business, *Cooperation*: Miscalibration and the Volume of Trade (Sebastian Krügel)

Pierfrancesco LaMura, Handelshochschule Leipzig, *Guest Lecture*: Non-Dictatorial Social Choice through Delegation

Luis Miller, Nuffield College, University of Oxford, *Guest Lecture*: Who should be called to the lab? A comprehensive comparison of students and non-students in classic experimental games

Mikael Puurtinen, Tapio Mappes, University of Jyväskylä, *Cooperation*: The effect of in-group punishment in intergroup competition (Lauri Sääksvuori)

Heiko Rauhut, UNO C 14, *Cooperation*: Experimental investigation of norms and conflict (Fabian Winter)

Georg Weizäcker, DIW Berlin, *Guest Lecture*: Instrumenting for statements of trust: Are actions driven by beliefs?

**Publications**


March, Christoph: *Behavioral Social Learning*. Working paper JERP #2009-105 (with A. Ziegelmeyer)

Uhl, Matthias: *The Resolution Game – A Multiple Self Perspective*, with Dimitri Migrov, working paper JERP 2009-060

Winter, Fabian: *How norms can generate conflict*, working paper submitted May 2009 (with Heiko Rauhut and Dirk Helbing)

Winter, Fabian: *A sociological perspective on measuring social norms by means of strategy method experiments*, working paper submitted June 2009 (with Heiko Rauhut)

**Contributions to edited books:**


### 3.3 Other Courses for the University of Jena

**Winter Term 2007/2008**

Guido Buenstorf: *Wissenschaftsökonomik und Technologietransfer* (lecture)

Christian Cordes, Astrid Matthey: *Mikroökonomik* (lecture)

Jörg Zimmermann: *Gründerseminar*

**Summer Term 2008**

Astrid Matthey, Christian Cordes: *Microeconomics for undergraduates* (seminar)

Christian Schubert: *Wohlfahrtsökonomik* (lecture)
Winter Term 2008/2009

Stephan Heblich, Viktor Slavtchev: Entrepreneurship, Innovation und Wirtschaftswachstum (seminar)

Astrid Matthey, Tobias Regner: Behavioral Economics (seminar)

Summer Term 2009

Christian Cordes: A Naturalistic Approach to Economics (seminar)

Stephan Heblich, Holger Patzelt: Entrepreneurship und Nachhaltige Entwicklung (seminar)

Viktor Slavtchev: Innovationssysteme (seminar)

Winter Term 2009/2010

Christian Cordes: 20 Jahre Systemtransformation in Deutschland: Lektionen und Herausforderungen (seminar)

Stephan Heblich, Christina Günther: Das Zusammenspiel von unternehmensspezifischen und regionalen Erfolgsfaktoren (seminar)

Astrid Matthey, Tobias Regner: Behavioral Economics (seminar)

Erik Monsen: Gründungs- und Wachstumsmanagement (lecture)

Vera Popova: Übung zur Vorlesung Spieltheorie WS 2009/2010 (Lehrstuhl Oliver Kirchkamp)

3.4 Courses for other Institutions

Winter Term 2007/2008

Guido Buenstorf, Leuphana University Lüneburg: Industrie-Evolution

Tommaso Ciarli and Paul Windrum, Manchester Metropolitan University, UK: February 2008, Postgraduate course on: Globalisation Strategy

Jörg Zimmermann, University of Augsburg: International Management

Summer Term 2008

Guido Buenstorf, University Witten/Herdecke: Evolution in Firms and Industries

M. Vittoria Levati, University of Bari, Italy: Instructor: Game Theory, PhD level

M. Vittoria Levati, University of Bari, Italy: Instructor: Principles of Economics, Undergraduate level

Astrid Matthey, Komenius University Bratislava: Economics and Psychology

Winter Term 2008/2009

Guido Buenstorf, DIMETIC Doctoral European Summer School, Maastricht, MERIT: Spin-offs and Spinoff-based Cluster Formation

Erik Monsen, The International Graduate Business School (IGBS), Zagreb, Croatia: MBA Entrepreneurship and Growth Management. (lecture)

Holger Patzelt, European Business School, Oestrich-Winkel: Entrepreneurial Organization (lecture)

Christian Schubert, University of Kassel: Institutionenökonomik

Summer Term 2009

Alice Becker, IESA, Cordoba (Spain): seminar The Impartial Spectator: From Hume to Experimental Economics
Tommaso Ciarli and André Lorentz, University of Strasbourg: Simulation in Evolutionary Economics (SIME), Training Course
Holger Patzelt, European Business School, Oestrich-Winkel: MBA Entrepreneurship (lecture).
Holger Patzelt, Handelshochschule Leipzig (HHL): Growth Management (lecture).
Christian Schubert, University of Freiburg: Visiting Professor (Lehrstuhlvertretung)
Anthony Ziegelmeyer, College of Management (Israel): Invited lecturer, Herding in Financial Markets (master of business administration)

Winter Term 2009/2010
Guido Buenstorf, University of Kassel: Visiting Professor (Lehrstuhlvertretung)
Guido Buenstorf, DIMETIC Doctoral European Summer School, Maastricht, MERIT: Spin-offs and Spin-off-based Cluster Formation
Tommaso Ciarli, University of Sussex, Brighton: Postgraduate course on Simulations in Evolutionary Economics
M. Vittoria Levati, Frankfurt School of Finance & Management: Tutor: Experimental Economics: The Basics, PhD level
Holger Patzelt, European Business School, Oestrich-Winkel: Entrepreneurial Organization (lecture).
Holger Patzelt, Goethe Universität Frankfurt: MBA Entrepreneurship (Vorlesung)
Christian Schubert, University of Freiburg: Visiting Professor (Lehrstuhlvertretung)
Anthony Ziegelmayer, Technical University of Berlin: Visiting professor, Advanced microeconomics: Lectures and exercises (graduate level), Game theory: Exercises (undergraduate level), Social learning: Seminar (graduate level)

3.5 Supervision of Diplomarbeiten (Master Theses)

2008
David Audretsch and Holger Patzelt: Andreas Lipfert (Friedrich Schiller University Jena): Top Management Teams und Erfolg junger Biotechnologieunternehmen.
David Audretsch and Jagannadha Pawan Tamvada: Thilo Klein (Friedrich Schiller University Jena): Microfinance 2.0 – Group Formation & Repayment Performance in Online Lending Platforms.
Guido Buenstorf: Alexander Schacht (Friedrich Schiller University Jena): Licensing of Technologies from Public Research Institutes: Empirical Results for the Max Planck Society.
Werner Güth and Torsten Weiland: Matthias Hamm (Friedrich Schiller University Jena): Fair division games with negative externalities – An experimental study of the fair division approach.
Werner Güth and Christoph Vanberg: Christiane Bradler (Friedrich Schiller University Jena): Social Preferences under Risk – An Experimental Analysis.
2009

**David Audretsch** and **Anja Klaukien**: Norman Bedtke (Friedrich Schiller University Jena): Der Einfluss unternehmerischer Leidenschaft auf das Engagement der Mitarbeiter, im jungen Unternehmen zu arbeiten.

**David Audretsch** and **Viktor Slavtchev**: André Sonntag (Friedrich Schiller University Jena): Entrepreneurship und Innovation als Determinanten regionalen Wachstums.

**David Audretsch** and **Holger Patzelt**: Sandra Wolf (Friedrich Schiller University Jena): Environmental Entrepreneurship.


**David Audretsch** and **Erik Monsen**: Andrea Gebhardt (Friedrich Schiller University Jena): Auswirkungen von Stress am Arbeitsplatz auf die Verbundenheit der Mitarbeiter zum Unternehmen.

**David Audretsch** and **Stephan Heblich**: Sebastian Döll (Friedrich-Schiller-Universität Jena): Soziale Innovatoren: KMU’s als Agenten eines Aufdeckungsverfahrens für Staatliche Technologie- und Umweltpolitik.

**Guido Buenstorf**: Judith Herzberg (Friedrich Schiller University Jena): Innovation am Wendepunkt: Eine patentstatistische Analyse der Laserforschung in der DDR mit Verbleibstudie der Erfinder nach der Wiedervereinigung.

**Christian Cordes**: Sebastian Müller (Friedrich Schiller University Jena): Why do we find a relatively stable difference in the levels of entrepreneurship-activity across countries? Re-defining the idea of entrepreneurship-culture towards a "Collective-Entrepreneurship-Memory".

**Erik Monsen**, **Diemo Urbig**, Michael Schefczyk, Oliver Uecke: Lysann Lippert (Dresden Technical University): The impact of personal variables and framework conditions on the individual propensity to become entrepreneurial active.
4 Research Cooperations

4.1 Partnerships and Agreements with Universities and other Institutions

Partnership with University of Augsburg
The University of Augsburg and the Entrepreneurship, Growth and Public Policy Group (EGP) share a strong and growing partnership between students and professors. Moreover, Augsburg doctoral students may continue to conduct their research in Jena while working with their doctoral advisor in Augsburg. Cooperation between the two institutions also includes a series of research seminars and exchange between faculty and doctoral students that alternate between Jena and Augsburg.

Partnership with Erasmus University and EIM
The Max Planck Institute of Economics (MPI Econ) maintains strong relations with the two leading entrepreneurship and small business research centers in the Netherlands, the Centre for Advanced Small Business Economics (CASBEC) at Erasmus University Rotterdam, and the research institute EIM Business and Policy Research located in Zoetermeer. Through the help and coordination of Dutch scholars, such as Roy Thurik, these programs foster greater exchange of research interests and ideas. Several advantages are obtained from this research cooperation.

Partnership with University of Erfurt – Erfurt School of Public Policy (ESPP)
The Entrepreneurship, Growth and Public Policy Group and the Erfurt School of Public Policy (ESPP) at the University of Erfurt are continuing their successful partnership and co-operation in the field of higher education. The former Director of the ESPP, Heike Grimm, continues to work as an active external researcher. Additionally, Dr. Heike Grimm is representing the EGP Group with the pan-European IPREG project (“Innovative Policy Research for Economic Growth”, see below).

Partnership with George Mason University
Several joint research projects between the School of Public Policy at the George Mason University outside of Washington D.C. and the Entrepreneurship, Growth and Public Policy Group (EGP) involved both faculty and doctoral students at both institutions. In addition to that, the partnership enables extended research visits and intensive interactions by researchers in both Washington, D.C. and Jena, as well as a series of joint conferences.

Partnership with University of Wuppertal
The Entrepreneurship, Growth and Public Policy Group continued to work closely with Werner Bönte (University of Wuppertal) on several research projects, including projects funded by the Strategic Innovation Fund of the Max Planck Society. The close cooperation between the Max Planck Institute of Economics and the University of Wuppertal will be carried forward in the coming years.

Partnership with Kauffman Foundation
The Ewing Marion Kauffman Foundation in the United States and the Entrepreneurship, Growth and Public Policy Group (EGP) maintain a strategic partnership that has resulted in
The Annual Kauffman-Max Planck Conference on Entrepreneurship Research. The Conference takes place each year on alternate sides of the Atlantic and brings together the leading scholars in the world on entrepreneurship research to analyze state-of-the art theory and empirical analysis. The 3rd annual conference was organized in May 2008 in Schloss Ringberg near Munich with the theme of Entrepreneurship and Economic Growth.

**Cooperation with International Consortium on Entrepreneurship (ICE)**

The Entrepreneurship, Growth and Public Policy Group (EGP) cooperates with the International Consortium on Entrepreneurship (ICE). ICE works to improve the analytical foundation for entrepreneurship policies. It is an international consortium of policy-makers, mainly from ministries of economics, and partner organizations. The eight full members are Canada, Denmark, Finland, Norway, Sweden, the Netherlands, the UK, the US and the OECD. ICE projects do not aim at producing new data, but rather critically demand and buy accurate entrepreneurship data from other respectable sources designed to specifically meet member countries’ needs. A major focus is also the initiation of comparative policy analysis in order to improve the understanding of the functioning of entrepreneurship policies. FORA, the Danish ICE member and founder of the consortium, serves as secretariat for the consortium.

**Cooperation with Knowledge Science and Innovation (KSI)**

The Evolutionary Economics Group (EVO) and the Entrepreneurship, Growth and Public Policy Group (EGP) collaborate with the German-French Associated European Laboratory “Knowledge Science and Innovation”. The cooperating institutes are “Centre National de la Recherche Scientifique”, the Université Louis Pasteur, Strasbourg and the “Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung”. Annual workshops are held in an effort to enhance policy decisions on innovation.

**European Initiative for Policy Research in Entrepreneurship and Growth (IPREG) – A European Network of National Networks**

The European Initiative for Policy Research in Entrepreneurship and Growth (IPREG) created a European network of national networks to initiate and disseminate policy and policy oriented research focusing on entrepreneurship and economic growth. The idea is to bridge the gap between policymakers and researchers to establish a scientific basis for more efficient growth policies. The focus of IPREG contributes to the revitalisation of the Lisbon strategy that was launched by the European Union in 2000. The Entrepreneurship, Growth and Public Policy Group (EGP) is a member of IPREG.

**Economic Sciences for Sustainability**

The Evolutionary Economics Group (EVO) participates in this research project financed by the German Federal Ministry on Education and Research jointly with the Carl von Ossietzky University Oldenburg (Reinhard Pfriem, Heinz Welsch) and the Dresden Technical University (Marco Lehmann-Waffenschmidt). The aim of the project is to identify barriers and promoting factors in achieving more sustainable lifestyles in terms of energy and food consumption. Furthermore, the project seeks to integrate different theoretical perspectives on the subject, namely evolutionary economics, happiness research, institutional economics and cultural economics. In the second and third year of the project, the survey data on consumers, producers, retailers and non-profit organizations (collected in the region of Hannover as well as the south of Germany) were analyzed. The results were presented to the general public at a workshop in November 2009 in Oldenburg. Two further workshops were held, one in February 2009 (Berlin), where the empiri-
cal results were discussed with an academic audience, and one workshop in June 2009 (Oldenburg) on the theoretical insights of the project more in general. The project ends in March 2010.

“Lasers: A Spatial-Sectoral System of Innovation and its Evolution (LASSSIE)” is a conjoint project of Helmuth Albrecht (Technical University Bergakademie Freiberg), Michael Fritsch (Friedrich Schiller University Jena) and Guido Buenstorf (MPI Econ). Its objectives are to identify relevant nodes of knowledge generation and channels of knowledge transfer, to analyze their interaction and change and to better comprehend the scope of an innovation system in functional, sectoral and spatial dimensions. In order to achieve these aims, the project maps and analyses the evolution of the laser industry in Germany from its inception to the present. The project is funded by the Volkswagen Stiftung in the framework of the initiative “Innovationsprozesse in Wirtschaft und Gesellschaft”.

How does strategic interaction of oligopolistic employers influence the flexibility in reacting to business cycle effects and structural changes? Participation in the DFG –Schwerpunktprogramm (sub-project in collaboration with Siegfried Berninghaus and Hans-Jürgen Ramser).

4.2 EU Projects

DIME
DIME (Dynamics of Institutions and Markets in Europe) has been made a Network of Excellence under the Sixth Framework Program of the EU. It started operating in February 2005. The Evolutionary Economics Group (EVO) and the Entrepreneurship, Growth and Public Policy Group (EGP) together with the University of Jena are one of the contractors of DIME. A total of 49 partners from several countries are involved in DIME. This network of excellence has two main objectives. On the academic side it coordinates interdisciplinary empirical research on the co-evolution of technologies, corporate organizations and institutions as the fundamental driving process of economic change. Networks, institutions, knowledge flows and a regional perspective are at the core of this approach. On the structural side the network organizes dissemination workshops for practitioners and policy makers and establishes a Europe-wide teaching package in its research field. A common Ph.D. and master program is conducted, as well as joint summer schools and Ph.D. events. MPI Econ plays an active role in all these activities. Examples for activities carried out by MPI Econ within DIME include the coordination of WP 1.9 “Knowledge, capabilities and organizational processes: Towards a useful representation of production” (G. Buenstorf, with the active participation of T. Ciarli and A. Lorentz) and WP 3.20 “An Evolutionary approach to development and institutions: An application to technological change in the agro-food sector” (T. Ciarli), the organization of a workshop for WP 1.9 (held in Jena within the EMAEE conference, spring 2009) as well as teaching at DIMETIC (G. Buenstorf, teaching staff for the Maastricht session 2008, 2009) and SME (T. Ciarli and A. Lorentz, teaching staff for the Strasbourg session, spring 2009).

Coordinator: University of Eindhoven, The Netherlands

IAREG
IAREG (Intangible Assets and Regional Economic Growth) is a project financed by the European Union under the Seventh Framework Programme for Research and Technological Deve-
velopment in the “Socio-economic sciences and the humanities” area and started its work in 2007. The IAREG consortium consists of partners from different European countries with the aim of studying the impact of Intangible Assets on Regional Economic Growth. The work carried out by the Partners adhering to the IAREG Project is organized in 8 different Work-Packages with the aim of providing empirical and theoretical analysis as well as useful policy implications to academia, policy makers and general audience. The Entrepreneurship, Growth and Public Policy Group of MPI Econ contributes to a number of Work-Packages. The project will end in 2010.

Coordinator: University of Barcelona. Regional Quantitative Analysis Group (UB-AQR), Spain

AEGIS
AEGIS (“Advancing Knowledge-Intensive Entrepreneurship and Innovation for Economic Growth and Social Well-being in Europe”) is a project financed by the European Union under the Seventh Framework Programme for Research and Technological Development in the “Socio-economic sciences and the humanities” area and started its work in 2009. It studies the interactions between knowledge, innovation, economic growth, and social well-being in Europe. The project moves away from a person-centric view of entrepreneurship and considers entrepreneurs as generating and using knowledge, and as inserted in networks, systems, institutions and society and involved in dynamics processes of innovation and transformation. The main ideas of the project are related to the perception of knowledge-intensive entrepreneurship as a necessary mechanism and an agent of change mediating between the creation of knowledge and innovation and its transformation into economic activity. In particular, knowledge-intensive entrepreneurship represents herein as a core interface between two interdependent systems: the knowledge generation and knowledge diffusion system, on the one hand, and the productive system, on the other. In turn, both systems – and therefore also entrepreneurship - shape and are shaped by the broader social context – including customs, culture, and institutions. The Evolutionary Economics Group (EVO) and the Entrepreneurship, Growth and Public Policy Group (EGP) of MPI Econ both contribute to several Work-Packages. The project will end in 2011.

Coordinator: PLANET, Athens, Greece
4.3 Visiting Scholars, Guests and Guest Lectures

2008

**Alós-Ferrer, Carlos**, Department of Economics, Chair of Economic Theory (Microeconomics), University of Konstanz, Germany, *Guest lecture*: The Logit Response Dynamics.

**Arat, Ayala**, The Eitan Berglas School of Economics, Tel Aviv University, Israel, *Guest lecture*: The Tennis coach problem: A game theoretic and experimental study.


**Berninghaus, Siegfried**, Institute for Economic Theory and Operations Research, University of Karlsruhe, Germany.


**Bleich, Sabrina**, Institute for Economic Theory and Operations Research, University of Karlsruhe, Germany.

**Bosma, Niels**, Urban and Regional Research Center Utrecht, Utrecht University, The Netherlands.

**Braham, Matthew**, Faculty of Philosophy, University of Groningen, The Netherlands, *Guest lecture*: Degrees of Causation.


**Buttermann, Garry**, University of Louisville, Kentucky, USA.

**Cappelletti, Dominique**, Interdepartmental Centre for Research Training in Economics and Management (CIFREM), University of Trento, Trento, Italy.

**Castellacci, Fulvio**, Norwegian Institute of International Affairs (NUPI), Oslo, Norway, *Guest lecture*: Innovation and structural change in OECD countries.

**Chaudhuri, Swayan**, Business School & Centre for Knowledge, Innovation, Technology & Enterprise (KITE), Newcastle University, United Kingdom, *Guest lecture*: Universities, Small Firms and Regions: Innovation and Economics Growth.

**Chaudhuri, Swayan**, Business School & Centre for Knowledge, Innovation, Technology & Enterprise (KITE), Newcastle University, United Kingdom, *Guest lecture*: Universities, Small Firms and Regions: Innovation and Economics Growth.

**De Haan van der Weg, Peter**, Swiss Federal Institute of Technology, Zurich, Switzerland, *Guest lecture*: Monetary and indirect effects of tax rebates for the purchase of energy-efficient cars: Results from surveys and agent-based microsimulation, and assessment of rebound effects.

**Devito, Jennifer**, Indiana University, Bloomington, USA.

**Dorroll, Courtney**, Indiana University, Bloomington, USA.

**Dutta, Bhaskar**, Department of Economics, University of Warwick, Coventry, United Kingdom, *Guest lectures* on Strategic Models of Group Formation.

**Eklund, Johan**, Jönköping University, Sweden.

**Elsner, Wolfram**, University of Bremen, *Guest lecture*: The process and a simple logic of “Meso” economics: Emergence and the co-evolution of institutions and “Meso” group size.

**Elston, Julie Ann**, Cascades Campus, Oregon State University, Corvallis, USA.

**Fagiolo, Giorgio**, Sant’Anna School of Advanced Studies, Pisa, Italy.

**Falck, Oliver**, Human Capital and Innovation, Ifo Institute Munich, Germany.

**Fellner, Gerlinde**, Institute of Economic Policy and Industrial Economics, Vienna University of Economics and Business Administration, Austria.
Fischbacher, Urs, Department of Economics, Chair of Applied Research in Economics, University of Konstanz, Germany.

Fischer, Sven, ELSE & Department of Economics, University College London, United Kingdom.

Fitza, Markus, Johannes Gutenberg University, Mainz, Germany, Guest lecture: Diversification in the Venture Capital Industry.

Folta, Timothy, Grannert School of Management, Purdue University, West Lafayette, USA, Guest lecture: Experimental Self-Employment.


Gamble, Edward, Edwards School of Business, University of Saskatchewan, Saskatoon, Canada.

Ghate, Chetan, Indian Statistical Institute, New Delhi, India.

Hodgson, Geoff, University of Hertfordshire, United Kingdom, Invited Lecture at Doctoral Training Course “Evolutionary Economics” March 2008.

Hölzl, Werner, Austrian Institute of Economic Research, Vienna, Austria, Guest lecture: Are high growth more innovative than other firms?


Jarosch, Monika, University of Wuppertal, Germany.

Klepper, Steven, Carnegie Mellon University, Pittsburgh, USA.

Korsgaard, Audrey, Moore School of Business, University of South Carolina, Columbia, USA, Guest lecture: Firm Performance, Board Processes, and CEO Turnover.

Klient, Hartmut, Frankfurt School of Finance & Management, Frankfurt (Main), Germany.

Kocher, Martin, Department of Economics, Chair of Behavioral Economics and Experimental Economics, LMU Munich, Germany.

Kreutter, Peter, WHU Otto Beisheim School of Management, Koblenz/Vallendar, Germany, Guest lecture: When entrepreneurial spirit is not enough. The ill-fated model of spun-out IT Departments and their role in the emergence of the IT outsourcing industry in Germany (together with G. Stadtmann).

Kübler, Dorothea, Faculty of Economics and Management, Chair of Microeconomics, Technical University of Berlin, Germany, Guest lecture: Why Votes Have a Value.

Kurz, Heinz, Karl-Franzens-University Graz, Austria, Guest lecture: Über das Wachstum im Wissen vom Wissen im Wachstum.

Leitao, Joao, Management and Economics Department, University of Beira Interior, Covilhã, Portugal.


Liviano-Solis, Daniel, Universitat Rovira i Virgili, Reus, Spain, Guest lecture: Determinants of Industrial Location: A Spatial Approach.

Löffler, Andreas, Chair of Finance and Investment, Faculty of Economics and Business, University of Paderborn, Germany.

Lübke, Weyma, Institute of Philosophy, University of Leipzig, Germany, Guest lecture: Nonaggregationismus.

Lüdemann, Elke, Human Capital and Innovation, Ifo Institute Munich, Germany.

Luksha, Pavel, Institute of Economics, Russian Academy of Sciences, Moskau, Russia, Guest lecture: How organizations create their (business) environment – an evolutionary perspective.

Maciejovsky, Boris, Massachusetts Institute of Technology (MIT), Sloan School of Management, Cambridge, USA.

Miettinen, Topi, Stockholm Institute of Transition Economics (SITE), Stockholm School of Economics, Sweden.

Özcan, Serden, Copenhagen Business School, Copenhagen, Danmark, Guest lecture: Size-localized spatial density and plant survival: The effect of organizational form.

Okamuro, Hiroyuki, Graduate School of Economics, Hitotsubashi University, Tokyo, Japan, Guest lecture: Determinants and Effects on partner choice in the research partnership between small businesses and universities.


Ploner, Matteo, Department of Economics, University of Trento, Italy.

Powers, Joshua, Educational Leadership, Administration and Foundations, Indiana State University, USA, Guest lecture: The Effects of Technology Licensing on Innovation Diffusion in the Live Sciences.

Qiu, Jianying, Faculty of Economics and Statistics, Department of Public Finance and Department of Economic Theory, Economic Policy and Economic History, University of Innsbruck, Austria.

Sanders, Mark, Graduate School of Economics, Utrecht University, The Netherlands, Guest lecture: Intellectual Property Rights and the Knowledge Spillover.

Savona, Maria, University of Lille 1, France.

Schetzkat, Ronald, University of Wuppertal, Germany. Guest lecture: The astonishing regularity of service employment expansion.

Schweizer, Lars, Frankfurt University, Germany.

Sofka, Wolfgang, Center of European Economic Research (ZEW), Mannheim, Germany.

Souitaris, Vangelis, Cass Business School, City University London, United Kingdom, Guest lecture: The effects of experience on licensing and spinning off from public research institutions. The case of Max Planck.

Stadler, Manfred, Faculty of Economics, Department of Economic Theory, University of Tübingen, Germany.

Stadtmann, Georg, WHU Otto Beisheim School of Management, Koblenz/Vallendar, Germany, Guest lecture: When entrepreneurial spirit is not enough. The ill-fated model of spun-out IT Departments and their role in the emergence of the IT outsourcing industry in Germany (together with P. Kreutter).

Stanton, Angela, Anaheim, USA, Guest lecture: Making Up Your Mind: Judgmental Hormones.

Stauf, Julia, Institute for Entrepreneurial Studies and Innovation Management, Humboldt University Berlin, Germany.

Strasser, Sebastian, Department of Economics, Munich Graduate School of Economics (MGSE), LMU Munich, Germany.

Terjesen, Siri, Kelley School of Business, Indiana University, Bloomington, USA, Guest lecture: New Venture Team Composition: Persistence and Performance.

Teruel, Mercedes, Department D’Economia, Universitat Rovira i Virgili, Reus, Spain.
Tonoyan, Vartuhi, Institute for Small Business Research, University of Mannheim, Germany, 
Guest lecture: Corruption and Entrepreneurship.

Traub, Stefan, Department of Economics, University of Bremen, Germany.

Truffer, Bernhard, Swiss Federal Institute of Aquatic Science and Technology, Eawag, Switzerland, 
Guest lecture: Towards an integrated analysis of technological and spatial innovation systems – Insights from the study of environmental innovations.

Valente, Marco, University of L’Aquila, Italy, Guest lecture: A percolation model of the product lifecycle.


Varsakelis, Nikos, Department of Economics, Aristotle University of Thessaloniki, Greece, 
Guest lecture: European Regional Knowledge Spillovers and Technological Convergence: A Maximum Entropy Markov Model.


Wacker, Evelin, Bernstein Center for Computational Neuroscience, Charité Berlin, Germany.

Warning, Susanne, IAAEG, Trier, Germany, Guest lecture: Firm Organization and Employment Volatility.

Weiler, Stephan, Department of Economics, Colorado State University, Fort Collins, USA, Guest lecture: Geographical Information Asymmetries and the Value of Research.

Weitzel, Utz, University of Utrecht, The Netherlands.

Welter, Friederike, Rheinisch-Westfälisches Institut für Wirtschaftsforschung, Essen, Germany, 
Guest lecture: Reviewing Entrepreneurship in a Transition Context.

Wright, Stephen, Department of Economics, Birkbeck College, University of London, United Kingdom.

Zarri, Luca, Department of Economics, University of Verona, Italy, Guest lecture: On Punishing Non-Punishers. When (Not So) Nice Guys Deserve the Stick, not the Carrot.

Zultan, Ro’i, The Center for Study of Rationality, The Hebrew University, Jerusalem, Israel.

2009

Acs, Zoltan, Center for Entrepreneurship and Public Policy, George Mason University, Fairfax, USA, Guest lectures: American Money – Making it, giving it away and why it will continue to influence the world, and: Gearing up to measure entrepreneurship in a global economy.

Attanasi, Giuseppe, Chair in Mathematical Economics, Toulouse School of Economics, France.

Barigozzi, Matteo, ECARES - Université Libre de Bruxelles.

Beckert, Jens, MPI for the Study of Societies, Cologne, Guest lecture: Distributional Effects and Demand Factors in Lottery Markets.

Berger, Noam, Einstein Institute of Mathematics, The Hebrew University of Jerusalem, Israel.

Berninghaus, Siegfried, Institute for Economic Theory and Operations Research, Chair of Economics, University of Karlsruhe.

Bleich, Sabrina, Institute for Economic Theory and Operations Research, University of Karlsruhe, 
Guest lecture: Screening of workers’ motivation under heterogenous qualification.

Blendin, Hanja, Department of Politics and Management, University of Konstanz, Germany.

Bracht, Jürgen, Department of Economics, University of Aberdeen Business School, United Kingdom, Guest lecture: How to place trust well: An experimental Study in the Role of the Source of information.
Brünner, Tobias, Institute for Research in Economic Evolution, University of Freiburg, Guest lecture: Bidding Behavior in Second-price procurement auctions.


Buttermann, Garry, University of Louisville, USA.

Brunner, Hans-Peter, Human Capital and Innovation, Ifo Institute Munich, Germany.

Daraio, Cinzia, University of Bologna, Italy, Guest lecture: A general framework for the consolidation of productivity stylized facts.


Dragone, Davide, University of Bologna, Italy, Guest lectures: Food consumption, social conformism and health concerns: Implications for public policy, and: A real-time experiment on intertemporal preferences.

Ehrig, Timo MPI for Mathematics in the Sciences, Leipzig, Germany, Guest lecture: Strategizing using analogies and metaphors expressed in texts: A coherence-based approach to model reasoning about novelty.

Fellner, Gerlinde, Institute of Economic Policy and Industrial Economics, Vienna University of Economics and Business Administration, Austria.


Fischer, Sven, ELSE & Department of Economics, University College London, United Kingdom.

Ford, Randal, Spartanburg Regional Healthcare System, USA.

Hanappi, Hardy, University of Technology, Vienna, Austria, Guest lecture: Credit and economic policy in a crisis – Are there answers from evolutionary economics?

Gamble, Edward, University of Prince Edward Island, Charlottetown, Canada, Guest lecture: Rural Entrepreneurship and Economic Development.

Ghate, Chetan, Indian Statistical Institute, New Delhi, India.

Hülsbeck, Marcel, Augsburg University, Germany.

Hvide, Hans, University of Aberdeen, Scotland, Guest lecture: Are founders non-substitutable? Evidence from nascent firms where a founder dies.

Katsanidou, Alexia, Division of Sociology and Social Policy, School of Social Sciences, University of Southampton, United Kingdom.

Klepper, Steven, Carnegie Mellon University, Pittsburgh, USA.

Kliemt, Hartmut, Frankfurt School of Finance & Management, Frankfurt (Main), Germany.

Kritikos, Alexander, Deutsches Institut für Wirtschaftsforschung (DIW) Berlin and Hanseatic University IRE, Rostock, Germany, Guest lecture: The Impact of Personality Characteristics on Entrepreneurial Development.

Krueger, Norris, Founder Entrepreneurship Northwest, Boise, USA, Guest lecture: What Should Cognition Scholars and Social Entrepreneurs Ask Each Other?

Laspita, Stavroula, European Business School, Oestrich-Winkel, Germany.

Leroch, Martin, Institute of SocioEconomics, University of Hamburg, Guest lecture: perceiving the boss: does the role of the boss change his perception by subordinates - ideas for an experiment.

Llorente, Loreto, Department of Economics, University of Navarra, Pamplona, Spain, Guest lecture: Price-competition: Bertrand equilibria with u-shaped average cost functions.

Levin, Dan, Department of Economics, The Ohio State University, Columbus, United States, Guest lecture: On the Conjunction fallacy in Probability Judgment: New Experimental Evidence Regarding Linda.
Lippert, Lysann, Technical University Dresden, Germany.
Menon, Carlo, London School of Economics, United Kingdom, Guest lecture: Stars and Comets: An Exploration on the Patents.
Metcalfe, Stan, Centre for Business Research, Cambridge University, United Kingdom, Guest lecture: Technology and Economic Theory.
Miettinen, Topi, Stockholm Institute of Transition Economics (SITE), Stockholm School of Economics, Sweden.
Migrow, Dimitri, Faculty of Business, Economics and Management Information Systems, Department of Economics, University of Regensburg, Guest lecture: Nature of Production Process and Political Efficiency.
Mittone, Luigi, Department of Economics, University of Trento, Italy.
Müller, Wieland, Department of Economic, University of Tilburg, The Netherlands, Guest lecture: Naked Exclusion: A behavioral approach to exclusive dealing.
Napel, Stefan, Faculty of Law and Economics, Chair of Microeconomics, University of Bayreuth, Germany, Guest lecture: Aspirations, Segregation and occupational choice.
Parker, Simon, The University of Western Ontario, London Ontario, Canada, Guest lecture: Intrapreneurship or Entrepreneurship?
Pelikan, Pavel, Ratio Institute, Stockholm, Sweden.
Ploner, Matteo, Department of Economics, University of Trento, Italy.
Porcile, Gabriel, Universidade Federal do Paraná, Brazil, Guest lecture: Specialization Matters: Keynesian and Schumpeterian Efficiency in a BOP-Constrained Growth Model.
Pull, Kerstin, Faculty of Economics, Department of Personal and Organization, University of Tübingen, Germany.
Raffaelli, Tiziano, University of Pisa, Italy, Guest lecture: Marshall’s evolutionary model.
Qiu, Jianying, Faculty of Economics and Statistics, Department of Public Finance and Department of Economic Theory, Economic Policy and Economic History, University of Innsbruck, Austria.
Sanders, Mark, Graduate School of Economics, Utrecht University, The Netherlands.
Schliffke, Philipp, Department of Economics, Institute of SocioEconomics, University of Hamburg, Germany, Guest lecture: Personal Relationships and the Evolution of Trust.
Santarelli, Enrico, University of Bologna – Faculty of Statistics, Italy.
Sorenson, Olav, Toronto University, Rotman School of Management, Canada, Guest lecture: Venture capital, entrepreneurship and economic growth.
Stadler, Manfred, Faculty of Economics, Department of Economic Theory, University of Tübingen, Germany.
Strauch, Rolf, European Central Bank, Frankfurt, Germany, Guest lecture: The impact of ICT capital and education on TFP – Implications for recent EMU and US growth differences.
Turnovec, František, Faculty of Social Sciences, Institute of Economic Studies, Charles University, Prague, Czech Republic, Guest lecture: Fairness and strict proportional power.
Valente, Marco, University of L’Aquila, Italy.
Vanberg, Viktor, University of Freiburg and Walter Eucken Institute, Freiburg, Germany.
Warning, Susanne, IAAEG, Trier, Germany, Guest lecture: D&O Insurance and Small Firms: Some Empirical Evidence.
van den Broek, Eva, Department of Economics, Chair of Behavioral Economics and Experimental Economics, University of Munich, Germany.

Waichman, Israel, Department of Economics, Christian Albrechts University of Kiel, Germany, Guest lecture: A natural investigation of the Ultimatum Game: The Kiel Market for budget travel by train.

Weiler, Stephan, Department of Economics, Christian Albrechts University of Kiel, Germany.

Walgenbach, Peter, Friedrich Schiller University Jena, Germany, Guest lecture: Institutional theories of organization.

Wennberg, Karl, Imperial College Business School, London, United Kingdom, Guest lecture: The Birth, Growth and Demise of Entrepreneurial Firms in the Knowledge Intensive Economy.

Zelený, Miroslav, Faculty of Mathematics and Physics, Charles University, Prague, Czech Republic.

Zultan, Ro’i, The Center for Study of Rationality, The Hebrew University, Jerusalem, Israel, Guest lecture: Job Market Signaling and job search costs.
5 Conferences and Workshops

Survey of Conferences and Workshops

ESI Winter Workshop on Games, Experiments and Philosophy
Jena, January 6-8, 2008 ........................................ 126

EGP Workshop: Institutional Reform to Support the Entrepreneurial Economy
Jena, 14-18 January, 2008 ........................................ 126

ESI Workshop: Institutional Economics – Theory and Evidence
Jena, February 28 - March 1, 2008 .............................. 127

EGP Workshop: The Allocation of Entrepreneurship
Jena, April 4-5, 2008 ........................................ 128

EVO Workshop/Project meeting: WENKE² – Transition Towards Sustainable Energy
and Food Consumption
Jena, April 17-18, 2008 ........................................ 128

ESI Workshop on Procedural Fairness – Theory and Evidence
Jena, April 22-23, 2008 ........................................ 129

EGP International Working Group on Entrepreneurial Intentions:
Research Planning Meeting
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ESI Winter Workshop on Games, Experiments and Philosophy

From January 6 to 8, 2008, the ESI group held its Winter Workshop on Games, Experiments and Philosophy. Inviting scholars of diverse backgrounds, the workshop broadened our knowledge of neighbouring fields and introduced us to the experimental work in other disciplines. For the field of Experimental Philosophy, Edouard Machery from the University of Pittsburgh gave an Introduction into the topic, which Joshua Knobe from the University of North Carolina built upon with his talk on The pervasive impact of moral judgment. Shaun Nichols from the University of Arizona completed this part of the workshop with his discussion Intuitions and individuels differences: The Knobe effect revisited. Tiziana Zalla of the Institut Jean Nicod, CNRS, Paris rounded out the day with her talk on Regret: conceptual and experimantal issues.

The second day of the workshop offered talks of two completely different topics. The morning was dedicated to Positive Psychology, with Willibald Ruch from the University of Zurich waking everybody up with his entertaining and interesting talk on Character strengths, orientation to happiness as predictors of satisfaction. Although not falling into the direct expertise of any of the ESI researchers, the topic caused lively and productive debate – and a good portion of fun and laughter. Offering a more highly aggregated perspective on the factors driving human happiness, Ruut Veenhoven from Erasmus University Rotterdam afterwards offered his view on Greater happiness for a greater number. How is this possible?

After lunch we returned to more classic topics of economics, with Herbert Dawid from the University of Bielefeld presenting On the relationship between skill-dynamics and innovation: An agent-based analysis and Simon Gächter from the University of Nottingham on Understanding social interaction effects in the workplace – An experimental approach. Being close to our own topics of research, the lively debate that the ESI department is known for soon evolved.

The third day of the workshop was again dedicated to topics that we usually have less contact to, helping us to think beyond the limits of Experimental Economics. Paul Dekker (University of Amsterdam), Gerhard Jäger (University of Bielefeld), Anton Benz (ZAS, Berlin) and Ahti-Veikko J. Pietarinen (University of Helsinki) gave us an extensive introduction into the diverse issues discussed in experimental linguistics and neighboring fields, while Daniel L. Chen (Harvard Law School) offered a discussion on a question we might have hoped was out of question: Does science progress? A statistical approach to postmodern theories of knowledge.

Looking back, three days of mainly non-Economics talks gave us the opportunity to view our field from a bit of a bird’s perspective, discussing and maybe reconsidering some of the alleged deep truths of experimental economics. This may help us to contribute to a positive answer to the last question of the workshop – Does science progress?

EGP Workshop: Institutional Reform to Support the Entrepreneurial Economy

From January 14 to January 18, 2008, the Entrepreneurship, Growth and Public Policy group hosted the Workshop “Institutional Reform to Support the Entrepreneurial Economy” at the Institute in Jena. The workshop was organized by Holger Patzelt, David Audretsch, and Mark Sanders, 14 young scholars (PhDs, Post-Docs, Assistant Professors) from seven countries participated.
Monday’s schedule entailed presentations from Andrew Corbett (Rensslaer Polytechnic Institute), Karl Wennberg (School of Economics Stockholm), Siri Terjesen (Queensland University of Technology), Erik Monsen (Max Planck Institute of Economics), and James Hayton (University of Bocconi). On Tuesday, Joao Leitao (Universidade da Beira Interior), Erik Stam (University of Cambridge), Miguel Amaral (Instituto Superior Technico), Niels Bosma (Utrecht University), and Rui Baptista (Instituto Superior Technico) held presentations. The presentation part was completed on Wednesday morning with talks from Mark Sanders (Utrecht University) and Holger Patzelt (Max Planck Institute of Economics).

On Wednesday afternoon three groups were formed. These groups discussed existing research on how institutions influence the formation, growth, and exit of new ventures, respectively. The goal was to identify new and important avenues for future research, which the groups can jointly address in future research projects. Magnus Hendrekson (Research Institute of Industrial Economics) gave supervisory support and another talk on institutions and entrepreneurship on Thursday afternoon. At the end of the workshop, the three groups presented their results to other participants, resulting in intensive and fruitful discussion for the continuance of the group work after the workshop. Participants’ overall assessment was that the week had been not only interesting and enjoyable but also very productive in terms of ideas for future collaborative research.


Institutional design has been studied as “Ordnungspolitik” and in a more technical way as mechanism and market design. Here the usual assumption is that of common(ly known) rationality, except when optimality relies on dominant strategies (which are universally best replies). The workshop (Feb. 28th – March 1st, 2008) covered both, such normative studies of institutional design as well as empirical studies of institutional arrangements. Although the main focus was on economic institutions like incentive schemes in firms, other presentations were focussed on more interdisciplinary topics like the allocation of organ transplants and even ethical decision making as captured by the well-known trolley tasks. Similarly, the empirical, mostly experimental presentations covered a rather wide range including topics like tax evasion, other regarding concerns in different phases of personal development, and the influence of network formation.

For the ESI-group the workshop served as a landmark for its last Olympic season with its predicted end on the 29th of February in the year 2012. The workshop included most of the researchers, who are closely linked and actively cooperating with members of the ESI-group, especially its director Werner Güth, and has hopefully strengthened the ESI-research network.

Topics and speakers included:

- **Peer influence in a tax-evasion experiment**, Martin Kocher, University of Munich
- **Contestant heterogeneity and tournament incentives**, Kerstin Pull, University of Tübingen
- **On the evolution of market institutions: The platform design paradox**, Georg Kirchsteiger, Université Libre de Bruxelles
- **Information signaling in a game of price competition**, Manfred Stadler, University of Tübingen
- **Scarcity and the institutions of organ transplantation and allocation**, Hartmut Kliemt, HfB Frankfurt
- **The Aggregation Argument in the Numbers Debate**, Weyma Lübbe, University of Leipzig
- **Agents play more sophisticated than Nash: Experimental evidence from network formation experiment**, Siegfried Berninghaus, University of Karlsruhe
- **Social preferences and risk attitudes in children and adolescents**, Matthias Sutter, University of Innsbruck
EGP Workshop: The Allocation of Entrepreneurship

From April 4 to April 5, 2008, the Entrepreneurship, Growth and Public Policy group hosted the workshop “Allocation of Entrepreneurship” at the Institute in Jena. The workshop was organized by David B. Audretsch (Max Planck Institute of Economics), Zoltan J. Acs (George Mason University) and Sameeksha Desai (Max Planck Institute of Economics).

Topics and speakers included:

- **Government as Social Entrepreneur: A Theoretical Basis**, Gordon Shockley, Arizona State University
- **Entrepreneurship, Structural Change and Development**, Wim Naude, World Institute for Development Economics Research
- **An Experiment on Allocation of Entrepreneurship**, Utz Weitzel, Utrecht University
- **Entrepreneurship and SME Growth: Evidence from Advanced and Laggard Transition Economies**, Besnik Krasniqi, Staffordshire University
- **A Theory of Destructive Entrepreneurship**, Sameeksha Desai, Max Planck Institute of Economics
- **Productive, Unproductive and Destructive Entrepreneurship: A Theoretical and Empirical Exploration**, Arnis Sauka, Stockholm School of Economics in Riga
- **Discussion on Entrepreneurship and Growth; Entrepreneurship and Development**, Zoltan Acs, Max Planck Institute of Economics.

EVO Workshop/Project meeting: WENKE² – Transition towards sustainable energy and food consumption

The project WENKE², which is financed by the Federal Ministry of Education and Research (March 2007–March 2010), inquires into the factors hindering and promoting a wider diffusion of sustainable consumption patterns. It integrates several theoretical perspectives which deviate from the standard economic framework, including happiness research, evolutionary economics, institutional economics and cultural economics. The project specifically studies the transition process in the consumption of food and energy in the residential sector.

In April 17-18, 2008, members of the WENKE² project met in Jena to discuss the “naturalistic approach” to economics developed by Ulrich Witt, which is a core element of the research agenda of the evolutionary economics group. In the talk entitled “What do we know about consumers’ preferences?” Ulrich Witt presented the naturalistic approach to consumer behavior (Theory of learning consumers), which integrates the motivational basis of consumers into consumption analysis. Witt argued that consumers share a certain set of preferences because of their joint genetic endowment, which is reflected in the psychological-biological make-up of modern humans. Taking into account these motivational underpinnings of behavior is a deviation from the neoclassical assumption of subjective preferences. Witt explained that in the long-run, preferences and consumer behavior evolve as a result of three processes: genetic adaptation, conditioning learning, and cognitive learning. The latter two processes play the major role for current consumption patterns. Learning processes are a necessary condition for ongoing consumption growth by overcoming temporary satiation of consumers’ needs.

Guido Buenstorf and Christian Cordes gave a talk on “Consumer Learning for a Transition toward Sustainability.” Guido Buenstorf emphasized that the consumption of environmentally benign goods will
depend on cognitive learning processes, as consumers cannot learn to appreciate the environmental friendliness of products through conditioning learning, i.e. sensory experiences. Christian Cordes presented a formal model to illustrate that three major factors drive the diffusion of consumption goods: a direct bias (i.e. choosing products that yield sensory rewards), a role model bias (i.e. choosing the product consumed by individuals of high status) and a conformity bias (i.e. consuming like the majority of consumers). While environmentally friendly goods might diffuse as a result of social learning processes triggered by the two latter biases, conventional goods which are directly rewarding can challenge a once established environmentally friendly consumption regime, hence hindering a lock-in.

The talk held by Reinhard Pfriem dealt with “The turning point from production capitalism to consumption capitalism from a culturalistic perspective.” Reinhard Pfriem emphasized that consumption patterns show a strong cultural imprinting, which emerges through the interaction of demand and supply side. These culturally contingent meanings show only a loose connection to biologically-determined basic needs, but instead an orientation towards happiness and enjoyment. Analyses of consumption behavior will benefit from taking into account how entrepreneurs and other actors determine cultural meanings and practices.

ESI Workshop on Procedural Fairness – Theory and Evidence

The Strategic Interaction Group held a workshop on “Procedural Fairness – Theory and Evidence” on April 22-23, 2008. The interdisciplinary workshop gathered together several scholars, who have undertaken experimental research on the topic of procedural fairness and have posited alternative theoretical explanations for behavior in these settings.

The work-shop reviewed recent formal models of procedural fairness. It examined similarities and differences in theoretical structure and predictions. It also looked at many experiments where these models have been taken to data. There were ten presentations during two days including such scholars as Gary Bolton from Penn State, Axel Ockenfels from the University of Cologne, and Tim Salmon from the Florida State University.

All presentations provided the setting for fruitful and rich discussions, both during and after the formal sessions for the 35 participants of the workshop.

EGP International Working Group on Entrepreneurial Intentions: Research Planning Meeting

In June of 2009, Alan Carsrud (Ryerson University, Canada) and Malin Brännback (Åbo Akademi, Finland) published the edited book “Understanding the Entrepreneurial Mind: Opening the Black Box” as Volume 24 in David Audretsch’s “International Studies in Entrepreneurship” with the publisher Springer. One important step in the process was a meeting of the authors of this edited volume from May 19th to 21st 2008 in Jena, Germany. At this intensive research and planning meeting, contributing authors from around the globe presented the concepts for their chapters and exchanged feedback on how to produce a volume that is more integrated and forward-looking than more tradi-
tional research handbooks. Over the three days, a series of five topic clusters emerged (Entrepreneurial Perceptions and Intentions; Cognitive Maps and Entrepreneurial Scripts; Motivations, Emotions, and Entrepreneurial Passion; Attributions, Self-efficacy, and Locus of Control; and Thinking and Behaving), around which the chapters of the book are now organized. The work of two researchers from our institute, Erik Monsen and Diemo Urbig, appear in Chapter 12 of the book “Perceptions of Efficacy, Control, and Risk: A Theory of Mixed Control”.

EGP Annual Max Planck Ringberg Conference

From June 8 to June 10, 2008, the Entrepreneurship, Growth and Public Policy group hosted the “Annual Max Planck Ringberg Conference” at the Ringberg Castle at the banks of Lake Tegernsee. The focus of this year’s conference was The Entrepreneurial University. The conference was co-organized by the EGP group and the Ewing Marion Kauffman Foundation.

Topics and speakers included:

- *The Future of Universities in Europe*, Thomas Andersson, Jönköping University; Wolfgang Herrmann, Technical University of Munich; Axel Freimuth, University of Cologne
- *Education, Entrepreneurship and Economic Growth*, JanWillem Oosterwijk, Erasmus University Rotterdam
- *A View on Entrepreneurial Universities in Israel*, Manuel Trajtenberg, University of Tel-Aviv
- *The Entrepreneurial University*, Michael Crow, Arizona State University
- *Universities and Technology*, William Wulf, University of Virginia; Manuel Heitor, Secretary of State for Science, Technology and Higher Education
- *The Global University*, Alan Merten, George Mason University
- *Should Universities Be Agents of Economic Development?* Robert Litan, Lesa Mitchell, Ewing Marion Kauffman Foundation

**EVO Workshop: Emerging Clusters. Theoretical, Empirical and Political Aspects of the First Stage of Cluster Evolution**

In recent years a lot of theoretical and empirical work has been carried out to enlarge the understanding of growth processes and the functioning of local clusters. Many valuable insights into the relevant factors and processes have been gained. Contrary to this, the actual genesis of clusters has been less scrutinized. But the few existing contributions strongly emphasize the essential difference between the factors leading to this genesis and those guaranteeing the functioning of the clusters. Therefore special consideration is required on the actual phase of emergence to gain a deeper insight into the process of cluster evolution.

The intention of the workshop (June 2008) was to gather theoretical and empirical contributions from different fields which focus on the phase of cluster. It was divided into successive sessions with two or three presentations each and a subsequent discussion. Initially, around 20 researchers were invited to submit a paper for presentation at the workshop at the Max Planck Institute of Economics in Jena (Germany). Out of these, 15 researchers submitted and presented their papers. The workshop was jointly organized by David B. Audretsch, Max Planck Institute of
Economics, Jena; Dirk Fornahl, Max Planck Institute of Economics, Jena; Sebastian Henn, MLU Halle-Wittenberg, Halle; and Max-Peter Menzel, University of Berne, Berne, Switzerland.

**EVO Workshop: The Role of Consumption for Structural Change in the Economy**

This workshop organized by the Evolutionary Economics Group in July 2008 gathered scholars involved in theoretical or applied investigations that relate consumption and demand analysis to structural change. The aim was to provide a more comprehensive understanding of demand-driven structural change which takes into account empirical evidence that has been enabled by recent developments in econometrics.

Giorgio Fagiolo (Sant’Anna, Pisa) presented a paper on “Phenomenology of household consumption patterns”, in which he explored some statistical properties of household expenditures in Italy. Andreas Reinstaller (WIFO, Vienna) gave a talk on “The impact of productivity and demand shocks on structural dynamics: Evidence from OECD countries 1979-2004”. Based on Pasinetti’s (1981) model of structural dynamics he estimates a vector autoregressive model showing that structural change within and between industries may have quite different determinants. Ori Heffetz (Cornell University) presented a paper on “Symbolic consumption and structural change.” He suggested that consumption that is driven by its association with symbolic meanings may play an important role in microeconomic consumer behavior and hence in macroeconomic outcomes. Ulrich Witt (MPI Jena) gave a talk on “Differential satiation effects and changing consumer expenditure shares” where he presented a model based on a behavioral approach to consumption. Alessio Moneta (MPI Jena) gave a talk on “Satiation, escaping satiation, and structural change: some evidence from the evolution of Engel curves” He linked certain properties of Engel curves to patterns of structural change in the economy, using UK Family Expenditure Survey data. Based on the same data set is the paper presented by Andreas Chai (Productivity Commission, Australian Gov.): Some Empirical Evidence about the Hierarchy of Wants.” This paper examines the degree to which the distribution of consumption expenditure across wants is stable at the lowest income levels. In the second day, André Lorentz (MPI Jena) presented a paper on “Structural change of production and consumption”, where he proposed a model to analyze the concomitant effects of structural changes in both production and consumption.

Luigi Pasinetti (Catholic University of Milan) gave a talk on “Consumption vs. technology – their asymmetric role in a process of structural dynamics”. He presented his claim that the feature of modern economic systems is necessarily structural, arguing that technology and demand evolve following two independent paces. Paolo Saviotti (University Mendes-France, Grenoble) presented the paper “Demand, structural change and economic development,” where he discussed the interaction of consumption and of structural change in the long term evolution of the economic system. Davide Gualerzi (University of Padua) presented “Consumption and Growth: A new perspective”, showing a scheme centered on the reciprocal determination of consumption and growth. Bart Verspagen (University of Maastricht) gave a talk on “Shifting consumption patterns: a neglected determinant of growth performance?” in which he investigated the potential importance of a third determinant of output growth, international differences with respect to consumption dynamics. Finally, Werner Hildenbrand (University of Bonn) presented a paper on “Aggregate demand of a heterogeneous population.” It is shown how one can effectively use microdata in modelling the change over time in an aggregate of a large and heterogeneous population.
EVO-RETREAT
The Evolutionary Economics Group gathered together, Sept. 28th – Oct. 2nd, 2008, for an internal strategy discussion and brainstorming session in Sudelfeld, Bavaria. This retreat was meant to help clarifying the evo group’s roadmap for the coming years, to review the ongoing projects, encourage synergies, and trigger cooperation, publication, conferences, hiring, exchange, and others.

Three sets of questions were circulated before the meeting to allow everybody to make up her or his mind and prepare individual presentations.

The first set of questions revolved around the state of affairs in the individual research projects. What questions do the group’s projects try to answer and why are these questions important. What do we consider the “evolutionary specificity” – conceptually and/or methodologically – in our approach? And how do the individual research projects relate to the research agenda of the whole evolutionary group?

The second theme touched the issue of cooperation within the group and was meant to look out for future prospects for the evo group research agenda. What joint projects with other researchers would be desirable and what kind of output would one expect to emerge? How would these projects relate to, or expand, current work in evolutionary economics and why would this be important to do?

Last but not least, the question of how to increase the output of the group’s research was raised. To strengthen ties with the economic community one can take several actions (e.g. organizing workshops, joint conference sessions, etc.). People discussed concrete suggestions for workshops and cooperation projects and also ideas as to how the group can increase the publication output.

It was a full three-days schedule of work. Of course, the group also took the time for relieve. The surrounding of the place invited some hiking tours.

ESI Workshop: ESI–EVA–HHL
On October 7, 2008, Christoph Vanberg of the ESI group organised an informal JENA-LEIPZIG workshop. There were no ex ante restrictions regarding to the topics of the talks; the workshop was mainly meant as a chance to get to know researches from the Department of Developmental and Comparative Psychology of the Max Planck Institute for Evolutionary Anthropology in Leipzig and from the chair for Economics and Information Systems of HHL – Leipzig Graduate School of Management. Keith Jensen and four of his Ph.D. students from EVA talked about experiments with bonobos and chimpanzees. The HHL enriched the workshop by two presentations: “Projective Expected Utility” by Piero La Mura on “Bargaining with incomplete information” by Ekaterina Demidova. In addition, Astrid Matthey and Christoph Vanberg presented the research agenda of the ESI group, and Christian Cordes of the EVO group of our institute talked about the naturalistic approach to economics. The whole day of presentations and discussions between members of the three local scientific institutes gave us a great opportunity to enrich our research agenda with a new perspective. Especially the relation of the experiments with human participants and the experiments with apes seems to be a really challenging agenda for our future research.
Roland-Seminar on Legal and Social Philosophy

The “Roland-Seminar” usually takes place in Bad Godesberg with its Rolandsbogen where its initiator Ernest Garzón Valdés is living. It’s a meeting mainly of philosophers, sociologists, and economists with widely varying research interests. The topic of the meeting in Jena (Dec. 2008) was “Legal and Social Philosophy” but also covered fundamental topics like variations in rationality, Asian philosophy, the conflict between reasons and feelings, and of overarching philosophical concepts for moral philosophy and institutional design. The rather small workshop demonstrates the interdisciplinary research orientation of the ESI-group and the close links with researchers in the neighboring social sciences.

The agenda of the meeting was the following:
- Susanne Hahn (Mülheim-Ruhr): Rational, irrational, arational – Fragen rund um einen universell eingesetzten Ausdruck
- Siegfried Berninghaus (Karlsruhe): Buddhismus – Futter für Kritische Rationalisten?
- Max Albert (Gießen): Wenn Rationalität zu etwas gut sein soll, bleibt nichts von ihr übrig
- Bernd Lahno (Frankfurt, M.): Wieder einmal: Vernunft und Gefühl
- Rainer Hegselmann (Bayreuth): Modellierung von Humes Theorie der Moral- und Institutionen- nengenese – Ein Fortschrittsbericht mit Live-Vorführung

Wirtschaftspolitik im institutionellen Umfeld

In February 2009, the Max Planck Institute of Economics organised a symposium “Wirtschaftspolitik im institutionellen Umfeld” to honour Manfred E. Streit’s 70th birthday. Former colleagues and companions of the laureate assembled in Jena to discuss issues that were of central concern to the work and life of Manfred Streit. After a welcome address by the institute’s then-managing director David Audretsch, the laudatio was held by Peter Oberender (Bayreuth) recalling the stations of Streit’s successful career. Subsequently Stefan Voigt (Marburg) gave a talk on the role of procedural law for economic growth (“Welche Rolle spielt das Prozessrecht für wirtschaftliches Wachstum?”), where he discussed findings of an empirical analysis correlating variables representing the judicial regime with indicators of economic growth. Afterwards, Stefan Okruch (Budapest) gave a lecture on economic policies in the institutional context of the European Union (“Wirtschaftspolitik im europäischen Umfeld: Systemwettbewerb und/oder Politikkoordination?”). The final talk was held by Christoph Engel (Bonn) on his research about competition as a social dilemma (“Wettbewerb als soziales Dilemma”). Engel summarized a research programme in which he conceptualized issues of collusion in cartels as social dilemmas.

The symposium found an adequate counterpoint to the intellectually stimulating talks in the gustatorily stimulating dinner banquet in the Institute’s library afterwards.

ESI Pre-Spring Workshop

The ESI Pre-Spring Workshop 2009 was being held from March 16 until March 19. The event was organized by the whole ESI Group with special effort from René Levinský. The traditional workshop takes place since March 2007 and ever since international researchers annually meet in Jena to discuss recent developments in theoretical and experimental economics. This year’s workshop offered 20 speakers the opportunity to give a presentation and provided plenty of opportunities for exchange of ideas. Participants also included researchers from the Strategic Interaction Group as well as PhD students from the IMPRS Uncertainty and Jena Graduate School doctoral programs. Everyday saw a variety of talks, brainstorming as well as common lunch and
dinners, which gave participants the chance to immerse in the research topics. Every contribution was scheduled to last one hour, including time for a presentation, questions, comments and discussion. The fruitful collaboration with partner institutes, i.e. The Hebrew University of Jerusalem, Center for the Study of Rationality (represented by Eyal Winter) and the University of Trento (represented by Luigi Mittone and Dominique Cappelletti) continued. This cooperation accelerates the development of ideas and further projects.

The workshop started with a talk by Daniel Zizzo, University of East Anglia on Trust, Inequality and the Market, followed by Dominique Cappelletti, University of Trento: The Effect of Default Contributions in Public. The last one to present his work on the first day was Luigi Mittone, University of Trento who gave a talk on The OBN game.

The second day of the workshop focused on theoretical economics, starting with presentations from Georg Kirchsteiger, Université Libre de Bruxelles: Other-Regarding Preferences in General Equilibrium; David Reinstein, University of Essex: Loss of Face; David Hugh-Jones, Max Planck Institute of Economics, Jena: Anonymous Signalling and Ritual. The second half of the day took off with a talk by Eugen Kovác, University of Bonn on Reversibility in Dynamic Coordination Problems, followed by Carlos Alós-Ferrer, University of Konstanz: Hidden Symmetries and Focal Points and Eyal Winter, Hebrew University of Jerusalem: Mental Equilibrium and Rational Emotions.

The following days were characterized by a mixture of talks from the fields of theoretical and experimental economics. Hans-Theo Normann, Goethe-University Frankfurt talked about Signalling in Deterministic and Stochastic Settings. Afterwards Veronika Grimm, Friedrich-Alexander-University Erlangen-Nürnberg gave a presentation on An Experiment on Learning in a Multiple Games Environment. The next contribution came from Dirk Engelmann of Royal Holloway, University of London who presented his work on: A Shock Therapy Against the “Endowment Effect”. He was followed by Matthias Blonski, Goethe-University Frankfurt on Excess returns for companies with a distinguished player and Marco Casari, Università di Bologna with a talk on Explicit versus Implicit Contracts for Dividing the Benefits of Cooperation. The last presentation of the third day was given by a member of the Strategic Interaction Group: Tobias Regner, Max Planck Institute of Economics, Jena shared his insights on Why Consumers Pay Voluntarily: Evidence from Online Music.

The final day was opened by Andrea Morone, Università degli Studi di Bari: An Experimental Study on Discretionary Environmental Enforcement. After that, Gerlinde Fellner, Vienna University of Economics and B.A. talked about Heterogeneous Productivity in Voluntary Public Good Provision – an Experimental Analysis, followed by a talk from Mitesh Kataria, Max Planck Institute of Economics, Jena on: Do EPA administrators recommend environmental policies that citizens want? The event was closed by contributions from Eva-Maria Steiger, Max Planck Institute of Economics, Jena on Relating Risk Attitudes and Probability Updating: An Experimental Study and Peter Dürsch, University of Heidelberg: Taking punishment into your own hands: An experiment on the motivation underlying punishment.

Again, the third ESI Spring workshop was a valuable and beneficial event for the participants with plenty of opportunities to share and extend their views on experimental and theoretic economics.
EMAEE 2009: Evolution, Behavior and Organizations

From May 21-23, the Max Planck Institute of Economics hosted the bi-annual international conference “EMAEE”, focusing on “Evolution, Behavior and Organizations”. The conference traditionally features young researchers (PhD students and post-docs), providing a unique opportunity to discuss the latest insights and methods in applied evolutionary economics and innovation studies with top international scholars. In 2009, over 200 researchers from around the world participated in the conference.

In addition to the presentation and discussion of individual research projects, EMAEE 2009 included plenary talks of internationally renowned researchers of the field. These speakers explored commonalities with the neighboring fields and disciplines – in particular behavioral economics, organization and management science, and historiography. Among the plenary speakers of EMAEE 2009 were Uwe Cantner (Friedrich Schiller University), Lee Fleming (Harvard Business School), Steven Klepper (Carnegie Mellon University), Bart Nooteboom (University of Tilburg) and Olav Sorenson (University of Toronto) and MPI-director Werner Güth (Strategic Interaction group). The Advisory Committee of EMAEE 2009 included (among others) the MPI-directors David Audretsch (Entrepreneurship, Growth and Public Policy group) and Ulrich Witt (Evolutionary Economics group).

Previously held in Grenoble, Vienna, Augsburg, Utrecht, and Manchester, the EMAEE 2009 took place in Jena in recognition of the city’s recent establishment as a European center of evolutionary and innovation research. This development centered around the Max Planck Institute of Economics and the Friedrich Schiller University in Jena, particularly visible in the joint projects like the DFG-Graduate College “Economics of Innovative Change”, the Max Planck Research School “Adapting Behavior in a Fundamentally Uncertain World” and the Graduate School “Human Behaviour in Social and Economic Change”. By inviting a large group of young researchers to come to Jena, EMAEE 2009 supports the city of Jena’s aspirations as an attractive place to do research in this field. Consequently, EMAEE 2009 was organized under the patronage of Dr. Albrecht Schröter (Mayor, City of Jena).

EMAEE 2011 will be organized by Luigi Marengo and Alessandro Nuvolari at the Sant’ Anna School in Pisa (Italy).

EVO Project-Workshop: Laser – A Spatial-Sectoral System of Innovation and its Evolution (LASSSIE)

The workshop (May 24 – 26, 2009) served as a platform to exchange insights from the multi-disciplinary LASSSIE (Laser – A Spatial-Sectoral System of Innovation and its Evolution) project with leading scientists in Industrial Dynamics, Economic Geography and Economic History. Jointly organized by the Technical University Bergakademie Freiberg, Friedrich Schiller University Jena und the Max Planck Institute of Economics Jena, it was furthermore a success in communicating the project to a wider audience by inviting experienced scholars from the realm of laser physics and representatives of firms presently active in the German laser industry.

During the three days of the workshop leading scientists of Industrial Dynamics such as Steven Klepper (Carnegie Mellon University Pittsburgh) and Stefano Breschi (Bocconi Uni-
versity Milano) exchanged views with economic geographers like Ron Boschma (Utrecht University) and Koen Frenken (Eindhoven Technical University) as well as with Economic historians represented by Manuel Schramm (Technical University Chemnitz) and Helmut Albrecht (Technical University Bergakademie Freiberg). The participation of leading laser physicists and representatives from laser firms proved very fruitful for invigorating economic theory. Herbert Welling (Laserzentrum Hannover) and Rasmus Beck (Heinrich Beck Institut Meiningen), both physicists and Laser pioneers of the very first hour gave testimony of the exciting phase of Laser discovery and development in the 60s, 70s and throughout the 80s. Moreover, they supplied rich anecdotal evidence to the analyses carried out by the project partners. Sven Ederer (Berthold Leibinger Foundation) representing Berthold Leibinger of TRUMPF, one of the world leaders in laser machine tool production, provided useful insights into the challenges of adopting new technology such as lasers. Moreover, he gave an accurate account of today’s challenges of the industry. All participants agreed that it was an extraordinary experience to view the topic of the Laser Innovation System from such diverse ankles.

The workshop as well as the LASSSIE project is funded by the Volkswagen Foundation under the framework program “Innovationsprozesse in Wirtschaft und Gesellschaft”.

EGP Annual Max Planck Ringberg Conference

This year’s Max Planck Ringberg Conference on Entrepreneurship, which took place at the Max Planck Society’s Ringberg Castle conference center from June 10th to 13th, 2009, addressed how experimental methods can be applied to better research entrepreneurship. It provided the opportunity to generate new ideas, new interdisciplinary research methodologies, and even more questions demanding subsequent research. All together 12 recent studies were presented, which included a number of different experimental approaches such as economic lab experiments, psychological field experiments, and natural experiments. In addition to researchers from our institute (Werner Guth, Diemo Urbig, Erik Monsen, and Stephan Heblich), presentations were made by renowned senior researchers and promising junior researchers from around the globe, including Hans Hvide (University of Aberdeen, UK), Dietmar Harhoff (LMU Munich), Nicos Nicolaou (University of Cyprus), Sabrina Teyssier (Thurgau Institute of Economics), Julie Ann Elston (Oregon State University, USA), Stefan Bauernschuster (FSU Jena), Reddi Kotha (Singapore Management University), and Christian Schade (Humboldt University Berlin). A selection of these studies will be published in a special issue of the Journal of Economic Behavior and Organization. The event was organized by David Audretsch, Sameeksha Desai (University of Missouri-Kansas City, USA), and Isabell Welpe (Technical University Munich).
New Frontiers in Normative Economics and Policy Advice

In the workshop on “New Frontiers in Normative Economics and Policy Advice”, held jointly by the Walter Eucken Institute (Freiburg) and the Max Planck Institute of Economics (Jena) in Dec. 2009, leading scholars from various disciplines assembled to discuss the new challenges of normative economics and policy advice that might result from taking seriously the findings of behavioural economics. During this interdisciplinary event, the discussions revolved around the question to what extent findings from other behavioural sciences, such as psychology, can enrich normative theorizing, if at all. A second question then centred around how these insights would relate to economic policy making and whether they could prompt new policy advice. Topics that were hotly debated during the workshop included the alleged inevitability of (libertarian) paternalism and the scope and legitimacy of welfare economics when preferences change. This also included the question what role individuals’ opportunities (as opposed to preferences) might play. The debates also related to the recent financial crisis and the lessons that could be drawn in terms of a revision of normative tenets. Besides these issues, scholars also discussed John Stuart Mill’s utilitarianism and the Adam Smith’s notion of an impartial spectator.

Participants included Richard Arneson (University of California, San Diego), Matthew Braham (University of Groningen), Wilfred Dolsma (University of Groningen), Lars Feld (University of Heidelberg), Wulf Gaertner (University of Osnabrück), Till Grüne-Yanoff (Helsinki Collegium of Advanced Studies), Wolfgang Kerber (University of Marburg), James Konow (Loyola Marymount University, Los Angeles), Stephen Lea (University of Exeter), Mozaffar Qizilbash (University of York), Jonathan Riley (Tulane University, New Orleans), Don Ross (University of Alabama, Birmingham and University of Cape Town), Robert Sugden (University of East Anglia) Christian von Weizsäcker (MPI for Research into Collective Goods, Bonn), as well as from the organizing institutes Viktor Vanberg, Michael Wohlgemuth (Walter-Eucken-Institut, Freiburg), Ulrich Witt, Christian Schubert and Martin Binder (MPI of Economics, Jena).

The stimulating intellectual debates took place at Freiburg’s “Mercure Panorama” Hotel with a stunning view over the town. The social programme included a short trip into town where the participants visited the Freiburger Münster and delved into the history of Freiburg.
6 Outreach Activities

Survey of Outreach Activities

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Two Weeks Doctoral Training Course on “Evolutionary Economics”

From March 3-14, 2008, the second International Doctoral Course in Evolutionary Economics here in Jena was run by the Evolutionary Economics Group.

Evolution in the economic domain is driven by multilevel learning and innovation processes. The course introduced doctoral students to a consistent interpretation and analysis of the evolutionary processes and selected applications. Altogether 29 PhD students from all over Europe participated. In the first week the course focused on consumption and production from an evolutionary point of view. Seminars and lectures of the second week dealt with evolutionary theories of welfare and institutions, the development of firms and industries, innovation and growth.

The students were taught state-of-the-art surveys on, and given introductions to (i) interpretations of evolution in the economic context, (ii) alternative methodological approaches, (iii) selected dynamics modeling and simulation techniques, and (iv) econometrics and other empirical methods applicable to evolutionary processes.

During the two weeks these theories and methods were applied to preference change, consumption, and demand; normative implications and welfare theory; institutional change as collective learning process; production, environmental issues, and economic growth; firm development, industrial dynamics and innovation processes.

The faculty from the Max Planck Institute – Ulrich Witt, Guido Buenstorf, Alex Coad, Christian Cordes, Andre Lorentz, Alessio Moneta and Christian Schubert – was strengthened by two guest lecturers, Thomas Brenner from Marburg University (Regional Innovation Systems and Computational & Simulation Methods) and Ivo Bischoff, University of Giessen (Genetic Algorithms).

Highlights of the training course were several guest lectures by internationally renowned scholars and panel discussions with the invited speakers moderated by Uwe Cantner from the University of Jena.

Invited speakers were Richard Arena, University of Nice-Sophia Antipolis/CNRS, with lectures on “Marshall, Schumpeter and Social Science” and “Marshall and Veblen on Economic Evolution and Institutional Change”; Jean-Luc Gaffard, OFCE-CNRS Nice-Sophia Antipolis with lectures on “Innovation, Competition and Growth: An Evolutionary Analysis”; Geoffrey Hodgson, University of Hertfordshire with lectures on “Why we need a generalized Darwinism, and why generalized Darwinism is not enough” and “The complex evolution of a simple traffic convention”; Stan Metcalfe, University of Manchester with a lecture on “Alfred Marshall, Open Competition and the Representative Firm: Tools for Evolutionary Analysis”; Jeroen van den Bergh, Autonomous University of Barcelona, with lectures on “Evolution in Environmental Economics” and “Sustainability Transitions: Coevolution, Group Selection and Optimal Diversity”; and Bart Vespas from UNU-MERIT, Maastricht, with lectures on “International Growth Rate Differentials and Technology Gaps” and “University-Industry Technology Transfer: Patents and Other Instruments.”
Courses during Doctoral Training at MPI Jena:

Guido Buenstorf: Industrial Development
Guido Buenstorf: Survival Analysis
Guido Buenstorf: Evolutionary Production Theory
Alex Coad: Firm Size and Growth
Alex Coad: Firm Size Econometrics
Christian Cordes: Social Learning and the Firms
André Lorentz: Agent-Based Modeling
Alessio Moneta: Econometrics for Consumption & Demand
Christian Schubert: Evolutionary Welfare Theory
Christian Schubert: Evolution of Institutions
Ulrich Witt: Evolutionary Economics General Orientation
Ulrich Witt: Evolutionary Approach to Consumption
Ulrich Witt: Evolutionary Production Theory
Ulrich Witt: History, Path Dependence and Selforganization
Ulrich Witt: Evolutionary Theory of the Firm

This Doctoral School was financially supported by the European Dime network.

5th Max Planck Summer School on Entrepreneurship Research 2008

From August 25-29, the Entrepreneurship, Growth and Public Policy group hosted the 5th Max Planck Summer School on Entrepreneurship Research at the Institute in Jena. 30 Ph.D. students and Post-Docs participated and were offered the opportunity to profit from lectures and personal interactions with leading researchers in the field of entrepreneurship research.

Frank Rothaermel (Georgia Institute of Technology), Melissa Caridon (Pace University), Arvids Ziedonis (University of Michigan), Norris Krueger (Entrepreneurship Northwest), and Henry Etzkowitz (Newcastle University) informed the Ph.D. Students about recent trends in the fields of Entrepreneurship, including the intersection of entrepreneurship and organizational theory, entrepreneurial emotions, or the role of institutions in the innovation process.

On Wednesday morning a panel discussion with the invited top researchers on publishing and research strategies for young scholars initiated a lively discussion, which was continued on Wednesday afternoon during a sightseeing trip to the Leuchtenburg. Immediate feedback yielded a very positive image of the 2008 Summer School and initiated already planning activities for the following year.

Participation MIT European Career Fair 2008/2009

In both 2008 and 2009, Stephan Schütze represented the Max Planck Institute of Economics at the MIT European Career Fair (ECF) in Boston, USA. For three years in a row, the Institute hosted a booth with research partner Friedrich Schiller University (FSU) Jena, funded by the German Federal Ministry of Education and Research (BMBF). The annual MIT European Career Fair is held at the Massachusetts Institute of Technology and co-organized by the European Commission. It provides the opportunity to recruit talented students and researchers currently
working in the United States of America, for Ph.D. or postdoctoral positions in Germany. Established in 1997, the career fair now attracts as many people from the US and other parts of the world, as it attracts Europeans that reside in the US. The European Commission is partnering with the ECF since 2007 to promote Europe as a great place to pursue a career in science and technology, be it in industrial research, research organizations, academia or science policy. MPI's continuous participation also strengthens the collaboration with the FSU Jena's Graduate Academy and represents the Institute in the regional and national scientific community. Other exhibitors in the German Cluster include the Max Planck Society, the German Academic Exchange Service, and the German Rector's Conference. MPI's presence in cooperation with FSU Jena will continue in 2010.

**Participation MPG Science Express 2009**
In 2009, the Max Planck Society launched a 300 meter long “ScienceExpress” train “Science Express” to display the variety of scientific trends that will shape our future beyond the year 2020. Between April and November the train stopped in 62 cities across all 16 German Länder. Its 12 wagons allowed visitors to contemplate the question: How will we live in 20 years? How will technology develop and how will research take us there? Scientific exploration was encouraged with each wagon featuring a different theme, ranging from the beginning of our world, to nanoscience, as well as life sciences, information sciences, and beyond. Of course the Max Planck Institute of Economics supported the exhibition from May 3-5, 2009, while the ScienceExpress visited Jena Göschwitz. Together with the other Jena Max Planck Institutes, MPI Econ hosted an information booth at the Göschwitz train station. The public showed great interest: Over its three day stop in Jena nearly 5000 visitors saw the exhibition.

**6th Max Planck Summer School on Entrepreneurship Research, 2009**
From July 20-24, the 6th Max Planck Summer School on Entrepreneurship Research took place at the MPI of Economics in Jena. During the week, Ph.D. students and senior researchers discussed issues, trends and interesting future developments in entrepreneurship research. This year, the summer school welcomed seven world-class researchers from the fields of management and economics along with 40 promising doctoral students from around the world. The week of lectures was designed to enhance the students’ abilities to design, carry out, and publish world class research. Guest professors, including Simon Parker (The University of Western Ontario, Canada), Saras Sarasvathy (University of Virginia, USA), Ulrich Kaiser (University of Zurich, Switzerland), and James Hayton (Bocconi University, Italy), lectured and led discussions on a wide range of entrepreneurship topics from economic and management research perspectives.
Additionally, the program included training sessions on research design and publication, led by Anne Huff (Technical University Munich), and statistical methodology, led by Robert Fairlie (University of California, USA) and Oliver Falck (IfO Munich). The event was organized by David Audretsch, Stephan Heblich, and Erik Monsen.

9th Buchenbach Workshop for Young Scholars on Evolutionary Economics

The Buchenbach Workshop 2009 took place October 6 - 9, 2009 in the Black Forest. Given the large number of international summer schools in the field in these years, it was organized already the second time as a German language workshop for PhD students working on themes related to Evolutionary Economics. As in previous years, the workshop was organized in cooperation by professors Marco Lehmann-Waffenschmidt (Technical University Dresden) and Ulrich Witt (Max Planck Institute of Economics, Jena). An overview on the ongoing topics and debates in Evolutionary Economics was given in selected keynote lectures by Ulrich Blum (Co-operation: an Efficient Paradigm of European R&D Policy?), Uwe Cantner (Entrepreneurial Action and Success – The role of individual, group and contextual factors), Thomas Ehrmann (Managing the Evolution of Cooperation in Franchise Networks), Peter Kenning (Neuroeconomics), Friedrich Thießen (Economics of ugliness) and Ulrich Witt (What is in effect economic growth?).

The presentations of the PhD students and young Post-Docs covered a large variety of topics ranging from simulation models on sustainable consumer behavior, changing consumption patterns, industrial dynamics, determinants of entrepreneurship, to behavioral economics. Each presentation was accompanied by a comment from a selected participant and a general discussion.

The participants’ presentations were:

- Entrepreneurial spirit in Japan: a showcase analysis using the rule-based approach, Georg D. Blind, TU Dresden
- Ökologische Transformation der Energiewirtschaft – Pfadwechsel und Innovationssynergien, Dr. Thomas Göllinger, IOEB Siegen
- Überleben in Nischenmärkten – Innovation im deutschen Werkzeugmaschinenbau, Dr. Christina Günther, Max Planck Institute of Economics, Jena
- Netzwerkposition und Unternehmenserfolg in der deutschen Photovoltaikindustrie, Christoph Hornych, Halle Institute for Economic Research
- Akteurspezifische Funktionen ökonomischer Evolution, Nana Karlstetter, Carl von Ossietzky University Oldenburg
- Conspicuous Consumption and Race: Evidence from South Africa, Wolfhard Kaus, Max Planck Institute of Economics, Jena
- Wissens-, Lern-, und Innovationsnetzwerke im Transformationsprozess – Netzwerkinnovationen, Netzwerkpositionierung und organisationale Erfolgswirkungen, Muhamed Kudic, Halle Institute for Economic Research
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– Modell zum nachhaltigen Konsum - MONAKO, Dr. B. Cornelia Lehmann-Waffenschmidt, TU Dresden
– Agentenbasierte netzwerkgetriebene Simulation umweltfreundlicher Konsummuster – Ein Zwischenbericht, Martin Pokropp, TU Dresden
– Expenditures and added value as determinants of R&D spending in the pharmaceutical industry – a research proposal, Dr. Tino Schütte, TU Dresden
– Why Blu-Ray-HD-DVD is not VHS-Betamax: Dynamics in Standard-Setting Consortia and the Co-Evolution of Predictions, André P. Slowak, University Hohenheim
– Elasticities of German Beer Demand Revisited, Benjamin Volland, Max Planck Institute of Economics, Jena

As a complement Heinz Jeger (Privatbanquiers Bauman & Cie, Basel) gave an inside talk on the current economic and financial crisis.

The opportunity to follow up on the discussions was given during the guided tour through a regional cooperative winery and the following dinner in a traditional wine cellar (“Straußwirtschaft”).

3rd Long Night of Science 2009

In German cities, the “Long Night of Science” concept is an increasingly popular way to present scientific work to the general public. Jena is no exception: For the 3rd time, Jena hosted a Long Night of Science on November 13, 2009, attracting thousands of interested citizens. Over 150 Visitors came to the Max Planck Institute of Economics, participating in our open house which featured presentations from leading scientists and other interactive events for children of all ages.

First, Christian Cordes talked about the influence of Darwin on the field of economics – is mankind naturally egotistic, and which aspects of our evolutionary past are still influencing our behavior today? Does the economy function by the same rules in the struggle of survival as nature does?

In another presentation, Holger Patzelt and Robert Gold informed about new research findings of the Max Planck Institute of Economics concerning innovative start-ups. More than ever, countries need innovative entrepreneurs in order to create future-oriented jobs. But how can public policy contribute to more people discovering their entrepreneurial spirit, and what can regions or countries do to better support entrepreneurs?

In a traditional talk show-style setting, ARD-journalist Vera Linß hosted a talk with three young MPI Econ scientists about their work: Sophie Wörsdorfer studies incentives for buying eco-friendly washing machines, Tobias Regner analyses business models for MP3-downloads, and Stefan Krabel works on the commercialization of science. How did they “discover” their topics, and what is the practical contribution of their studies to society?

For a more practical learning experience, a series of games, modeled on actual game-theory experiments, was prepared for the evening by members of IMPRS Uncertainty and the Strategic Interaction Group.
From “Rock-Paper-Scissors” to Chess, many games constitute what economists call strategic situations. That is, the consequences of one individual’s choices depend on the choices made by others. Many economic and political situations have this feature: actors must make decisions while taking into account the behavior of political adversaries or economic competitors. Researchers at the Max Planck Institute of Economics study strategic decision-making using experiments in which people play games. IMPRS Uncertainty and the Strategic Interaction Group invited visitors to experience some of these games, including “The Pharaoh’s Mummy”, a game where a Pyramid is discovered, and a hidden treasure needs to be saved while escaping from the pharaoh’s mummy.

Opportunities for guided tours through the institutes’ library, as well as games and handicrafts for children completed the institute’s contribution. Jena’s next Long Night of Sciences will take place in November 2011.
7 Appointments, Awards and Theses Completed

7.1 Appointments

2008

**David Audretsch** – *Doctor honoris causa*
David Audretsch, Director of the Entrepreneurship, Growth and Public Policy Group until August 2009, received a *Doctor honoris causa* at the University of Augsburg on July 2, 2008. David Audretsch’s research focuses on the links between entrepreneurship, government policy, innovation, economic development and global competitiveness. He serves as a Scholar-in-Residence at the Ewing Marion Kauffman Foundation. In addition, he is an Honorary Professor at the Friedrich Schiller University of Jena, Research Professor at Durham University, a Distinguished Professor and the Ameritech Chair of Economic Development and Director of the Institute for Development Strategies at Indiana University, an External Director of Research at the Kiel Institute for the World Economics, and is a Research Fellow of the Centre for Economic Policy Research (London).

**M. Vittoria Levati** – *Minerva Research Group Leader*
M. Vittoria Levati has been appointed as Minerva Research Group Leader (W2) at the Max Planck Institute of Economics. After holding research positions at the Universities of York (Centre for Experimental Economics), Kiel (Institute of Public Finance), and Berlin (Institute for Economic Theory), she became in 2001 member of the Strategic Interaction Group at MPI Econ. Since 2005 she has taught economics and game theory courses at the Faculty of Economics of the University of Bari (Italy). Her research interests include game theory, experimental economics, behavioral economics, social dilemma games, social preferences, and bounded rationality.

**Christoph Vanberg** – *Assistant Professor*
Christoph Vanberg has been appointed to an Assistant Professorship at the Department of Economics (University of Heidelberg). After serving as Research Assistant at the Department of Economics of Cornell University, USA, Christoph Vanberg joined the Strategic Interaction Group in 2005 as Research Associate. His research interests include Behavioral Economics, Political Economics, and Experimental Methods.

**Isabell Welpe** – *Full Professorship*
Isabell Welpe, a Senior Research Fellow at the Entrepreneurship, Growth and Public Policy Group until October 2008, was appointed as a full professor at the Technical University of Munich, Business Economics – Strategy and Organisation Department in 2008. After receiving her Ph.D. from the University of Regensburg (2003) and her Honorary Lectureship from the Ludwig-Maximilians-University Munich (2007), she joined the Entrepreneurship, Growth and Public Policy Group in 2007.
2009

**Guido Buenstorf – Honorary Lectureship and Full Professorship**

Guido Buenstorf, research group leader in the Evolutionary Economics Group at the Max Planck Institute of Economics, has been appointed to a professorship in economics at the University of Kassel. Buenstorf joined the EVO group in 1996 as a Research Associate, became Assistant to the Executive Director in 1999. After receiving his Ph.D. in Economics from the Friedrich Schiller University, Jena in 2002, he served as Visiting Researcher at the Department of Social and Decision Sciences, Carnegie Mellon University, Pittsburgh/USA (2003). In 2008, he became Research Group Leader at the Max Planck Institute of Economics and received his Honorary Lectureship from the Friedrich Schiller University, Jena. His research interests include industry evolution, entrepreneurship, technology transfer, and regional economics.

**Christian Cordes – Honorary Lectureship**

Christian Cordes received his postdoctoral lecture qualification in Economics (habilitation) from the Economics and Business Administration Faculty of Jena’s Friedrich Schiller University. Cordes joined the EVO group in 1998. After finishing his Ph.D. in 2003, he was Guest Researcher at the Centre for Research on Innovation and Competition (CRIC) at the University of Manchester (2004), and Visiting Scholar at the University of California at Davis, Department of Environmental Science and Policy (2005-2006). Cordes’ research interests include the biological and psychological foundations of economic behavior, the evolution of business cultures, the determinants of human behavior in an organizational context, long-term economic change and its driving forces, as well as the evolutionary perspective on economic policy making and normative aspects.

**Holger Patzelt – Honorary Lectureship and Full Professorship**

Holger Patzelt, Group Leader in the Entrepreneurship, Growth and Public Policy Group at the Max-Planck-Institute of Economics, has been appointed to a professorship at the Technische Universität München (Technical University Munich). Patzelt joined the EGP group in 2005 and became Associate Director in 2008. In 2007, he served as Representative of the Chair of Entrepreneurship (Lehrstuhlvertretung) at the European Business School in Oestrich-Winkel, where he also received his honorary lectureship in economic science (habilitation). Holger Patzelt holds both a Ph.D. in Management/Entrepreneurship (Dr. rer. pol.) from the University of Bamberg, and a Ph.D. in Life Sciences (Dr. rer. nat.) from the University of Heidelberg.

7.2 Awards

**2008**

**Stephan Heblich – Dissertation prize**

Stephan Heblich has won the 2008 Passau University / Sparda-Bank Regensburg dissertation prize for his study “Self-Reliant Individuals and Pro-Active Companies”. The jury acknowledged the “special contribution” of his analysis concerning Corporate Social Responsibility and networks in dynamic regional development to the field of economics.

**Erik Monsen, Holger Patzelt – Best Paper Award**

Erik Monsen and Holger Patzelt, Senior Research Fellows at Max Planck Institute of Economics in Jena, and Todd Saxton, Indiana University, won the 2007 BCERC Stevens Institute
of Technology Wesley J. Howe Award for excellence in research on the topic of Corporate Entrepreneurship for their paper “Motivation and Participation in Corporate Entrepreneurship: The Moderating Effects of Risk, Effort, and Reward”. The award, which is endowed with 2.500 USD, was announced on June 6th at the “2008 Babson College Entrepreneurship Research Conference”.

2009
Guido Buenstorf – “Habilitationspreis”
Guido Buenstorf (Max Planck Institute of Economics) has been awarded the “Habilitationspreis 2009” of the Friedrich Schiller University of Jena. He was honored for his work on “Knowledge Transfer through Spin-Offs: Processes, Performance Effects and Implications for Industry Evolution”. The annually awarded prize credits scientists whose excellent “Habilitations” render outstanding services to the Alma Mater Jenensis.

Nicola Breugst – Best Paper Award for Junior Researcher
Nicola Breugst has won the Best Paper Award for a Junior Researcher at the RENT XXII Research in Entrepreneurship and Small Business Conference, Covilha, Portugal. The paper with the title “Filling the Situational Vacuum of the Trait Approach – Entrepreneurial Intentions in Experimentally Manipulated Situations” was a joint project with Tobias Kollmann and Carina Lomberg from the University of Duisburg-Essen. It aims at integrating the personality traits of potential entrepreneurs and the situations in which they act. Nicola Breugst received her degree in psychology from the Ludwig-Maximilians-University in Munich, Germany in 2007. Since November 2008 she is a research fellow at the Max Planck Institute of Economics.

Prashanth Mahagaonkar – Best Dissertation Award
Prashanth Mahagaonkar has won the Best Dissertation Award at the Schumpeter School of Business and Economics, University of Wuppertal. The committee awarded his “extraordinary” work on “Money and Ideas: Four Studies on Finance, Innovation and Corruption”. The dissertation studies (among other topics) the effects of financial constraints on several phases of business formation. After working as a Research Scholar at the Department of Humanities and Social Sciences (Indian Institute of Technology, Bombay, India), Prashanth Mahagaonkar joined MPI Econ in 2006.

Jagannadha Pawan Tamvada – Best Dissertation Award and Otto Hahn Medal
Jagannadha Pawan Tamvada has been awarded twice for his dissertation “Essays on Entrepreneurship and Economic Development”, in which he studied the connection between Entrepreneurship and economic development in India. On the one hand, he was awarded by the Danish Research Unit for Industrial Dynamics (DRUID) with the Best Dissertation Award. Furthermore, he received the prestigious Otto Hahn Medal by the Max Planck Society. JP Tamvada joined the EGP group in September 2004. He left the Institute in 2009 and works now as a Lecturer at the Aston University Birmingham (Economics and Strategy Group).
7.3 Theses completed

Taylor Aldridge (EGP):
Scientist Entrepreneurs and University Commercialization. Ph.D. at University of Augsburg, Germany

Martin Binder (EVO):

Tom Brökel (EVO):
Knowledge and Regional Innovativeness – Theoretical Considerations, Measurement, and Empirical Analysis. Ph.D. at University of Jena, Germany

Susanne Büchner (ESI):
Experimental Studies on self-centered and other-regarding behavior. Ph.D. at University of Jena, Germany

Devrim Göktepe-Hultén (EGP):
“Inside the Ivory Tower: Inventors & Patents at Lund University”. Ph.D. at Lund Institute of Technology, Sweden

Christina Günther (EVO):
Structural dynamics in the German machine tool industry. An empirical investigation of technological, regional and firm-specific developments. Ph.D. at University of Jena, Germany

Prashanth Mahagaonkar (EGP):
“Money and Ideas”: Four Studies on Finance, Innovation and Corruption. Ph.D. at University of Wuppertal, Germany

Jianying Qiu (ESI):
Developments in Capital Asset Pricing: Theory and Experiments. Ph.D. at University of Jena, Germany

Viktor Slavtchev (EGP):
Universities and the regional innovation system. Ph.D. at University of Jena, Germany

Tobias Uske (ESI):
The Perception of Uncertainty and its Impact on Strategic Interactions Analysis and Experimental Investigations. Ph.D. at University of Jena, Germany

Jörg Zimmermann (EGP):
Overcoming the Inherent Sources of Liability of Foreignness. Ph.D. at University of Augsburg, Germany
8.1 Researchers at the Institute

**Aldridge, Taylor**, Postdoc (Ph.D. in Economics, 2009, University of Augsburg, Germany): University knowledge transfer and Entrepreneurial Scientists.


**Barigozzi, Matteo**, Postdoc May 2008-Nov 2008 (Ph.D. in Economics and Management, 2008, Scuola Superiore Sant’Anna, Pisa, Italy): Dynamic factor models for forecasting in finance and macroeconomics; Non-fundamental representations in time series models; Phenomenology of consumption behavior in developed and developing countries; International Trade Networks.


**Binder, Martin**, Postdoc (Dr. rer. pol., Economics, 2009, Friedrich Schiller University, Jena): Changing Preferences and Evolutionary Welfare Economics, Happiness Research.


**Buenstorf, Guido**, Senior Researcher until December 2009 (PD Dr. rer. pol. habil., 2009, Friedrich Schiller University, Jena): Industry Evolution, Entrepreneurship, Technology Transfer, Evolutionary Economics.


**Ciarli, Tommaso**, Postdoc (Ph.D. in Economics – Industrial Development, 2005, University of Birmingham and the University of Ferrara, Italy; MA in Development Economics 2002 from the University of Sussex): Institutional change and economic development; Structural change of production and consumption: a microeconomic approach to growth and development; Organisation of production, technological change and worker relations.
Coad, Alex, Postdoc away on leave October 2008 to October 2009 (Ph.D. in Economics, Univ. Paris I Panthéon-Sorbonne; Ph.D. in Economics and Management, LEM, Sant’Anna School, Pisa): Evolutionary economics; Industrial Organization; Firm Growth; Panel data econometrics.

Conte, Anna, Postdoc (Ph.D. in Econometrics and Empirical Economics, University of Rome II “Tor Vergata”, Rome): Microeconometrics, Monte Carlo Simulation techniques, Econometric Modeling, Discrete Choice Models, Survey data analysis.


Desai, Sameeksha, Doctoral Student until September 2008 (Ph.D. candidate in Public Policy, George Mason University, USA): public policy, institutions and entrepreneurship, political economy of conflict, social innovation/reconstruction.


Gold, Robert, Doctoral Student (Ph.D. candidate; Magister Artium (M.A.); Political Science, Sociology and Economics; 2008; University of Passau); public policy, institutions and entrepreneurship, regional growth regimes.


Güth, Werner, Director (Dr. rer. pol., 1972, and habil., Economics, 1976, University of Münster; 1977–1986, University of Cologne, 1986–1994 University of Frankfurt (Main), 1994–2001 Humboldt University of Berlin; since 2001 Director of the Strategic Interaction Group of the Max Planck Institute of Economics in Jena and honorary professor of Economics of Friedrich Schiller University, Jena and a member of the Berlin-Brandenburg Academy of Sciences): Game Theory, Experimental and Micro-economics with strong leanings towards (Social) Psychology, Philosophy, (Evolutionary) Biology and the Political Sciences.

Heblich, Stephan, Senior Postdoc (Dr. rer. pol., Economics, 2007, University of Passau): Regional and Urban Economics, Entrepreneurship, Innovation, Corporate Social Responsibility.


Krabel, Stefan, Doctoral Student (Ph.D. candidate, Diploma of Business Mathematics, 2006, Friedrich Schiller University, Jena): Academic Entrepreneurship, Knowledge and Technology Transfer from University to Industry, Commercialization Strategies of Scientists.


Levati, Maria Vittoria (Minerva Group), Research Associate Group Leader/Associate Professor (Ph.D. in Economics, 2000, University of York; 2000 University of Kiel; Jan.–Sept. 2001 Humboldt University of Berlin; Oct. 2001 – July 2008 Research Associate at the Strategic Interaction Group, Max Planck Institute of Economics, Jena; since Aug. 2008 Research Group Leader of the Minerva Group at the Max Planck Institute of Economics); Experimental and Behavioral Economics, Game Theory, Public Goods and Social Dilemmas, Theories of Bounded Rationality.

Levinský, René, Associate Professor (Ph.D., Economics, 2000, CERGE-EI, Charles University, Prague): Game Theory, Experimental Economics, Social Choice, Political Economy, Behavioral Finance.


Lorentz, André, Postdoc (Dr. Economics, 2005, Université Louis Pasteur Strasbourg & Sant’Anna School for Advanced Studies, Pisa): Structural Change and Economic Growth; Macro-Dynamics and Technical Change; Industry Dynamics; Evolutionary Modelling.

Mahagaonkar, Prashanth, Postdoc (Dr. rer. oec., 2009, Bergische Universität Wuppertal, M.A. Economics University of Hyderabad, India, B. Sc. (Honors) Economics, Sri Sathya Sai University, India): Financing of Innovation, Entrepreneurial Finance, Geography of Finance, Industrial Organisation, Economics of Innovation, Corruption, Emerging markets.


Miettinen, Topi, Postdoc (Ph.D., 2006, University College London): Theoretical and Experimental Game Theory (until May 2008).

Miller, Luis Miguel, Postdoc (Ph.D. Sociology, 2007, Universidad Complutense de Madrid). His interests are in behavioral and experimental economics and analytical sociology. He is currently working both theoretically and empirically on the notion of social convention (until July 2008).


Monsen, Erik, Senior Researcher (Ph.D. in Organizational Management, 2005, University of Colorado at Boulder): Corporate Entrepreneurship Strategy, Organizational Development


**Popova, Vera**, Doctoral Student (Diploma in Economics, 2005, Humboldt University Berlin): Behavioral Economics, Game Theory, Experimental Economics.


**Seri, Paolo**, Doctoral Student (Laurea Degree in Economics, 1998, University of Ancona): Firms behavior in mature and declining industrial districts, Persistence and change of local institutions, University knowledge transfer, Evolutionary and Behavioral economics.

**Shrivastava, Mili**, Doctoral Student (Ph.D. candidate, Masters in Mathematics, Indian Institute of Technology, Delhi): Corporate spinoffs, Economics of entrepreneurship, Entrepreneurial strategy.


Welpe, Isabell, Postdoc until October 2008 (Ph.D. in Management, 2003, University of Regensburg): Entrepreneurial Decision Making (the influence of cognitions and emotions), Experimental Entrepreneurship.

Witt, Ulrich, Director (Dr. rer. pol., 1979, University of Göttingen; Habilitation, 1985, University of Mannheim; 1986-87; Dr. honoris causa, University of Witten-Herdecke, 2003): Economic behavior and its biological and psychological foundations; Long-term economic growth; Institutional Change; Consumption and Production Theory; Industry Dynamics and Firm Development; Methodological and conceptual problems of evolution.


Ziegelmeyer, Anthony, Senior Postdoc (Ph.D., Economics, 2001, University of Strasbourg): Social Learning and Behavioral Economics.

Zimmermann, Jörg, Postdoc (Dr. rer. pol., 2008, University of Augsburg; Diplom (MBA) University of Freiberg 2005): International Entrepreneurship, Liability of Foreignness, Risk and Individual Decision Making, Learning, Ownership and Control.


8.2 General Services

Administration
The administration department, consisting of eight permanent staff members, relieves the scientists of the necessary daily clerical work including personnel administration, bookkeeping, purchasing, completion of projects and guestroom administration. The administration staff ensures a clean environment as well as tidiness and security at the institute. This department not only provides all kinds of information for the scientists, it also offers necessary consultation services for various topics.

The administration department has been using the accounting system SAP since 1997 and SAP R/3 HR since 2003 for personnel administration.

The administration employs two apprentices, who are trained in personnel administration, bookkeeping and purchasing, and also receive an overview of secretarial duties and other administrative tasks within the institute. Thus, we offer young people an optimal way to start their professional career. At the same time, the administration is more flexible in supporting the work of the three scientific groups. In 2008, the first apprentice of the administration department ever finished her training successfully.
One of the main tasks the administration department executed in 2008 was the modification of the former apartment of the institute’s head caretaker to provide new office space. Within three months, construction activities had been finished, creating twelve work stations for the members of the IMPRS Uncertainty.

In 2009, the internal auditing department of the Max Planck Society executed a detailed analysis upon different procedures and general development of the administration department. The inspection covered business organization, personnel administration, purchasing and bookkeeping, as well as the condition and maintenance of the technical facilities at the institute. The internal auditing department certified the administration to work in an efficient and correct manner according to the rules.

**IT Department**

The IT department provides a stable and modern communication infrastructure for scientists. It ensures a constant process of modernization to keep the infrastructure current and to introduce new IT technologies to enhance the communication and collaboration infrastructure as well as the scientific productivity. Additionally, the IT supports scientific workshop activities by providing a technical infrastructure for workshops and conferences, as well as support for users and guests. In 2009, not only the summer school program of the scientific departments, the Graduate Center and the international Max-Planck Research School was supported, the IT department also provided the technical infrastructure for the international EMAEE conference in the ‘Volksbad’ in Jena.

The MPI Econ websites undergo a constant process of modernization and updating in layout and content. Of course, communication to internal users is equally important. The intranet of the institute was extended and now, among other functionalities, supports a management system for users and guests based on a database system.

The technical trend towards virtualization technologies did not stop at the institute’s doors. The IT department started a server virtualization project based on VMware Infrastructure. This will save costs by reducing electric power consumption and the need of cooling. It also increases the reliability of networking services as the VMware Infrastructure includes high availability mechanisms and clustering services.

Due to ever increasing data sets the demand for calculation capacities in econometrics and statistics is rising steadily. Year by year, the infrastructure is being renewed by replacing old computers and notebooks with modern and powerful machines, and by providing users and guests a portfolio of current software products for statistical and mathematical computations and modeling.

The IT department arranged the central workshop on software license issues for all IT departments within the Max Planck Society. It took place June 16-17, 2009 in Jena.

**Library**

The Library is the central information resource of the institute. We acquire literature and electronic media in the fields of evolutionary and experimental economics and entrepreneurship. General works from related disciplines, such as biology, psychology, philosophy, law and political science are also part of the collection. Currently, the collection comprises about 35,000 volumes and about 160 subscribed journals. In cooperation with the Department of Scientific Information Provision of the Max Planck Society about 21,000 electronic journals and a wide range of full text and reference databases are available, such as WISO-NET, Ebsco databases as
Items not held at the library of the institute can be obtained through the interlibrary loan service. Providing the required books and articles as quickly as possible is our highest priority. The services of the library are not only available to the staff of the institute, but also to guest researchers and external daily visitors. Currently, 336 external users are registered.

The library department supports the annual four-week-long IMPRS Uncertainty Summer School by opening from 8.00 – 22.00 during this period. Participants enjoy an optimal work environment in the reading room, and service from the library staff.

The newly implemented Version 18.2 of the library system ALEPH offers numerous new services for library visitors, including simultaneous research in the library inventory and accessible e-books. Several other innovations complement the library services, including a re-structured intranet representation.

The library is also involved in outreach projects. For example, its participation in the “3. Lange Nacht der Wissenschaften” (Third Long Night of the Sciences) saw a great response. The library hosted guided tours, a talk show with three young scientists, and several offerings for children, including a scavenger hunt.

**Public Relations**

The public relations department of the Max Planck Institute of Economics offers several PR-related services, targeted at a) communication to the public on local, regional, and national levels, b) internal communication within the Max Planck Society and c) internal communication within the Institute itself.

The public is mainly reached through scientific departments of daily/weekly newspapers or radio stations, using press releases and sometimes the direct procurement of interviews or co-operations with specific media. Currently, a regular press release reaches about 19,000 registered journalists specialized in science coverage.

In 2009, the PR department organized a co-operation between the Thuringian daily newspaper *Ostthüringer Zeitung* (OTZ), the Friedrich Schiller University, and MPI Econ, in order to facilitate a game theoretical experiment. Over 800 readers of the OTZ took part in this, making the endeavor a resounding success.

Within the Max Planck Society, the PR department organizes the Institute’s representation through internal communication channels like the society’s website, and the publications *Max Planck Journal* and *Max Planck Research*. The MPI Econ staff is reached via the website, which – in close co-operation with the IT department – is regularly updated.

Moreover, the PR department also facilitates the Institute’s participation in certain outreach activities, including the “Long Night of Sciences”, or the “MPG Science Express”. Apart from offering a chance to inform the regional public about the scientific work at the institute, this kind of activity is also regarded by the Max Planck Society as important indirect measure to support the integration of non-German MPG scientists into society.

The Public Relations department currently employs two permanent staff members.
Max Planck Institute of Economics

**Managing Director:** Prof. Ulrich Witt
**Office:** Inken Poßner / Karin Serfling

**Public Relations:** Petra Mader / Stephan Schütze

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### General Services

**Administration**
- Christian Nagel (Head)
- Ute Apel (Accountant)
- Ellen Richter (Human Resources)
- Konstanze Lommatzsch (Purchasing)
- Gisela Bartschat (Reception)
- Angelika Gundermann (Housekeeping)
- Dirk Homberger
- Gunnar Neumann (Janitors)
- Annemarie Eckert
- Sarah Meinhardt (Trainees)

**Library**
- Katja Müller (Head)
- Hella Bruns
- Brigitte Hofmann

**IT-Department**
- Thomas Baumann (Head)
- Jürgen Rosenstengel (Network)
- Thomas Brückner (IT-Helpdesk)
- Robert Färber (ScientificWebProgrammer)
- Christoph Prater (Trainee)

### Scientific Departments

**Evolutionary Economics Group**
- **Director:** Prof. Ulrich Witt
- **Office:** Inken Poßner / Karin Serfling
- **Associate Professor:** Guido Bünstorf
- **Researchers:** Martin Binder, Christian Cordes, Christina Günther, André Lorenz, Alessio Moneta, Christian Schubert
- **PhD Candidates:** Matthias Geißler, Christian Groß, Wolfhard Kaus, Corina Manig, Georg Schwesinger, Paolo Seri, Benjamin Volland, Julia Sophie Würsdorfer

**Strategic Interaction Group**
- **Director:** Prof. Werner Güth
- **Office:** Sylvia Arnold, Karin Richter
- **Associate Professor:** René Lévinzy
- **Researchers:** Astrid Matthey, Tobias Regner, Ondrej Rydval, Eva Maria Steiger, Anthony Ziegelmeyer
- **Scholarship Holders:** Anna Conle, David Hugh-Jones, Mitsuhito Kurino, King King Li, Hironori Otsubo, Toru Suzuki
- **PhD Candidates:** Alice Becker, Vera Popova

**Entrepreneurship, Growth and Public Policy Group**
- **Office:** Madeleine Schmidt, Kerstin Schück
- **Associate Professor:** Holger Patzelt
- **Researchers:** Taylor Aldridge, Stephan Heibich, Erik Monsen, Jörg Zimmermann
- **Scholarship Holders:** Devrim Göktepe, Prashanth Mahagaonkar

**Minerva Group**
- **Group Leader:** Maria Vittoria Levati
- **Assistant:** Claudia Zellmann
- **Scholarship Holder:** Anastasios Koukoumelis
- **PhD Candidate:** Roi Zultan

**IMPRS**
- **Coordinators:** Tobias Uske, Susanne Büchner
- **PhD Candidates:** Linan Diao, Christiane Ehres Friedrich, Charlotte Kiempt, Hannes Koppel, Sebastian Krügel, Christoph March, Katrin Schmelz, Lauri Sääksvuori, Stephan Tontrup, Matthias Uhl, Johannes Weisser, Fabian Winter

**Emeritus**
- **Prof. em. Manfred Streit**
- **Office:** Sandra Deichsel

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*December 31, 2009*