

**António Afonso**

“Macroeconomic Rates of Return of Public and Private Investment: Crowding-in and Crowding-out Effects”

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*Abstract:*

Using annual data from 14 European Union countries, plus Canada, Japan and the United States, we evaluate the macroeconomic effects of public and private investment through Vector Autoregressive (VAR) analysis. From impulse response functions, we are able to assess the extent of crowding-in or crowding-out of both components of investment. We also compute the associated macroeconomic rates of return of public and private investment for each country. The results point mostly to the existence of positive effects of public investment and private investment on output. On the other hand, the crowding-in effects of public investment on private investment vary across countries, while the crowding-in effect of private investment on public investment is more generalized.

**Semih Akcomak**

“Social Capital, Innovation and Growth: Evidence from Europe”

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*Abstract:*

The paper investigates the interplay between social capital, innovation and economic growth in the European Union. We identify innovation as an

important mechanism that transforms social capital into economic growth. In an empirical investigation of 102 European regions in the period 1990-2002, we show that higher innovation performance is conducive to economic growth and that social capital affects growth indirectly by fostering innovation. There is no evidence for a direct effect of social capital on economic growth.

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**Ramon van den Akker**, Johan Segers, and Bas Werker

“Exploiting Knowledge on the Dependence Structure: Efficient Estimation of the Marginals in Case the Copula is Known”

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*Abstract:*

Let  $(X_1, Y_1), \dots, (X_n, Y_n)$  be independent random pairs with unknown (bivariate) distribution function  $H$ . The only knowledge we have on  $H$  is that its copula is  $C$ , that is,  $H(x, y) = C(F(x), G(y))$ , where  $F$  and  $G$  are the (unknown) marginal distribution functions of  $H$ . These marginals can, of course, be estimated by their empirical distribution functions. However, amongst smooth copulas, these estimators are only efficient for the independence copula. This paper provides an efficient estimator of the marginals, and thus answers the following question posed by Klaassen and Wellner (1997): “It would be very interesting to know information bounds and efficient estimators for estimation of the marginal distribution functions  $F$  and  $G$  in the bivariate normal copula model treated here, or in other copula models.”

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**Erik Ansink** and Arjan Ruijs

“Effects of Climate Change on the Stability of Water Allocation Agreements”

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*Abstract:*

We analyze agreements between riparian countries to cooperate in river water allocation. Apart from being efficient, water allocation agreements need to be stable in order to be effective instruments to increase the efficiency of water use. In the paper, the effects of climate change on the stability of water allocation agreements are analyzed, using a game theoretic model. Results show that (i) both a decrease in mean river flow and an increase in variance of river flow decrease stability; and (ii) an agreement where the downstream country is allocated a fixed amount of water has the lowest probability of stability compared with other sharing rules.

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**Gerrit Antonides**

“Perceived Inflation and Actual Price Changes in the Netherlands and the United Kingdom”

Economics of Consumers and Households Group

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*Abstract:*

Statistical bureaus regularly measure and report prices of consumer goods. However, price perceptions rather than the objective price level may affect consumer demand. We analyze which types of expenditures drive consumer perception of inflation. We use both aggregate consumer price indices (CPI)

and price indices of 13 consumer goods categories in the 1986–2005 time period from the Netherlands and the UK. Furthermore, we use series of perceived inflation based on the following survey question: “Do you believe prices have increased or decreased in the past 12 months?” We relate month-to-month changes in the perceived inflation series to month-to-month changes in each of the price series. The estimation results were different across countries. In the Netherlands, food and soft drinks, and transportation had significant positive effects on perceived inflation. In the United Kingdom, decoration and appliances, and transportation significantly affected perceived inflation. The other price categories were not significantly related to perceived inflation. Since all price categories have a positive weight in constructing the CPI, the results with respect to price perceptions are quite different. Consumer price policies will differ from current policies when the effects on perceived inflation are taken into account.

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**Alex Armstrong**, Nick Draper, André Nibbelink, and Ed Westerhout  
“Aging, Demographic Uncertainty, and Optimal Fiscal Policy”

Labor Market and the Welfare State Sector  
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*Abstract:*

As with many other industrialized countries, the aging population of the Netherlands is expected to render current fiscal policies unsustainable in the coming decades. The sizable changes in the number of retirees to workers will increase demographically sensitive public expenditures beyond the ability of current revenue arrangements to cope. Adequate remedies may take a variety of forms: tax rate or premium increases, spending reductions, institutional reforms or some combination of all three. Uncertainty in the scale and direction of future demographic developments presents an added problem to policy makers because the magnitude of the required adjustments is not fully

known. The paper focuses on the implications of this uncertainty if only one policy reform is implemented: an adjustment of the labor income tax rate. A dynamic applied general equilibrium model of the Dutch economy is used in combination with stochastic population forecasts to demonstrate that social welfare may be improved if the government pursues a precautionary fiscal policy in response to demographic risk.

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**Eddy Bekkers** and Joe François

“Heterogeneous Productivity in a Cournot Model of Trade”

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Abstract:

Heterogeneous productivity is introduced in a model of Cournot competition with trade. Variants with and without free entry are explored. In both variants market prices decline as a result of trade liberalization, least productive firms get squeezed out of the market, exporting firms gain market share and more firms can export. Welfare rises in both models with trade liberalization, unless trade costs decline from a prohibitive level in the model without free entry.

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**Leon Bettendorf** and Elbert Dijkgraaf

“The Bicausal Relation Between Religion and Income”

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*Abstract:*

In the paper, the relation between religion and income is investigated using a micro-dataset for the Netherlands. Religiosity is measured by religious membership and by participation. Instead of estimating separately a religion and an income equation, joint regression is preferred since this generally yields more efficient estimates. Following the single equation approach, both religious measures are found to decrease income significantly and income is found to affect negatively religion. However, these cross-effects get insignificant once the equations are simultaneously estimated. In contrast, the effects of socio-economic characteristics on religion and income hardly differ between both approaches.

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**Iwan Bos**

“Leniency and Cartel Size: A Note on how Self-Reporting Nurtures Collusion in Concentrated Markets”

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*Abstract:*

Leniency programs lower the expected cost of anticompetitive behavior to the extent that they allow colluding firms to pay reduced fines. The paper connects this potential adverse effect to the number of firms involved in the cartel agreement. It is shown that leniency programs may provide firms with an incentive to form cartels of limited size in concentrated markets.

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**Kees Bouwman** and Paul Bekker

“A Unified Approach to Mean-Variance Portfolio Selection in Discrete and Continuous Time”

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*Abstract:*

The paper uses dynamic programming to solve the multiperiod Mean-Variance (MV) portfolio selection problem in both discrete and continuous time. Stochastic market parameters are incorporated using a vector of state variables. The joint process of the prices and the state variables is assumed Markov. Our solution applies to both complete and incomplete markets as well as to markets with a riskless asset or markets with only risky assets. We compare strategies that are MV efficient on different investment horizons. In special cases, we observe strategies that are MV efficient for all investment horizons. Finally, we investigate the duality between MV efficient strategies and Stochastic Discount Factors (SDFs). We construct a dual market and observe that all SDFs consistent with the primary market can be expressed as value processes of self-financing strategies investing in the dual market. Our multiperiod MV-solution is used to obtain MV bounds on the space of SDFs. Duality between MV efficient strategies in the primary and dual market is established.

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**Alper Cenesiz** and Christian Pierdzioch

“Capital Mobility and Labor Market Volatility”

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*Abstract:*

We use a dynamic two-country optimizing model featuring efficiency wages to analyze the implications of capital mobility for labor market volatility. Capital mobility magnifies the short-run effects of productivity shocks and monetary shocks on employment and the real wage, but dampens the medium-run effects. The overall effects of capital mobility on the volatility of employment and the real wage, their cyclical properties, and the persistence of employment fluctuations are moderate.

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**Geraldo Cerqueiro**, Hans Degryse, and Steven Ongena

“Rules Versus Discretion in Loan Rate Setting”

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*Abstract:*

We propose a heteroscedastic linear regression model in order to identify the determinants of loan rates' dispersion. Larger unexplained deviations from the loan-pricing model are interpreted as evidence of banks' discretionary use of information in the loan rate setting process. Consistent with this view, we find an increasing role for “discretion” in the amount of private and public information available about the firm. Our results also reveal that the weight of “discretion” in the loan pricing process: (i) decreases in both firm and loan size and; (ii) increases with the risk of the borrower as well as with the bank-firm physical distance. Our results do not seem to be sample specific or driven by bank heterogeneity.

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**Carin van der Cruijssen**, Sylvester Eijffinger, and Petra Geraarts  
“Does Central Bank Transparency Reduce Interest Rates?”

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*Abstract:*

Central banks have become increasingly transparent during the last decade. Theoretical models predict that monetary policy transparency enhances flexibility and reputation, which suggests that it should lead to lower short-term and long-term nominal interest rates. This paper exploits a detailed transparency data set to investigate this for eight major central banks. It appears that many transparency enhancements are associated with significant effects on interest rates, controlling for macroeconomic conditions. In most of these cases, interest rates are lower, often by over 50 basis points, although in some instances transparency appears to have had a detrimental effect on interest rates.

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**Lammertjan Dam**

“Corporate Social Responsibility in a General Equilibrium Stock Market Model”

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*Abstract:*

Using a general equilibrium stock market model with production externalities, we model the relation between Corporate Social Performance (CSP) and various measures of Corporate Financial Performance (CFP). Consumers are assumed to incorporate the production externalities in constructing

investment portfolios. Subsequently, socially responsible firms take this into account in their production decision. Our model is able to explain meta-outcomes of empirical studies of the relation between CSP and CFP, which appeared to be contradictory in the past.

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**Hans Degryse**, Luc Laeven, and Steven Ongena

“The Impact of Organizational Structure and Lending Technology on Banking Competition”

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*Abstract:*

Recent theoretical models argue that a bank’s organizational structure reflects its lending technology. A hierarchically organized bank will employ mainly hard information, whereas a decentralized bank will rely more on soft information. We investigate theoretically and empirically how bank organization shapes banking competition. Our theoretical model illustrates how a bank’s geographical reach and loan pricing strategy is determined not only by its own organizational structure but also by organizational choices made by its rivals. We take our model to the data by estimating the impact of the rival banks’ organization on the geographical reach and loan pricing of a singular, large bank in Belgium. We employ detailed contract information from more than 15,000 bank loans granted to small firms, comprising the entire loan portfolio of this large bank, and information on the organizational structure of all rival banks located in the vicinity of the borrower. We find that the organizational structure of the close rival banks matters for both branch reach and loan pricing. The geographical footprint of the lending bank is smaller when the close rival banks are large, hierarchically organized, and technologically advanced. Such rival banks may rely more on hard information. Large rival banks in the vicinity also lower the degree of spatial

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pricing. We also find that the effects on spatial pricing are more pronounced for firms that generate less hard information, such as small firms. In short, size and hierarchy of rival banks in the vicinity influences both branch reach and loan pricing of the lender.

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**Maria Demertzis** and Nicola Viegi

“Inflation Targets as Focal Points”

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*Abstract:*

In a world characterized by noisy information and conflicting signals, no Central Bank is always able to affect private sector expectations. Based on Morris and Shin's model, monetary policy then becomes an information game, in which individuals form their expectations based on all the information that is available to them (public and private). However individual agents also know that ultimately inflation is affected by both the objectives of the Central Bank (and hence the policies it pursues) as well as the average expectation formed by all agents. Any individual agents thus need to evaluate both actions. The way individuals interpret these actions to form their expectations is central to our argument. We apply Bacharach's methodology to provide a framework for assessing everyone's interpretations. Our contribution is to merge these two models to show that a monetary policy regime that has explicit quantitative objectives may provide individuals with better anchors for expectations to coordinate at. However, that is only true (i) if no great shocks are anticipated to hit the economy; and (ii) when all other public information is very unclear thus rendering the inflation target the only clear piece of information. We derive the conditions under which this is true in detail.

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**António Dias da Silva** and Bas van der Klaauw

“Wage Dynamics and Promotions Inside and Between Firms”

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*Abstract:*

We focus on the dynamic relation between wage increases, promotions and job changes. We relate our empirical analyses to the theoretical model of Gibbons and Waldman (1999). In the empirical analyses we use the Portuguese matched employer-employee data *Quadros de Pessoal*. We conclude from finding significant serial correlation in wage increases and promotion rates that employer learning about the worker's ability may be important. Furthermore, we find that the Portuguese labor market is not competitive. Finally, we argue that employer-reported promotions relate to a large extent to wage increases rather than changes in job tasks and complexity.

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Lennart Hoogerheide and **Herman van Dijk**

“A reconsideration of the Angrist-Krueger analysis of returns on education”

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*Abstract:*

In this paper we reconsider the analysis of the effect of education on income by Angrist and Krueger (1991). In order to account for possible endogeneity of the education spell, these authors use quarter of birth to form valid instruments. Angrist and Krueger apply a classical method, two-stage least-

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squares (2SLS), and consider results for data sets on individuals from all states of the US. In this paper the research by Angrist and Krueger is extended both in a methodological and an empirical way. Classical as well as Bayesian methods are used. Bayesian results under the Jeffreys prior are emphasized, as these results are valid in finite samples and because in the instrumental variables (IV) regression model the Jeffreys prior is in a certain sense, truly, non-informative. Further, it is considered how results vary between subsets of the data corresponding to regions of the US. Finally, some assumptions of Angrist and Krueger are investigated and it is examined if whether the results are robust when some assumptions are dropped.

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**Robert Dur**

“Status-Seeking in Criminal Subcultures and the Double Dividend of Zero-Tolerance”

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*Abstract:*

The paper offers a new argument for why a more aggressive enforcement of minor offenses (‘zero-tolerance’) may yield a double dividend in that it reduces both minor offenses and more severe crime. We develop a model of criminal subcultures in which people gain social status among their peers for being ‘tough’ by committing criminal acts. As zero-tolerance keeps relatively ‘gutless’ people from committing a minor offense, the signaling value of that action increases, which makes it attractive for some people who would otherwise commit more severe crime. If social status is sufficiently important in criminal subcultures, zero-tolerance reduces crime across the board.

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**Shuyi Feng**, Nico Heerink, and Ruerd Ruben

“Land and Labor Market Imperfections and Allocative Efficiency in Chinese Agriculture”

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*Abstract:*

Integration of farm households into markets depends on their endowments and the transaction costs they face. It is important to take this diversity in endowments and transaction costs, and the resulting diversity in market participation regimes, into account in analyzing farm household behavior. In the study, we analyze the allocative efficiency of household decision making for different land and labor regimes, using data from a household survey held in three villages in Northeast Jiangxi province in the year 2000. Our main finding is that households participating in the land rental market but not in the labor market are allocative efficient, whereas households participating in the labor market but not in the land rental market and households not participating in either market are not. This finding suggests that prevailing imperfections in the off-farm employment market and/or the market for hiring agricultural labor prevent households participating in off-farm employment from adjusting their on-farm labor as much as they would like to. Allocative inefficiency is found to be highest for households that do not participate in both markets. And it is higher for households working in local off-farm employment than for households involved in migration.

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Erjen van Nierop, **Dennis Fok**, and Philip Hans Franses

“Interaction Between Shelf Layout and Marketing Effectiveness and its Impact on Optimizing Shelf Arrangements”

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*Abstract:*

Allocating the proper amount of shelf space to stock keeping units (SKUs) is a relevant but difficult topic for managers. The relation between shelf space and sales has been widely documented in the literature. However, the exact location of the SKU on the shelf is also an important moderator of sales. At the same time, the effectiveness of marketing instruments of an SKU may also depend on the shelf layout. First, we propose a new model to optimize shelf arrangements in which we use a complete set of shelf descriptors. We aim to gain insight into the dependencies of SKU sales and SKU marketing effectiveness on the shelf layout. Second, we use these insights to improve the shelf layout in a practical setting. In a Hierarchical Bayes fashion, we augment a sales model with a second equation that relates the effect parameters to shelf and SKU descriptors. We estimate the parameters of the two-level model using Bayesian methodology. Next, we optimize the profit over the shelf arrangement. Using posterior draws from our Gibbs sampling algorithm, we can generate the probability distribution of sales and profit for any feasible shelf arrangement. To find the optimal shelf arrangement, we use simulated annealing.

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**Ricardo Fort Meyer**

“Spillover and Externality Effects of Titling on Investments: Evidence from Peru”

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*Abstract:*

Most studies regarding the effects of land property rights on rural livelihoods consider individual titling as a sufficient condition for enhancing investments. The empirical literature presents, however, a vast amount of evidence that challenges the principal channels through which titling is supposed to enhance investments. This paper explores yet another possible impact of titling on individual investments derived from a spillover or externality effect that appears with an increase of the number of titled plots in the same district. Using a sample of Peruvian farmers, we found that this effect indeed exists and is robust to different specifications and controls. This may call for the introduction of a new regional perspective in the promotion of land titling programs.

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**Sabine Fuss, Mykola Gusti, Jan Szolgayova, and Michael Obersteiner**

“Investment Response to Uncertainty in Regulation in the Electricity Sector”

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*Abstract:*

The emissions from electricity generation constitute a considerable fraction of total anthropogenic emissions on a global scale. CO<sub>2</sub> emissions in turn are found to be the primary cause of global warming and there is mounting

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evidence on the extent of the damages and their irreversibility. Therefore, the goal of policy makers has been to reduce the combustion of fossil fuels for power generation. In liberalized electricity markets, this implies that investors do not only face uncertainty from volatile electricity prices, but also from the possibility of stricter climate change policy. We investigate this in a real options framework with two types of power plants, where the price of electricity and the price of CO<sub>2</sub> emissions are stochastic. In particular, we analyze the response of long-term investment to uncertainty about CO<sub>2</sub> prices, which can come from two sources: (i) price fluctuations that might as well be market-driven; and (ii) uncertainty about the actions of the government, which can lead to price jumps/falls. We find that producers facing market uncertainty want to hedge against negative surprises and invest into the carbon-saving technology earlier, while policy uncertainty leads to postponement of investment.

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**Pieter Gautier** and Bas van der Klaauw

“Grow Rich while you Sleep: Selection in Experiments with Voluntary Participation”

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*Abstract:*

We use data from a promotion campaign of NH-Hotels to study self-selection of participants in a gift-exchange experiment. The promotion campaign allowed guests to decide their own payment after a stay in one of 36 hotels in Belgium and the Netherlands. The data allow us to distinguish between “regular guests”, who booked prior to the announcement of the promotion campaign and guests who booked after the campaign was announced. During the promotion campaign we varied the posted price of stay that was communicated to the guests. We find that the average payments differ

between both groups of guests and that both groups respond differently to the posted price. This different behavior cannot be explained by differences in satisfaction or compositional differences in individual characteristics. Therefore, we conclude that self-selection into experiments can give biased results.

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**Natalia Goncharova** and Arie Oskam

“The Role of Risk and Uncertainty in Investments: Dutch Greenhouse Horticulture”

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*Abstract:*

Risk and uncertainty are explicitly incorporated in the theoretical model of investment behavior in relation to input demand and output supply. Their effects are distinguished and estimated on firm-level data for Dutch horticulture firms during 1975-1999. The new approach of the empirical investigation of uncertainty as an unpredictable part of price changes is explored. This approach provides the opportunity to test assumptions about asymmetric effects of uncertainty and difference in effects of risk and uncertainty of input prices, output prices, and capital prices on investment decisions. Risk related to input and output prices is not significant for investments, but uncertainty shows a significant effect: output-price uncertainty suppresses investments and input-price uncertainty stimulates investments if input prices are decreasing and suppresses investments in case of growth. As distinct, the capital-prices uncertainty plays no significant role, but increase in risk of changes in capital prices has negative impact on investments in Dutch horticulture.

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**Henri de Groot** and Sandy dall'Erba

“The Effectiveness of EU Regional Policy: A Meta-Analysis

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*Abstract:*

Structural Funds are the most intensively used policy instrument to promote convergence across the (regions of the) member states of the European Union. Huge theoretical and empirical controversies exist in the literature that aims to evaluate the effectiveness of Structural Funds in promoting regional economic growth. This paper takes stock of the econometric literature that has investigated the impact of the Funds on economic growth. This literature is clearly divided between studies finding a positive and statistically significant impact, and those concluding that the Funds have no statistically significant or even a negative impact. We apply meta-analytic tools to provide a formal statistical and objective summary of the results found in 27 papers on the topic. Meta-regression analysis is subsequently used to explain the variation in observed outcomes in the primary literature.

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**Andrea Günster**, Martin Carree, and Maarten Pieter Schinkel

“European Antitrust Policy: An Analysis of Commission Decisions, 1962-2004

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*Abstract:*

The paper surveys the development of European competition law enforcement of Articles 81, 82, and 86—excluding merger control and state aid—since its

foundation in the Treaty of Rome of 1957. It provides a complete overview and statistical analyses of all formal Commission decisions as published in the *Official Journal* and the *Annual Reports on Competition*. From the first vertical negative clearance (that is, Grosfillex and Fillistorfin in March 1964) more than 500 formal Commission decisions are analyzed up to and including 2004. More than 150 appeals cases were lodged; starting with the successful Consten-Grundig appeal to the first cartel infringement found in September 1964. A range of summary statistics concerning report route, duration, length of the decision, economic rationale, imposed fines, number of parties, sector classification and Commissioner responsible are reported. All statistics are linked to changes in legal and administrative implementation, thereby providing a historical overview that explains the Commission's work up to the present day. The paper further estimates the determinants of the probability of infringement for notified cases and the probability of appeal to the CFI/ECJ for infringement cases.

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**Marco Haan** and José Luis Moraga-Gonzalez

“Competing for Attention in a Model of Search”

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*Abstract:*

We present a search model in which firms' advertising intensities determine the order in which consumers visit firms. The likelihood that a consumer visits a firm is proportional to that firm's share of total advertising messages. Firms only advertise their presence, not their prices. We show that equilibrium advertising levels are increasing in consumer search costs. Yet, equilibrium profits are non-monotonic in search costs: firms are not necessarily better off if search costs increase. In our model, advertising is purely wasteful.

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Equilibrium prices are unaffected, and firms would be better off without the possibility to advertise.

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**Jakob de Haan**

“Does Dispersion in Central Bank Communication Harm the Predictability of Interest Rate Decisions? Evidence for the Euro Area”

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*Abstract:*

Using statements by euro area central bankers, we find that greater dispersion in central bank communication on expected developments in inflation has a negative impact on the predictability of interest rate decisions by the European Central Bank. Inconsistent communication also leads to more market uncertainty.

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**Metodij Hadzi-Vaskov** and Clemens Kool

“The Importance of Interest Rate Volatility in Empirical Tests of Uncovered Interest Parity (UIP)”

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*Abstract:*

Uncovered interest rate parity (UIP) provides a crucial theoretical underpinning for many models in international finance and international monetary economics. Though theoretically sound, this concept has not been

supported by empirical evidence. Typically, econometric tests not only reject the null hypothesis, but also find significant slope coefficients with the wrong sign. Following the approach employed in Kool and Thornton (2004), we show that the empirical procedure conventionally used to test for UIP may produce biased slope coefficients if the true data-generating process slightly differs from the theoretically expected one. Using monthly data for 10 industrial countries during 1975-2004, we estimate the UIP relation for all possible bilateral country pairs for each of the six 5-year sub-periods. The evidence supports the biasedness hypothesis: when the interest rate volatility of the anchor country is very high (very low), this estimation procedure reports significantly higher (lower) slope coefficients. This result is quite robust to the inclusion/exclusion of different sub-periods and anchor countries.

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Siem Jan Koopman, Marius Ooms, and **Irma Hindrayanto**

“Periodic Unobserved Cycles in Seasonal Time Series with an Application to US Unemployment”

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*Abstract:*

This paper discusses estimation and testing for a class of periodic unobserved components time series models with trend, seasonal, and cycle components. Two convenient state space formulations are introduced for exact maximum likelihood estimation, component estimation, testing, and forecasting. Identification issues are considered and a novel periodic version of the cycle component is presented. The empirical illustration is applied to the US unemployment time series (non-seasonally adjusted) and a significant periodic cycle is discovered. Furthermore, a comparison is made between the

performance of the unobserved components time series model and a periodic seasonal autoregressive integrated moving average model.

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**Harold Houba** and Quan Wen

“Perfect Equilibria in a Negotiation Model with Different Time Preferences”

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*Abstract:*

There has been a long debate on equilibrium characterization in the negotiation model when players have different time preferences. We show that players behave quite differently under different time preferences than under common time preferences. Conventional analysis in this literature relies on the key assumption that all continuation payoffs are bounded from above by the bargaining frontier. However, when players have different time preferences, intertemporal trade may lead to continuation payoffs above the bargaining frontier. We provide a thorough study of this problem without imposing the conventional assumption. Our results tie up all the previous findings, and also clarify the controversies that arose in the past.

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**Yamei Hu** and George Hendrikse

“Allocation of Decision Rights in Fruit and Vegetable Contracts”

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*Abstract:*

The use of contracts as a way of organizing transactions between primary farmers and downstream agri-business is spreading in many agricultural sectors. One observation is that many restrictive arrangements are adopted in agricultural contracts. The restrictive contractual arrangements specify issues/decisions ex ante or move decision rights across fixed firm boundaries or both. What determines the extent and form of decision rights allocation in agricultural contracts? Based on several theoretical and empirical studies, we identify uncertainty, reputation, quality, specific investment, monopsony-oligopsony power as potential variables influencing decision rights allocation. Several agricultural firms procuring vegetable and fruit from farmers via contracts are interviewed to test the explanatory power of the exogenous variables. It shows that the extent of completeness of a contract and allocation pattern of control rights vary a lot across different supply chains. A contract may be complex when the firm designing the contract have well-recognized reputation or sells high quality products or both. Market uncertainty will not influence the completeness of a contract in our cases. Under a contracting governance structure, many control rights are shifted from farmers to firms. Quality, reputation, and specific investments may positively influence the number of control rights allocated to firms.

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**Janine Huisman** and Jeroen Smits

“Factors Influencing the Demand for Education in 350 Regions in 28 Developing Countries”

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*Abstract:*

Education is a powerful means of reducing poverty and achieving economic growth. Despite considerable progress, millions of children in developing

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countries are not in school. To improve this situation it is important to gain a better understanding of the factors that influence educational participation of children in developing countries. Most comparative studies on developing countries focus either on a micro- or a macro-level. The community level has been virtually neglected in present research. An important reason for this has been the lack of data. However, in recent years several household-surveys have been conducted in developing countries. Based on these surveys we have constructed a unique database in which individual and household characteristics of over 200,000 children in 350 regions in 28 developing countries are combined with characteristics of the region in which they live. Our baseline is a model for human capital investment, with which it is possible to determine the factors that influence the demand for education. The research method we use is a multilevel regression analysis. Our dependent variables are variables indicating whether or not children aged 7 to 14 are in school. Our independent variables at the regional level include various indicators of school quality and quantity, indicators of the labor market structure, and of the local culture. The individual level-dependent variables we use include education and occupation of the parents and wealth of the family.

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**Oliver Hülsewig**, Eric Mayer, and Timo Wollmershäuser

“Bank Behavior and the Cost Channel of Monetary Transmission”

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*Abstract:*

The paper presents a New Keynesian model that discusses the role of banks in the cost channel of monetary policy. Banks extend loans to firms in an environment of monopolistic competition by setting the loan rate according to a Calvo-type staggered price setting approach, which means that the

adjustment of the aggregate loan rate to a monetary policy shock is sticky. We estimate the model for the Euro area by adopting a minimum-distance approach. Our findings exhibit that: (i) frictions on the loan market influence the propagation of monetary policy shocks as the pass-through of a change in the money market rate to the loan rate is incomplete; and (ii) the cost channel is operating, but the effect is weak since inflation is driven by real unit labor costs rather than the loan rate. Our main conclusion is that the strength of the cost channel is mitigated as banks shelter firms from monetary policy shocks by smoothing lending rates. Even though firms base their pricing decision on credit conditions, the impact on inflation dynamics arising through changes in interest rates emerges as quantitatively unimportant.

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**Ekko van Ierland**, Hans Peter Weikard, and Rob Dellink

“Renegotiations and the Stability of International Climate Agreements”

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*Abstract:*

International climate policies are being shaped in a process of ongoing negotiations. The paper explores the stability of international climate agreements in a sequential-game framework allowing for multiple renegotiations. We analyze how the incentives to reach an international climate agreement today will be impacted by the prospect of further negotiations at a later stage. We empirically examine the stability of international climate agreements in a setting with renegotiations by means of an extended version of the Stability of Coalitions model (STACO). We explore the impact of timing of renegotiations in a two-stage game and find that in the context of the STACO model, a coalition of China and the United States is the unique renegotiation proof equilibrium. In a game with more frequent renegotiations, we find that the possibility to punish players helps to stabilize

larger coalitions in early stages of the game. Consequently, several renegotiation-proof equilibria emerge that outperform the coalition of China and the United States in terms of abatement level and global payoff. The Grand Coalition, however, remains unstable.

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**Jan Jacobs**, Gerard Kuper, and Johan Verlinden

“Monetary Policy in the Euro Area: The Impact of Fiscal Closure Rules”

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*Abstract:*

The paper focuses on the importance of fiscal policy rules for the conduct of monetary policy in a monetary union. The idea is that monetary and fiscal policy can be seen as complements. Whereas none of the Vector Autoregressive (VAR) models for the euro area published so far includes government debt, we start from the government budget constraint to model the dynamics between deficit and debt. In simple VAR models we show that incorporating a fiscal closure rule indeed seems to affect monetary policy in the euro area.

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**Richard Jong-A-Pin** and Jakob de Haan

“Identifying and Explaining Growth Accelerations”

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*Abstract:*

The paper examines the definition and determinants of growth accelerations as defined by Hausman, Rodrik and Pritchett (HRP, 2005). We question to which extent the filter used by HRP is able to identify the right initiation of growth accelerations and provide an alternative filter. We find that broad policy reform and political regime changes are the most important determinants of growth acceleration.

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**Martin Kahanec**, Amélie Constant, and Klaus Zimmerman  
“The Russian-Ukrainian Earnings Divide”

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*Abstract:*

Ethnic differences are often considered to be powerful sources of diverse economic behavior. In the paper, we investigate whether and how ethnicity affects Ukrainian labor market outcomes. Using micro data from the Ukrainian Longitudinal Monitoring Survey (ULMS) and Oaxaca-Blinder decomposition of earnings, we find a persistent and rising labor market divide between ethnic Russians and Ukrainians throughout Ukraine’s transition era. We establish that language rather than nationality is the key factor behind this ethnic premium favoring Russians. Our findings further document that this premium is larger among males than among females.

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**Willemien Kets**

“Rules of Thumb for Social Networks”

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*Abstract:*

In many contexts, social networks are important for determining economic outcomes. Social networks are typically large and complex, so that individuals may not know the exact structure and may even hold incorrect beliefs on the prevailing network. The paper considers games on social networks in which players have incomplete information on the network structure. Players form beliefs on the network structure on the basis of some rules of thumb, which only yield the correct probability distribution over possible network structures in the limit that the number of players on the network goes to infinity. We show that: (i) for each equilibrium in a Bayesian game in which players base their beliefs on these rules of thumb, there exists an approximate equilibrium in the corresponding Bayesian game where players hold correct beliefs on the network structure; and (ii) in the limit of an infinite number of players, payoffs in this approximate equilibrium will be arbitrarily close to equilibrium payoffs.

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**Mohamad Khaled**

“A Multivariate Generalization of the Markov-switching Model”

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*Abstract:*

We present a multivariate generalization of the markov-switching model. We allow for the introduction of several latent processes that have a simple parametric distribution. The matrix-variate Bernoulli distribution yields a flexible yet parsimonious pattern of dependence between the different latent processes while preserving the markov property. We illustrate in detail the first-order markov case of that distribution and we show how to derive different quantities and characteristics such as marginal and conditional distributions or such as the integration constant.

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**Bas van der Klaauw**, Philip de Jong, and Maarten Lindeboom  
“Screening Disability Insurance Applications”

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*Abstract:*

The paper investigates the effects of intensified screening of disability insurance benefit applications. A large-scale experiment was setup where in 2 of the 26 Dutch regions case workers of the disability insurance administration were instructed to screen applications more intense. The empirical results show that intense screening reduces long-term sickness absenteeism and disability insurance applications. This provides evidence both for direct effects of the more intensive screening on work resumption during sickness absenteeism and for self-screening by potential disability insurance applicants. We do not find any spillover effects to the inflow into unemployment insurance. A cost-benefit analysis shows that the costs of the intensified screening are only a small fraction of its benefits.

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**Bas van der Klaauw**

“Structural Empirical Evaluation of Job Search Monitoring”

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*Abstract:*

In the paper we develop a model that describes the labor market behavior of both unemployed and employed workers. Our job search models explicitly models endogenous job search effort and accounts for monitoring of job search behavior of unemployed workers. To estimate the model we use data from a randomized experiment conducted in the Netherlands to evaluate the effectiveness of job search monitoring. The data are very rich on both short-term and long-term labor market outcomes and contains some measures for job search behavior. Reduced-form estimations shows that the data are in agreement with the predictions of the theoretical model. Job search monitoring slightly reduces the length of unemployment spells, but that it causes unemployed workers to accept jobs of lower quality. Individuals who were exposed to stricter job search monitoring receive on average lower wages and have shorter job durations. We use the structural model estimates to compare the efficiency of job search monitoring to other potential active labor market policies such as job search assistance and changes in unemployment benefits.

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**Jeroen Klomp**

“Health, Democracy, and Political Instability”

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*Abstract:*

The health status of a country in most economic and political studies is recognized as a one-dimensional construct, mostly expressed by the life expectancy or mortality rate. This paper examines with a factor analysis (including 23 health indicators) if the health status is a one or multidimensional construct. The results indicate that health is one dimensional, but it differs much from frequently used indicators. At the same time we looked what effect the type and stability of the political regime has on the health status. The findings show that democracy has a positive effect, but the effect of political instability is ambiguous.

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**Michael Koetter**

“The Road from Suboptimal to Default: Ordered Failure Events in German Banking”

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*Abstract:*

Outright failures of banks without prior indication of financial instability are very rare. Supervisory authorities monitor banks constantly and thus usually obtain early warning signals that lead ultimate failure. But to our knowledge virtually all studies that predict bank failures neglect the cardinal nature of bank distress. We have access to the distress database of Europe's largest banking industry: Germany. We distinguish three different kinds of distress events that banks experience of which only the worst entails a bank to exit the market. Weaker orders of distress are, first, compulsory notifications of the authorities about potential problems and, second, actions by banking pillars' insurance schemes. Since the three categories of hazard functions are not proportional, we specify a generalized ordered logit model to estimate the respective probabilities of distress simultaneously. Our model estimates each

set of probabilities with high accuracy and confirms, first, the necessity to account for different kinds of bank distress and, second, the violation of the proportional odds assumption implicit in traditional ordered logit and single limited dependent analyses. Consequently, future bank hazard models should model different degrees of distress more explicitly.

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**Pierre Koning**

“Measuring the Effectiveness of the Public Employment Service”

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*Abstract:*

In the paper, we measure the effectiveness of the Dutch public employment service (PES) for a variety of outcome measures, ranging from job placement rates to customer friendliness and the timeliness of benefits allocation. Using unique administrative monthly data from local PES offices during 2003-2004, we exploit the fact that the number of PES workers per job seeker varies substantially between offices. The number of PES workers per office varies frequently; it is determined by the product of the standard time per client and the estimated number of clients. Under the assumption that under- or overestimates of the number of full time worker equivalents available per client are not correlated with job placement rates and other outcomes, we obtain consistent estimates of the effectiveness of PES workers. We find the effectiveness of additional PES workers to significantly reduce job placement rates for short term unemployed and unemployment insurance (UI) recipients. In contrast, small and insignificant effects are obtained for the job placement rates of long-term unemployed and social assistance (SA) recipients. We also find additional PES workers to improve: (i) the timeliness of UI benefits; (ii) the number of vacancies that are registered by offices; and (iii) customer friendliness. Overall, we conclude that (small) increases of the

number PES workers per client are cost-effective, that is, the resulting reduction in benefit expenses is roughly equal to the extra costs.

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**Michal Krawczyk**

“A Note on the Strategy Method in Experimental Games”

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*Abstract:*

The strategy method (SM, Selten, 1967) is a widely used way of eliciting choices in experimental games in extensive form, as it provides the experimenter with more data—namely, choices contingent on every information set in the game. The paper investigates whether SM systematically leads to different decisions than those made in the traditional way, particularly in situations where predictions of the classical theory are at odds with considerations like reciprocity, fairness or altruism. Contrary to the often-cited idea of “hot-cold empathy gap,” “non-rational” choices are made more often under SM (“cold” mode). To account for this, a model of self-image protection is developed, in which agents make “fair” choices more eagerly under SM, because this is ex-ante “cheap”—the chances are that their choices will not affect their earnings. The model also correctly predicts several other regularities observed in bargaining experiments, for example the rejection pattern in ultimatum game when stakes are varied (Slonim and Roth, 1998; and Oosterbeek et al., 2004) and the manipulation of information conditions (Straub and Murnighan, 1994; Bolton and Zwick, 1995; and Abbink, Sadrieh and Zamir, 1999) as well as disadvantageous counter-offers in sequential bargaining games (Ochs and Roth, 1989).

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**Maureen Lankhuizen**

“Technology Transfer Through FDI: Absorption Capacity and the Importance of Technological Human Capital”

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*Abstract:*

Foreign Direct Investments (FDI) are a potentially important channel for technology diffusion. This paper investigates the importance of absorption capacity in attracting FDI. One of the factors determining countries' absorption capacity most commonly recognized is human capital. We use indicators of human capital that allow us to test whether (i) specific types of human capital such as technological human capital (scientists and engineers) are more conducive to attract FDI than others; and (ii) whether it is quantity or quality (measured by students' performance in mathematics and science) of technological human capital that matters for attracting FDI. Our results indicate that technological human capital is important for attracting both total FDI and high-tech FDI. Regarding different types of human capital, it is enrolment in engineering, manufacturing and construction that matters for attracting FDI. Enrolment in science, and social sciences, business and law have no statistically significant effect or contribute less to the variation in FDI. The quality of technological human capital is also important for attracting FDI. The relative importance of enrolment in engineering, manufacturing and construction and the quality of technological human capital is higher in high-tech FDI than total FDI.

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Ralph de Haas and **Iman van Lelyveld**

“Internal Capital Markets and Lending by Multinational Bank Subsidiaries”

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*Abstract:*

We use panel data on the intra-group ownership structure and balance sheets of 45 of the largest banking groups to analyze what determines the credit growth of their subsidiaries. We find that the lending of multinational bank subsidiaries is influenced by substitution effects, as parent banks trade-off lending in several countries, and support effects, as parent banks support weak subsidiaries. This provides evidence for the existence of internal capital markets through which multinational banks manage the credit growth of their subsidiaries. Greenfield subsidiaries are more closely integrated into internal capital markets than subsidiaries that result from a take-over.

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**Allard van der Made** and Bert Schoonbeek

“Entry Facilitation by Environmental Groups”

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*Abstract:*

We consider a model of vertical product differentiation where consumers care about the environmental damage their consumption causes. An environmental group is capable of increasing consumers' environmental concern via a costly campaign. The threat of such a campaign can facilitate entry by firms that are able to employ cleaner technologies than those used by

incumbents. However, we demonstrate that the subsequent intensification of competition can lead to an adverse effect on aggregate pollution that is the decline in average pollution per product is offset by the increase in total production.

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**Fabio Manca**

“Technology Catching-up and the Role of Institutions”

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*Abstract:*

The aim of the paper is to investigate the role played by differences in Institutional Quality on the process of technology transfer across countries. This is done by means of a total factor productivity (TFP) catching-up analysis in the fashion of Benhabib and Spiegel (2002) for a cross-section of 50 countries in which institutional quality is inserted as a promoting factor of technology transfers. We find that, by using a logistic functional form of technology diffusion, institutional differences across countries play a significant role in explaining different patterns of technology transfer. Having better institutions is associated with higher TFP growth rates and faster rates of technology imitation. We are able to compute a threshold level for institutional quality below which countries should not theoretically catch-up. Empirical evidence show that 15 countries fall short of this value but that the overall picture seems to point to catching-up in the longrun. We extended the framework to investigate the role of different policy arrangements within the innovative and imitative processes of an economy: Empirically, we find that an enforcement of Intellectual Property Rights (IPRs) is detrimental to followers by reducing their ability to imitate and that trade-oriented policies, instead, benefit all regions.

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**Luca Marchiori**

“Replacement Migration in an Aging World”

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*Abstract:*

In the paper, we analyze the effects of international migration on developed and developing regions. We use a computable general equilibrium model of the world economy, sharing the world in 10 (3 developed and 7 developing) regions. We compare the economic consequences of two different policies of increased immigration: one in which the majority of migrants is skilled and one in which the majority is unskilled. Within the limits of our assumptions, we show that both immigration policies considerably alleviate the expected fiscal burden due to population aging in developed regions. However, a selective immigration policy is much more harmful for developing countries and contributes to increase inequality across nations.

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**Lydian Medema**

“Statistical Validation of a Credit Risk Model”

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*Abstract:*

The Basel Committee on Banking Supervision has published a new proposal (Basel II) for revising the existing Basel I capital adequacy framework from 1999. Basel II forces banks to develop credit risk models, which can be used in

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risk management and for calculation of reserves. In according to the Basel II guidelines, these models have to be validated. However, regulators have not provided clear guidelines as to how this validation should take place. We propose a simple validation methodology that can be used by banks to validate their credit risk models and apply this methodology to a real-world case. In this paper, we focus on statistical criteria for validation. Validation is obviously not only a statistical exercise, we also pay attention to managerial judgment and a qualitative analysis of the model. The paper gives a clear overview of the available statistical validation methods.

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**Rossana Merola**

“An Estimated Dynamic-Stochastic General Equilibrium Model with Financial Frictions”

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*Abstract:*

Episodes of crises that have recently plagued many emerging market economies have lead to a widespread questioning of the two traditional generations of models of currency crises. Distressed banking systems and adverse credit-markets conditions have been pointed as sources of serious macroeconomic contractions, so introducing these imperfections into standard economic models can help to explain the more recent crises. This effort introduces financial frictions à la Bernanke, Gertler, and Gilchrist in a two-sector small open economy. We analyze the impulse response functions to various structural shocks. We start from a basic model and we add frictions one by one and we analyze how outcomes are affected by each friction. The frictions we consider are the following: foreign currency denominated debt, sticky wages, habit-formation in consumption, and a financial accelerator mechanism. We include these frictions because, in order to test the relevance

of the financial accelerator mechanism, it is important to see if financial market frictions are important only because of the absence of other underlying frictions in the economy. Then, we proceed to analyze how the economy would respond under both a fixed exchange rate and flexible exchange rate, to better understand which regime is more able to isolate shocks. The model is estimated on simulated data applying both Bayesian techniques and maximum likelihood methods and comparing the results under the two different estimation procedures. First, we will analyze the influence of the prior on the estimation outcomes. Second, we will test the sensitivity of estimation outcomes to the sample size, showing how, for large samples, results under Bayesian estimation converges asymptotically to those obtained applying maximum likelihood.

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**Mark Mink**

“Does Rising Correlation Imply Synchronization? An Analysis of Business Cycle Co-Movement Patterns in the European Union”

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*Abstract:*

This article discusses the common practice of using correlation coefficients in analyses of business cycle synchronization. As it turns out, several reasons can be presented to question the appropriateness of employing such a methodology. A new co-movement measure is developed that is not affected by these problems. It manages to uncover substantially less volatile cycle affiliation patterns that are to a much lesser extent distorted by temporary shocks and outlier observations, even when band-pass filters are used to improve the correlation coefficient's performance. Examining EU-15 countries over the 1970-2003 period, reveals for several countries a stable synchronization patterns towards an EMU cycle.

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**Raymond Montizaan**

“Training and Retirement Behavior in the Perspective of the Firm”

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*Abstract:*

In the paper, the relation between technological change, workers' training history and retirement behavior is analyzed in the context of earning profiles that increase with tenure. Using data from the National Longitudinal Survey of Older Men for the United States, we find that workers with a firm-specific training history retire earlier than workers with a general training background. This indicates that a productivity-wage gap, induced by with tenure increasing earning profiles for workers with a formal firm specific training history, gives firms an incentive to dispose of older workers with specific training. The paper contributes to the life cycle literature (e.g., Lazear, 1979; Hutchens, 1987; and Kotlikoff and Gokhale, 1992) on the existence of a productivity-wage gap by using training indicators of Johnson (1996), which enables us to increase insights in the causality between training and retirement behavior get while accounting for technological change. We also contribute to the literature on technological change (e.g., Bartel and Sicherman, 1993; Violante, 2002; and Weinberg, 2002) by distinguishing between firm-specific and general training history, which contrasts with the study of Bartel and Sicherman in which only a proxy for on-the-job-training on an industrial level is used.

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**Mariëlle Non**

“Going Where the Ad Leads You: On High Advertised Prices and Searching Where to Buy”

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*Abstract:*

The search literature assumes that consumers know which firms sell products they are looking for, but are unaware of the particular variety and the prices at which each firm sells. In this paper, we consider the situation where consumers are uncertain whether a firm carries the product at all by proposing a model where in the first stage firms decide on whether or not to carry the product. Firms may advertise, informing consumers not only of the price they charge, but also of the basic fact that they sell the product. In this way, advertising lowers the expected search cost. We show that this role of advertising can lead to a situation where advertised prices are higher than non-advertised prices in equilibrium.

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**Daan Ooms**

“Growth and Exit as Determinants of Production Structure After Policy Change”

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*Abstract:*

The purpose of this research is to estimate exit and growth models of Dutch dairy farms in order to make farm-specific statements about the 2003 reform

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of the European Common Agricultural Policy (CAP). We consider exit both in the short term (one year) as the medium term (three years). We explore the possibilities of using panel data estimation techniques that allow for farm-specific effects. We concluded that for the exit models a cross-section probit approach was most suitable in our situation. Next to that, we test for attrition bias in the growth equation. Based on this test we conclude that attrition does not bias the parameters in our growth model. Therefore, the growth model is estimated by standard dynamic panel data estimation techniques. Simulation results show that the 2003 CAP reform has a large negative effect on the number of farms. The remaining farms do grow, but not enough to circumvent a large negative effect on total milk production after the policy reform. Decoupling direct income payments from production in the implementation period, results in a more gradual decrease of total milk production and number of farms compared with a situation where direct income payments are coupled in the implementation period.

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**Bastiaan Overvest**

“Competition, Semi-Collusion, and Full Collusion with Sequential Consumer Search”

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*Abstract:*

We examine three distinct modes of competition on an oligopolistic market. Buyers visit firms sequentially and value low prices and high levels of effort exerted by the firms. Firms may (i) behave completely non-cooperative and set price and effort in a Nash fashion; (ii) make a binding price-fixing agreement, but compete in effort; or (iii) collude in both price and effort. We find that when firms engage in semi-collusion, they may select a price that is below the

competitive price. Semi-collusion and full collusion yield lower levels of social welfare than non-cooperative play.

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**Hans Peters** and Dries Vermeulen

“WPO, COV and IIA bargaining solutions”

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*Abstract:*

The class of bargaining solutions that are defined on the domain of finite sets of alternatives and satisfy Weak Pareto Optimality (WPO), Independence of Irrelevant Alternatives (IIA), and Covariance (COV), is characterized. These solutions select from the set of maximizers of a nonsymmetric Nash product—that is, from a nonsymmetric (multi-valued) Nash bargaining solution—according to a specific decomposition of the indifference curves of this Nash product. We use this characterization in two ways. First, we derive consequences on this domain and on larger domains of compact (non-convex) bargaining problems, and show that most results in the literature are special cases and consequences of our central results—in particular, by adding continuity or symmetry axioms. Second, since the continuity axiom prevents nontrivial selections from the Nash bargaining solutions, we use the Axiom of Choice to construct, for example, non-single-valued discontinuous WPO, IIA, and COV bargaining solutions. We discuss the status of the Axiom of Choice in deriving such solutions in detail.

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**Michiel de Pooter**, Francesco Ravazzolo, and Dick van Dijk  
“Predicting the Term Structure of Interest Rates: A Bayesian Approach”

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*Abstract:*

In the paper we forecast future values of US zero-coupon bond Treasury Bill rates. We analyze a wide range of models that have been used in the literature to predict the term structure of interest rates, including univariate and multivariate autoregressive models, the popular Nelson-Siegel factor model, and no-arbitrage models. Previous literature has focused only on individual models and advocates the use of a single “best” forecasting model. We instead develop a novel Bayesian model averaging framework in which we combine forecasts from a (potentially large) number of different models into a single forecast. By allowing for time-varying weights and by using prior beliefs for these weights, the resulting forecasts are more responsive to changes in the underlying dynamics of interest rates, something, which has proven to be difficult for individual models. When assessing the accuracy of yield forecasts and when constructing the time-varying weights in our model averaging approach, we place strong emphasis on using economic metrics, in addition to more common statistical criteria. In particular, we assess the quality of (model averaged) interest rate forecasts from an investor’s point of view. Focusing on individual models only, our results show that Bayesian analysis allows us to construct better quality forecasts than frequentist methods, especially for more elaborate (nonlinear) models such as the Nelson-Siegel and affine models. However, the largest gains in forecasting performance are obtained when averaging forecasts using our advocated Bayesian model averaging approach with time-varying weights. Statistical and economic forecast evaluation criteria both show that the benefits of Bayesian modeling averaging are substantial for interest rate predictions.

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**Arkadi Predtetchinski**

“Sequential Share Bargaining”

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*Abstract:*

The paper presents a new extension of the Rubinstein-Stahl bargaining model to the case with  $n$  players, called sequential share bargaining. The bargaining protocol is natural and has as main feature that the players' shares in the cake are determined sequentially. The bargaining protocol requires unanimous agreement for proposals to be implemented. Unlike all existing bargaining protocols with unanimous agreement, the resulting game possesses a unique sub game perfect equilibrium for any value of the discount factor. In equilibrium, agreement is reached immediately. The results are therefore qualitatively the same as in the two-player case.

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**Katharina Raabe, Ivo Arnold, and Clemens Kool**

“Firm Size and Monetary Policy Transmission: A Theoretical Model on the Role of Capital Investment Expenditures”

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*Abstract:*

This paper presents a dynamic investment model that explains differences in the sensitivity of small and large-sized firms to changes in the money market interest rate. In contrast to existing studies on the firm size effects of monetary policy, the importance of firms as monetary transmission channel

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does not originate from credit market imperfections, but from size-related differences in the degree of investment irreversibility. The degree of investment irreversibility is determined by sunk capital investment expenditures. We show that size-related differences in sunk investment expenditures have two interdependent effects: they (i) affect the optimal investment behavior of small- and large-sized firms: and (ii) account for differences in the interest rate sensitivity of small and large firm investment. We illustrate that sunk investment expenditures affect the region of zero and nonzero investment activity and, hence, the frequency at which large and small firms change investment regimes. Furthermore, sunk investment costs determine the extent to which small and large firm investment displays discrete jumps. We find that large firms change investment regimes less frequently than small firms and that swings in investment are more accentuated for large than for small firms. We illustrate that the response of small and large firm investment to monetary policy actions depends on the magnitude of the monetary policy shock.

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**Afaf Rahim**, Ekko van Ierland, and Hans-Peter Weikard

“Competition in the Gum Arabic Market: A Game-Theoretic Modeling Approach”

Environmental Economics and Natural Resources Group

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*Abstract:*

Gum arabic is mainly produced from two Acacias that are found in the gum belt of Sub-Saharan Africa. These are *Acacia senegal* that produces high quality gum and *Acacia seyal* that produces low quality gum. In recent years, the gum market structure has changed and Sudan lost its near monopoly position. In order to understand the best strategy for Sudan to pursue, we model the competition between Sudan, Chad, and Nigeria in the export of

high- and low-quality gum arabic using a Stackelberg model with interdependent markets. Whereas Sudan (the leader) has a comparative advantage in the export of high-quality gum, Chad and Nigeria (the followers) have a cost advantage in the export of low-quality gum. We determine the market equilibrium outcomes and study the impact of subsidies to promote either the high- or low-quality gum. Our results suggest that the three countries are better off if they adopt an export coordination strategy and if Sudan makes side payments to Chad and Nigeria.

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**Francesco Ravazzolo**, Marno Verbeek, and Herman van Dijk

“Economic and Statistical Gains from Classical and Bayesian Forecast Combinations”

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*Abstract:*

The interest of this work is to combine forecasts of the same events to outperform individual forecasts, and to provide new evidence in favor of time varying combining methods. A considerable literature finds that combining procedures can sometimes improve forecasting accuracy over the original procedures, but also that indiscriminate combining can reduce the performance dramatically as a result of several factors. The paper compares several well known averaging strategies, and tests their performances over different simulation exercises. Results show that time varying strategies statistically outperform other strategies when the underlying data generating process is subject to location shifts. In an empirical application to the S&P 500 index returns, time varying strategies are shown to be also economically profitable.

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**Ward Romp** and Ben Heijdra

“Retirement, Pensions, and Aging”

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*Abstract:*

We extend an overlapping generations model for a small open economy with a realistic description of the mortality process and with an optimal retirement decision. Our model explains why, given current retirement systems, people retire at the earliest possible age. We show how lifetime utility optimizing individuals react to various policy related and demographic shocks. As an application we use our retirement model on a macroeconomic level to determine the required system reforms to keep the pension systems sustainable in the long run.

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**Bert Schoonbeek**

“Delegation with More Instruments in a Rent-Seeking Contest”

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*Abstract:*

We consider delegation in a rent-seeking contest with two players, where delegates have more instruments at their disposal than the main players. We endogenize both the decision to hire a delegate and the contingent fee offered to the delegates. We characterize the situations when either no, one or two players hire a delegate in equilibrium. We show that the decision to hire a delegate depends in a non-monotone way on the size of the contested prize.

**Silvia Sgherri**

“Long-Run Productivity Shifts and Cyclical Fluctuations: Evidence for Italy”

Directorate General Research

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*Abstract:*

Using unobserved stochastic components and Kalman filter techniques, the paper assesses the relative importance of transitory and permanent shifts in Italian real GDP within a production function framework. Evidence suggests that the increase in hours worked that has accompanied pension and labor market reforms accounts for the bulk of low-frequency variation in growth, but points to factor utilization as the main driver of business cycle fluctuations. In contrast with the predictions of standard Real Business Cycle models, a positive shock to the underlying rate of total factor productivity growth generates a slight decline in hours, whereas the response of output to the same shock is found to be positive.

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**I-Ling Shen, Frédéric Docquier and Hillel Rapoport**

“Remittances and Inequality: A Dynamic Migration Model”

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*Abstract:*

We develop a model of the interdependencies between remittances and inter-household inequality in origin countries. While remittances are shown to monotonically decrease wealth inequality along the time-span, the short- and long-run impacts on income inequality may be of opposite signs, suggesting

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that the dynamic relationship between remittances and inequality may well be characterized by an inverse U-shaped pattern. This is consistent with the findings of the empirical literature, yet offers a different interpretation, with no need to endogenize migration costs through the role of migrant networks but simply via intergenerational wealth accumulation.

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**Marc van der Steeg**, Maarten Cornet, and Björn Vroomen

“Do Innovation Vouchers Help SMEs to Cross the Bridge Towards Science?”

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*Abstract:*

The 2004 Dutch innovation voucher policy experiment aims to stimulate the interaction between small and medium-sized enterprises (SMEs) and public research institutes. The voucher is intended as a credit note, which SMEs can use to buy technological and other knowledge from or place an application-oriented research problem with a public or semi-public knowledge provider. This paper provides an estimate of the effectiveness of the innovation voucher instrument, employing the fact that the vouchers were assigned randomly by means of a lottery. The experimental design assures that the difference in number of assignments between SMEs with and without voucher can confidently be attributed to the voucher instrument. The main conclusion is that the innovation voucher instrument does stimulate SMEs to engage in many new assignments with public research institutes. Out of every ten vouchers, eight are used for a project that would not have been assigned without such a voucher, one is used for a project that would have been assigned anyhow, and one voucher is not used. An overall assessment of the innovation voucher also needs to take into account the value added of the additional assignments, however. This is subject of a follow-up study later this year.

**Linda Toolsema**

“Grey Versus Green Electricity: A Vertical Differentiation Model with Interfirm and Intrafirm Switching Costs”

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*Abstract:*

We analyze competition on the market for ‘grey’ and ‘green’ electricity (electricity derived from nonrenewable versus renewable sources) in a vertical differentiation setup. In a duopoly model where both firms supply the same two qualities of an otherwise homogeneous product, we derive the critical level of the interfirm switching cost needed to sustain monopoly pricing. In particular, we show how a decrease in the intrafirm switching costs may cause an increase in this critical value, thereby facilitating monopoly pricing. We discuss implications for policy measures intended to stimulate green electricity.

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**Andrey Vasnev**

“Sensitivity of GLS Estimators in Random Effects Models”

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*Abstract:*

The paper studies the sensitivity of random effects estimators in the one-way error component regression model. Maddala and Mount (1973) give the simulation evidence that in random effects models the properties of the feasible GLS estimator are not affected by the choice of the first-step estimator

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used for the covariance matrix. This paper gives a reason for this in terms of sensitivity. The properties of the first step estimator are transferred via an independent link, called sensitivity. The sensitivity statistic counteracts the improvement of the first step. A Monte Carlo experiment confirms the theoretical findings.

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**Koen van der Veer** and Eelke de Jong

“Official Financing: Making up for the Missing Catalytic Effect”

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*Abstract:*

This article presents four ways to extend previous quantitative research concerning the influence of adjustment programs of the International Monetary Fund (IMF) on private capital flows to developing countries. First, it investigates whether the effects of IMF programs differ in cases where a country has a restructuring agreement with the Paris Club. These agreements contain a ‘comparability of treatment’ clause, enforcing private sector involvement. Second, it estimates the time span of the effects of different IMF programs. Third, it examines the effect on private lending of the size of total official financing in comparison to a country’s financing need. Finally, for those cases where a catalytic effect is found, the paper analyzes whether this prevents an over-adjustment of the current account balance, which after all is the ultimate goal of IMF lending.

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Jan Jacobs, Jenny Ligthart, and **Hendrik Vrijburg**

“Commodity Tax Competition Among Governments: Evidence from the United States”

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*Abstract:*

The paper contributes to a small but growing literature that estimates tax reaction functions of governments competing with other governments. We analyze commodity tax competition between US states, employing a panel of state-level retail sales and excise tax data for 1977-1995. More specifically, we study the impact of a state’s spatial characteristics—that is, its size, geographic position, and relative border size—on the strategic interaction with its neighbors. We find overwhelming evidence for strategic interaction, but only partial support for the effect of spatial characteristics on tax setting.

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**Ellen Webbink** and Jeroen Smits

“Family Background Effects on Child Labor in Nine Developing Countries”

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*Abstract:*

The aim of this paper is to determine the relative effect of parental education, occupation, income and landownership on the decision to send children to school or to have them engage in child labor in developing countries or both. When parents decide about work versus schooling for their children, they weigh the direct and indirect costs and returns of both options in light of the household situation and the work and schooling opportunities offered by the

local context. In the literature, sometimes the “wealth paradox” is mentioned, which refers to empirical evidence that land ownership is positively correlated with child labor. When one considers land ownership as a reflection of wealth, this relationship is surprising. However, when parents own land, the possibility that their children have to work on it may increase. The data used are large representative household surveys for nine developing countries from three continents (that is, Bolivia, Columbia, Dominican Republic, India, Mali, Nicaragua, Peru, Tanzania and Uganda), the focus will be on children under age 14. The data are analyzed using multivariate binomial logistic regression analysis for boys and girls separately.

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**Bastian Westbrock**

“Efficient Collaboration Networks”

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*Abstract:*

Former work by Goyal and Joshi (2003) has developed a model on the private incentives of firms to form pair-wise collaborative links. Stable collaboration networks are typically asymmetric, with some firms having more links than others. The social desirability of those networks is however undetermined yet. Market dominance of a few might be desired, since competition is not too intense in such networks and industry profits are not extensively competed away. This paper provides an analysis of the architecture of socially efficient collaboration networks. Stable collaboration networks are generally inefficient, but the source of inefficiency depends on the nature of market rivalry. If firms' products are complements the efficient network is typically complete. Hence, stable networks tend to be under-connected from a social viewpoint. On the other hand, if firms compete with substitutable products the efficient network typically is either an interlinked star or a dominant group.

Moreover, competing firms have excessive incentives to form collaboration links. We find furthermore that efficient network structures are more likely to be stable as the number of firms in the market increases. This suggests that network structure matters in markets with weak rivalry. The invisible hand however works under intense competition.

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**Peter Wierds**

“The Sustainability of Euro Area Debt Evidence for Fiscal Reaction Functions”

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*Abstract:*

This paper re-assesses findings of the literature that the systematic debt stabilizing response in fiscal policy has been sufficiently strong for keeping debt ratios on a sustainable path in Euro area countries. In doing so, it adjusts the standard methodology to the specific context of Economic and Monetary Union (EMU) by: (i) using a fiscal reaction function that has been derived from the sustainability and stabilization motives in fiscal policy, reflecting the main objectives of the EU fiscal framework; and (ii) including increases in debt that are unaccounted for by budget deficits, due to attempts of circumventing the EU fiscal rules. Results reject the conclusion of sustainable policies for a group of high-debt countries that includes France and Germany.

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**Matthijs Wildenbeest**

“Vertical Product Differentiation and Search”

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*Abstract:*

The paper presents a nonsequential search model that allows for vertical product differentiation. In the unique symmetric equilibrium firms with different characteristics draw utilities from a common utility distribution. It is shown that differences in firm characteristics lead to different price distributions. The model, therefore, provides a theoretical rationale for explaining price dispersion as a result of quality differences and search behavior of consumers together. Furthermore, using the equilibrium conditions derived from the model, it is shown how to estimate search cost using only price data. Using a data set on prices of Dutch supermarkets, I find that consumer search cost have increased over time.

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**Ronald Wolthoff**, Pieter Gautier, and José Luis Moraga

“Structural Estimation of Search Intensity”

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*Abstract:*

The speed at which unemployed workers find jobs depends on their search intensity. Most of the literature defines search intensity as a scalar that influences the arrival rate of job offers. In the paper, we treat it explicitly as the number of applications per period that workers send out. Extending the

approach used by Moraga and Wildenbeest (2006), we present a structural model to estimate the search cost distribution and the implied search intensity from the wage distribution and the transition rate to employment. We also estimate the productivity of a match within a segment and the probability that an application results in a job offer. We test the method by Monte Carlo simulations. Finally, we use the model to study policies that affect the search cost distribution of individuals that is sanctions and subsidized childcare.

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Siem Jan Koopman and **Soon Yip Wong**

“Business Cycles and Semi-Nonparametric Estimation of Time-Varying Parameters in the Frequency Domain”

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*Abstract:*

Macro-economic time series are often subject to changes of the dynamic properties in different time periods. There is a growing interest in models that allow parameters to change over time in a smooth way or abrupt way. Such generalizations within the class of linear time series models usually lead to nonlinear and non-Gaussian model specifications that often require simulation-based methods for estimation. In this paper we consider a novel approach that avoid these complexities. For this purpose we consider a frequency-domain estimation method that is based on the spectral likelihood. In the frequency-domain, the spectral likelihood is a function of the model parameters and therefore they are reversely implied to be time varying when the spectrum is time varying. The paper discusses the technical details of the semi-parametric time-varying spectrum that is embedded within a two-dimensional state space framework. Since the approach relies mostly on frequency-domain and state space methods, computations are fast. Empirical

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analyses are carried out for two US macroeconomic time series: GDP and IPI. Some promising empirical results are presented.

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**Remco Zwinkels**, Ron Jongen, Willem Verschoor, and Christian Wolff  
"Dispersion of Beliefs and Market Volatility in the Foreign Exchange Market"

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*Abstract:*

The paper first discusses the sources of dispersion in beliefs in the foreign exchange market from a bounded-rationality point of view. Second we consider the possible techniques to quantify the degree of dispersion and to determine the source of dispersion of beliefs in a survey dataset. Third, we apply insights from the first part to a unique data set of individual market expectations for the major currencies. We find that there are distinct periods of high and low dispersion in which market participants disagree as to what will happen to the future level of the exchange rates. Furthermore, the frequency at which extreme differences in expectations among market participants occurs is higher than one would see under normality. Dispersion of beliefs is the result of the combined effects of market participants holding individual expectations and attaching different weights to various elements from their information sets. Furthermore, we find that differences in short-term expectations are based on differences in weights on technical analyses while differences in long-term expectations are based on differences in weights on fundamental analyses. Finally, we find that market volatility Granger-causes the degree of heterogeneity in beliefs.

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