



# Trends in Agricultural Economics

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## **Accounting for Negative, Zero and Positive Willingness to Pay for Landscape Change in a National Park**

Nick Hanley, Sergio Colombo, Bengt Kriström and Fiona Watson

In contingent valuation, despite the fact that many externalities manifest themselves as costs to some and benefits to others, most studies restrict willingness to pay to being non-negative. In this paper, we investigate the impact of allowing for negative, zero and positive preferences for prospective changes in woodland cover in two UK national parks, the Lake District and the Trossachs. An extended spike model is used to accomplish this. The policy implications of not allowing for negative values in terms of aggregate benefits are also investigated, by comparing the extended spike model with a simple spike making use of only zero and positive bids, and a model which considers positive bids only. We find that ignoring negative values over-states the aggregate benefits of a woodland planting project by up to 44%. (*Journal of Agricultural Economics* 60 (1): 1-16; *doi: 10.1111/j.1477-9552.2008.00180.x*)

## **Trade Creation and Diversion Effects of Preferential Trade Associations on Agricultural and Food Trade**

David Lambert and Shahera McKoy

Agricultural market distortions remain a major focus of contention in world trade negotiations. Estimates of the effects of liberalising current agricultural trade restrictions indicate an approximately \$385 billion increase in global welfare, with the disproportionate share of the benefit being enjoyed by developing countries. In response to difficulties in adopting agricultural trade reforms, individual groups of countries have formed multiple bilateral and regional preferential trade agreements (PTA) to enhance trade among members. Few sectoral analyses exist of the effects on agricultural and food product trade of PTAs. This research uses a gravity model to isolate the effects of various PTAs on both intra- and extra-bloc agricultural and food product trade for three time periods: 1995, 2000 and 2004. Findings strongly support PTA benefits in terms of increased intra-bloc trade in both sectors. The findings also generally support trade creation in agricultural products. PTA membership was also associated with food trade creation in most cases, although diversion was observed for several associations composed primarily of developing countries. (*Journal of Agricultural Economics* 60 (1): 17-39; *doi: 10.1111/j.1477-9552.2008.00184.x*)

## **Governance and Agricultural Production Efficiency: A Cross-Country Aggregate Frontier Analysis**

Mon-Chi Lio and Jin-Li Hu

This study uses a stochastic frontier approach to investigate the relationship between six governance indicators and agricultural efficiency. We find that improvements in rule of law, control of corruption and government effectiveness enhance agricultural productivity significantly if each indicator enters the inefficiency equation independently. When all six indicators are included in the equation, we find that an improvement in rule of law raises agricultural efficiency significantly, but increases in voice and accountability and political stability appear to significantly reduce agricultural efficiency. Grouping the six indicators into three dimensions, we find that an improvement in 'respect for institutional framework' raises agricultural efficiency significantly, but an enhancement in 'selection of authority' reduces agricultural efficiency significantly. Our results imply that poorer countries can enhance their agricultural efficiency substantially by strengthening the state and citizens' respect for institutional framework. However, our results show that greater democracy is associated with lower agricultural efficiency. This finding is consistent with interest group capture and political failure arguments of the political economy literature. (*Journal of Agricultural Economics* 60 (1): 40-61; *doi: 10.1111/j.1477-9552.2008.00172.x*)

## **But are they Meritorious? Genetic Productivity Gains under Plant Intellectual Property Rights**

Deepthi Elizabeth Kolady and William Lesser

The objective of this paper is to evaluate the effect of Plant Variety Protection (PVP) on the productive merit/yield increases of US seed varieties. As an example, we use wheat varieties, which are and have been available as both protected and unprotected under PVP from both the public and private sectors. We find evidence that PVP has contributed to the genetic improvement of wheat, using varietal trial data from Washington State. As the private open-pollinated varieties exist only because of PVP and are higher yielding, these results indicate a clear public benefit from PVP. (*Journal of Agricultural Economics* 60 (1): 62-79; *doi: 10.1111/j.1477-9552.2008.00171.x*)

## **Did the Federal Crop Insurance Reform Act Alter Farm Enterprise Diversification?**

Erik J. O'Donoghue, Michael J. Roberts and Nigel Key

We estimate how much United States farms changed enterprise diversification in response to a marked increase in crop insurance coverage brought about by the 1994 Federal Crop Insurance Reform Act, which substantially increased insurance subsidies. The analysis exploits farm-level panel census data to compare farm-specific changes in enterprise diversification over time. By examining diversification decisions of the same farms over time, we control for time-invariant unobserved individual heterogeneity. We then use pooled cross-sectional data from the United States Department of Agriculture (USDA) Agricultural Resource Management Survey to estimate the relationship between farm diversification and average returns. We find that the insurance subsidies caused a modest increase in enterprise specialisation and production efficiency. Estimated efficiency gains are far less than the subsidies. (*Journal of Agricultural Economics* 60 (1): 80-104; *doi*: 10.1111/j.1477-9552.2008.00166.x)

## **Regional Planning of Wastewater Reuse for Irrigation and River Rehabilitation**

Gilad Axelrad and Eli Feinerman

Subject to a few agri-environmental restrictions, municipal wastewater can be utilised for agricultural irrigation and river rehabilitation. This paper develops a single-year Planning Model for a region in Israel which consists of a city and three potential wastewater consumers. The model incorporates, in one endogenous system, the economic, physical and biological relationships in the water-soil-plant-environment system and its objective is to maximise the regional social welfare. The model determines the optimal crop mix and the optimal allocation of the limited water and land resources among all potential users. Then, different allocation approaches from the concept of transferable utility games are applied to determine a reasonable and fair allocation of the additional net benefits which will be acceptable to all the players. The results support the collaboration among the economic entities and indicate economic and environmental advantages which can serve the decision-makers. (*Journal of Agricultural Economics* 60 (1): 105-131; *doi*: 10.1111/j.1477-9552.2008.00170.x)

## **The Amenity Value of Agricultural Landscape and Rural-Urban Land Allocation**

Aliza Fleischer and Yacov Tsur

We analyse rural-urban land allocation in the light of the increasing environmental role of agricultural landscapes. The landscape amenity value of farmland varies across crops and as a result affects the optimal crop mix in addition to its effect on rural-urban land allocation. Investigating the effects of population and income growth processes, we find that, contrary to market outcomes, the socially optimal allocation may call for more farmland preservation under both processes. In an empirical application to a region in Israel, we find that the extent of market under-supply of farmland is substantial and that population growth calls for more farmland preservation at the expense of urban land. (*Journal of Agricultural Economics* 60 (1): 132-153; *doi*: 10.1111/j.1477-9552.2008.00179.x)

## **Testing the Consistency Between Standard Contingent Valuation, Repeated Contingent Valuation and Choice Experiments**

Mike Christie and Christopher D. Azevedo

Choice experiments (CEs) are a relatively new approach to valuing environmental resources. Initial tests of the validity of the approach have either compared benefit estimates generated using CEs with those estimated using contingent valuation (CV) or used more sophisticated hypothesis tests of parameter equality. Although useful, existing tests have been restricted to testing consistency based on a single policy scenario (standard CV). We argue that, although these tests are informative, they fail to take full advantage of the richness of CE data. In particular, CE data allow for the calculation of benefit estimates over a range of policy scenarios (i.e. attribute combinations). A similar range of benefit estimates may be generated by pooling scenarios in a repeated CV study. In this paper, we explore this relationship between CV and CEs by conducting validity tests between a CE model and a repeated CV model over a range of three levels of improved water quality at Clear Lake, IA, USA. Evidence from this test suggests that the CE and CV data are consistent. (*Journal of Agricultural Economics* 60 (1): 154-170; *doi*: 10.1111/j.1477-9552.2008.00178.x)

## **A Spatio-temporal Model of Farmland Values**

David Maddison

Despite the fact that data on farm sales are invariably collected over both time and space, previous papers have allowed for the presence of either temporal or spatial relationships in the data, but not both. Some papers have also inadvertently assumed that although farmland values are influenced by prices realised by nearby sales, these sales need not necessarily be comparable in terms of their attributes. Using data on sales of farmland obtained through public auctions in England and Wales, this paper examines the consequences of explicitly allowing for the presence of a spatio-temporal lag in the estimation of hedonic models of farmland value. The results indicate that spatio-temporally lagged values of the dependent and independent variables contribute significant additional explanatory power. Accounting for spatio-temporal relationships appears moreover to somewhat alter the perceived size and statistical significance of key farmland attributes. (*Journal of Agricultural Economics* 60 (1): 171-189; doi: 10.1111/j.1477-9552.2008.00182.x)

## **Land Heterogeneity, Agricultural Income Forgone and Environmental Benefit: An Assessment of Incentive Compatibility Problems in Environmental Stewardship Schemes**

Rob Fraser

This paper examines the issue of incentive compatibility within environmental stewardship schemes, where incentive payments to farmers to provide environmental goods and services are based on foregone agricultural income. The particular focus of the paper is land heterogeneity, either of agricultural or environmental value, leading to divergence between the actual and socially optimal level of provision of environmental goods and services. Given land heterogeneity, such goods and services are likely to be systematically over- or under-provided in response to a flat rate payment for income foregone. (*Journal of Agricultural Economics* 60 (1): 190-201; doi: 10.1111/j.1477-9552.2008.00183.x)

## **Technical Efficiency among Peasant Farmers Participating in Natural Resource Management Programmes in Central America**

Daniel Solís, Boris E. Bravo-Ureta and Ricardo E. Quiroga

This study examines the extent to which technical efficiency (TE) is related to activities promoted by two natural resource management programmes recently

completed in Central America. Data for a total of 639 farms operating in the hillsides of El Salvador and Honduras are used to estimate a household-level input-oriented stochastic distance frontier simultaneously with a TE effects model. The main finding of this study is that improvements in TE are financially beneficial to farm households while also contributing to environmental sustainability. The results also reveal a positive association between productivity and output diversification, and a positive relationship between TE and off-farm income, human capital and agricultural extension. (*Journal of Agricultural Economics* 60 (1): 202-219; *doi*: 10.1111/j.1477-9552.2008.00173.x)

### **Would African Countries Benefit from the Termination of Kenya's Economic Partnership Agreement (EPA) with the EU? An Analysis of EU Demand for Imported Roses**

Andrew Muhammad

This paper assesses the impact of Kenya's preferential status on EU demand for imported roses by country. Import demand equations were estimated using a production version of the Rotterdam model in an Armington framework. With the expiration of the Lomé Convention, tariffs (up to 24%) on Kenyan roses were likely if an Economic Partnership Agreement (EPA) was not signed by January 2008. Roses from African countries not subject to tariffs were expected to displace Kenya's exports in the future. However, results of this study showed that roses from African countries were complements in the EU market and those exports from Zimbabwe and Other African countries would have been negatively impacted if a Kenya-EU EPA was unsuccessful. Given the maximum import duty on Kenyan roses, EU imports from Kenya would decrease by 9.1% and imports from Zimbabwe and Other African countries would decrease by 6% and 4%, respectively. (*Journal of Agricultural Economics* 60 (1): 220-238; *doi*: 10.1111/j.1477-9552.2008.00169.x)

### **Estimating Price Elasticities of Food Trade Functions: How Relevant is the CES-based Gravity Approach?**

Alexandre Gohin and Fabienne Féménia

The main objective of this article is to examine econometric estimates of price elasticities of food trade functions. We investigate the relevance of the prominent gravity approach. This approach is based on the assumptions of symmetric, monotone, homothetic, Constant Elasticity of Substitution (CES) preferences. We

test all these assumptions using intra-European trade in cheese. In general, the assumptions made on preferences by the gravity approach are not supported by our dataset. The bias induced in the estimated price elasticities is ambiguous. (*Journal of Agricultural Economics* 60 (2): 253-272; doi: 10.1111/j.1477-9552.2009.00199.x)

## **Patterns and Determinants of International Trade Costs in the Food Industry**

Alessandro Olper and Valentina Raimondi

This paper documents patterns in international trade costs in processed foods for a large cross-section of developing and developed countries, during the 1976-2000 period. A trade costs index is inferred from a micro-founded gravity equation that incorporates bilateral 'iceberg' trade costs. For 2000, the trade costs, expressed as weighted average tariff equivalent, range from 73% for the north to 134% for the south countries. The time patterns show an average reduction of about 13% in the observed period that rises to 26% for the emerging countries. However, the same does not occur for south countries. On ranking the trade costs determinants, we find that, on average, geographical and historical factors seem to dominate those of infrastructure and institutions. However, trade policy emerges as an important determinant of the trade costs between north and emerging countries. (*Journal of Agricultural Economics* 60 (2): 273-297; doi: 10.1111/j.1477-9552.2008.00185.x)

## **Bilateral Import Protection, Free Trade Agreements, and Other Factors Influencing Trade Flows in Agriculture and Clothing**

Thomas L. Vollrath, Mark J. Gehlhar and Charles B. Hallahan

Many factors shape the global network of bilateral trade including fundamental forces of supply and demand factors and government policies. This study uses the generalised gravity framework to distinguish among the different drivers that either deter or aid partner trade in land-intensive agriculture and labour-intensive clothing. The dataset used in the analysis includes bilateral trade among 70 countries in 1995, 2000 and 2005. Collectively, the 70 countries account for 85% of the world's trade in agriculture and 96% of its GDP. Empirical results lend support to the Heckscher-Ohlin explanation of trade, namely that relative factor endowments motivate cross-border trade. Results also show that tariffs are not always binding and bilateral free-trade agreements more often divert rather than



create trade. (*Journal of Agricultural Economics* 60 (2): 298-317; **doi:** 10.1111/j.1477-9552.2008.00186.x)

## **Nonparametric Estimation of Oligopsony Power in First-Price Auction**

Chanjin Chung and Emílio Tostão

This paper proposes a nonparametric procedure to estimate market power for first-price auction data and applies the procedure to cattle procurement markets. Most previous studies have used parametric methods, which require specific functional forms for retail demand, input supply and processors' cost equations. However, researchers often find that market power estimates from parametric methods are sensitive to the choice of functional forms and specifications. An application to data from cattle procurement experiments shows that our nonparametric approach greatly outperforms commonly used parametric methods in estimating the degree of market power. While parametric estimates are sensitive to functional form specification and are at least 90% smaller than 'true' market power indices, estimates from our nonparametric procedure deviate from the actual value by no more than 25%. (*Journal of Agricultural Economics* 60 (2): 318-333; **doi:** 10.1111/j.1477-9552.2008.00188.x)

## **The Inefficiencies of Regionalised Milk Quota Trade**

Thia Hennessy, Shailesh Shrestha, Laurence Shalloo and Michael Wallace

This paper estimates the inefficiencies associated with the regionalisation of the milk quota trade. An optimisation model is developed to estimate the economic value of quota. Quota values are aggregated to derive quota sale and purchase curves under two scenarios: first, where quotas can be traded nationally and second, where the trade of quota is regionally restricted. Quota trade is simulated and the consequent effects on supplier structure estimated. Through the derivation of sectoral cumulative cost curves it is possible to estimate the impact of regionalising quota trade on sector efficiency. The model is solved using National Farm Survey data from Ireland and the inefficiencies of regionalised quota trade in Ireland are estimated at €27 million. The paper concludes by discussing the implications of restricted quota trade, especially in the context of eventual quota removal. (*Journal of Agricultural Economics* 60 (2): 334-347; **doi:** 10.1111/j.1477-9552.2008.00187.x)

## **Internet Access and Farm Household Income-Empirical Evidence using a Semi-parametric Assessment in Taiwan**

Hung-Hao Chang and David R. Just

There is considerable literature examining individuals' behaviour with respect to Internet use, but less attention is paid to farm household use of the Internet. Among the few studies on farm households, the emphasis is on the correlation between socioeconomic factors and the adoption of the Internet. Thus, relatively little is known about the association between Internet use and farm household well-being. In an effort to fill this void, this paper investigates Internet access among farm households and examines the effects of Internet access on farm household income. Given the observed income gap between Internet users and non-users, we then investigate the extent to which socioeconomic factors may be associated with this income gap. Using a nationwide survey of farm households in Taiwan, a novel econometric model is proposed and estimated employing a semi-parametric technique. Our results support the conclusion that Internet use improves farm household income. Most of the income gap between adopters and non-adopters can be explained by the differences in the return of the socioeconomic factors. (*Journal of Agricultural Economics* 60 (2): 348-366; doi: 10.1111/j.1477-9552.2008.00189.x)

## **Market Integration of Fish in Europe**

Max Nielsen, Jos Smit and Jordi Guillen

This paper examines market integration between fish species in Europe, taking international market integration into account. Based on Juselius (2006), market integration is found both on the fresh and frozen markets. The Law of One Price is in force on the fresh market within the segments of flatfish and pelagic fish. Assuming transitivity, a loose form of market integration is identified between 13 fresh and seven frozen fish species, and the relative prices are found fairly stable. The policy implication is that catch limitation measures implemented through the Common Fisheries Policy have limited and conditional effects on prices, because of the large size of the market and varying market integration. Therefore, many fishermen are not 'compensated' by price increases as a result of catch limitation measures. (*Journal of Agricultural Economics* 60 (2): 367-385; doi: 10.1111/j.1477-9552.2008.00190.x)

## **Valuing Traits of Indigenous Cows in Central Ethiopia**

Girma T. Kassie, Awudu Abdulai and Clemens Wollny

This research aimed at identifying and estimating the relative weight assigned to the preferred traits of indigenous cow population in the most dominant crop-livestock mixed production system in Central Ethiopia. A choice experiment approach was employed to elicit the preferences and a random parameters logit model was used to estimate the relative importance of the preferred attributes of indigenous cows. The results show that fertility, disease resistance and calf vigour traits are at least as important as milk. The location the cows are brought from is also an important attribute for buyers. Results from the simulation on the influence of changes in attribute levels showed that fertility and disease resistance affect preferences more than other traits. The findings suggest that the smallholder community in this part of Ethiopia depends on semi-subsistence agriculture and so livestock development interventions should focus on a multitude of reproductive and adaptive traits that stabilise the herd structure rather than focusing on traits that are only important for commercial purposes. (*Journal of Agricultural Economics* 60 (2): 386-401; *doi: 10.1111/j.1477-9552.2008.00191.x*)

## **Heterogeneous Risk Preferences, Discount Rates and Land Contract Choice in Ethiopia**

Mintewab Bezabih

This paper analyses the role of risk and rate of time preference in the choice of land contracts. The analysis builds on the risk-sharing and imperfect market explanations of contract choice. Unique data from Ethiopia, which contain land contract information and experimental risk and rate of time preference measures on matched landlord-tenant partners, are employed in the empirical analysis. The results show that landlord and tenant time preferences are significant determinants of contract choice. For landlords (but not tenants), risk preference is also significant, indicating the importance of financial constraints and production risk in the determination of contract choice. The results are of particular relevance to land market policy in Ethiopia, where production is risk-prone, financial markets are imperfect, and where there is a major need for the development of vibrant land rental markets. (*Journal of Agricultural Economics* 60 (2): 402-418; *doi: 10.1111/j.1477-9552.2008.00194.x*)

## **Production Efficiency of Jasmine Rice Producers in Northern and North-eastern Thailand**

Sanzidur Rahman, Aree Wiboonpongse, Songsak Sriboonchitta and Yaovarate Chaovanapoonphol

The paper jointly evaluates the determinants of switching to Jasmine rice and its productivity while allowing for production inefficiency at the level of individual producers. Model diagnostics reveal that serious selection bias exists, justifying use of a sample selection framework in stochastic frontier models. Results from the probit variety selection equation reveal that gross return (mainly powered by significantly higher Jasmine rice price), access to irrigation and education are the important determinants of choosing Jasmine rice. Results from the stochastic production frontier reveal that land, irrigation and fertilisers are the significant determinants of Jasmine rice productivity. Significantly lower productivity in Phitsanulok and Tung Gula Rong Hai provinces demonstrate the influence of biophysical and environmental factors on productivity performance. The mean level of technical efficiency is estimated at 0.63 suggesting that 59% [(100 - 63)/63] of the productivity is lost due to technical inefficiency. Policy implications include measures to keep Jasmine rice price high, increase access to irrigation and fertiliser availability, as well as investment in education targeted to farm households which will synergistically increase adoption of Jasmine rice as well as farm productivity. (*Journal of Agricultural Economics* 60 (2): 419-435; *doi: 10.1111/j.1477-9552.2008.00198.x*)

## **Exploring Farm Investment Behaviour in Transition: The Case of Russian Agriculture**

Raushan Bokusheva, Irina Bezlepkina and Alfons Oude Lansink

This paper analyses the investment behaviour of Russian farms during the period of economic stabilisation that followed Russia's financial crisis of 1998, and is the first to apply the error-correction investment model to describe farms' investment behaviour in the transitional context. Additionally, the paper employs the error-correction and the adjustment-cost model to test for differences in the investment behaviour between various farm categories. The results show that in general Russian farms exhibited an error-correcting behaviour in the period under investigation. From 1999 to 2005 the output-capital gap was closed by an average rate of 10% per year. Estimates of the adjustment-cost model show that Russian farm investments are very sensitive to the sales-capital ratio, suggesting that

Russian farms exhibit increasing returns to scale and positive expectations about future revenues. Yet, such farm characteristics as ownership structure, access to input markets and also regional specifics were found to be decisive for farm investment not only in the short but long term too. Finally, the results show that the adjustment-cost model is adequate for the evaluation of differences in short-term investment behaviour, whereas it is noticeably less powerful for investigating differences in the farms' long-term investment behaviour. (*Journal of Agricultural Economics* 60 (2): 436-464; doi: 10.1111/j.1477-9552.2009.00200.x)

## **EU Policies on Bioenergy and their Potential Clash with the WTO**

Alan Swinbank

The paper outlines EU policy on bioenergy, including biofuels, in the context of its policy initiatives to promote renewable energy to combat greenhouse gas emissions and climate change. The EU's Member States are responsible for implementing EU policy: thus, the UK's Renewables Obligation on electricity suppliers and its Renewable Transport Fuel Obligation and road-fuel tax rebates are examined. It is unlikely that EU policy is in conflict with the WTO Agreement on Agriculture or that on Subsidies and Countervailing Measures, but its provisions on environmental sustainability criteria could be problematic. (*Journal of Agricultural Economics* 60 (3): 485-503; doi: 10.1111/j.1477-9552.2009.00212.x)

## **Agricultural Subsidies and Rural Development**

Karine Daniel and Maureen Kilkenny

How consistent is a single farm payment system with rural development goals? A new economic geography model is used to compare coupled subsidies to 'single farm payments' effects on the location of farming, agro-industry and non-farm activity between rural and urban areas. This abstract model features a majority of employment in service sectors, farming vertically linked to manufacturing, and strong preferences for geo-varieties. It appears that both coupled subsidies and single farm payments can decrease spatial agglomeration. But only the single farm payment policy raises welfare in both rural and urban regions of this stylised economy. (*Journal of Agricultural Economics* 60 (3): 504-529; doi: 10.1111/j.1477-9552.2009.00214.x)

## **Use of Compliance Rewards in Agri-environmental Schemes**

Yuki Yano and David Blandford

Ensuring that farmers comply with the terms of agri-environmental schemes is an important issue. This paper explores the use of a 'compliance-reward' approach under heterogeneous net compliance costs with respect to cost-share working lands programmes such as the Environmental Quality Incentives Program (EQIP) in the United States. Specifically, we examine the use of a reward under asymmetric information and output price uncertainty. We examine two possible sources of financing under the assumption of budget neutrality: (i) funds obtained by reducing monitoring effort; and (ii) money saved by reducing the number of farmers enrolled. We discuss the advantages and disadvantages of each source of funding and analyse these numerically for both risk-neutral and risk-averse farmers. We also examine the trade-off between increased expenditure on monitoring effort and compliance rewards when additional budgetary resources are available. We show that under certain conditions a compliance reward can increase compliance rates. For risk-averse farmers, however, conditions that ensure a positive outcome become more restrictive. (*Journal of Agricultural Economics* 60 (3): 530-545; *doi*: 10.1111/j.1477-9552.2009.00208.x)

## **Modelling Farmers' Participation in an Agri-environmental Scheme using Panel Data: An Application to the Rural Environment Protection Scheme in Ireland**

Stephen Hynes and Eoghan Garvey

Previous studies that have attempted to model the participation decision of farmers in agri-environmental schemes have used a static framework where it was not possible to examine changes in the participation decision of farmers over time. This is rectified in this paper by utilising an 11-year panel that contains information on 300 farmers for each year. The structure of this dataset allows us to employ discrete time duration random effects panel data logit models to model the determinants of entering the Irish Rural Environment Protection Scheme (REPS). We introduce a dynamic element into a number of the models by using the random effects logit model estimator, with lagged dependent variables as additional explanatory variables. The results point to the fact that systems of farming that are more extensive and less environmentally degrading remain those most likely to participate in the REPS. In addition, the results highlight the fact that where no attempt is made to control for unobserved heterogeneity or path dependency the

effects of the farm- and farmer-specific characteristics may be overestimated. (*Journal of Agricultural Economics* 60 (3): 546-562; doi: 10.1111/j.1477-9552.2009.00210.x)

## **Impacts of Decoupled Agricultural Support on Farm Structure, Biodiversity and Landscape Mosaic: Some EU Results**

Mark Brady, Konrad Kellermann, Christoph Sahrbacher and Ladislav Jelinek

The decoupling of direct payments from production represents a substantial reform of the Common Agricultural Policy (CAP). Farmers are no longer required to produce commodities to be entitled to support but only to keep land in Good Environmental and Agricultural Condition. If output declines as a result, there is concern that landscape services produced jointly with commodities will also decline. The aim of this paper is to assess the long-term effects of the 2003 reform on farm structure, landscape mosaic and biodiversity for a sample of EU regions. Impacts are quantified using a spatial agent-based modelling approach by simulating agricultural development with links to indicators of landscape value. Our results demonstrate that eliminating the link between support payments and production has possible negative consequences for the landscape, but only under particular circumstances. It is shown that these effects could be offset by strengthening (Pillar II) agri-environmental schemes. Further the single payment scheme results in higher land rental prices which reduces its ability to achieve its goal of providing income security for farmers. Implications of these results for the direction of continued CAP reform are discussed. (*Journal of Agricultural Economics* 60 (3): 563-585; doi: 10.1111/j.1477-9552.2009.00216.x)

## **Armington Elasticities and Tariff Regime: An Application to European Union Rice Imports**

Marilyne Huchet-Bourdon and Esmail Pishbahar

The European Union's (EU) import sources for rice include developing countries and least developed countries (LDCs). The EU has made a commitment to allow duty-free and quota-free access to rice imports originating in the LDCs from September 2009 onward. The purpose of this article is to answer two questions: (1) does the inclusion of import tariffs lead to different estimated Armington elasticities? (2) when a discriminating tariff is introduced, what happens to the market share of large rice exporters to the EU, especially of poor countries? We present the Armington model, derived from a constant elasticity of substitution

(CES) utility function, and a non-homothetic CES utility functional form, which is more flexible. We then estimate the Armington model, with and without the inclusion of a tariff, and we compare the elasticities. Lastly, we model five scenarios with different discriminated import tariff rates to calculate the changes in the market access of large rice exporters to the EU. Our empirical results show the importance of non-homothetic preferences and import tariffs. Ignoring import tariffs and the non-homothetic parameter may produce results which are biased and of uncertain validity. Furthermore, the simulation findings demonstrate that, in spite of a large difference between import tariff rate of Suriname and other countries (scenario V), its market access would not change greatly. This may be caused by supply side problems like poor infrastructures, weak technology and small capacity production in LDCs. (*Journal of Agricultural Economics* 60 (3): 586-603; *doi*: 10.1111/j.1477-9552.2009.00217.x)

### **Consumer Acceptance of Second-Generation GM Foods: The Case of Biofortified Cassava in the North-east of Brazil**

Carolina González, Nancy Johnson and Matin Qaim

Biofortified staple foods are currently being developed to reduce problems of micronutrient malnutrition among the poor. This partly involves use of genetic modification. Yet, relatively little is known about consumer acceptance of such second-generation genetically modified (GM) foods in developing countries. Here, we analyse consumer attitudes towards provitamin A GM cassava in the north-east of Brazil. Based on stated preference data, mean willingness to pay is estimated at 60-70% above market prices for traditional cassava. This is higher than the results from similar studies in developed countries, which is plausible given that micronutrient malnutrition is more severe in developing countries. GM foods with enhanced nutritive attributes seem to be well received by poor consumers. However, the results also suggest that acceptance would be still higher if provitamin A were introduced to cassava through conventional breeding. Some policy implications are discussed. (*Journal of Agricultural Economics* 60 (3): 604-624; *doi*: 10.1111/j.1477-9552.2009.00212.x)

### **Factors Impacting Food Safety Risk Perceptions**

Glynn T. Tonsor, Ted C. Schroeder and Joost M. E. Pennings

We developed and applied a model of consumer risk perceptions of beef food safety to better understand the underlying drivers of consumer demand for food



safety. We show how consumer demographics, country-of-residence, as well as reliance on, and trust in, alternative food safety information sources affect risk perceptions of consumers in Canada, Japan and the United States. Consumers in all three countries have risk perceptions shaped by their level of reliance on observable and credence attribute information. Risk perceptions of consumers in each country are significantly higher for those less trusting of doctors. Moreover, personal and indirect food safety experiences substantially affect risk perceptions. These results are useful to decision-makers in developing more efficient supply chain management strategies and public policies aimed at building or sustaining consumer confidence in food safety. (*Journal of Agricultural Economics* 60 (3): 625-644; doi: 10.1111/j.1477-9552.2009.00209.x)

### **EU Food Safety Standards, Pesticide Use and Farm-level Productivity: The Case of High-value Crops in Kenya**

Solomon Asfaw, Dagmar Mithöfer and Hermann Waibel

This article provides an empirical analysis of the impact of European Union (EU) private food safety standards on pesticide use and farm-level productivity among small-scale vegetable producers in Kenya. We apply an extended three-stage damage control production framework, accounting for multiple endogeneity problems, to farm-level data collected from a random cross-sectional sample of 539 small-scale producers. Estimation results show that farmers producing vegetables for the domestic market use significantly lower quantities of pesticides than do export farmers. However, contrary to findings elsewhere, the econometric evidence here shows that both domestic and export-oriented vegetable farmers in Kenya use pesticides at levels below the economic optimum. The results also show that the adoption of standards by export farmers does not have any significant impact on total pesticide use. However, adopter categories are distinguishable in terms of types of pesticide used, i.e. adopters use safer pesticides based on World Health Organization (WHO) classification. The third-stage structural revenue model results demonstrate that adoption of standards has a positive and significant impact on revenue raised in vegetable production. Nevertheless, farmers producing for the export market are indistinguishable from those producing for the domestic farmers in terms of the total revenue earned from producing vegetables during the rainy season, on a 'per acre' basis. Although standards can potentially prevent resource-poor smallholders from maintaining their position in the lucrative export markets, they can also result in positive changes in the production systems of those small-scale farmers who adopt it, as shown by these results. (*Journal of Agricultural Economics* 60 (3): 645-667; doi: 10.1111/j.1477-9552.2009.00205.x)

## **Labour Market Adjustment and Intra-Industry Trade: The Effects of Association on the Hungarian Food Industry**

Imre Ferto

The structure of Hungary's food trade expansion over the period 1995-2003 and its implications for labour market adjustment are examined. The contributions of the paper are threefold. First, we test the sensitivity of results to the choice of measurement and their implications for the results. Second, we introduce more industry-specific control variables. Third, we distinguish the short- and long-run adjustment effects. Our results provide some support for the smooth-adjustment hypothesis of intra-industry trade. Estimations confirm that industry-specific variables may have a significant effect on adjustment costs. (*Journal of Agricultural Economics* 60 (3): 668-681; **doi:** 10.1111/j.1477-9552.2009.00201.x)

## **Valuing Quality Attributes and Country of Origin in the Korean Beef Market**

Chanjin Chung, Tracy Boyer and Sungill Han

For beef exporters, one of the important questions in the Korean beef market is why Korean consumers are willing to pay almost three times more for domestic Korean beef than they pay for imported beef. To answer this question, we surveyed 1,000 shoppers in Seoul, Korea, and conducted a conjoint analysis on consumers' willingness to pay (WTP) for country equity of domestic vs. imported beef and quality attributes of marbling, freshness, genetically modified organism (GMO)-free feed ingredients and antibiotic-free production. Among all factors contributing to the price differentials, the most important factor seems to be the country of origin followed by the use of GMO feeds and antibiotics in beef production, marbling grade and freshness. This study finds that Korean consumers value origins of imported beef approximately \$14/lb less than the Korean origin. Korean consumers' valuation of beef quality and country of origin differs by some demographic groups: older vs. younger generations, homemakers vs. non-homemakers and consumers who prefer to purchase packaged beef vs. consumers who prefer to purchase butcher shop beef. Our empirical findings suggest that the top priority for beef exporters who wish to increase sales and value of their beef in the Korean market must be to counter Korean consumers' strong ethnocentrism by improving the value of their country of origin. (*Journal of Agricultural Economics* 60 (3): 682-698; **doi:** 10.1111/j.1477-9552.2009.00218.x)

## **An Analysis of the Key Factors Influencing Farmer's Choice of Crop, Kibamba Ward, Tanzania**

Laura Greig

The need for further research into indigenous knowledge, in the context of agrarian development strategies, led to this investigation of one aspect of local knowledge; that of crop choice. Through the use of point score analysis, research was conducted in the Kibamba Ward located in the peri-urban zone of Dar es Salaam, Tanzania. The main aims were to investigate the key factors underlying farmers' choice of crop as well as to assess the differences in the decision-making process between commercial and subsistence farmers. Vegetable cultivation was observed as the main practice, influenced particularly by the physical environment, the availability of machinery as well as certain economic factors. A significant difference in decision making among subsistence and commercial farmers was found. Subsistence farmers placed greater emphasis on the taste of the crop, whereas commercial farmers were predictably more influenced by the market. In addition, this study highlights several practical areas of concern regarding water resources, basic machinery and the lack of formal extension provision in the area. Although the complexity of crop choice is portrayed, a need for future research in different geographical contexts is noted. (*Journal of Agricultural Economics* 60 (3): 699-715; *doi*: 10.1111/j.1477-9552.2009.00215.x)

## **Food Scares and Trust: A European Study**

Mario Mazzocchi, Alexandra Lobb, W. Bruce Traill and Alessio Cavicchi

The complex interactions between the determinants of food purchase under risk are explored using the SPARTA model, based on the theory of planned behaviour, and estimated through a combination of multivariate statistical techniques. The application investigates chicken consumption choices in two scenarios: (a) a 'standard' purchasing situation; and (b) following a hypothetical Salmonella scare. The data are from a nationally representative survey of 2,725 respondents from five European countries: France, Germany, Italy, the Netherlands and the United Kingdom. Results show that the effects and interactions of behavioural determinants vary significantly within Europe. Only in the case of a food scare do risk perceptions and trust come into play. The policy priority should be on building and maintaining trust in food and health authorities and research institutions, while food chain actors could mitigate the consequences of a food scare through public trust. No relationship is found between socio-demographic variables and consumer

trust in food safety information. (*Journal of Agricultural Economics* 59 (1): 2-24; **doi:** 10.1111/j.1477-9552.2007.00142.x)

### **Does 'Protection for Sale' Apply to the US Food Industries?**

Rigoberto A. Lopez

This paper tests the Protection for Sale model in terms of the structure of protection and how realistic the estimated domestic welfare weight is relative to campaign contributions. Using data from US food manufacturing, empirical results support the key predictions for the structure of protection when either all food manufacturing industries or most of the general population is assumed to be politically organised. The domestic welfare weight is estimated as low as 0.837, the lowest econometric estimate to date, underlining that protection is for sale and that, with a qualified 'yes', the model fits the data for these industries. (*Journal of Agricultural Economics* 59 (1): 25-40; **doi:** 10.1111/j.1477-9552.2007.00143.x)

### **Assessing the Impact of the 'Decoupling' Reform of the Common Agricultural Policy on Irish Farmers' Off-farm Labour Market Participation Decisions**

Thia C. Hennessy, Tahir Rehman

This paper assesses the impact of the 'decoupling' reform of the Common Agricultural Policy on the labour allocation decisions of Irish farmers. The agricultural household decision-making model provides the conceptual and theoretical framework to examine the interaction between government subsidies and farmers' time allocation decisions. The relationship postulated is that 'decoupling' of agricultural support from production would probably result in a decline in the return to farm labour but it would also lead to an increase in household wealth. The effect of these factors on how farmers allocate their time is tested empirically using labour participation and labour supply models. The models developed are sufficiently general for application elsewhere. The main findings for the Irish situation are that the decoupling of direct payments is likely to increase the probability of farmers participating in the off-farm employment market and that the amount of time allocated to off-farm work will increase. (*Journal of Agricultural Economics* 59 (1): 41-56; **doi:** 10.1111/j.1477-9552.2007.00140.x)

## **Modelling CAP Decoupling in the EU: A Comparison of Selected Simulation Models and Results**

Oliver Balkhausen, Martin Banse and Harald Grethe

This article reviews ways of representing the effects of decoupling in the European Union (EU) on land allocation and production in eight selected simulation models (AGLINK, AG-MEMOD, CAPRI, CAPSIM, ESIM, FAPRI, GOAL and GTAP). It then compares the simulated effects of decoupling and traces them back to the model specifications and parameter assumptions. In particular, roughage is not included in most models, so that changes in ruminant production are not necessarily consistent with the changes in fodder area. Models also differ in the extent to which they reflect the substitution possibilities in ruminant feeds. Notwithstanding the considerable differences in model types and specifications, all the studies considered here predict that as a result of decoupling, areas allocated to cereals (and silage maize) and beef and sheep production in the EU-15 will decline, while fodder area will increase. Differences in the projections about pasture, oilseed and set-aside areas can be attributed to different model or scenario specifications. The most important factor affecting the results is the extent to which the models assume that the Common Agricultural Policy (CAP) 2003 Reform (regarding Single Farm Payments) involves a substantial decoupling of support compared with the baseline (Agenda 2000) policy. (*Journal of Agricultural Economics* 59 (1): 57-71; doi: 10.1111/j.1477-9552.2007.00135.x)

## **The Variable Response of Agricultural Supply to World Price Instability in Developing Countries**

Julie Subervie

This paper analyses the effect of world price instability on the agricultural supply from developing countries and determines to what extent this effect is dependent upon the macroeconomic environment. Producers from agricultural commodity-exporting countries are particularly vulnerable to the fluctuations of world prices: they are widely exposed to price shocks and have little ability to cope with them. Nevertheless, the effectiveness of risk-coping strategies is conditioned by the influence of macroeconomic factors (infrastructure, inflation and financial deepening). Thus country-specific price indices are established, and the response of production indices to price instability indices is estimated by using a panel model including macroeconomic variables which interact with price instability. Such

analysis is based on a sample of 25 countries between 1961 and 2002. The results highlight a significant negative effect of the world price instability on supply, and further show that high inflation, weak infrastructure and a poorly developed financial system exacerbate this effect. (*Journal of Agricultural Economics* 59 (1): 72-92; **doi:** 10.1111/j.1477-9552.2007.00136.x)

### **Some Consequences of the 1994-1995 Coffee Boom for Growth and Poverty Reduction in Uganda**

Lindsay Chant, Scott McDonald and Arjan Verschoor

This paper reports a computable general equilibrium analysis that explores the consequences of the 1994-1995 increase in the international price of coffee for Uganda's economy. Evidence is found for a small effect on both medium-term growth and poverty reduction. Aid dependence is among the reasons why this effect is not found to be larger. Major beneficiary groups are not primarily the farmers to which the windfall initially accrued, but urban wage earners and the urban self-employed. (*Journal of Agricultural Economics* 59 (1): 93-113; **doi:** 10.1111/j.1477-9552.2007.00133.x)

### **Factors Affecting Farmers' Participation in Agri-environmental Measures: A Northern Italian Perspective**

Edi Defrancesco, Paola Gatto, Ford Runge and Samuele Trestini

Agri-environmental measures play an important role in Italian rural areas, as shown by the financial commitment to the Rural Development programmes. However, in contrast with other European Union (EU) countries, policy-makers still have limited experience on how farmers approach environmental incentive schemes. This paper casts new light on this issue from a northern Italian perspective. The rationale of the farmers' decision-making process is explored using two multinomial models. The first explains the probability of non-participation or participation in one of three specific agri-environmental measures. The model outcomes show that labour-intensive farming types and high dependency of household income on farming activity constrain farmers' participation, whereas previous experience, easy-to-implement environmentally friendly farm practices and adequate compensation of extra costs encourage participation. The second model explores the effect of farmers' attitudes and beliefs on their predispositions towards participation in any of the schemes. The results highlight that, besides income

factors, the farm's future in the business, and the relationship with neighbouring farmers and their opinions on environmentally friendly practices all have significant effects on adoption of agri-environmental measures. The paper concludes by suggesting that farmers' attitudes and beliefs, as well as the local behavioural influences, have to be taken into account when designing and communicating agri-environmental measures. (*Journal of Agricultural Economics* 59 (1): 114-131; **doi:** 10.1111/j.1477-9552.2007.00134.x)

### **The Cost Effects of Government-Subsidised Credit: Evidence from Farmers' Credit Unions in Taiwan**

Hung-Jen Wang, Ching-Cheng Chang and Po-Chi Chen

We investigate government-subsidised credit effects on participating financial institutions' performance in terms of cost efficiency. Using farmers' credit unions in Taiwan as an example, we find that credit unions' cost inefficiency is positively correlated with the extent of involvement in subsidy programmes. The results are robust to the control of local competition and labour quality. In addition to the stochastic frontier models from which we obtain the main results, we also propose a new distribution-free estimation method based on quantile regressions. Results of this study point out that, when evaluating the social costs of the credit programmes, it is important to take into account the efficiency loss generated among financial intermediaries by credit subsidy programmes. (*Journal of Agricultural Economics* 59 (1): 132-149; **doi:** 10.1111/j.1477-9552.2007.00137.x)

### **Who Pays More for Food?**

Hayden Stewart and Noel Blisard

Building on research with unit values, we demonstrate how a household's per serving and total vegetable expenditures depend on both the characteristics of the household and on its location. The lower a household's income, for example, the lower is vegetable spending, all else constant. However, households living in communities with high real estate prices, or with a high incidence of poverty, among other things, tend to pay more. Simulations further illustrate the effect that a community's characteristics can have on a household's vegetable spending, if the household lives in each of 10 cities in the United States. (*Journal of Agricultural Economics* 59 (1): 150-168; **doi:** 10.1111/j.1477-9552.2007.00139.x)

## **On the Characterisation and Measurement of the Redistributive Effect of Agricultural Policy**

Paul Allanson

The article proposes a coherent framework for the evaluation of the redistributive performance of agricultural policy. An illustrative study shows that the vertical stance of policy in Scotland was progressive in absolute terms, reflecting the chronic dependence of Scottish agriculture on policy transfers. Nevertheless, the overall redistributive effect of policy was to increase absolute inequality in farm incomes because of horizontal inequities in the incidence of transfers, though neither systematic discrimination between farm types nor systematic reranking was the main cause. The targeting of policy transfers could be improved by the use of indicator variables more strongly correlated with pre-transfer incomes. (*Journal of Agricultural Economics* 59 (1): 169-187; doi: 10.1111/j.1477-9552.2007.00132.x)

## **Optimisation of a Large, Constrained Simulation Model using Compressed Annealing**

Graeme J. Doole and David J. Pannell

Simulation models are valuable tools in the analysis of complex, highly constrained economic systems unsuitable for solution by mathematical programming. However, model size may hamper the efforts of practitioners to identify efficiently the most valuable management strategy. This paper investigates the efficacy of a new stochastic search procedure, compressed annealing, for the identification of profitable solutions in large, constrained systems. The algorithm is used to examine the value of incorporating a sown annual pasture, French serradella (*Ornithopus sativus* Brot. cv. Cadiz), between extended cropping sequences in the central wheatbelt of Western Australia. Compressed annealing is shown to be a reliable means of considering constraints in complex optimisation problems relative to the incorporation of fixed penalty factors in standard simulated annealing and genetic algorithms. French serradella is found to be an economic break pasture in the study region when weed populations are high or sheep production is lucrative. (*Journal of Agricultural Economics* 59 (1): 188-206; doi: 10.1111/j.1477-9552.2007.00138.x)



## **Protecting Biotechnology IPRs in Developing Countries: Simple Analytics of a Levy Solution**

Ryan Cardwell and William A. Kerr

High transaction costs and an absence of institutional infrastructure in developing countries prevent comprehensive enforcement of intellectual property rights and generate obstacles to the adoption of genetically modified (GM) crop technology. Governments of developing countries that are members of the World Trade Organization are faced with two options when licensing GM crop technology: (1) attempt to regulate GM crops to the standards of the Agreement on Trade-Related Aspects of Intellectual Property (TRIPS) or (2) allow a black market in GM seeds and risk trade retaliation from the GM innovator's host country through a TRIPS trade complaint. This paper develops a conceptual model that frames the adopting country's range of licensing options, including a new levy system, and derives welfare measures for each option. The model illustrates how a levy on GM technology can be a welfare-increasing policy for developing countries, and the operation of a levy is discussed. The conceptual model is applied to Brazil's soybean market and quantitative economic surplus measures are estimated within a calibrated welfare model for a range of licensing scenarios. The model's results suggest that a levy may interfere with the long-term prospects for innovators to collect monopoly rents in adopting countries. (*Journal of Agricultural Economics* 59 (2): 217-236; doi: 10.1111/j.1477-9552.2007.00141.x)

## **Forecasting the Adoption of GM Oilseed Rape: Evidence from a Discrete Choice Experiment in Germany**

Gunnar Breustedt, Jörg Müller-Scheeßel and Uwe Latacz-Lohmann

This paper explores farmers' willingness to adopt genetically modified (GM) oilseed rape prior to its commercial release and estimates the 'demand' for the new technology. The analysis is based upon choice experiments with 202 German arable farmers. A multinomial probit estimation reveals that GM attributes such as gross margin, expected liability from cross pollination, or flexibility in returning to conventional oilseed rape significantly affect the likelihood of adoption. Neighbouring farmers' attitudes towards GM cropping and a number of farmer and farm characteristics were also found to be significant determinants of prospective adoption. Demand simulations suggest that adoption rates are very sensitive to the profit difference between GM and non-GM rape varieties. A monopolistic seed price would substantially reduce demand for the new technology. A monopolistic

seed supplier would reap between 45% and 80% of the GM rent, and the deadweight loss of the monopoly would range between 15% and 30% of that rent. The remaining rent for farmers may be too small to outweigh possible producer price discounts resulting from the costs of segregating GM and non-GM oilseed rape along the supply chain. (*Journal of Agricultural Economics* 59 (2): 237-256; *doi*: 10.1111/j.1477-9552.2007.00147.x)

## **Impacts of Market Reform on Spatial Volatility of Maize Prices in Tanzania**

Fredy T. M. Kilima, Chanjin Chung, Phil Kenkel and Emanuel R. Mbiha

Maize is one of the major staples and cash crops for many Tanzanians. Excessive volatility of maize prices destabilises farm income in maize-growing regions and is likely to jeopardise nutrition and investment in many poor rural communities. This study investigates whether market reform policies in Tanzania have increased the volatility of maize prices, and identifies regional characteristics that can be attributed to the spatial price volatility. To achieve the objectives, an autoregressive conditional heteroskedasticity in mean (ARCH-M) model is developed and estimated in this study. Results show that the reforms have increased farm-gate prices and overall price volatility. Maize prices are lower in surplus and less developed regions than those in deficit and developed regions. Results also show that the developed and maize-deficit regions, and regions bordering other countries have experienced less volatile prices than less developed, maize-surplus and non-bordering regions. Our findings indicate that investments in communication and transportation infrastructures from government and donor countries are likely to increase inter-regional and international trade, thereby reducing the spatial price volatility in Tanzanian maize prices in the long run. (*Journal of Agricultural Economics* 59 (2): 257-270; *doi*: 10.1111/j.1477-9552.2007.00146.x)

## **The Spatial Integration of Paddy Markets in Vietnam**

Bob Baulch, Henrik Hansen, Le Dang Trung and Tran Ngo Minh Tam

This paper examines whether there is spatial integration between and within paddy markets in the north and south of Vietnam. The empirical model developed uses estimates of transfer costs to generalise Ravallion's model of spatial market integration to allow for threshold effects. A sequential testing strategy is used to test for market segmentation, the number of thresholds, long-run integration, informational efficiency and the Law of One Price within an error-correction

framework. We find neither threshold effects nor weak evidence of paddy market integration between northern and southern Vietnam. There is, however, evidence of both threshold effects and stronger market integration within the Red and Mekong River deltas. Whenever price spreads exceed their thresholds, at least 60% of price changes are transmitted between regional markets within a month. Nonetheless, the instantaneous version of the Law of One Price only holds for a few regimes and market pairs. These results suggest that national level policies cannot be relied upon to stabilise or support paddy prices in Vietnam. Instead, policies need to be designed with the specific production, consumption and marketing characteristics of northern and southern Vietnam in mind. (*Journal of Agricultural Economics* 59 (2): 271-295; doi: 10.1111/j.1477-9552.2007.00148.x)

## **Cost Structure and Vertical Integration between Farming and Processing**

Ola Kvaløy and Ragnar Tveterås

In several food-producing sectors, we observe vertical integration between the farming and processing stages. The salmon industry, which has motivated this paper, has seen a rise in large vertically integrated companies over the last decade, with direct ownership of production activities including hatcheries, fish processing and exporting. Both the farming and processing stages have become more capital intensive, which has led to a steeper U-shaped average cost (AC) curve. In this paper we present a theoretical link between this technological shift and vertical integration: in a repeated game model of relational contracting, we show that when the AC curve is sufficiently steep, then processors and farmers are more likely to vertically integrate. The reason is that steep AC curves make it costly to deviate from the optimal production scale, which in turn makes processors more vulnerable to hold-up and opportunistic behaviours from its suppliers. (*Journal of Agricultural Economics* 59 (2): 296-311; doi: 10.1111/j.1477-9552.2007.00149.x)

## **Evaluating the Potential of Index Insurance Schemes to Reduce Crop Yield Risk in an Arid Region**

Gunnar Breustedt, Raushan Bokusheva and Olaf Heidelberg

We evaluate yield risk reduction through weather index, area yield index and farm yield insurance contracts for wheat farms in Kazakhstan by employing data from 1980 to 2002. We use the usual mean variance (MV) approach and also a

second-degree stochastic dominance (SSD) criterion. While MV is not necessarily consistent with the expected utility (EU) theory, SSD results only in a minimum but EU-consistent benefit from insuring. Differences in the estimation results for both approaches underline the advantage of applying both criteria to analyse the risk-reducing potential of crop insurance. Bootstrapping results show that none of the analysed insurance schemes provides statistically significant risk reduction for every single farm. In addition, weather-based index insurance is found to provide less risk reduction than area yield insurance based on the rayon (county) yield. Moreover, rayon yield index insurance can reduce yield risk more effectively for Kazakhstan's wheat producers than farm yield insurance with a low strike yield. (*Journal of Agricultural Economics* 59 (2): 312-328; doi: 10.1111/j.1477-9552.2007.00152.x)

### **Modelling the Crop Variety Demand of Semi-Subsistence Households: Bananas in Uganda**

Svetlana Edmeades, Daniel J. Phaneuf, Melinda Smale and Mitch Renkow

We propose an approach to model the derived demand for crop varieties among semi-subsistence farmers in a developing economy, and apply it to smallholder banana producers in Uganda. We model variety planting decisions as being composed of an extensive margin decision to grow a subset of locally available varieties (variety choice); and an intensive margin decision about the scale or extent of variety cultivation per farm (variety demand). We estimate variety demand equations using a more complete representation of the choice set upon which observed planting decisions are made. Computed elasticities of variety demand with respect to variety attributes indicate that the relative importance of consumption and production attributes varies by location and proximity to markets, from which we draw implications for the social and economic impact of crop improvement. The approach that we propose has broad appeal for analysing adoption decisions for modern or traditional varieties of both major and minor crops in developing countries. (*Journal of Agricultural Economics* 59 (2): 329-349; doi: 10.1111/j.1477-9552.2007.00153.x)

### **Impacts of Norwegian Milk Quotas on Output Growth: A Modified Distance Function Approach**

Subal C. Kumbhakar, Gudbrand Lien, Ola Flaten and Ragnar Tveterås

Quota regulations that prevent output expansion of farms and reallocation of output between farms can cause lower growth in output and productivity. The aim of this

study was to explain the output growth rate of Norwegian dairy farms since 1976, and to decompose it into output, input, socioeconomic and technical change components. Instead of using the standard distance function approach for multi-output technologies, we use a growth rate formulation, which automatically removes the farm-specific effects. This formulation also helps to impose non-negativity constraints on marginal products of inputs (input elasticities), which are often violated for many observations, especially when flexible functional forms are used. The farm-level panel data cover three periods: before the quota scheme was introduced (1976-1982); the period with the most output-restricting quota scheme (1983-1996); and the period with a more flexible quota scheme (from 1997 onwards). Results show that the milk quota regulations had a significant constraining effect on output growth, in particular on milk output in the period 1983-1996. Furthermore, the output mix has shifted towards meat production for the average farm. What emerges from this study is that output growth and technical change are negatively influenced by policy aims where productive performance has not been the primary objective, and that there is scope for increased farm growth if the quota regime is liberalised. (*Journal of Agricultural Economics* 59 (2): 350-369; doi: 10.1111/j.1477-9552.2008.00154.x)

### **Technical Efficiency Estimates of Scottish Agriculture: A Note**

Andrew Barnes

Within the UK there has been a lack of studies of technical efficiency at the Scottish level. This note compares the results obtained using Scottish data with a recent study by Hadley [*Journal of Agricultural Economics* (2006) Vol. 57, pp. 81-100] for English and Welsh farms. Four major sectors are investigated, namely: (i) cereals, (ii) dairy, (iii) sheep and (iv) beef over the period 1989 to 2004. Some distinct differences in efficiencies, returns to scale and causes of efficiency are found. (*Journal of Agricultural Economics* 59 (2): 370-376; doi: 10.1111/j.1477-9552.2008.00156.x)

### **Some Economics of Public Statistics**

Berkeley Hill

Public statistics are an important part of the information needed for efficient and effective agricultural and rural policy. Experience of several decades of work at the interface of statistics and policy, in particular on income measurement in agriculture, suggests that there are systematic failures in the process by which

statistics are fed into policy decisions, although their nature and extent can be expected to vary across types of policy. These failures include poor recognition of the need for information and conceptual obsolescence in methodologies. The explanations for these failures are likely to include the unwillingness of policy-makers to articulate their objectives clearly, various interests in not having better statistics, the limited independence of agricultural statisticians from departments responsible for policy, and the low level of engagement by academics. Ways of improving the situation are explored. (*Journal of Agricultural Economics* 59 (3): 387-420; doi: 10.1111/j.1477-9552.2008.00174.x)

### **Determinants of Voter Support for a Five-Year Ban on the Cultivation of Genetically Modified Crops in Switzerland**

Felix Schläpfer

While much effort has been devoted to estimating market premiums for non-genetically modified (GM) food, the results of such research are largely silent about the preferences for the public good aspects, or externalities, of GM food production. For public goods, the closest substitute of private consumption decisions is voting on referenda. In November 2005, 55.7% of 2 million Swiss voters approved a five-year moratorium (ban) on the commercial cultivation of GM plants in Switzerland. The present study examines how individual voting decisions were determined by: (i) socioeconomic characteristics; (ii) political preference/ideology; and (iii) agreement with a series of arguments in favour and against the use of GM plants in Swiss agriculture. The analysis is based on the data of the regular voter survey undertaken after the national-level voting in Switzerland. The results suggest that current concerns about the use of genetically engineered plants in agriculture may not automatically decrease with higher levels of education/knowledge and generational change. Furthermore, analysis of voter motives suggests that public support for a ban on GM crops may be even larger in other countries, where industrial interests in crop biotechnology are less pronounced. (*Journal of Agricultural Economics* 59 (3): 421-435; doi: 10.1111/j.1477-9552.2008.00167.x)

### **Explaining National Border Effects in the QUAD Food Trade**

Alessandro Olper and Valentina Raimondi

Using a 'structural' gravity-like model, this paper first provides estimates of bilateral 'border effects' in food trade among the QUAD countries (the US,

Canada, Japan and the EU) at the ISIC (International Standard Industrial Classification) four-digit level (18 food sectors). It then investigates the underlying reasons for border effect, assessing the role played by policy barriers (tariffs, non-tariff barriers to trade (NTBs) and domestic support) with respect to barriers unrelated to trade policy, such as information-related costs, cultural proximity and preferences. In contrast to several previous findings, our results show that policy trade barriers, especially in the form of NTBs, are part of the story in explaining national border effects. Interestingly, in all country pair combinations, NTBs significantly dominate the trade reduction effect induced by tariffs. However, results show that elements linked to information-related costs and consumer preferences matter a great deal in explaining the magnitude of border effects. These findings have implications for the economic and welfare-related significance of national borders. (*Journal of Agricultural Economics* 59 (3): 436-462; doi: 10.1111/j.1477-9552.2008.00155.x)

### **Ex Ante Impact Assessment under Imperfect Information: Biotechnology in New Member States of the EU**

Matty Demont, Marie Cerovska, Wim Daems, Koen Dillen, József Fogarasi, Erik Mathijs, František Muška, Josef Soukup and Eric Tollens

Some argue that the lack of modern agricultural development in the former socialist countries of Central and Eastern Europe has made cutting-edge biotechnology attractive. However, enthusiasm for planting genetically modified (GM) crops varies greatly in the enlarged European Union (EU) and especially among the New Member States (NMS); the Czech GM maize area is progressively growing whereas Hungary imposed a de facto ban on GM crops. Remarkably, the Hungarian ban was not supported by any cost-benefit assessment. In the literature, ex ante impact assessments of monopolistically priced technologies are often based on cross-sectional comparisons of average cropping budgets. Such assessments ignore heterogeneity of farmers and underestimate the true impact of these technologies because of homogeneity bias. Therefore, we propose an improved method by explicitly modelling farmer heterogeneity under imperfect information, and assess the potential value and benefit sharing of GM crops in the two NMS using a stochastic partial equilibrium model. The total potential value of GM crops is estimated at €82 million for both countries, of which €60 million (73%) accrues to farmers and €22 million (27%) to the gene developers and the seed industry. This is in line with the literature on global benefit sharing of first-generation GM technologies. (*Journal of Agricultural Economics* 59 (3): 463-486; doi: 10.1111/j.1477-9552.2008.00157.x)

## **Non-Parametric Modelling of CO2 Emission Quota**

Alfons Oude Lansink and Arno van der Vlist

Dutch glasshouse firms are facing the introduction of a system of tradable CO2 emission quotas. This paper employs a non-parametric method for modelling tradable CO2 emissions of Dutch glasshouse firms. The method is capable of generating shifts in CO2 emissions across the sample of firms. Moreover, changes in volumes of outputs produced and inputs used are computed. Results show that firms using a conventional heating technology will be net purchasers of CO2 emissions, whereas firms using more advanced heating technologies will sell part of their emission quota. (*Journal of Agricultural Economics* 59 (3): 487-497; *doi*: 10.1111/j.1477-9552.2008.00168.x)

## **Seed Market Privatisation and Farmers' Access to Crop Technologies: The Case of Hybrid Pearl Millet Adoption in India**

Ira Matuschke and Matin Qaim

In India, pearl millet is a typical subsistence crop. Nonetheless, use of hybrid seeds is widespread. The first pearl millet hybrids were introduced in 1965 by the public sector. Yet, starting in the late 1980s, market liberalisation led to an increasing role of private companies in seed development and distribution. Although several studies showed that proprietary pearl millet hybrids are more productive than public hybrids and open-pollinated varieties, the impacts of privatisation on farmers' technology access and overall innovation rates are not yet well understood. This paper analyses the dynamics of adoption using duration models and farm survey data collected in the state of Maharashtra. The results show that education, short distances to main information sources and good market infrastructure speeded up the adoption of pearl millet hybrids. Likewise, the increasing role of private seed companies had a positive and accelerating effect on technology diffusion in the small farm sector. (*Journal of Agricultural Economics* 59 (3): 498-515; *doi*: 10.1111/j.1477-9552.2008.00159.x)

## **Investment Spikes in Dutch Greenhouse Horticulture**

Natalia Goncharova, Arie Oskam, Alfons Oude Lansink, Arno van der Vlist and Jos Verstegen

The presence of investment cycles demonstrates the long-run policy of firms investing in particular periods (investment spikes) with lower or zero investment



levels in between, which contradicts the smooth pattern predicted by a convex adjustment model. This paper investigates the spells between investment spikes in a discrete-time proportional hazard framework to estimate the probability of observing lumpy investment and factors underlying lumpy and intermittent patterns of investment. Duration models were estimated on two datasets: on an unbalanced panel and on average data of 10 'firm size' groups of Dutch greenhouse firms over the period 1975-1999. Two specifications of the model were estimated: one includes only theoretically grounded variables, and the other specification is extended by empirically grounded variables. Theoretically based models can explain the occurrence of investment spikes. Both specifications of model show an investment cycle of six years. This is also confirmed for the average firm, which exhibits a higher hazard ratio in the 6th, 12-13th and 21st years of duration. (*Journal of Agricultural Economics* 59 (3): 516-536; doi: 10.1111/j.1477-9552.2008.00158.x)

### **Pesticides, Preference Heterogeneity and Environmental Taxes**

Ali Chalak, Kelvin Balcombe, Alastair Bailey and Iain Fraser

In this paper we present results from two choice experiments (CE), designed to take account of the different negative externalities associated with pesticide use in agricultural production. For cereal production, the most probable impact of pesticide use is a reduction in environmental quality. For fruit and vegetable production, the negative externality is on consumer health. Using latent class models we find evidence of the presence of preference heterogeneity in addition to reasonably high willingness to pay (WTP) estimates for a reduction in the use of pesticides for both environmental quality and consumer health. To place our WTP estimates in a policy context we convert them into an equivalent pesticide tax by type of externality. Our tax estimates suggest that pesticide taxes based on the primary externality resulting from a particular mode of agricultural production are a credible policy option that warrants further consideration. (*Journal of Agricultural Economics* 59 (3): 537-554; doi: 10.1111/j.1477-9552.2008.00163.x)

### **Determinants of Food Industry Performance: Survey Data and Regressions for Denmark**

W. H. Furtan and J. Sauer

This paper investigates empirically the determinants of firms' performance in the agri-food sector by using recent survey data for Denmark. Treating sales per employee as a proxy for value added, we estimate several bootstrapped

regression models to draw conclusions on the marginal effects of potential performance determinants such as the form and nature of ownership, stage of the food chain and commodity sector, new product development, staff quality, firms' competitive stance, and elements of firms' strategy. To draw robust inferences we apply, besides the ordinary heteroscedasticity-corrected Tobit maximum likelihood estimator, a non-parametric least absolute deviations estimator (LAD/CLAD) based on a quantile regression procedure. The results indicate that we cannot reject the hypothesis of no influence of dominant orientation on value added. Rather, firms' focus on human capital, stage and commodity sector better explains their value addition. We reject the hypothesis that regional networks have no influence on value added. Location in Århus, emphasis on human capital and the negative influence of outsourcing on value added all provide supporting evidence. We reject the hypothesis of no influence of foreign direct investment (FDI), and moreover propose that FDI has targeted the Danish domestic market as a source of value added. (*Journal of Agricultural Economics* 59 (3): 555-573; *doi: 10.1111/j.1477-9552.2008.00164.x*)

### **Productivity Impacts of Veil Nets on UK Crangon Vessels**

James Innes and Sean Pascoe

As with many shrimp fisheries, the North Sea brown shrimp (Crangon crangon) fishery has been characterised by by-catch and discarding of juvenile fish species that are of value to other fleet segments. To offset this externality, the mandatory use of veil nets or separator panels was introduced in 2003 for all vessels using an aggregate beam length of more than 8 m. Sea trials prior to this date suggested that retained catch might be reduced by between 8% and 35%, depending on the area and season. These studies, however, do not consider the behavioural response by fishers to reduce this impact. In this study, the actual impact of the restrictions on the productivity of UK Crangon vessels was estimated using a production frontier approach. The ex post analysis suggests that a productivity decline of around 14% has been experienced by UK vessels adopting this gear. (*Journal of Agricultural Economics* 59 (3): 574-588; *doi: 10.1111/j.1477-9552.2008.00165.x*)

### **Trade liberalisation, agricultural productivity and poverty in the Mediterranean region**

Nadia Belhaj Hassine and Magda Kandil

A widely held view in the economic literature is that productivity growth is an important pathway through which trade liberalisation may alleviate poverty. This paper explores the link between trade openness, agricultural productivity growth

and poverty reduction in a panel of Mediterranean countries. Technical efficiency scores and total factor productivity indexes are computed using the latent class stochastic frontier model to account for cross-country heterogeneity in farming production technologies. The relevance of agricultural productivity gains for poverty reduction is investigated through joint estimation of real per capita GDP growth and inequality changes in a dynamic panel setting. The findings illustrate the positive effects of openness on farming efficiency and productivity and give strong support to the view that agricultural productivity growth is a channel for poverty alleviation. (*European Review of Agricultural Economics* 2009 36 (1): 1-29; **doi:** 10.1093/erae/jbp002)

## **Measuring market power in the French Comté cheese market**

Pierre R. Mérel

Received September 2007; Revision received November 2008. A new empirical industrial organisation approach is used to measure seller market power in the French Comté cheese market, characterised by government-approved supply control. The estimation is performed on quarterly data at the wholesale stage over the period 1985-2005. Three different elasticity shifters are included in the demand specification, and the supply equation accounts for the existence of the European dairy quota policy. The market power estimate is small and statistically insignificant. Monopoly is clearly rejected. Results appear to be robust to the choice of functional form and suggest little effect of the supply control scheme on consumer prices. (*European Review of Agricultural Economics* 2009 36 (1): 31-51; **doi:**10.1093/erae/jbp004)

## **The effects of EU agricultural policy changes on farmers' risk attitudes**

Phoebe Koundouri, Marita Laukkanen, Sami Myyrä, and Céline Nauges

This analysis utilises a model of production under risk estimated on Finnish farm-level data to measure farmers' risk attitudes in a changing policy environment. We find evidence of heterogeneous risk preferences among farmers, as well as notable changes over time in farmers' degree of risk aversion. This result is due to the increase in the non-random part of farm income generated by the policy change after Finland's European Union accession. The analysis confirms the assertion that agricultural policies that are decoupled from production do affect input use and crop mix through their effect on farmers' risk attitudes. (*European Review of Agricultural Economics* 2009 36 (1): 53-77; **doi:**10.1093/erae/jbp003)

## **Evaluating the effects of farm programmes: results from propensity score matching**

Andrea Pufahl and Christoph R. Weiss

The paper applies a semi-parametric propensity score matching approach to evaluate the effects of agri-environment (AE) programmes on input use and farm output of individual farms in Germany. The analysis reveals a positive and significant treatment effect of AE programmes on the area under cultivation, in particular grassland, resulting in a decrease of cattle livestock densities. Furthermore, participation significantly reduced the purchase of farm chemicals (fertiliser, pesticide). We also find differences in the treatment effect among individual farms (heterogeneous treatment effects). Farms that can generate the largest benefit from the programme are most likely to participate. (*European Review of Agricultural Economics* 2009 36 (1): 79-101; *doi:10.1093/erae/jbp001*)

## **Investment rigidity and policy measures**

Teresa Serra, Spiro Stefanou, José M. Gil, and Allen Featherstone

This paper assesses the impacts of decoupled government transfers on production decisions of a sample of Kansas farms. Our empirical analysis is based on a reduced-form application of the dual model of investment under uncertainty developed by Sckokai, which is extended to a consideration of irregularities in the capital stock adjustment cost function. To do so we adopt the threshold regression methods proposed by Hansen. The econometric results support the existence of three regimes characterised by different economic behaviour. Our analysis suggests that in a dynamic setting that allows for irregularities in the capital adjustment cost function, decoupled transfers can have a powerful influence on production decisions. The dynamics of the stock of capital cause this influence to grow over time. (*European Review of Agricultural Economics* 2009 36 (1): 103-120; *doi:10.1093/erae/jbp010*)

## **Valuing product attributes in Vickrey auctions when market substitutes are available**

Frode Alfnes

This article investigates the weakly dominant strategy in Vickrey auctions when substitutes are available in the market. We find that it is optimal for the consumers

to shade their bids so that they obtain at least the same surplus from the auction as they would from the market. For products that would be bought in the market, the optimal bid is the market price. For other products, the optimal bid is below the market price. Furthermore, the full bidding approach is an incentive-compatible method for eliciting consumers' valuations of product attributes if the products in the auction have the same field substitutes. (*European Review of Agricultural Economics* 2009 36 (2): 133-149; **doi:** 10.1093/erae/jbp013)

### **Modelling attribute non-attendance in choice experiments for rural landscape valuation**

Riccardo Scarpa, Timothy J. Gilbride, Danny Campbell, and David A. Hensher

Non-market effects of agriculture are often estimated using discrete choice models from stated preference surveys. In this context we propose two ways of modelling attribute non-attendance. The first involves constraining coefficients to zero in a latent class framework, whereas the second is based on stochastic attribute selection and grounded in Bayesian estimation. Their implications are explored in the context of a stated preference survey designed to value landscapes in Ireland. Taking account of attribute non-attendance with these data improves fit and tends to involve two attributes one of which is likely to be cost, thereby leading to substantive changes in derived welfare estimates. (*European Review of Agricultural Economics* 2009 36 (2): 151-174; **doi:** 10.1093/erae/jbp012)

### **The CAP reform between targeting and equity: a structural policy analysis for Italy**

Benedetto Rocchi

A model grounded on a social accounting matrix for Italy, adapted for an analysis of agriculture, is used to assess the distributive impacts of changes to the single payment scheme after the Common Agricultural Policy Health Check. The main goal of the analysis is to bring out how and to what extent the distributive outcomes of support are affected by the structural relations existing among production activity, factor ownership and the distribution of income from farming among households. A particular manipulation, the singular value decomposition, of the matrix of income multipliers is used to highlight the major trade-offs, implicit in the structure of the economy, between the support to different farm types and the impact on incomes of different households groups. The results outline the existence of a structural trade-off between targeting and equity in supporting Italian

agriculture through payments to farms and suggest flexibility in the application of reformed payments according to different distributive features of agriculture in member countries. (*European Review of Agricultural Economics* 2009 36 (2): 175-201; **doi**: 10.1093/erae/jbp020)

### **The impact of market and policy instability on price transmission between wheat and flour in Ukraine**

Bernhard Brümmer, Stephan von Cramon-Taubadel and Sergiy Zorya

Received January 2007; Revision received May 2009. Analysis of price transmission in transition countries is often complicated by unstable policy environments. We use a Markov-switching vector error-correction model (MSVECM) to model multiple regime shifts in the relationship between wheat and wheat flour prices in Ukraine from June 2000 to November 2004. Unlike common alternative error correction specifications, the MSVECM does not require an explicit transition variable but rather permits changes between regimes to depend on an unobserved state variable. The analysis reveals four regimes whose timing coincides with political and economic events in Ukraine. Strong coincidence between a 'high-uncertainty' regime and discretionary policy interventions suggests that policy responses to fluctuations in Ukrainian harvests may have amplified instability. (*European Review of Agricultural Economics* 2009 36 (2): 203-230; **doi**: 10.1093/erae/jbp021)

### **Critical masses in the decollectivisation of post-Soviet agriculture**

Martin Petrick and Michael R. Carter

Received August 2008; Revision received May 2009. Decollectivisation in post-Soviet agriculture has generally been slow except for islands of complete individualisation. Our model interlinks two types of critical mass phenomena that can explain these outcomes. First, positive network externalities reshape decollectivisation incentives after a sufficient number of reform pioneers shift to private farming. Second, workers have preferences for behaving in conformity with their social reference group. This allows collective farm managers interested in cementing their own power to manipulate reference groups by limiting workers' horizons. We provide empirical support with a threshold regression based on a unique data set of regional reform outcomes in Moldova. (*European Review of Agricultural Economics* 2009 36 (2): 231-252; **doi**: 10.1093/erae/jbp022)

## **Dynamically optimal strategies for managing the joint resistance of pests to Bt toxin and conventional pesticides in a developing country**

Fangbin Qiao, James Wilen, Jikun Huang and Scott Rozelle

In this study we discuss why planting non-Bacillus thuringiensis (non-Bt) cotton as a refuge crop in China (and other developing countries) may not be economically optimal. To show this, we develop a bioeconomic model to run simulations that will help find the optimal strategies for managing the joint resistance of pests to the Bt toxin and conventional pesticides. We show that the approach of not requiring non-Bt cotton as a refuge is defensible given initial conditions and parameters calibrated to China's cotton production environment. Of special importance is the existence of natural refuge crops. The nature of transaction costs associated with implementing a refuge policy is also considered. (*European Review of Agricultural Economics* 2009 36 (2): 253-279; **doi:** 10.1093/erae/jbp014)

## **The optimal amount and allocation of sampling effort for plant health inspection**

Ilya V. Surkov, Alfons G.J.M. Oude Lansink and Wopke van der Werf

Plant import inspection can prevent the introduction of exotic pests and diseases, thereby averting economic losses. We explore the optimal allocation of a fixed budget, taking into account risk differentials, and the optimal-sized budget to minimise total pest costs. A partial-equilibrium market model is used to compute the economic consequences of pest invasion. An application to Dutch imports of chrysanthemum cuttings shows that the optimal allocation of a fixed inspection budget halves the cost of pest invasion compared to allocating the same budget equally over all imports. A budget increase that enables 42 per cent more inspection can reduce total societal costs by 81 per cent compared to smaller, constrained budget that ignores risk differentials. (*European Review of Agricultural Economics* 2009 36 (3): 295-320; **doi:** 10.1093/erae/jbp030)

## **Eco-labelled food products: what are consumers paying for?**

Douadia Bougherara and Pierre Combris

The paper investigates whether the premium consumers are willing to pay for an eco-labelled product is driven by selfish or altruistic motives. Using an incentive-compatible experiment with both a within- and a between-subject design, we study

the effect on this premium of information stating that eco-friendly products do not necessarily lead to higher private benefits. We find that this information does not affect buying prices in the within-subject experiment. This suggests that consumers' willingness to pay for the eco-labelled product does not derive from perceived higher taste or safety attributes but from other motives. These results are confirmed in the between-subject design where we find that information affects buying prices for the eco-friendly product but also for the control product in the between-subject experiment. (*European Review of Agricultural Economics* 2009 36 (3): 321-341; *doi*: 10.1093/erae/jbp023)

### **Modelling farm production decisions under an expenditure constraint**

Subal C. Kumbhakar and Raushan Bokusheva

We use the indirect production function approach in the stochastic frontier framework to estimate separately the output losses due to the presence of a budget constraint and technical inefficiency. We develop a methodology for estimating the severity and testing the significance of the expenditure constraint at individual producer level. Our results, based on the farm data from three Russian regions from 1999 to 2003, show that the majority of the farms studied were expenditure-constrained during the study period. Expenditure constraints caused, on average, a potential output loss of 20 per cent. Output loss due to technical inefficiency, on average, is found to be around 13 per cent. (*European Review of Agricultural Economics* 2009 36 (3): 343-367; *doi*: 10.1093/erae/jbp031)

### **Cooperative liquidation under competitive stress**

Robin M. Cross, Steven T. Buccola and Enrique A. Thomann

Competitive environments encourage cooperatives to liquidate by distributing equity to their members, often by raising the transfer prices paid for member raw product. We provide a method of detecting when such liquidation activity begins. In the process, we derive the arbitrage-free price bounds of a broad class of forward contracts typical of seasonal and speciality agricultural markets. The bounds are illustrated for the failed Tri-Valley Growers, once the largest fruit/vegetable cooperative in the USA. We show that Tri-Valley began liquidation years before it was detectable through conventional means. Implications are drawn for the expanding competitive pressures accompanying EU enlargement. (*European Review of Agricultural Economics* 2009 36(3):369-393; *doi*:10.1093/erae/jbp027)



## **Modelling the impact of the CAP Single Farm Payment on farm investment and output**

Paolo Sckokai and Daniele Moro

This paper analyses the impact of the Common Agricultural Policy arable crop regime on farm investment and output, introducing explicitly farmers' risk attitudes into a dynamic dual model of farm decision-making. Estimation and simulation results are based on a Farm Accounting Data Network sample of Italian arable farms. The main finding is that an increase in intervention price would significantly affect farm investment, mainly through reduced price volatility, while policy changes not affecting price uncertainty, like an increase in the Single Farm Payment, would have a much smaller impact. (*European Review of Agricultural Economics* 2009 36(3):395-423; doi:10.1093/erae/jbp026)

## **Demand elasticities for farmed salmon in world trade**

Jinghua Xie, Henry W. Kinnucan and Øystein Myrland

The generalised demand specification of Barten and Eales et al. is used to estimate the world demand curves faced by major exporters of farmed salmon. Results suggest that the demand for farmed salmon has become less price elastic over time, fresh salmon from the UK faces the most competition in world markets and fresh salmon from Chile the least. Promotion programmes sponsored by the Norwegian Seafood Export Council appear to have increased the demand for fresh salmon at the expense of frozen salmon. Although the estimated promotion effects are small, the programme appears to have been remunerative from the Norwegian producer perspective. (*European Review of Agricultural Economics* 2009 36(3):425-445; doi:10.1093/erae/jbp028)

## **Demand for on-farm permanent hired labour on family holdings: a comment**

Ayal Kimhi

This comment discusses several aspects of the recent paper by Blanc et al. (2008), focussing on the link between the theoretical and empirical models. It argues that there is an inconsistency between the two models in the way households are segmented into different labour regimes. The econometric approach is also queried. (*European Review of Agricultural Economics* 2009 36(3):447-452; doi:10.1093/erae/jbp024)

## **Heterogeneous firms and homogenising standards in agri-food trade: the Polish meat case**

Marie-Luise Rau and Frank van Tongeren

A partial equilibrium trade model with heterogeneous firms is developed and applied to the issue of compliance with the EU food standards in Polish meat production. The model parameters are estimated using a nonlinear least squares method to match the observed patterns of trade. With asymmetrically distributed productivities homogenising standards tend to increase the concentration of production and exports among the more productive and larger firms. Simulation analysis shows the trade and market structure impacts of support programmes in the context of EU accession. The simulations also highlight the importance of the substitution elasticity between varieties and effects of productivity upgrades. (*European Review of Agricultural Economics* 2009 36 (4): 479-505; *doi*: 10.1093/erae/jbp032)

## **Are food safety standards different from other food standards? A political economy perspective**

Johan F.M. Swinnen and Thijs Vandemoortele

This paper uses a political economy model which integrates risk to analyse whether the nature of public food standards [food safety standards, food quality standards, and social and environmental standards] affects the politically optimal level of the standard and the likelihood of trade conflicts. In general, public food safety standards are set at higher levels because stronger consumption effects translate into larger political incentives for governments. The relationship between food standards and protectionism is also affected by the nature of the standards. (*European Review of Agricultural Economics* 2009 36 (4): 507-523; *doi*: 10.1093/erae/jbp025)

## **Pre-empting public regulation with private food quality standards**

Jill J. McCluskey and Jason A. Winfree

There has been a great deal of recent growth in the area of private food quality standards. This article analyses the incentives for setting private quality standards before governments do so. Since food quality standards are generally multifaceted,

different types of standards will affect revenues differently. Our model shows that private firms can pre-empt public regulation by setting their own private food quality standards in order to choose the type of standards that minimises their costs. The emergence of private food standards in grocery retailing is discussed in this context. (*European Review of Agricultural Economics* 2009 36 (4): 525-539; **doi:** 10.1093/erae/jbp040)

### **Factors influencing contractual choice and sustainable relationships in European agri-food supply chains**

Christian Fischer, Monika Hartmann, Nikolai Reynolds, Philip Leat, César Revoredo-Giha, Maeve Henchion, Luis Miguel Albisu and Azucena Gracia

The role of inter-enterprise relationships in European pig meat, beef and cereals chains is analysed. Using survey data from 1,442 farmers, processors and retailers in six countries, the empirical relevance of several factors potentially influencing the choice of contract types and the sustainability of relationships is tested. In particular, the significance of quality orientation and the use of traceability schemes are explored. Market, industry and enterprise-specific characteristics are found to influence contract type choice while dyadic, firm-level factors appear to affect relationship sustainability. The results carry implications for agribusiness management, particularly regarding food safety standards, as well as policy support. (*European Review of Agricultural Economics* 2009 36 (4): 541-569; **doi:** 10.1093/erae/jbp041)

### **Stock market response to food safety regulations**

Mario Mazzocchi, Maddalena Ragona and Melanie Fritz

Event studies (ESs) can be applied to evaluate the impact of new regulations on the value of listed firms. However, regulatory changes are preceded by consultation processes and anticipations to the shareholders, which make it difficult to determine the exact timing of stock price response and limit the potential of the analysis. We adopt a methodological extension to the ES approach which enables the detection of significant response under date uncertainty. The application measures the impact of European Commission Regulation 1881/2006 and the English Contaminants in Food Regulation 2007 on 30 food securities listed in the London Stock Exchange. (*European Review of Agricultural Economics* 2009 36 (4): 571-595; **doi:** 10.1093/erae/jbp043)

## **Who leaves after entering the primary sector? Evidence from Swedish micro-level data**

Joakim Gullstrand and Kerem Tezic

Using 14 waves of panel data, this paper investigates why employees entering the primary sector exit subsequently. Transition probabilities are explained by a rich set of individual, regional and sectoral characteristics and a discrete-time competing risks model with unrestricted base-line hazards is used to distinguish between exits into a job in other sectors and other exits. The results confirm Jovanovic's suggestion of 'survival of the fittest matches' as workers and firms learn more about the quality of the match between them. It is found that agricultural education, higher income and sector wage differences are the main determinants of the hazard of moving to another sector, whereas marriage and higher education lower the hazard of leaving for non-employment. (*European Review of Agricultural Economics* 2008 35 (1): 1-28; **doi:** 10.1093/erae/jbn009)

## **My favourite is not on the shelf: effects of the revealed-preference bundle on consumers' stated choice**

Wuyang Hu

Based on a conjoint choice experiment relating to canola oil in Japan, this article establishes and tests the impacts of various measures of reference dependence on choice. Results show that although reference dependence may be defined within choice tasks as a type of choice complexity, a broader and more logical definition should be based on respondents' revealed-preference bundle. This broader definition allows for a richer representation and interpretation of behaviour. It is found that references may affect choices through different channels and that many of these effects are non-linear. (*European Review of Agricultural Economics* 2008 35 (1): 29-50; **doi:** 10.1093/erae/jbn002)

## **Implications of biotech traits with segregation costs and market segments: the case of Roundup Ready® Wheat**

William W. Wilson, Eric A. DeVuyst, Richard D. Taylor, Won W. Koo and Bruce L. Dahl

Roundup Ready® Wheat (RRW) is one of the first genetically modified (GM) traits for the wheat sector. We develop a spatial partial equilibrium model of the

higher-protein hard wheat market and assess the changes in the distribution of welfare associated with release and adoption of RRW. It incorporates segments for GM aversion in each market and segregation costs for each segment. In the most likely scenario, producer and consumer welfare increases by \$301 and \$252 million, respectively. Producers of hard red spring wheat in the US and Canada gain. There are welfare losses to hard red winter wheat growers in the US and to EU consumers who have to import at a higher cost. (*European Review of Agricultural Economics* 2008 35 (1): 51-73; **doi:** 10.1093/erae/jbn003)

### **Investment with weak contract enforcement: evidence from Hungary during transition**

Azeta Cungu, Hamish Gow, Johan F. M. Swinnen and Liesbet Vranken

This paper aims to provide empirical evidence relating to the importance of contract enforcement for development. Survey data on Hungarian farms are used to estimate the impact of contract hold-ups on investment. We find that investment is affected by a variety of factors. Contract breaches in the form of delayed payments have a non-linear effect on investment: at high levels, they significantly deter the investment, but not at low levels. (*European Review of Agricultural Economics* 2008 35 (1): 75-91; **doi:** 10.1093/erae/jbn001)

### **Household food consumption in Turkey: a comment**

Andreas C. Drichoutis, Stathis Klonaris, Panagiotis Lazaridis and Rodolfo M. Nayga, Jr

We comment on a recent important article by Akbay et al. and discuss some methodological and estimation issues arising from their paper. We then suggest alternative procedures that may help improve their estimates and thereby enhance their usefulness as a basis for food policy and marketing decisions. (*European Review of Agricultural Economics* 2008 35 (1): 93-98; **doi:** 10.1093/erae/jbn010)

### **Household food consumption in Turkey: a reply**

Cuma Akbay, Ismet Boz and Wen. S. Chern

We reply to the Comment by Drichoutis et al. regarding some methodological and estimation issues arising from our paper. In particular, we compare the elasticities reported in the original paper with those obtained using estimation procedures

suggested by Drichoutis et al. We find that the differences are very small. (*European Review of Agricultural Economics* 2008 35 (1): 99-102; **doi:** 10.1093/erae/jbn011)

### **Will EU biofuel policies affect global agricultural markets?**

Martin Banse, Hans van Meijl, Andrzej Tabeau and Geert Woltjer

This article assesses the implications of the EU Biofuels Directive (BFD) using a computable general equilibrium framework with endogenous land supply. The results show that, without policy intervention to stimulate the use of biofuel crops, the targets of the BFD will not be met. With the BFD, the enhanced demand for biofuel crops has a strong impact on agriculture globally and within Europe, leading to an increase in land use. On the other hand, the long-term declining trend in real agricultural prices may slow down or even reverse. (*European Review of Agricultural Economics* 2008 35 (2): 117-141; **doi:** 10.1093/erae/jbn023)

### **Scoring two-dimensional bids: how cost-effective are agri-environmental auctions?**

Thilo W. Glebe

This paper analyses the cost-effectiveness of agri-environmental auctions that solicit two-dimensional bids consisting of conservation activity and compensation payment. Taking a self-selecting contract schedule as a benchmark, an optimally designed auction has the potential to reduce government expenditure significantly. However, the relative cost-effectiveness of a multi-dimensional auction is determined by the bid scoring system and farmers' expectations of the maximum acceptable bid score. The article elaborates conditions for a bid scoring rule that optimises cost-effectiveness and tests how benefits of an auction approach may be eroded if farmers' expectations of the maximum acceptable bid score diverge from the level consistent with this optimum. (*European Review of Agricultural Economics* 2008 35 (2): 143-165; **doi:** 10.1093/erae/jbn024)

### **Agri-environmental contracting of Dutch dairy farms: the role of manure policies and the occurrence of lock-in**

Jack Peerlings and Nico Polman

The paper examines the possibility of lock-in on the area contracted under an agri-environmental contract in Dutch dairy farming, using a mathematical programming

model, and the interaction of these contracts with Dutch national manure policy. Stricter manure policies increase contract participation, since more restrictive N application standards lower the opportunity cost of contracting. If contract payments are halved in a later period, 95 per cent of the contracting farms in the model would like to alter their contracting decision but they do not because of the cost of grassland renewal (switching cost). These farms are locked-in. The model incorporates time, transaction cost and technical and institutional constraints. (*European Review of Agricultural Economics* 2008 35 (2): 167-191; **doi:** 10.1093/erae/jbn022)

### **Stringency of environmental targets in animal agriculture: shedding light on policy with shadow prices**

Anni Huhtala and Per-Olov Marklund

We present a framework for deriving shadow prices for regulations on manure-spreading in animal agriculture and demonstrate that these prices can be used as indicators of the stringency of environmental regulation. We illustrate our approach with the case of water protection measures implemented in Finland to restrict the use of phosphorus on livestock farms. The estimated shadow price of the nutrient limit lies in the range {euro}60-125 per kilogram of bioavailable phosphorus in manure, assuming that output reduction is the only option for decreasing the amount of manure in manure-dense areas. However, instead of cutting output, farms may be able to avoid these high abatement costs by more efficient input use or alternative abatement methods. (*European Review of Agricultural Economics* 2008 35 (2): 193-217; **doi:** 10.1093/erae/jbn025)

### **Modelling dairy supply for Hungary and Poland by generalised maximum entropy using prior information**

Axel Tonini and Roel Jongeneel

This paper presents an innovative quantitative approach to modelling milk and beef supply, which is then applied to Hungary and Poland. Utilising generalised maximum entropy estimation, we provide an empirical basis for treating ill-posed and -conditioned problems by reconciling sample and non-sample information. Adjustments in quasi-fixed factors are explicitly taken into account in order to capture dynamics. Inelastic milk supply responses were found both for Hungary and for Poland. Milk and beef outputs behave as complements in the medium run, but not in the short run for Poland. The empirical estimates found generally support the assumed parameters used in calibrated models. (*European Review of Agricultural Economics* 2008 35 (2): 219-246; **doi:** 10.1093/erae/jbn018)

## **Nutrition, obesity and health: policies and economic research challenges**

Rodolfo M. Nayga, Jr.

This paper briefly covers some of the recent issues and policies related to nutrition, obesity and health. Some of the important economic research gaps, needs and challenges are then discussed focusing on few selected themes, namely the data needs, methodological and modelling challenges and policy evaluation issues. These research challenges, if addressed, could further enhance nutrition and obesity economic studies that can be used to design and implement effective policy interventions. (*European Review of Agricultural Economics* 2008 35 (3): 281-302; **doi**: 10.1093/erae/jbn013)

## **Economic development in emerging Asian markets: implications for Europe**

Will Martin, Elena Ianchovichina, and Betina Dimaranan

The impacts of faster growth in China and India for Europe are analysed taking into account terms-of-trade effects, second-best welfare impacts and improvements in product quality and variety. More rapid growth in these giants could improve Europe's terms of trade, but second-best effects on energy markets could lower welfare unless these taxes are Pigovian. Whether growth arises from productivity or capital accumulation has important implications, with capital-driven growth involving higher energy and agricultural prices. When quality and variety growth are taken into account, the benefits to Europe are substantially greater. If agricultural protection in emerging Asia increases with growth, the impacts on Europe appear to be adverse but small. (*European Review of Agricultural Economics* 2008 35 (3): 303-330; **doi**: 10.1093/erae/jbn017)

## **Biotechnology and the development of food markets: retrospect and prospects**

GianCarlo Moschini

Received April 2008; Biotechnology has had an important impact on the agricultural and food industries over the last 12 years by way of fast and extensive adoption of a few genetically modified (GM) crops. This has produced large efficiency gains, including higher yields and reduced costs of weed and pest control, as well as some environmental benefits. The expected development of crops with additional agronomic traits, and with output traits to improve the



nutrition and health attributes of food products, holds the potential for even more pervasive impacts. Full realisation of such promises may require overcoming the constraining effects of restrictive GM product regulations. (*European Review of Agricultural Economics* 2008 35 (3): 331-355; **doi:** 10.1093/erae/jbn014)

### **Particular requirements for institutional analysis in nature-related sectors**

Konrad Hagedorn

Agriculture, horticulture, fishery and forestry are nature-related sectors that interact frequently with natural systems. This interaction represents a source of enforcement problems and transaction costs in the context of governing transactions. Institutional analytical frameworks used in agricultural economics should consider the particular properties of transactions involving natural systems. For ordering nature-related transactions, we propose a heuristic framework based on two dimensions: ‘modularity and decomposability of structures’ and ‘functional interdependence of processes’. It serves as a starting point for establishing a typology ranging from ‘atomistic-isolated transactions’ to ‘complex-interconnected transactions’. The complex process of institutionalising such transactions is decomposed into conceptual categories by means of a ‘transaction-interdependence cycle’. (*European Review of Agricultural Economics* 2008 35 (3): 357-384; **doi:** 10.1093/erae/jbn019)

### **Energy production with agricultural biomass: environmental implications and analytical challenges**

Jan-Erik Petersen

The paper reviews analytical challenges for assessing the environmental impact of bioenergy production in the context of global greenhouse gas emissions and global biofuel production targets. The main environmental issues associated with bioenergy production are briefly explained and used to describe different analytical approaches for assessing the environmental effects of bioenergy production. The paper discusses the relevance of suitable system boundaries in analysing the sustainability of bioenergy production. This includes the need for achieving coherence between several policy areas such as agriculture and food, energy and transport, climate and environment as well as international development. The review concludes with a range of research and policy challenges in the bioenergy field. (*European Review of Agricultural Economics* 2008 35 (3): 385-408; **doi:** 10.1093/erae/jbn016)

## **Tariffs and other trade costs: assessing obstacles to Mediterranean countries' access to EU-15 fruit and vegetable markets**

Charlotte Emlinger, Florence Jacquet and Emmanuelle Chevassus Lozza

This paper evaluates the role of tariffs in the overall trade barriers faced by Mediterranean countries that export fruit and vegetables to the European Union (EU), using a gravity model. With an annual specification, we measure the border effect faced by the Mediterranean countries on entering EU markets and show that trade costs other than transport costs and tariffs seriously hinder exports from Mediterranean countries. A second specification analyses the impact of seasonality on tariff sensitivity. Periods of the year during which liberalisation could have a greater impact on trade are identified. (*European Review of Agricultural Economics* 2008 35 (4): 409-438; **doi:** 10.1093/erae/jbn031)

## **Global productivity distribution and trade liberalisation: evidence from processed food industries**

Jun Ruan and Munisamy Gopinath

In this study, we test the hypothesis that an industry's average productivity increases with liberalised trade in the context of processed food industries. Furthermore, we examine the resulting cross-country resource and market share reallocation in these industries. For this purpose, we employ a kernel density estimator to approximate the global productivity distribution in five major processed food industries for every period between 1993 and 2000. We find that the mean and alternative percentiles of the global productivity distribution shift to the right with liberalised international trade. Moreover, countries with faster productivity growth than the global average benefit from trade liberalisation by acquiring a larger share of global markets and resources. (*European Review of Agricultural Economics* 2008 35 (4): 439-460; **doi:** 10.1093/erae/jbn034)

## **Impact of a gradual increase in milk quotas on the EU dairy sector**

Zohra Bouamra-Mechemache, Roel Jongeneel, and Vincent Réquillart

The European Union (EU) dairy sector is facing significant changes due to EU enlargement, the Luxembourg reform and ongoing World Trade Organisation (WTO) negotiations. This paper explores the impact of alternative dairy policies

in the context of a WTO agreement and further dairy policy adjustments. In particular, it analyses the impact of gradual but significant increases in EU milk quota and discusses the implications of different changes in the allocation of milk quotas. These scenarios are compared with the status quo as decided in the Common Agricultural Policy reform of 2003. We find that, by 2014-2015, the market effects of abolishing quota are similar to those of a 2 per cent gradual quota increase starting in 2009. (*European Review of Agricultural Economics* 2008 35 (4): 461-491; **doi:** 10.1093/erae/jbn044)

### **Demand for on-farm permanent hired labour on family holdings**

Michel Blanc, Eric Cahuzac, Bernard Elyakime, and Gabriel Tahar

In many developed countries, the share of permanent hired labour in the total agricultural labour force has been increasing in recent years. Using data from the 1988 and 2000 agricultural censuses in France, we analyse the factors that influence households' decisions regarding the use of hired labour. We show that the increase in permanent wage employment observed over that period results from two opposite trends: an important increase in the proportion of family farms using permanent wage labour and a slight decrease in the average volume of permanent hired labour per employer. The first trend was mainly due to an improvement in family labour productivity and to a sharp rise in farm size, whereas the second results from a rise in agricultural wages, and possibly also from an increase in the productivity of hired labour. (*European Review of Agricultural Economics* 2008 35 (4): 493-518; **doi:** 10.1093/erae/jbn032)

### **Bioenergy crop production and climate policies: a von Thunen model and the case of reed canary grass in Finland**

Jussi Lankoski and Markku Ollikainen

We examine the potential of bioenergy crops to offset greenhouse gas emissions from fossil fuels, assuming homogeneous agricultural land and distance-dependent transport costs. Variable transport costs define the socially and privately optimal extensive margin of the bioenergy crop production and imply that fertiliser intensity differs across locations. Under current policy, private fertiliser application is suboptimal, requiring location-specific input, transport or output subsidies. The theoretical model is applied to reed canary grass (*Phalaris arundinacea* L.) in Finland, which offsets emissions from peat in electricity production. If oats is the alternative crop, and taking permit price of CO<sub>2</sub> emissions as the proxy for climate

benefits over the life cycle, reed canary grass production is socially optimal even 100 km away from the power plant and still offsets more than 6 tons/ha of CO<sub>2</sub> emissions from peat. (*European Review of Agricultural Economics* 2008 35 (4): 519-546; **doi:** 10.1093/erae/jbn040)

### **Producer incentives and plant investments for Salmonella control in pork supply chains**

Gé B.C. Backus and Robert P. King

This paper presents a unified analysis of dynamic producer incentive systems for Salmonella control in primary production and slaughter plant investments in Salmonella control measures. We identify optimal incentive system parameters and cost-effective control strategies for achieving various levels of Salmonella prevalence. We compare the performance measures of the combined plant-level control and producer incentive system with results obtained under a producer incentive system only. The combined system allocates control effort among producers and the slaughter plant, resulting in 25-83 per cent lower expected total control cost for a wide range of threshold values. (*European Review of Agricultural Economics* 2008 35 (4): 547-562; **doi:** 10.1093/erae/jbn042)

### **Cross-border acquisitions in the global food sector**

Nils Herger, Christos Kotsogiannis, and Steve McCorrison

Cross-border acquisitions constitute the main form of foreign direct investment in the world economy, the focus of this paper being to consider the determinants of the location and growth of cross-border acquisitions in the global food sector. The data relates to over 2,000 international acquisitions in the food sector from 45 source to 46 host countries. The results highlight the importance of market size, relative costs and stock market growth as important determinants. We also report differences involving acquisitions in food processing and retailing and higher and lower/middle income countries. Results involving acquisitions in European countries are also highlighted. (*European Review of Agricultural Economics* 2008 35 (4): 563-587; **doi:** 10.1093/erae/jbn033)