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Abstracts

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**Plenary Session 1: Opening Session****Plenary Session 2: Global Food System Transformation: Trends and Issues**

**Joachim von Braun: The agri-food system transformation toward bioeconomy: implications for food and nutrition security**

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**Julie Caswell: Impacts of the next generation of food standards on food trade**

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**Simon Kimenju, Ramona Rischke, Stephan Klasen, Matin Qaim: Do supermarkets contribute to the obesity pandemic in developing countries?**

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Many developing countries are currently undergoing a nutrition transition with rising rates of obesity, and a resulting surge in chronic diseases. This nutrition transition coincides with a rapid expansion of supermarkets, partly replacing more traditional food retail outlets. One important question is whether this expansion of supermarkets in developing countries is just a business response to changing consumer demands and lifestyles, or whether supermarkets are a causal factor of overweight and obesity. We address this question, building on cross-section observational data collected in Kenya using a quasi-experimental survey design. We employ instrumental variable regressions to analyze the impact of supermarket purchase on nutritional status of adults and of children and adolescents. We also estimate causal chain models to examine the pathways through which supermarkets affect nutritional status. Controlling for other factors, buying in a supermarket increases the body mass index of adults and raises the probability of adult overweight or obesity by 13 percentage points. For children and adolescents we do not find a significant impact on overweight. Instead, buying in a supermarket tends to decrease child undernutrition measured by height- for-age z-scores. Impacts of supermarkets depend on many factors, including people's initial nutritional status. Kenya and many other developing countries face a dual burden of malnutrition, where adult overweight coexists with childhood stunting. For both, adults and children, the nutrition impacts of supermarkets occur through higher calorie consumption and changes in dietary composition.

**Plenary Session 3: Market Restructuring, Poverty, and Food Security****Johan Swinnen: Rent distribution and price transmission in value chains: towards a general model**

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**Christine G.K. Chege, Camilla I.M. Andersson, Matin Qaim: Impacts of supermarkets on farm household nutrition in Kenya**

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Many developing countries are experiencing a food system transformation, with a rapid growth of supermarkets. Research has shown that smallholder farmers can benefit from supplying supermarkets in terms of higher productivity and income. Here, we analyze impacts on farm household nutrition. Building on data from vegetable farmers in Kenya, we show that participation in supermarket channels has sizeable positive effects: calorie, vitamin A, iron, and zinc consumption are all increased by 15% or more. We also analyze impact pathways, using simultaneous equation models. Supermarket-supplying households have higher incomes, a higher share of land under vegetables, and a higher likelihood of male control of revenues. Furthermore, income and the share of land under vegetables have positive impacts, while male control of revenues has negative impacts on dietary quality. The total nutrition effects of supermarket participation could be even more positive if women were able to keep their control over farm revenues in the process of commercialization. The methods developed and used may also be useful for other impact studies to better understand agriculture-nutrition linkages.

**Maximo Torero: A text message away: information and communication technologies as a tool to improve food security**

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**Plenary Session 4: Panel Discussion “Is food standard setting and compliance worth the effort?”****Plenary Session 5: Supply Chain Relations and Rent Distribution****Camilla I.M. Andersson, Christine G. Kiria, Matin Qaim, Elizaphan J.O. Rao: Following up on smallholder farmers and supermarkets**

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In many developing countries, supermarkets are expanding rapidly. This also affects farmers’ marketing options. Previous studies have analyzed welfare effects for smallholders with cross- section data. Here, we use panel data and a differencing approach to study supply chain dynamics and better account for unobserved heterogeneity in impact assessment. The analysis focuses on vegetable producers in Kenya. Participation in supermarket channels is associated with large income gains, which have further increased over time. However, many farmers are not able to enter supermarket channels, or they have dropped out due to various constraints. Specific support is needed to avoid widening income disparities.

**Julio Berdegué: Determinants of the spatial distribution of agri-processors and impacts on employment and poverty: evidence from Latin America**

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**Jill Hobbs: The evolving landscape of food safety and food quality standards: implications for supply chain relationships**

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**Parallel Sessions 1****A1: Supply chain management I****Anthony Halog: Agri-food industrial transformation: towards creating circular economy-oriented industries in Australia**

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**Theresia Dominic, Ludwig Theuvsen: The Impact of external and internal factors on strategic management practices of agribusiness firms in Tanzania**

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This study employs the frameworks of the resource-based theory and industrial organization to bring out important factors for firms' success; firm attributes, resources and external environmental factors. Also, strategic management (STM) understanding is employed because of its contribution to firms' success and their survival in competitive markets. Therefore, we conceptualize links between the factors and STM practices, but literature shows contradiction in their contribution towards STM practices. Therefore, as each firm differ in STM implementation, we use data collected from 229 food processing firms in Tanzania to examine the contribution of each factor and their impact on STM practices. Findings indicate that among several factors analysed, significant contribution comes mostly from managers' level of expertise and least from availability of production inputs. This implies that better strategic actions reside in the capabilities of firm managers to drive the firm towards success and not always to what the firm possesses; because their common challenge, is how to plan and strategically get the product to the final consumer. The study also gives a categorization of important items to explore for quick managerial actions.

**Verena Otter, Alejandra Engler, Ludwig Theuvsen: The influence of the interplay of supply chain network relationships on smallholder performance in the Chilean NTAE- sector**

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With the ongoing globalization, smallholders are increasingly challenged by the complex organizational structure of international food supply chains. This study aims to identify how the interplay of supply chain network relationships, determined by situational factors of farms and their business environment, influences smallholder performance. A theoretical framework is developed and empirically applied on data obtained by a standardized survey of 81 Chilean raspberry producers, by using PLS analysis. The results reveal that the positive interplay of tight horizontal and external relationships negatively influences the farm performance while tight vertical relationships positively influence performance. Thereby, all three kinds of relationships highly depend on perceived transparency and perceived power inequalities within trading relationships. The results provide interesting implications for Chilean raspberry farmers to increase farm performance through connecting closer to their trading partners and for the governmental office INDAP the inducement to extend its support for smallholder farmers.

## B1: Economic experiments in agriculture

### **Angelino Viceisza, Fo Kodjo Dzinyefa Aflagah, Tanguy Bernard: Communication and coordination: experimental evidence from farmer groups in Senegal**

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The effect of communication on coordination has been established both theoretically and by means of laboratory experiments. Recently, studies have focused on understanding the mechanisms that underlie this effect, given their importance for designing policies geared towards mitigating coordination failure. This paper reports findings from neutrally-framed, high-stakes coordination games played by random subsets (of size  $N$  equal to 10 or 20) of members of existing farmer groups in rural Senegal. These subgroups were exposed to several experimental conditions, one of which was  $N$ -way preplay communication. Members were able to signal their intended action to the group. Like previous lab studies, we find that communication significantly reduces coordination failure. Using treatment variation and additional survey data, we further explore the mechanisms underlying this effect. We find that at least two mechanisms are at play. First, communication increases coordination due to changes in strategic uncertainty surrounding other players' actions. Second, by revealing information about other players' actions, communication also establishes a norm of "equitable coordination". To the best of our knowledge, we are one of the few studies to experimentally assess the impact of communication on coordination in the field, in particular in the presence of high stakes and using large experimental groups that are comprised of members of existing farmer organizations. These artefactual field experiments were designed with subsequent natural field experiments (randomized controlled trials) in mind and we thus use our findings to discuss potential policy implications of communication.

### **Travis Lybbert, Stephen A. Vosti, Katherine P. Adams, Rosemonde Guissou: Experimental markets for nutrient supplements to prevent undernutrition: estimating household demand and exploring supply chain implications in Burkina Faso**

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The success of Plumpy'Nut® in treating severe acute malnutrition has sparked efforts to develop similar Lipid-based Nutrient Supplement (LNS) products aimed at preventing undernutrition. The move from therapeutic to preventative LNS products has fundamental implications for supply chains and implies that private demand and the private sector will play central roles in the distribution of these products. We use experimental markets in rural Burkina Faso to shed light on household demand for preventative LNS and explore associated distribution challenges. We find that price elasticity of demand for these products is high on average, but that elasticity for repeat purchases is significantly higher than for first-time purchases. While many households may be willing to pay close to market prices to try LNS products for a week or two, sustained demand is extremely sensitive to price. Even where SQ-LNS products are cost-effective as a nutritional investment, private demand may cover less than half the production and distribution costs of SQ-LNS, underscoring the need for hybrid private-public delivery strategies. The public sector clearly has a role to play in providing the investments, infrastructure and legal frameworks required to enable the private sector to engage in these LNS markets. Private firms, including those in the food and beverage sector that have proven remarkably nimble and innovative in rural Africa, will play a similarly important role in production, distribution and marketing. Fully tapping this expertise will require the current public and private stakeholders in childhood nutrition to embrace this as an opportunity, to build partnerships based on trust, and to ensure that associated regulatory systems function effectively and efficiently.

### **Hanna Julia Ihli, Oliver Musshoff: Investment behavior of Ugandan smallholder farmers: an experimental analysis**

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In this study, we experimentally analyze the investment behavior of smallholder farmers in Uganda. We consider a problem of optimal stopping, stylizing an option to invest in a project. We ascertain whether, and to what extent, the real options approach and the classical investment theory can predict farmers' investment

behaviors. We also examine differences in the investment behavior with respect to the presence of a price floor, which is often used to stimulate investments. Furthermore, we look at learning effects. Our results show that both theories do not explain exactly the observed investment behavior. However, our results suggest that real options models better predict the decision behavior of farmers than the classical investment theory. The presence of a price floor and learning from personal experience during the experiment do not significantly affect the investment behavior. However, we find that specific socio-demographic and socio-economic characteristics affect the investment behavior of farmers.

### **Sebastian Kunte, Meike Wollni, Claudia Keser: Making it personal: breach and private ordering in a contract farming experiment**

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Contracts may be subject to strategic default, particularly if public enforcement institutions are weak. We study real subjects' behavior in an experimental contract farming game without third-party enforcement but an external spot market as outside option. Both players, farmer and company, may breach a contract by side-selling and arbitrary payment reductions, respectively. We examine if and how private ordering through relational contracts and the opportunity for direct bargaining and personal conflict resolution can provide enforcement. We find mixed evidence for our private ordering hypothesis. Although contract breach can be significantly reduced by relational contracts, the possibility for direct bargaining does not additionally improve the outcome. Most subjects are not willing to sacrifice short-term gains in favor of a well-functioning relationship that (as we show) is beneficial for both contract parties in the long run.

## **C1: Nutrition transition**

### **Iris Butzlaff: Nutrition transition – the case of Russia**

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Theory predicts the relationship between income and body weight of individuals to change from positive to negative in the process of economic growth. Empirical results seem to suggest that prevalence rates of overweight and obesity are higher among poor people in high income countries and among rich people in developing countries. Economies in transition are of particular interest for studying such dynamics as they do not only show economic growth but transitions along other dimensions are also advanced, e.g. the nutrition transition. Increasing consumption levels of animal-sourced food, saturated fats, and sugar lead to higher prevalence rates of diverse nutrition-related non-communicable diseases such as diabetes, heart diseases, cardiovascular diseases, and certain cancers. Using the Russia Longitudinal Monitoring Survey (RLMS-HSE), we explore the extent to which the income gradient differs by socioeconomic groups and changes over a period of ten years. Indeed, we can show that the income gradient changes over time. Interestingly, we only find a significantly positive association between income and BMI for males and not for females. At the same time BMI increases more strongly for females than for males over time.

### **Ramona Rischke, Simon C. Kimenju, Stephan Klasen, Matin Qaim: Supermarkets and the nutrition transition in Kenya**

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Many low income countries experience a “nutrition transition” towards the consumption of more energy-dense, highly processed foods and more sedentary lifestyles. Among the consequences, overweight and obesity and related non-communicable diseases are rising. It remains unclear to what extent the concurrent spread of supermarkets is spurring the nutrition transition. This paper investigates the effect of supermarkets on consumption patterns using cross-sectional household survey data collected in Kenya in 2012. To establish causality, we use quasi-experimental data, with study sites differing in supermarket access, and employ instrumental variable techniques to allow for endogeneity of supermarket purchases. We find that supermarket purchases increase the consumption of processed foods at the expense of unprocessed foods. Supermarket

purchases increase per capita calorie availability, which is supported by lower prices per calorie, particularly for processed foods. Our results imply that supermarkets contribute to the nutrition transition, while effects on nutrient adequacy are less clear.

### **Xiaobo He, Wendy Umberger, Nicholas Minot: Supermarkets, diet transition and child health: Is there a link? Evidence from a survey of urban Indonesian households**

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This paper examines the link between the spread of supermarkets in Indonesia and child health measured by Body Mass Index (BMI). We define the spread of supermarkets as the share of total annual food expenditures made by households at modern supermarkets. Using data obtained from the 2010 Indonesia Survey of Urban Consumers, the results of a regression analysis suggest the presence of a positive ‘supermarket effect’ on BMIs of children under the age of 18. In particular, we find that for children under the age of 12, a one percent increase in the share of household food expenditures made in supermarkets raises child BMI by 0.04. The overall ‘supermarket effect’ for all children under 18 is around 0.02. We also observe this effect to be heterogeneous. Conditional quantile regression estimates indicate that children who locate on the median and upper quantile of the conditional distribution of BMI receive a stronger ‘supermarket effect’. Last, we confirm that household income plays a prominent role in the relationship between the spread of supermarkets and child BMI.

### **Hermann Waibel, Lena Hohfeld: Poverty and nutrition: a case study of rural households in Thailand and Vietnam**

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In this paper we analyze the link between nutrition and poverty in two Asian countries where monetary - based poverty reduction was especially successful. Thailand and Vietnam are two emerging market economies where poverty rates are now below 10 % and are declining further. Despite this success, it is not so clear to what extent this success has translated into similar improvements in the nutritional situation of the people and especially of children. We find that undernutrition continues to be a problem in Vietnam with child underweight rates of 27% and therefore higher than headcount rates of the 1.25\$ poverty line. Also in Thailand, after the economic crisis with 19% of children underweight is still above the WHO threshold. We investigate the factors that influence nutrition outcomes, measured as z - scores of the Weight - for - age indicator, by using Tobit regressions for four different groups of children, based on income (poor vs. non - poor) and nutrition (underweight vs. non - underweight). We find poverty and income to influence nutrition outcomes, but other factors such as mothers’ height, education, migration and sanitation to condition nutrition as well. Coefficients of respective variables differ by poverty status. Our conclusion that non - monetary factors matter to reduce undernutrition and therefore monetary poverty reduction is not a sufficient condition is further underlined by a prediction of future undernutrition rates based on regressions. Also here we find that even under the assumption of high growth, income growth alone will not be able to reduce undernutrition to a level of low severity until the year 2030.

## **D1: Consumer preferences I**

### **Yanjun Ren, Yanjie Zhang, Jens-Peter Loy, Thomas Glauben: A food demand system estimation for households segmented by income in rural China**

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As the main part of farm households’ expenditure, food consumption is one of the most pivotal issues in rural China. Since uneven income between rural households has become more serious, this may cause the different demand system for food. In order to investigate the demand for six major food commodities according to household poverty status, we estimate two steps demand system model by using the household level panel

data collected in representative provinces (Yunnan, Zhejiang, and Hubei) in rural China from 1995 to 2005. The empirical results indicate that income responsiveness is high for animal products and fruits, while it is relatively low for vegetables and grain, and lower income households are more sensitive to animal products with income increase. Own-price changes have significant negative influence on households food demand for all commodities, particularly for aquatic products in lower income households. Consumption habits account for changing in demand of grain and vegetables in both groups. Household production is another important factor in the changing of grain and vegetables consumption, but not important for pork consumption. Furthermore, farmer household size, age and educational level of the main laborer and the status of the household members are observed to affect food commodity consumption in different degrees.

### **Marie von Meyer-Höfer, Achim Spiller: Consumer expectations regarding sustainable food – an explorative survey in industrialised and emerging countries**

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The manner of global food production and consumption today often opposes the objectives of sustainable development. Sustainable food products, characterised by higher environmental or ethical standards than conventional equivalents, are therefore an essential mean of addressing this global challenge. However, to ensure uptake of these products it is crucial for agri-food business actors to understand consumer expectations regarding sustainable food, so they can appropriately tailor their differentiation and communication strategies. To explore these consumer expectations, data from an online survey in three industrialised and three emerging countries was used. The results show that consumers around the globe have quite diverse expectations regarding sustainable food products. Only very few attributes can be used to meet a range of international consumers' expectations regarding sustainable food. International food marketers should thus try to get to know their consumers in each country better and learn how to address them specifically.

### **Irina Dolgoplova, R. Teuber, V. Bruschi: Consumers' perception of functional foods in Germany and Russia: qualitative comparative study**

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The market success of functional foods highly depends on consumers' perception. It is thus vital to understand which factors influence consumers' attitudes toward such foods, and whether a health benefit is a significant factor in consumers' purchasing decisions. We employ the Health Belief Model (HBM) to define factors influencing consumers' perception of foods with health benefits. Specifically, we examine grain products with a high anthocyanin content in Russia and Germany, two countries with growing markets of functional foods and different socio-economic conditions. Focus group discussions were carried out in both countries using the same interview guide. With the help of semantic analysis, expressed opinions about food consumption in general and grain products with high anthocyanin content in particular were used to fill in the components of the HBM, which proved to be effective when applied to explaining preventive health behaviors. The results of this qualitative comparative study highlight that benefits of food product consumption were almost similarly perceived in the countries analyzed, with the health benefit not playing a significant role. However, substantial differences exist between consumers' understanding of barriers to purchases and cues to action. Perceived susceptibility and perceived threat were an equally weak and almost unobservable factor of food consumption in both countries.

### **Natascha Loebnitz: The effect of food shape abnormality on purchase intentions in China**

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## Parallel Sessions 2

### A2: Standards & trade

#### **Brian Chiputwa, Matin Qaim, David Spielman: Certification of smallholder farmers and poverty: the case of coffee producers in Uganda**

Global Food systems are undergoing a rapid transformation, with high-value market segments, private standards, and certification schemes gaining in importance. Smallholder farmers in developing countries may potentially benefit from these trends when they can be linked successfully to the emerging international value chains. Fairtrade, UTZ, and Organic are among the most important sustainability oriented standards in the global coffee market and the most widely adopted by smallholder farmers in developing countries. All three standards have social and environmental objectives. We analyze and compare impacts of these three standards on the livelihoods of smallholder coffee farmers in Uganda. Using household survey data on 419 Robusta farmers and propensity score matching with multiple treatments to reduce selection bias, we find that the impact of standards and certification on farmer livelihoods may differ significantly by certification scheme. In particular, we find that Fairtrade certification increases household living standards by 30% and significantly reduces the prevalence and depth of poverty. For the other two certification schemes, we find no significant impacts. Several institutional factors that may explain differential impacts and policy implications are discussed. Overly general statements about the effects of standards on smallholder livelihoods may be misleading.

#### **Anna Müller: GlobalGAP adoption among smallholder farmers in Guatemala: do business skills matter?**

This paper investigates the effect of financial literacy on small farmer's technology adoption behaviour. In the course of agrifood systems transformation, adoption of organizational innovations as food safety and quality standards is vital for farmers in order to stay competitive. For resource-poor small farmer in Developing Countries this is a difficult task. Besides from farm assets, access indicators and social capital, farmer's ability to manage their business and evaluate information and trends might play a role in their adoption decision. Financial literacy has been used in explaining financial market participation. In this study, the concept is linked to an agricultural investment decision. Survey data from small pea producers from Guatemala show a significant influence of financial literacy on farmer's decision to adopt a food safety standard. The findings may help to improve development interventions that are targeting farmer's market integration by focusing on business skills.

#### **Amjad Masood: Impact of GlobalGAP certification on banana imports in European Union: a gravity model approach using panel**

Global agrifood systems are undergoing a rapid transformation which is largely driven by restructuring of the agribusiness sector under globalization process. Furthermore, enhanced consumer concerns about food safety and quality has enhanced this transformation phenomenon. Emergence of the private standards as a much more prevalent part of the governance of agrifood value chains is a dimension of the same shift. In fact, public standards provide the overall structure, while private standards fill the voids in public regulations (Henson and Humphrey, 2009). As compared to large amount of literature with a focus on public regulations such as Sanitary and Phytosanitary measures of WTO, there has been less quantitative research about private standards as data availability may often be a limiting factor. Thereby, the potentially far-reaching implications of private food standards for trading patterns and rent distribution are not yet well understood.

This study aims to contribute to the quantitative literature on private food standards while taking into account the case of international trade in GlobalGAP certified bananas. GlobalGAP is a pre-farm-gate, business to business, voluntary, food safety standard spread across the globe in 112 countries certifying 409 agricultural

products with a major focus on vegetables and fruits. Of all GlobalGAP products, banana has the highest coverage in terms of number of hectares harvested under the certification (GlobalGAP, 2012) and it has the highest volume of production among all fruits and is amongst the five most consumed fruits (FAO, 2011). Banana is mostly grown in southern hemisphere countries, while the European Union – the home of GlobalGAP initiative – is the major consumer of the certified bananas. GlobalGAP certified bananas, hence, represent an appropriate case to analyze the impact of private food standards on international agri-food supply chain.

Gravity trade model is applied to parameterize the impact of GlobalGAP certified banana production on the bilateral banana trade. Gravity trade model has undergone several developments over time and is nowadays widely used in empirical trade estimations. Traditional log-linear gravity equation has been relying on ordinary least squares (OLS) and other panel estimation techniques. However, Santos Silva and Tenreyo (2006), a seminal work in gravity trade modeling, applies a Poisson Pseudo Maximum Likelihood (PPML) estimator to compute the gravity equation in multiplicative form as they find that under heteroskedasticity, the parameters of log-linearized models estimated by OLS lead to biased estimates of the true elasticities. Based on its workability with econometric issue of excessive zero trades and heteroskedasticity, the PPML estimator is also suggested by studies such as Fally (2012) and Prehn et al. (2012).

For the estimation of the GlobalGAP impacts, we use a panel of GlobalGAP certification incidence per country for 2010, 2011 and 2012. We estimate the gravity models using PPML and OLS. The results are consistent across these two models. We use banana import in values as dependent variable and explanatory variables include GlobalGAP certification, distance between the trading partners, colonial relation, regional trade agreements, if a country is landlocked, ad valorem import tariffs, banana production in tons. Our result shows GlobalGAP has a significant and positive impact on banana imports. All other gravity variables are appearing with their expected signs.

The results of this study would allow transforming the impact of GlobalGAP certification into the variation in bilateral trade. By analyzing the underlying reasons for a standard's role as trade barriers or trade facilitator, the study would provide guidance for trade policies especially related to food exports from developing countries to developed world.

### **Beatrice Muriithi: Impact of EU private food safety on commercialization of horticulture: analysis of panel data on smallholder vegetable producers in Kenya**

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#### **B2: High-value markets**

### **Wendy Umberger, Suprehatin, Dale Yi, Randy Stringer: How do farmers' preferences for crop attributes affect high value crop adoption?**

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The rapid agri- food market transformation occurring in Indonesia presents farmers with opportunities to increase income by modifying their production systems to include high value crops. Although previous research demonstrates potential benefits for farmers resulting from high value crop adoption, the participation of adoption among farmers remains low. The literature on technology adoption by smallholder farmers pays limited attention to the role of crop attributes as factors influencing their adoption decisions. This study analyses primary data obtained from a survey of a random sample of 960 farmers that also completed a unique best-worst (BW) scaling task. This data is analyzed to provide insight on how farmers' preferences for crop attributes influence their adoption decisions. At the aggregate level, the results from the BW scaling task suggest that the most important attributes for farmers when considering whether or not to adopt a new crop, are higher expected profit, stable and consistent yield, and good quality seed. Results from a LC cluster analysis indicate there are four clusters of farmers, each distinct in their relative preferences for crop attributes and socio-demographic characteristics. The results of regression suggest that the factors influencing farmers' adoption decisions of high value crops are somewhat different across clusters. The findings allow more targeted programming and the development of

information on specific cropping attributes that are most likely to encourage farmers to adopt new crops that have a high probability of offering benefits, including improved livelihoods for farmers.

### **Cristina Romero, Meike Wollni: Supplier dynamics in the broccoli export sector: why are small farmers leaving a “profitable” market?**

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Globalization and growing demand for high-quality food have facilitated international food trade and opened up new business opportunities for farmers worldwide. Therefore, the expansion of smallholders' income opportunities and the reduction of their exposure to variable prices have been promoted as measures to reduce poverty. Nevertheless, overcoming the initial constraints may not be sufficient to guarantee sustained benefits in the long run. Only few studies deal with the problems farmers face once they join high-value chains. We empirically analyze the factors influencing the degree of participation on an export marketing channel and the decision to withdraw from it. Emphasis is put on the effects of transaction risks. Panel data from 401 small-scale broccoli farmers of the Ecuadorian highlands is used for the analysis. This includes socio- demographic household characteristics and information on the quantity and quality delivered and days to payment for each farmer for the 2002-2012 period. A Cragit model explains the effects of farm, household characteristics and transaction risks on the amount delivered each year to the export market, and a duration model explains the likelihood to withdrawal from it. Results reveal that rejection and days to payment influence the participation decisions in the long run. Farmers are highly reactive to price when deciding the quantity to market through each channel. With the pass of time farmers are also more likely to drop out from a high value chain. This withdrawal process is speeded up if there is a negative external shock affecting the chain (bankruptcy of a firm) or if transaction problems are experienced.

### **Cornelis Gardebroek, Jony Girma Meshesha: The impact of contracts on Ethiopian organic honey producers' incomes**

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In southwest Ethiopia honey is a non- timber forest product that provides income for many smallholders. Some of these beekeepers supply their honey under contract to a company that markets their organic honey internationally allowing them to access premium markets. Since both production and marketing depend crucially on the forest, both smallholders and the company have an interest in preserving the forest. An important question is whether smallholders also benefit economically from supplying under contract. This study examines the impact of contract supply on household income of organic honey producers in southwest Ethiopia using various econometric methods. First, it is investigated whether contract farming has impact a causal impact on incomes. Since an increase in income could be due to higher prices and/or larger production quantities it is investigated in a second step whether beekeepers under contact receive higher prices and produce more. Results show that participation in contract farming causally improves honey prices and beekeepers' annual incomes. These results underline the importance of participation in contract farming as a sustainable development strategy.

## **C2: Networks & Collective Action**

### **Inka Gersch: Contract farming or producer organization: which market strategy works better for smallholders and rural economies? A comparative study in the floriculture sector of South India**

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The Indian agricultural sector is strongly dominated by small and marginal farmers. Inefficiencies on the production level and low competitive value chains are deemed to be the sector's main challenges. In this context, the company driven model of contract farming as well as member-based producer organizations are found to be promising alternative strategies beyond the traditional farming and marketing systems. The present study analyses and compares two exemplary models located in the floriculture sector of Tamil Nadu/South India

respectively their ability to increase the sector's competitiveness and to uplift smallholders. The empirical data was acquired by personal interview method. The study reveals that the different approaches of the models, that is a company's business strategy on the one hand and a representation of farmer interest on the other, manifest in their different emphasis of impact. The contract farming supports the rural economic structures while the producer organization succeeds in improving the economic situation of its members. However, compared to the contract farming system, professionally organized and with a strong financial background, the producer organization remains largely limited to its core aim of strengthening its members bargaining power. Despite, both models don't reveal themselves as competitors but as complementary strategies. Mixing the models and at the same time not giving up traditional systems is the best strategy in order to manage the farmers' risks, avoid dependencies and benefit from the different advantages. Beyond, collaborating with a company as a producer union is advisable in order to combine and strengthen advantages of both models.

### **Tisorn Songsermsawas, Kathy Baylis, Ashwini Chhatre, Satya Prasanna: Friends or traders? Do social networks relate to the use of market mechanisms by farmers in India**

We ask whether and how social networks associate with a farmer's choice to enter into a long-term contract with a trader. A long-term relationship with a trader can improve access to market information, but removes the farmers' option to sell to other traders in a specific year. Social networks could act either as substitutes to traders, helping disseminate market information and pooling product, or as complements, where farmers help build relationships with their trader and their peers. Using data from a household survey in rural India, we estimate the likelihood of a farmer committing to a long-term contract with a trader and investigate how his social networks can associate with this decision. We then test whether the peer effects are merely capturing location, and do not observe the same peer effects through geography. We find significant evidence of peer effects, but not of geographical distance. We also see evidence that the more central position the household has in the network and the smaller the network, the higher the probability of a long-term relationship with a trader.

### **Nico Herforth, Ludwig Theuvsen, Wilson Vasquez, Meike Wollni: Understanding access to modern marketing channels from a social network perspective – evidence from blackberry farmers in the Ecuadorian Andes**

Agri-food systems in developing countries are experiencing a high degree of modernization. This has sparked strong interest of researchers and policy-makers along the question of farmers' inclusion in these modern marketing channels (MMC). The key factors that explain farmers' access to these channels are mainly to be seen at the individual household-level. In particular, households with larger farms and richer equipment with farm assets like irrigation systems are found to be significant determinants. Drawing on the literature of agricultural technology adoption, we hypothesize that access to modern marketing channels is strongly influenced by the marketing behavior of farmers' individual social networks. Social networks can be an important channel for the dissemination of market-, buyer-, and transaction-specific information. We use original survey data from small blackberry farmers from the Province of Tungurahua in the Ecuadorian Andes to address this question. Our findings reveal that blackberry farmer's access to MMC is strongly influenced by the number of blackberry farmers supplying MMC in his individual social network. As opposed to previous research we do not find blackberry farms size and equipment with farm assets to be important barriers for access to MMC. These results provide a basis for understanding that scope of analysis should not be limited to factors related to the individual household, but encompass processes occurring in individual social networks in order to explain access to different market outlets.

## D2: Supply chain management II

### **Ayako Ebata: Linking small farmers to alternative markets: learning from a development project**

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In response to the increasing importance of including smallholder farmers in modern market transactions, development institutions are launching projects that focus on linking markets and smallholders. However, the impact pathways addressing different commodities are not studied broadly in the empirical literature. The purpose of this paper is to fill this gap by analyzing what intervention activities can lead to positive impacts regarding linking smallholder farmers to non- local markets. The analysis is based on a five-year- long panel data set, which contains a total of approximately 10,000 smallholder farmers in rural Nicaragua. The analysis is conducted on producers of several different commodities, which include coffee and staple beans. Based on a probit specification model, the paper assesses how intervention activities influenced farmers' commodity sales outside local, wholesale markets. The results suggest that some interventions activities contributed to increase in sales to alternative markets although producers of different commodities benefit from intervention activities in distinct ways. Policy implications, particularly in the context of development project interventions, are discussed. In addition, further research ideas are presented with limitations and challenges.

### **Wytse Vellema, Monika Sopov: Inclusive business models: beyond contract farming**

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Increasing consolidation in retail and production combined with increasing consumer awareness are profoundly changing governance structures in agricultural value chains. Pressure for increased traceability and higher quality requirements are increasing the degree of integration. The resulting increase in compliance costs creates participation challenges for cash-constrained smallholder farmers in developing countries. At the same time, urbanisation and population growth are forcing an ever larger share of food output through industrial agri-food chains, causing companies unwilling or unable to opt for organizing their own production to include ever more and smaller farmers. Such inclusion often requires innovative business models, that go beyond contract farming. Many donors and governments consider these inclusive business models as an opportunity to help people help themselves. Since the term inclusive business models was first used by SNV-WBCSD in 2005, large donors such as USAID, UNDP, IFC, and DFID have started departments specialising in funding and supporting such models. Most of the supported models have been documented, leading to an explosion in case-studies. Corporate Social Responsibility (CSR) departments have added their own case studies to this mound. The challenge is to find a meaningful way of comparing and interpreting these case studies, to encourage learning and preventing repetition of design flaws. In order to do so, a framework is required that allows identification of comparable business models, determination of the factors defining the structure of these models, and analysis of their impact on the well-being of beneficiaries. The objective of this paper is to propose such a framework.

### **Ihtiyor Bobojonov, Ramona Teuber, Dauren Oshakbayev, Thomas Glaben: The impact of supply chain transformation on welfare of small farmers in Kazakhstan**

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Agricultural production in Kazakhstan is carried out by large scale agricultural enterprises, medium size individual farms and small scale household producers. During the transition, the state prioritized policies aiming at improving cereal productivity and exports, which mainly created favorable conditions for large scale producers, although individual farms and household producers still play an important role, producing more than 75 percent of the gross agricultural output. However, there is a very large regional heterogeneity in terms of small producers' contribution to gross regional agricultural product. Similarly, retail channels and agricultural processing also developed with different speed and structure between the regions. This study investigates how those developments in the agrifood industry influence production at the small and medium scale producer level in Kazakhstan.

We use regional panel data to qualify the impact of trade modernization, transition in the processing industry and developments in market infrastructure on the welfare of medium and small scale producers in

Kazakhstan. The fixed effect model is used to investigate the impact of these agrifood industry developments on production change at the individual farm and household producer levels. To the best of our knowledge, this type of analysis has not been conducted for any Central Asian country to date. Therefore, this study provides the first evidence concerning the agrifood industry transformation impact based on data from Kazakhstan.

The results show that food demand growth and developments in the processing industry have positively influenced the production volume of small producers. However, the modernization of the retail trade has negatively affected the production potential of small farms. The study results and discussions clearly highlight the need for investment in rural infrastructure to create a favorable environment for small producers as an important factor for rural development in Kazakhstan.

### **Alexander Saak: Traceability and reputation in value chains**

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The paper studies the questions of why and when a supply chain should invest in a traceability system that allows the identification of which supplier is responsible for quality defects due to insufficient non-contractible effort under vertical complementarity in efforts to provide quality and repeated interaction. The downstream firm and consumers observe imperfect, lagged signals of intermediate and final quality. It is demonstrated that in deciding whether to maintain information regarding product origin, firms face a trade-off. On one hand, the downstream firm is tempted to condone limited upstream shirking when products are not traceable to their firm of origin. On the other hand, the downstream firm is tempted to vertically coordinate shirking in the provision of quality when products are traceable. Perfect traceability is not optimal if (1) the ratio of the cost savings from upstream and downstream shirking is neither too high nor too low or (2) the downstream firm sufficiently infrequently detects input defects or (3) the consumer experience is a sufficiently noisy signal of quality.

### **E2: Consumer preferences II**

### **De Zhou, Xiaohua Yu: Calorie elasticities with income dynamics: evidence from the literature**

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This paper proposes a finite mixture model (FMM) to identify the behavioral transition of calorie consumption with an assumption that nutrition consumption is a mixture of two different behaviors: a hunger stage and an affluent stage. Based on 381 calorie-income elasticities collected from 89 primary studies, our results identify that the threshold income for nutrition transition is 457.81 USD in 2012 prices. It implies that the threshold for calorie demand transition is 1.25 dollar/day, consistent with the World Bank poverty line.

### **Mousumi Das: Dietary diversity and child nutrition in rural and urban India: a quantile regression analysis**

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Different policy initiatives have been adopted in many developing countries to improve the nutritional outcome of its population, to not only increase the intake of calories but also other micronutrients. In this context one needs to examine an output indicator of food security called dietary diversity, which gives an overall assessment of food and nutritional intake for India, where calorie intake has been used as the only indicator of food security. Using 61st (2004-05) and 66th round (2009-10) National Sample Survey household level data we find heterogeneous dietary diversity profile across different regions, which highlight the persistence of uneven development and the agriculture nutrition disconnect. We supplement this dataset with information from Census 2001. We try to identify the different determinants of dietary diversity such as socio-economic and demographic factors, district level amenities, market infrastructure and epidemiological environment at the household and district level for rural India. Quality adjusted unit value of food groups are used to understand the spatial difference in prices across regions and its impact on consumption pattern. Using OLS and Quantile regression analysis we find that income, education and infrastructural facilities have a significant, positive impact on

dietary diversity. Dissemination of information by newspaper/magazines improves dietary diversity. We find evidence of a strong linkage between agricultural production and dietary diversity. The present Food Security Bill's emphasis should be on alternative options like bio fortification, improving sanitation and hygiene practices. Identification of policies to promote dietary diversity and subsequently improve health status is urgently required in rural India given the alarming rates of malnourished population in the country.

### **Shi Min, Junfei Bai: Impact of demographic and aging on meat consumption in China**

Driven by rapid economic development, income growth and urbanization, meat consumption in China have been increasing significantly in past 30 years, especially the meat consumption away from home. At the same time, due to the "one couple one child" policy and longer life expectancy, age structure changes and population aging become the more and more serious problem in China. However, so far the possible impact of population aging on meat consumption in China is still unclear. Drawn on the data collected by surveying 1340 urban households from 6 cities in China, this paper quantifies the meat consumption by jointly considering meat consumed at-home and away from home, and estimates the impacts of demographic changes on household meat consumption, with particular interests in the impacts of aging society. We then simulate the meat demand trend based on the trajectories of population in China. The results indicate: 1) meat consumption away from home averagely accounts for about 30% of household total meat consumption in terms of quantity; 2) family composition affects household meat consumption significantly. When the proportion of elderly population (age>60) increase 1%, the quantity of meat consumption per capital will decrease 0.5%; 3) Simulation result suggests that the expected meat consumption without considering aging in 2030 will be higher estimated about 5%. The findings from this study have great implications for understanding China's meat consumption, trends, and demand for feed grains.

### **Oyinbo O., Omolehin R.A., Abdulsalam Z.: Household consumption preference for imported and domestic rice in Kaduna State, Nigeria: implication for rice quality improvement**

This research was undertaken to determine consumption preference between imported rice and locally produced rice by households in the study area and the factors that influenced the households' consumption preference between the two types of rice. Primary data obtained from a sample of 310 household heads with the aid of structured questionnaire were employed in this study and the data were analysed using descriptive and inferential statistics. The results of the data analysis revealed that 75% of the sampled households' preferred imported rice to local rice and the factors that significantly influenced the households rice consumption preference are quality of rice ( $p<0.01$ ), ease of preparation ( $p<0.1$ ), price of rice ( $p<0.1$ ), frequency of rice consumption ( $p<0.1$ ) household size ( $p<0.1$ ) and household income ( $p<0.05$ ). Sequel to the high significance of rice quality, it was recommended that huge investment on rice value chain should be pursued with emphasis on local rice processing by government and other stakeholders in the rice subsector to ensure that the quality of locally produced rice is improved to make it highly competitive with foreign rice. This will encourage shift in consumer preference from imported rice to locally produced rice. Also, it will save the nation from continual loss of foreign exchange in the importation of foreign rice to meet local demand and create job opportunities in the rice value chain in line with the rice transformation action plan under the umbrella of the on-going Agricultural Transformation Agenda (ATA) of Nigeria.

### Parallel Sessions 3

#### A3: Gender

##### **Edward Asiedu, Marcela Ibanez: The weaker sex? Gender differences in punishment across Matrilineal and Patriarchal Societies**

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This paper investigates the hypothesis that women are underrepresented in leadership roles due to a lower ability to influence others. By comparing societies that differ in the inheritance rights of men and women, we trace the origins of such difference. The results of a public good game with third party punishment indicate that in patriarchal societies there are persistent gender differences in social influence while in matrilineal societies these differences are smaller. While in the patriarchal society sanctioning behavior is not different across genders, cooperation is lower in groups with a female monitor than a male monitor. In contrast, in the matrilineal society male monitors sanction more often than female monitors, though cooperation does not depend on the gender of the monitor.

##### **Isabel Lambrecht, Bernard Vanlauwe, Miet Maertens: Does gender targeting make sense in agricultural extension programs? Evidence from Eastern DR Congo**

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Development projects regularly claim to have a successful gender strategy if a certain proportion of participants is female. However, female participation not necessarily coincides with reaching the program's objectives. With data from South-Kivu, DR Congo, we analyze whether targeting female farmers in agricultural extension programs increases the adoption of three agricultural technologies: improved legume varieties, row planting, and mineral fertilizer application. We find that joint male and female program participation leads to the highest levels of adoption. The gender of the participant matters, but the direction and significance of the effect depends strongly on the characteristics of the technology.

##### **Debosree Banerjee, Stephan Klasen, Meike Wollni: Market discrimination, market participation and control over revenue: a gendered analysis of Cameroon's cocoa producers**

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Using micro level data from Cameroon this paper applies the theories of intrahousehold bargaining to models in which farmers decide whether to take up cocoa marketing on their own or to rely on others and how this affects who controls the proceeds. We find that controlling both production and marketing provides higher bargaining power compared to a situation in which the farmer participates only in production. Our data also indicate that in the cocoa sector of Cameroon, female farmers' market participation is hindered by existing price discrimination which in turn reduces their intrahousehold bargaining. In other words, participating female farmers receives much lower prices for their produce than participating males. To generate higher revenue, female farmers decide to hand over the marketing responsibility to a male in the family. Such non-participation results in lower control over the proceeds by the female farmer, as the individual doing the marketing could now claim a higher share in the revenue. Additionally we find that collective marketing could eliminate price discrimination and promote female market participation and thus their control over proceeds.

### B3: Food prices

#### **Carolin Mengel, Stephan von Cramon-Taubadel: Distance and border effects on price transmission – a meta-analysis**

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In a meta-analysis of spatial price transmission (PT) literature we aim to test for the presence of distance and border effects on price transmission. We use PT estimates for 1330 grain market pairs extracted from 58 studies and seek to explain them by airline distance and existence of a border. The findings indicate distance and border effects on both price cointegration and price transmission. A border separating two markets reduces the probability of cointegration of price series by 25-48% compared with markets located in the same country. 1000 kilometers of domestic distance reduces the probability of cointegration by 9-20%. International distance has a minor and economically insignificant effect on price transmission. The speed of price adjustment is on average 18% slower in international than in intra-national market pairs. 1000 kilometers of distance within a country on average yields 3-15% slower price adjustment. Distance effects become negligible and economically insignificant for international market pairs. Evidence for a publication bias towards more frequent positive cointegration tests was found, however the speed of price adjustment is similar in peer-reviewed and grey literature studies. All models indicate that the rice market is more integrated and responds faster to price changes. The study contributes to the literature by presenting a first meta-analysis of spatial PT literature and providing insights into distance and border effects on price transmission.

#### **Nelissa Jamora, Stephan von Cramon-Taubadel: Thresholds in international rice markets**

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The study models price relationship between world and domestic rice markets in a threshold vector error correction model using an improved regularized Bayesian threshold estimator. We observe an increase in thresholds and a decline in price transmission over the sample period. The former indicates that price deviations between world and domestic markets have widened in recent years. The latter points to a certain degree of decoupling of domestic markets from world prices. The results adhere to the transaction cost view of spatial arbitrage and violations can be partly attributed to policy interventions implemented during the 2008 food crisis.

#### **Matthias Kalkuhl: How strong do global commodity prices influence domestic food prices in developing countries? A global price transmission and vulnerability mapping analysis**

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This paper analyzes the transmission from global commodity to domestic food prices for a large set of countries. First, a theoretical model is developed to explain price transmission for different trade regimes. Drawing from the competitive storage model under rational expectations, it is shown that domestic prices can respond instantaneously to global prices even if no trade takes place but future trade is expected. Using a global database on food prices and an autoregressive distributed lag model, we construct national and international grain price indices and empirically detect countries in which food prices are influenced by global commodity prices, including futures prices. Our empirical analysis reveals that 80-90 percent of the global poor (income below 1.25\$/day) live in countries where domestic food prices respond to international prices - but the extent of transmission varies substantially. Mapping transmission elasticities with the size of the population below the poverty line which spends typically a large share of its income on food, we are able to detect countries that are highly vulnerable to global commodity price shocks.

### C3: Agriculture & sustainability

#### **Marcela Ibanez: Environmental and socioeconomic impact of growing certified organic coffee in Colombia**

Agricultural production is an important source of income and employment for developing countries. About half of the population living in developing countries is involved in agriculture (World Bank; 2008). Nonetheless, agriculture is responsible for serious environmental damage. Underground water depletion, land degradation, water and soil pollution and health problems are just some of the negative effects associated with agricultural production (World Bank, 2008). Other environmental impacts associated with agriculture are loss of biodiversity, deforestation, soil erosion, spread of livestock diseases and global climate change (Isik, 2004; Sterner, 2003; World Bank, 2008).

Controlling agricultural environmental impacts is challenging. The small scale of agricultural producers, their large number and their geographical dispersion implies high transactions costs making prohibitively costly to implement mechanisms of command and control. In addition, environmental control agencies have limited resources or lack personnel to implement these policies (Wehrmeyer and Mulugetta, 1999). Moreover, the high levels of poverty in rural areas, where three out of four people live on less than one dollar a day, can cause further environmental degradation (Duraiappah, 1998).

Eco-labels appear as a promising alternative for controlling the negative environmental effects of agriculture and increasing the income of rural poor. Awarded by a third party who ensures that production meets specific environmental criteria, eco-labels enable consumers to compensate producers who voluntarily decide to use environmentally friendly practices. However, there is still limited empirical evidence regarding the socioeconomic and environmental impact of these certificates. Most of the existing studies fail to find a credible counterfactual against which the impact of the certificate can be evaluated. A direct comparison between certified and non-certified producers fails to control for self-selection bias.

As a first step toward filling that gap, this paper presents an evaluation of the environmental impacts of organic coffee certification in southeast Colombia. We use original farm-level data and rely on propensity score matching to control for selection bias. To the best of our knowledge, this is the first paper that considers simultaneously the economic and ecological impacts of certification.

We find that certification does have an environmental benefit. It significantly reduces use of two of the three chemical inputs for which we have data (chemical fertilizers and insecticides) and spurs adoption of one of the two environmentally friendly management practices for which we have data (organic fertilizer). However, the positive externalities generated by certification are not being compensated by higher returns. The price premiums are just enough to compensate lower productivity in certified organic technologies and cannot cover the certification cost.

#### **Munyaradzi Junia Mutenje, Julius Manda, Menale Kassie, Arega Alene: Farmers' maize seed variety choices: implication on household food security in Eastern Zambia**

Smallholder farmers in eastern Zambia account for a third of the food staples produced and marketed in Zambia. Although improved maize varieties have been developed and diffused successfully since independence and the government of Zambia has committed a significant proportion of financial resources to this subsector, smallholders in this province still plant local varieties on significant proportion of their maize area. Adoption of these promising technologies has been very low, given the lengthy of experience these farmers have had with improved maize seed. Using data from 811 households and their 2409 maize plots, the study analysed the determinants of the adoption of improved maize varieties. The double hurdle results revealed that there is feedback relationship between the selection and amount of improved maize varieties used by the farmers in Eastern Zambia. The result also showed that more than a third of the households could not adopt improved maize varieties due to the seed access constraints. There was trade-off between local varieties and hybrids, with more commercially oriented households allocating more of their land and labour to hybrid production and less to local varieties. In the face of biotic and economic constraints maize production tends to be oriented towards substance farming with very little use of hybrids. The low adoption of improved maize in the study area was

attributed to high transaction cost, lack of preferred production and consumption attributes mainly tolerance to storage pest, taste, and easy of processing. The results imply that increased adoption of improved maize varieties by these communities can be achieved by involving farmers in the breeding and selection processes. It can be concluded that both production and consumption traits existing in local varieties need to be incorporated in the creation of new varieties. Multinomial endogenous switching regression model results suggest that adoption of improved maize varieties has positive and significant impact on household food security.

### D3: Food security

#### **V. Rajendra Prasad, D. Vishnu Sankar Rao: Analysis of sustainable path for food security in India**

Food security is a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. Prioritizing and quantifying the contribution of food security related activities will help us in making fruitful decisions. Hence a study has been under taken with the objective to develop sustainable path in various contingent situations for agricultural development in general and food security in particular. Critical factors of input and allied component, central allocation component, climate and stocks component and storage component that were obtained through data reduction, were considered as independent variables to find out their direct and indirect contribution towards the household food security in India during 1991-92 to 2009-10. Annual central allocation on plantation (1.1731), expenditure incurred for food storage (1.2826) and poultry production (1.2332) were the factors that had significant direct affect and annual central allocation to agricultural research and education (-1.7980) had direct negative effect on household food security of India.

#### **Marta Kozicka, Matthias Kalkuhl, Shweta Saini, Jan Brockhaus: Modeling Indian wheat and rice sector policies**

This paper serves to disentangle the complex system of Indian food policies, related to wheat and rice procurement, storage, distribution and trade. Using time series for national aggregate data, these policies are econometrically analyzed, next their implications for the markets are assessed and finally their fiscal costs are estimated. The study revealed strong impact of the policy measures on the production, procurement, stocks and trade. We detected several market distortions and mounting fiscal costs that seem to be higher than officially accounted by the government. Wheat and rice supply strongly and significantly responds to the minimum support price (MSP). Wholesale prices at planting or lagged harvest time prices are largely irrelevant for the production. The Food Cooperation of India's (FCI) procurement volume is driven by the production level and the difference between the MSP and the market price. The signs of the estimated price elasticities of demand are consistent with theory, however for rice they turned out to be insignificant. The negative income elasticity of rice consumption as well as the downward trend in rice consumption suggest changing habits and the inferior character of rice as a consumption good. Strong crowding out effects of the public stocks on private stocks and negative impact of export restrictions on private ending stocks was found. Starting from 2006/07, there is a clear upward trend in inflation adjusted costs of operating the public food procurement and distribution system, coming mostly from the rising procurement volume and the MSP. On the other hand, the revenues have declined in real terms, due to lower real central issue prices and only marginal revenues from the domestic sales and exports. As a result, the food subsidy has shown a permanent growth in real terms. The seasonal analysis of the intra-year data revealed strong seasonality of prices and procurement and stock levels, in particular for wheat (less for rice).

**Poster Session**

**Barbara Degenhart: Research project: consequences of globalization processes on the food habits of the middle class in the mid-sized cities context of Mek'ele**

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**Nishant Shende: Food consumption pattern in Maharashtra state (India)**

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**Céline Bignebat, Fatima El Hadad-Gauthier, Sana Bensalk: Integration in export marketing channels and farms' labour force composition: female agricultural workers in the Moroccan vegetable sector**

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The Moroccan agricultural sector employs around 40% of the total active population of the country. In particular, the female labour supply is decisive regarding the evolution of the sector, especially in horticulture. The paper investigates the demand for labour in vegetable producing farms in the Souss Massa region. The focus will be put on the gendered composition of the labour force, namely the weight of female labour force in total employment. In particular, modern marketing channels, requiring flexibility, quality and consistency of the produce, can drive the trend towards a higher share of women workers. We draw on an original data set comprising 240 agricultural holdings. The econometric analysis shows that farm size is not a determinant of the relative weight of male and female labour use but that the destination markets matter, with a higher proportion of women being employed on farms engaged in exports to Northern Europe. Surprisingly, the share of the produce directed to local collectors influences positively the share of women labour, relatively to exports.

**Evans Osabuohien: Land deals and empowerment of rural women in East African community: the case of Tanzania and Uganda**

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**Hauke Brankamp: Transformation of fresh fruit and vegetable value chains in India: the case of Andhra Pradesh**

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**Dominika Malchar-Michalska: Contractual relationships of fruit and vegetable producer's groups with agrifood sector in Poland: the case of producer's groups operated in Dolnoslaskie and Opole regions**

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### **Geraldine Arbogast Rasheli: Vegetable value chain analysis in Morogoro, Tanzania**

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This paper looked at vegetable value chain in Morogoro Tanzania. It used New Institutional Economics and theories of Value Chains to discuss different actors involved in chain, national locations, governance mechanisms, produce /vegetable upgrading and exclusion of famous farmers in the vegetable trade from more dynamic markets. Data included 150 farmers located in Mgeta division in Morogoro district, one dry vegetable processor in Morogoro town and four stockiest. Qualitative analyses including narrations and central tendency were used. The findings show that there are emerging and changing roles of stockiest. Stockiest are now included in the vegetable value chain as traders and farmers. The findings indicate further that, captive relationship is evident between farmers and the stockiest. There has been volume downgrading for leafy vegetables. On the other hand, volume upgrading is evident in fruity vegetables while to a large extent process upgrading is found among smallholder farmers in washing the vegetables. There are further indications that some farmers and wholesale traders have been excluded from trading activities while large processors are never included in this chain. Some smallholders are also excluded from vegetable value chain due to the rising prices of agro chemicals in real terms. Almost all actors in the vegetable value chain of Mgeta are excluded from the international markets. Policies for public private partnership engagement, action researches and investments in large processing industries are required to include actors in the international chains and for upgrading initiatives. There has not been a study showing the changing dynamics and relationships among actors in vegetable value chains in Mgeta. Moreover, researches on upgrading and downgrading and inclusion and exclusion debates are limited for Mgeta vegetable value chain.

### **Hildegard Garming: From traditional markets to modern value chains – how do smallholders get their share?**

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### **Vera Belaya: Power and conflict in Russian agri-food supply chains**

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### **Wolfgang Bokelmann, Zoltán Ferenczi: Diversifying food systems – horticultural innovations and learning for improved nutrition and livelihood in East Africa**

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Regardless of considerable efforts in the past, the reduction of poverty and hunger especially in sub-Saharan Africa has hardly made appreciable progress. The development of the horticultural production sector in East African countries shows an opportunity to make substantial contributions toward the alleviation of poverty, hunger and malnutrition. Workplaces and income opportunities originate from labour-intensive production systems and logistic and processing processes. Vegetables deliver vital minerals and vitamins in food. The variety, particularly of indigenous vegetables, contributes to a raised diversity of agricultural production systems. Although there is growing demand, no suitable expansion of the vegetable supply is taking place. This is primarily due to a lack of infrastructure and supportive regulations. Unpredictable precipitation, insufficient plant nutrition, soil degradation and plant diseases show room for improvement. In addition, the post-harvest losses of crops reach upwards of 50%. The weak organisation of local and regional marketing processes lead to considerable transaction costs with the result of lower incomes for small farmers and higher prices for consumers. Within the scope of project HORTINLEA, funded by BMBF and BMZ, knowledge should be elaborated on by the investigations and be made readily available to relevant decision makers in order to develop strategies to improve the value chain of African indigenous vegetables. Investigations of six technical subprojects will accumulate knowledge of how to increase productivity. Another group of sub projects focuses strongly on postharvest treatment, product quality, processing, logistics and marketing processes. With the help of value chain analysis, special problems of rural and urban value chains will be examined. A central subproject will regularly collect data from 1500 Kenyan households and analyse how different value chains can contribute

to the reduction of poverty and improved food security. Derived from the experience that research often only marginally contributes to the improvement of the livelihood situation of the poor, special transfer activities will be carried out in subproject “Dissemination”. Another special concern of the project is to promote the ability of young African researchers to plan and to carry out interdisciplinary projects oriented on solving complex real world problems.

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### **Akanksha Negi: Cooling effects of imports on food prices: the case of pulses in India**

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### **Christine Moser: Maize prices and unobservable quality: evidence from aflatoxin tests in Kenya**

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### **Joseph Amikuzuno: Are these ties that bind? – Causes, costs and tradeoffs of cross-border arbitrage in West African tomato markets**

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### **J. Amikuzuno, E. D. Setsoafia, A.Y Seini: Regional integration in Africa: why cross-border price transmission and integration of agricultural markets matter**

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Trans-border, agricultural commodity trade within sub-regional economic blocks in Sub-Saharan Africa (SSA) is believed to be faster, cheaper, more convenient and welfare-enhancing than trade between SSA countries and the USA, EU or China. Trade flow difficulties across international borders in SSA are however a fundamental disincentive to cross-border arbitrage, price transmission and market integration. Despite the above observations, little research has so far taken a disaggregated view of the benefits of cross-border trade between neighbouring countries in Africa by comprehensively studying the price dynamics, transaction cost, rents to arbitrageurs and the spatial integration of the markets involved. The major objective of this paper is therefore to cast light on these issues by examining the cross-border trade between Ghanaian consumer and Burkinabe producer markets of fresh tomato. Our findings reveal a high level of tradability, rents to arbitrageurs and above 10% transmission of prices between the two market across the border between Ghana and Burkina-Faso. The findings have theoretical and practical relevance for cross-border trade in West Africa.

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### **Nina Dohmeier: Shocks and food insecurity in Lao PDR**

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### **Aminou Arouna, Rose E. Fiamohe, Aliou Diagne: Analysis of smallholder’s preferences for rice contract to produce high quality in rice sector development hub of Africa**

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In Sub Sahara Africa (SSA) countries, smallholders are subject to market constraints for both input and outputs. In rice value chains, access to credit, information and markets for selling paddy or milled rice represents main challenges. Linking farmers, processors and markets through contractual arrangements in SSA has become an important mean to positively impact the well- being of smallholders. However, to be sustainable, contract

farming arrangements need to benefit each party. This paper aims to inventory different promising contractual farming arrangements between rice actors in the hubs and examine factors that affect rice actors' decisions to enter into contract. Both qualitative and quantitative data are collected through interview in rice hubs in Africa. Rice hubs are zones where rice research products are integrated across the rice value chain to achieve development outcomes and impact. Data were collected from 1600 households randomly in 5 African countries (Benin, Ghana, Senegal, Nigeria and Tanzania). To avoid bias due to difference in characteristics of adopters and non-adopters, the average treatment effect (ATE) method based on counterfactual approach was used. Preliminary results show about 37% have knowledge on contractual arrangement and 31% have adopted them. Different contractual arrangements exist and are characterized mainly by price agreement, quantity and quality. In Benin, 49% of the contractual arrangement agreed on rice quality. Smallholders' preferences for contractual arrangements are mainly determined by access to market, levels of production, experience in rice production and experience with previous contract. Contractual arrangement initiatives can engage rice smallholders successfully, especially through producer organizations.

#### **K. P. Sudheer: Strategies to enhance spice export through improved safety and quality measures**

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#### **Minette Flora de Asis: The implications of participation to environmental standards by smallholder sugarcane farmers in the Philippines: the case of the muscovado sugar value chain**

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#### **Dele Raheem: Empowering the youth of Africa to promote food security in an emerging global value chains**

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#### **Samson Katengeza, Julius H. Mangisoni: Assessment of the maize situation, outlook and investment opportunities in Malawi**

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Maize is the most important food crop in Malawi whose availability equates to food security. Maize however, is vulnerable to economic, weather, political, technological, environmental, institutional and social changes. As such, the study was undertaken to assess maize situation, outlook and investment opportunities. Results on maize production have shown increasing trends over the years with high instability index though as a result of weather changes and policy volatility especially Farm Input Subsidy Programme (FISP). Future maize outlook in production shows greater volatility. As uncertainties continue surrounding sustainability of FISP and continued deterioration of the environment, Malawian farmers are likely to face decreasing trends in maize production a situation that will lead to food balance deficit. As such, without sustainable alternative to FISP programme, researchers and extension service are likely to start promoting sustainable intensification of maize productivity options such as maize- legume intercropping. Crop rotation is likely to be infeasible overtime because of decreasing farm sizes. Researchers will also increase efforts to develop new varieties of maize that are drought tolerant, disease resistant and efficient users of scarce inputs. The policy direction of government on inputs is likely to focus on organic manure utilization as opposed to increased use of inorganic fertilizers. Research as well as policy focus on postharvest losses will intensify in order to preserve the maize that is harvested. Economic research will be geared toward resource use efficiency, rain water harvesting, irrigation,

marketing and development of efficient value chains and dethroning policies that inhibit international trade and investment.

### **Sarah Marie Nischalke: Climates of food insecurity in the Hindu-Kush Himalaya Region – impacts of changing agri-food system transformations on food security**

The Hindu-Kush–Himalaya (HKH) region, which hosts one of the poorest and most vulnerable communities in the world, is highly dependent on agriculture, and of late, is facing major climate change as well as socioeconomic stress. All dimensions of food security, availability, access, utilization and stability are affected. Mountain farmers from Yunnan (China), the Far West and Mid West in Nepal to Assam in India report problems of low productivity and too much and too little water in an area that already is topographically challenging terrain for agriculture. Farmers practicing predominantly rain-fed agriculture struggle with the erratic climate, droughts and flooding. Despite the condition of natural capital resources, migration leads to labor shortages and a restructuring of farming systems. Cash crops of low labor intensity are perceived and serve as relief (tea in Assam, tobacco in Yunnan, fruit trees in Central Nepal etc.) and move the system away from food self-sufficiency. At the same time, cash crops, ranging from medicinal herbs to spices such as cardamom, winter vegetables or fruit trees also have the potential to lift people out of poverty and improve disaster preparedness as long as diversity and food production are maintained. If people rely more on remittances and cash crops, market availability and nutritional education determine the level of food security. The vulnerability to markets and prices increases and people are in need of good decision-making for investments.

### **Supena Friyatno, Adang Agustian: Role of corn commodity analysis on Indonesian economy**

Corn is a strategic commodity in Indonesian economy, because corn has some role in the Indonesian economy, such as source of major food after rice, as a source of animal feed, even lately as alternative energy feedstock (bio-fuel). Therefore, the increasing of national corn production becomes very important. This study aims to analyze the role and position of corn in the Indonesian economy which includes: (a) analyze the multiplier effects in the creation of the output, income, value added, and employment (b) share of multiplier creation, (c) backward and forward linkages of corn commodity, and (d) the position of corn in the economy (harvested area, production and trade). The analysis method used is descriptive analysis. The data used is the National Input-Output Table of Indonesia, year 2008 and secondary data time series (2005-2012). The results of the study showed that: (1) corn has multiplier effect of 1.64 in the creation of output, meaning that any for a IDR1.00 change in final demand in the local economy, the total direct, indirect and induced impacts are IDR1.64, and multiplier effect of 1.94 in income generation, the multiplier effect of 1.46 in the creation of added value, as well as the multiplier effect of 1.21 in employment generation, (2) corn also has a role as an economic trigger, through backward linkages with indications of 0.7481 and forward linkages with indications of 1,3421. Thus the role of corn as trigger is mainly on the forward linkages, (3) during the 2005-2012 period, the performance of production, harvested area and productivity have increased respectively by: 7:11% / year; 2:04% / year and 5:07% / year. This indicates that the rate of increase in national corn production is dominant driven by increased productivity through the application of corn cultivation technology; (4) based on the total national corn production and requirements during the period 2005-2006, it can be explain that the national corn production is always below the total requirement, to meet the various requirement of corn, imported of corn have be done with a range between 235 thousand - 1.84 million tons; (5) given the important role of corn, it is recommended to prioritize the development of corn production in the country. In addition to meet the domestic demand, is also likely to be exported to the international market. Conversely, if the fulfillment of the requirement to rely on imported corn, it will be high risk and have a negative impact on the national food situation, the domestic livestock industry, and would weaken Indonesian corn farmers; (6) in order to increasing corn production, it is recommended that government to take several strategic efforts, including: the increasing the scale of corn farming, through the use of land that is not cultivated optimally, increasing access to financial credit farming, and encouraging the development of modern technology for increasing productivity of corn farming.

**Menale Kassie: Sustainable intensification practices, crop income and input use: a multinomial endogenous switching regression approach**

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**Yuliana Griewald: Looking at peasant farms within the supply chain for wheat in Russia: an institutional economics perspective**

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