

## **Rapid Agrifood System Transformation, Globalization, and International Development Preconference of AAEA Meetings**

**July 25, 2015, 8:30AM to 6:30PM**

Workshop Organizers: Thomas Reardon, Bart Minten, David Zilberman, and Jo Swinnen

Program finalized June 2015

### **Description of the Topic:**

In 1999 there was an AAEA preconference on “Agroindustrialization, Globalization, and International Development;” that started a ball rolling of integrating agribusiness and development work among agricultural economists. The emphasis in 1999 was on the “midstream” of food supply chains, specifically on the rapid rise of large-scale agri-processing firms in developing countries especially Latin America, parts of Southeast Asia, and Eastern Europe, induced by the then relatively recent liberalization of trade and foreign direct investment (FDI) and the recent surge in incomes and the start of urbanization. Attendant on that theme were developments in the economics of institutional change, an “upstream” theme of agri-processing links with contract farming, and the theme of the emergence of private quality and safety standards required of suppliers by large processors. Intensification, diversification, and commercialization of agriculture was surging on the heels of the relatively recent (1970s/1980s) Green Revolution, public sector induced change in food systems (such as wholesale market investments) had been important over the several decades before the 1999 preconference.

As of 1999, however, very little to no work had been done by agricultural economics on a number of themes but a body of research pertaining to agrifood system transformation in developing countries would rise to prominence over the 15 years since the 1999 preconference leading to our preconference in 2014 for a stocktaking of changes over the past several decades. The themes below were not really “gaps” in the 1999 preconference – rather, they were not much treated then because much of the change noted in the themes below was only emerging in the mid to late 1990s and “took off” in the 2000s. This rush of new themes and real world changes drew much more attention to our general theme, inducing research on these themes and deepening and extension of the work on the prior themes. The new themes include: (1) downstream segment transformation, the “supermarket revolution” in Asia, Africa, Latin America; (2) further midstream segment transformation, with a “Quiet Revolution” along value chains in Asia and Africa of small and medium enterprise activity in processing, logistics, wholesale, cold storage, with concomitant rise of processed food and fresh produce consumption; (3) upstream segment transformation, both of inputs as products (such as the rise of Monsanto and Syngenta’s activities in developing countries), and of inputs as services (such as the development of outsourcing services of combine harvesting teams in China); (4) cross-cutting themes linking transformation of agrifood markets with - rapidly increasing urbanization, with nutritional challenges such as obesity, with institutional change in food quality, safety, and environmental sustainability, with rural nutrition, with labor and credit markets; (5) impacts of the transformation of agrifood systems cum globalization on the rural poor and on farm technology modernization; this theme has included work on “poverty traps” and on the issues of inclusion and exclusion of small farmers in transforming markets.

The preconference July 25, 2015 on agrifood system transformation, globalization, and international development, will take stock of the emergence of this new field in agricultural economics - research and new thinking on the five new themes and the deepening that has taken place on the earlier themes, and to assess the implications for policy and for agricultural economics research going forward.

## **Program (of confirmed speakers)**

### **Session 1, Overview**

#### **8:30-8:50 Overview of five inter-related transformations contextualizing Agrifood System Transformation in Africa, Asia, and Latin America, Thomas Reardon, MSU**

This paper provides the framework for the overall structure of the conference by relating downstream contextual drivers (urbanization and diet change) of system change, with downstream and midstream system change (in retail and food service segments downstream and processing, wholesale, and logistics segments midstream in the agrifood value chains), with upstream parts of and context for system change (farm segment and rural factor market transformation). The paper lays out the framework and key points about these changes and how they relate, and notes how the conference will add to knowledge in these to show what themes and knowledge have been added since the AAEA preconference on this theme in 1999.

8:50-9:00 discussion

#### **9:00-9:20 David Zilberman, UC Berkeley, From the Theory of the Firm to the Theory of the Supply Chain** (from paper by David Zilberman, Liang Lu, Xiaoxue Du, Scott Kaplan and Thomas Reardon)

Agricultural economics has emphasized understanding the economics of the micro unit—the farm—and the behavior of farmers, assuming that farmers operate in a competitive world. But as agriculture evolves, with increased emphasis on product differentiation and globalization, much of the innovation and new activities are occurring within supply chains. This paper develops a theory of the economics of the agrifood supply chain in terms of: (1) the determinants of choices of its organizational structure - activities can be contained within a vertically integrated firm or to different extents can be dispersed through contracting or trading between processors and farmers; (2) the determinants of innovations they embody – such as innovations in terms of a differentiated products, introduction of a crop to a new location, or introduction of new farming or processing technologies; (3) the determinants (such as the degree of monopolistic and monopsonistic power, and access of firms and farms in the supply chain to land, credit, and access to specialized capital, as well as risk and uncertainty) and patterns of dynamics of output and prices, as well as supply chains evolve.

9:20-9:30 discussion

### **Session 2, Downstream and Midstream**

#### **9:30-9:50 Bart Minten, The “Quiet Revolution” in downstream and midstream of agrifood value chains in Asia and Africa** (Based on paper by Bart Minten and Thomas Reardon)

This talk/paper will review evidence from the past 15 years on changes in the midstream and downstream sectors of agrifood value chains, more in particular in retail, processing, wholesale, cold storage, and logistics. Analysis will be presented based on primary data collected from staple food supply chains to major cities in Asia (Delhi, Dhaka, and Beijing) and Africa (Addis). Downstream, large price variation is seen, driven by increasing quality and brand differentiation

of these staples and by urban consumers' increasing willingness to pay for quality and convenience. Moreover, modern retail is quickly growing in all of these countries, with important impacts on supply chains and processors. Midstream, we note processes of up-scaling, economies of scale, and modernization.

9:50-10:00 Discussion

**10:00-10:20 David Tschirley, MSU, Rapid transformation in the maize processing and wholesale segments in Tanzania.** (Paper by Jason Snyder, Claire Ijumba, David Tschirley, Thomas Reardon)

This talk/paper will analyze the rapid proliferation and clustering of micro, small and medium enterprises in milling and wholesale of maize and other grains in large versus intermediate cities in Tanzania. It will present a model of firm behavior and empirics to show and explain rapid changes in segment conduct, with the rapid development of branding, packaging, and quality differentiation, as well as change in the scale of milling.

10:20-10:30 Discussion

10:30-10:40 coffee and tea

### **Session 3, Upstream**

**10:40-11:00 Carl Pray, Rutgers, Transformation of the input industry and private R&D in Asia and Africa.**

This paper will analyze consolidation and multinationalization of the seed, fertilizer, and machinery manufacture-wholesale-retail sectors in selected countries in Asia and Africa. It will explore how R&D conduct and structure of these sectors has been influenced by the segment's structural change, and how in turn this R&D and sectoral structural change affects technological change in the farm sector.

11:00-11:10 discussion

**11:10-11:30 Saweda Liverpool-Tasie, MSU, Challenging Conventional Wisdom on Trader-Farmer interlinked input-credit markets with evidence from Africa** (Based on Paper by Saweda Liverpool-Tasie, Serge Guigonan Adjogon, David Tschirley, Michael Dolislager, Thomas Reardon)

This paper will use farm survey data from Nigeria, Ethiopia, Malawi, Tanzania, and Uganda to test for interlinked input-credit markets and analyze arrangements among farmers and input retailers/wholesalers and output wholesalers. The findings challenge conventional wisdom about these relations.

11:30-11:40 Discussion

Lunch 11:45-12:45 (sandwiches in the conference room)

**Upstream session continued**

**12:45-13:05 Xiaobo Zhang, IFPRI, Transformation of the Agricultural Services segment in Asia: the rise of outsourcing labor/combine operations in grains in China**

This paper analyzes the formation of clusters of cross-province outsourced-labor combine operations in China, presenting a model and empirical evidence of the supply and demand side of these services, and its impact on the profile of farm labor use.

13:05-13:15 Discussion

**Cross cutting themes session - linking transformation of agrifood markets with key themes**

**13:15-13:35 Luc Christiaensen, World Bank, Urbanization in Africa: linkages with transformation of agrifood markets and poverty reduction**

Urbanization patterns and food supply chains - implications for jobs and poverty Africa is urbanizing rapidly, with much of its urban population concentrated in cities. This is generating important opportunities for agricultural supply chain development and employment in Africa's rural hinterlands, where Africa's poor are concentrated. Economic growth where the poor are has often proven to be more poverty reducing and secondary towns can play an important role as conduit for supply chain development. This paper reviews these broad trends, articulates the opportunities for poverty reduction and identifies the challenges in making Africa's agricultural value chains inclusive.

13:35-13:45 Discussion

**13:45-14:05 Julio Berdegué, Rimisp, The spatial location of agroindustrialization as a function of intermediate city placement and rural territory characteristics: the case of agroprocessors in Chile** (based on a paper by Chiara Cazzuffi, Yessica Lagos, and Julio Berdegué).

This paper examines the spatial distribution of agroprocessors in Chile using data from 1995-2003. The paper models the growth of number of firms, and their employment and sales volumes, by firm size strata, as a function of the rural municipalities' characteristics, such as the distance to cities of various sizes as well as the size of urban centers in the surrounding rural territory, as well as infrastructure and public services, labor market characteristics, and agricultural production and land tenure and distribution.

14:05-14:15 Discussion

**Session on Impacts of Agrifood system transformation**

**14:15-14:35 Barry Popkin, University of North Carolina, Links between Transformation of the agrifood system and transformation of diets and diet-related health concerns in Latin America and Asia**

This paper will start by discussing the nutrition transition that has occurred over the past three decades in LMICs. Efforts to correct a biological mismatch between modern technology and our inherent biology developed over millennia are focused on agrifood systems. Latin America was the earliest to shift toward a modern food system and see major dietary and obesity problems, with Mexico as an example, which became precursors to what has started in Asia, with China as a key example. The paper illustrates with new data analysis from these two countries as

illustrations and notes the shift that these agricultural system changes have meant to the policies that LMICs are using to address many of the nutrition-related health problems.

14:35-14:45 discussion

**14:45-15:05 Jo Swinnen, University of Leuven, Linking transformation of the Agrifood system with labor market development in Africa**

The transformation of the agrifood system is associated with a supply system which is remarkably heterogeneous across commodities and countries. In some cases it has induced a concentration in supplying farms; in other cases it has included many smallholders. The impact of the shift towards a more concentrated supply system for the poor and for rural households depends crucially on the functioning of the labor market, i.e. to what extent it results in an increased demand for labor, who is employed on larger farms (and in processing, packaging, etc.), and under what conditions. Empirical research also suggests that there can be important gender implications of these labor market impacts. This paper will present a conceptual framework and link this with empirical research on this issue.

15:05-15:15 discussion

15:15-15:25 coffee and tea

**15:25-15:45 Jinhua Zhao, MSU, Transformation of Agrifood markets' impacts on energy costs and vulnerability in developing countries** (based on a paper Jinhua Zhao, David Zilberman, Na Bai, and Thomas Reardon)

This paper will present a conceptual model to assess the relation between agrifood market transformation and energy intensity and efficiency and vulnerability to shocks. The model will be based on stylized facts from the Asian context with illustration of fish in China.

15:45-15:55 discussion

**15:55-16:15 Christine Chege, University of Goettingen (Germany), Nutritional implications of the supermarket revolution in Africa for consumers and farmers** (based on paper by Matin Qaim, Christine G.K. Chege, Simon C. Kimenju, Stephan Klasen, and Ramona Rischke)

This paper will address nutritional aspects of supermarket channels for small farm households and for the nutrition of urban consumers in Africa. This is the first paper uniting these two angles. A conceptual framework of possible impact pathways in producer and consumer households is discussed. The empirical analysis builds on data from household and individual level surveys carried out by the authors in rural and urban areas of Kenya using quasi-experimental sampling designs. Instrumental variable models and causal chain models are estimated. Results indicate that supplying to supermarkets and buying in supermarkets affects food consumption patterns and dietary quality through various channels, including changes in prices, incomes, and gender roles, among others. The supermarket revolution can affect nutrition in positive and negative ways. The methods developed and used in this paper help to analyze important linkages. More research is required to identify effects under different conditions.

16:15-16:25 discussion

**16:25-16:45 Marc Bellemare, University of Minnesota, “Empirical Research on Contract Farming and Supply Chains in Developing Countries: Quo Vadis?”**

This paper first argues that empirical studies of the effects of participation in contract farming in agricultural value chains need to move beyond income and other welfarist outcomes. Given recent advances in empirical methods, it also identifies a need for studies looking at the mechanisms through which contract farming and supply chains affect the welfare of participants. Then, it discusses the ever-present issues of causal identification, and offers some thoughts about a possible marriage of agricultural and development economics with industrial organization before concluding with a discussion of the structural transformation in developing countries.

16:45-16:55 discussion

**16:55-17:15 Duncan Boughton, MSU, Small Farmer agricultural Commercialization and Diversification in Eastern and Southern Africa as a function of Differentiating Urbanization**  
(based on a paper by Duncan Boughton, Steve Haggblade, David Tschirley, Antony Chapoto, Chris Barrett, and Thomas Reardon)

This paper will analyze the inter-year trajectories and product composition of commercialization of crops by farm households in Kenya, Zambia, and Mozambique. As an example of how urban driven food system transformation changes smallholder opportunities the paper will focus on how the spatial pattern of urbanization affects smallholder participation in horticulture markets.

17:15-17:25 Discussion

**17:25-17:45 C. Peter Timmer, Harvard, Policy implications of rapid transformation of agri-food markets in developing countries**

This paper shows that the rapid transformation of agri-food markets in developing countries significantly complicates the design and implementation of policies that further the basic objectives of a successful food system: inclusive economic growth, improved nutrition, a stable environment, and an effective safety net for both chronic and transitory poverty. First, the policy instruments traditionally available have reduced efficacy. Second, market infrastructure designed as a public good to foster entry and competition is increasingly supplanted by integrated supply chains that may or may not include smallholder suppliers as low cost producers. Third, the “industrialization” of the food supply chain offers important opportunities to enhance food safety, but also offers challenges to the nutritional well-being of consumers who may not be fully informed about the health consequences of their food choices in supermarkets. These challenges also come with significant opportunities. This concluding paper offers an organizing framework for a policy discussion of these trade-offs.

17:45-17:55 discussion

**17:55-18:25 Panel to discuss implications for Agricultural Economics and research and policy contributions of conference and agenda and gaps, Eric Crawford (MSU) and Mike Cook (Missouri)**

**18:25-18:30 Thanks and Adjournment and next steps, David Zilberman, UC Berkeley**