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SCHOLARSHIPS

APPLIED ECONOMICS CENTENNIAL UNDERGRADUATE SCHOLARSHIP

Theo Walther

AGRICULTURAL AND FOOD BUSINESS MANAGEMENT

Imad Diomande

AGRICULTURAL AND FOOD BUSINESS MANAGEMENT

WILLIS PETERSON SCHOLARSHIP

Wyatt Lawrence

AGRICULTURAL AND FOOD BUSINESS MANAGEMENT

Brooke Burditt

AGRICULTURAL AND FOOD BUSINESS MANAGEMENT

Brant Thomas

APPLIED ECONOMICS

Ethan McLaughlin

APPLIED ECONOMICS

YOST FAMILY SCHOLARSHIP

Levi Kermes

AGRICULTURAL AND FOOD BUSINESS MANAGEMENT

ROUTE-CHRISTIANSEN SCHOLARSHIP

Erik Loewen

AGRICULTURAL AND FOOD BUSINESS MANAGEMENT

Phoebe Limond

AGRICULTURAL AND FOOD BUSINESS MANAGEMENT

TEACHING ASSISTANT AWARDS

Congratulations to our three TA award winners for 2018–2019. The award winners were chosen based on student evaluation responses and have displayed exemplary teaching performance for their assigned classes.

8000 LEVEL

Sunghun Lim

3000 LEVEL

Corissa Marson

1000 LEVEL

Kadidja Doucoure

Applied Economics at the University of Minnesota



@ApEcMN



Notes from the Department Head

BY FRANCES HOMANS



It is the start of a new semester, and we are looking forward to all that brings; between the first hint of fall during the state fair to deep winter as the semester draws to a close, we will be humming with activity. A highlight is sure to be our Outstanding Alumni Award and discussion forum on October 4, featuring Pat Duncanson, Nancy Morgan, Scott Swinton, and Eugenie Maiga. Please join us!

We also look back, in sadness and with fondness, on the life and career of Jerry Hammond. Jerry passed away on August 8, just one day shy of his 86th birthday. Jerry retired soon after I

joined the department. Here, I turn the column over to the voices of some of his colleagues and students who knew him during his career in the department.

Jerry was a colleague and friend you could count on to step up and step in whenever you needed help, professionally or personally. Jerry was smart, kind, gentle, and respectful. Both he and Marie have been dear friends. I admired how he would support Marie's art by making frames for her many paintings.

JEAN KINSEY

Jerry played a lead administrative role in the Poland project, involving many of our faculty in the project. He and Marie were gracious hosts for the many visitors to the Department from Poland. Jerry and Marie were always among the first to be on the dance floor at departmental events.

ROB KING

Our family arrived in Minnesota in December of 1971. On our first Christmas our entire family was ill with pneumonia. Despite this, Jerry and Marie opened his home to all of us and

we spent Christmas day with his family. Being far away from our home and relatives, this invitation meant a lot. We spent the entire day talking, singing, and listening to his daughter Tricia play the piano along with his brothers and brothers in law. Jerry and Marie opened their hearts and home to the Vanegas family. He was my adviser and friend for nearly 49 years.

MANUEL VANEGAS

In the early 1970s he was a member of our team of about five University of Minnesota economists stationed in Tunis, Tunisia. He was generous with his time and sound in providing good advice. He was my advisor during my first year as a graduate student at North Dakota State University. He will be sorely missed.

TERRY ROE

Jerry was my first professional "boss," in my first job after finishing my B.A. Jerry was a great first supervisor, giving me the structure I needed to be productive while also encouraging me to add my own ideas to the project. We never directly worked together again, but I was always glad to see him and will miss him now.

DICK TODD

Jerry offered to me my first professional employment as a young economist with a fresh M.S. degree from South Dakota State University. Jerry taught me how to be a good and caring advisor and mentor. Jerry Hammond was most of all my friend. My family and I will miss him greatly.

CAMERON THRAEN, PROFESSOR EMERITUS,
THE OHIO STATE UNIVERSITY

Jerry was, indeed, a good friend to the department and we will miss him. Plans for a memorial service are still pending. Please email me at fhomans@umn.edu if you want to be kept informed about those plans.

Frances Homans

DEPARTMENT OF APPLIED ECONOMICS

Agriculture and the Economic Growth of Nations

BY TERRY ROE AND HARUMI NELSON¹



This note discusses selected features of agriculture as economies transition from low to higher income per capita over time. Understanding this process, as Rodrik, Hausmann, and Velasco (2005) point out, can help policy makers and others to better diagnose impediments to overall economic growth and agriculture's contribution, or lack thereof, to this process. The process of economic growth has the following features. In early stages of development, agriculture tends to account for a relatively large share of a country's total value added and to employ a sizable share of a country's total work force compared to advanced countries. In advanced countries, agriculture tends to account for a smaller share of total value added, but a higher degree of connectivity to other sectors of the economy in terms of its employment of intermediate inputs such as electrification, transport services and purchased biological and mechanical inputs. Technological change in the nonagricultural sectors thus tends to "spill into" agriculture in advanced countries relative to lower income countries. To simplify discussion, think of an economy as composed of three sectors: agriculture, industry and services. Industry includes the manufacturing of chemical products, textiles, metal production, other fabrication, meat and other food processing. We note these production activities because some of them are linked to markets for agricultural outputs (e.g., meat, and textiles) and some to agricultural inputs such as chemical products, fertilizers and pesticides. The service sector includes wholesale and retail trade, transport, communication, business and financial services, and dwellings. Many of these services are also employed by farmers.

How important to agriculture are the primary inputs of labor, capital and land relative to the intermediate inputs? Data from the Global Analysis Project (GTAP) show that the value of intermediate resources employed by U.S. agriculture account for roughly 58 percent of the value of total resources employed. In other words, 42 percent of the total cost of agricultural production, as broadly defined here, is accounted for by farm labor, capital and land. Industry is higher with about 63 percent of total resource cost of production accounted for by intermediate resources. For the case of the service sector, the percent of total production cost accounted for by intermediate resources drops to about 37 percent.

The relatively large share of intermediate factors of production in U.S. agriculture, as our example of an advanced economy, attests to the interlinkages between agriculture and the rest of the economy. Farmers in lower income countries typically employ fewer intermediate resources in proportion to their total cost of production than farmers in advanced countries. For the case of India, GTAP data suggest that only about 31 percent of the value of total resources in farm production are accounted for by intermediate resources. In Uganda, a country whose gross domestic product (GDP) per capita is less than one half that of India, intermediates employed in agricultural production only account for about 16 percent of total input cost. The greater the extent of interlinkage between agriculture and the rest of the economy, the larger are the quality-improving and cost-reducing benefits of technological change in one sector, say manufacturing, that are shared with or spill over to another sector such as agriculture.

These sources of spillovers between sectors and the advantage this gives to more advanced economies are discussed by Jones (2008).

For the agricultural sector to advance, it is necessary to establish the pathway for the provision of both primary and intermediate inputs, many of which are subject to market failures and that tend to vary in importance by country and stage of development. Examples are markets for rural credit, electrification and transportation services. The provision of these services typically encounter market failures, and are hence often provided by government entities. However, this source of provision tends not to gain from the typical benefits of market competition and therefore they tend to be under supplied in quantity and quality, and particularly so in low income countries.

Now, let's glimpse at the features of an economy as it evolves over time. This evolution is often described as structural change. Johnson (1970) reviewed the literature on development economics from about 1940 through 1969, and was recently supplemented by Roe and Gopinath (2019). With the exception of some debacle countries (see Panagariya (2004)), structural change almost always features a decline in the share of a country's labor force in agriculture, and a rise in its share in the service sector.

How the "process" of agricultural production evolves over time tends to separate the economically successful countries from the less successful. In a study of growth and structural transformation, Herrendorf, Rogerson and Valentinyi (2013) focus on the



change
over time
in the sectoral

shares of GDP
and sectoral labor shares

in total labor. Returning to our three example countries, the share of total GDP accounted for by agriculture in the U.S. economy is only about 1.2 percent, while for India and Uganda it is about 19 percent and 25 percent of total GDP, respectively. Thus, agriculture is an important driver of economic growth for countries in the earlier stages of development due to its relative size in a developing country's total GDP. Another measure is labor productivity, defined as sector GDP divided by the number of workers in the respective sector. Two features stand out. First, labor employed in agriculture is generally less productive than labor employed in industry and services. This feature is also true for the U.S. Consequently, the migration of workers from relatively low labor productivity agriculture to the manufacturing and service sectors tends to boost total economic growth. Second, the more advanced the country, in general, the higher is labor productivity. In agriculture, labor productivity in U.S. agriculture is about 60 times more productive than labor in Indian agriculture, and about 410 times more productive than labor in Ugandan agriculture.

Herrendorf, Rogerson and Valentinyi (2013) show for a sample of countries

that, over time, agricultural GDP shares in total GDP exhibit a continual decline to less than 5 percent of total GDP. Manufacturing share in GDP exhibits a bell shaped pattern, rising to about 40 percent of GDP for countries at a level of GDP per capita averaging about \$13,500 (in 1990 dollars) and then declining thereafter. For most countries, the service sector share in GDP grows throughout the range of the data. The effect on employment follows a similar pattern. For many countries, this pattern suggests a net flow of labor out of agriculture to cities and villages where manufacturing and service producing firms are mainly located.

Agriculture's unique role in this process is the release of labor which eases the competition for labor employed in the manufacturing and service sectors, while placing upward pressure on rural wages due to the outmigration. Farmers respond by increasing their use of intermediate inputs and substituting machinery and other capital inputs for the departing labor, as the cultivated area per farmer tends to increase. Economists look for constraints or impediments to this growth process. Impediments typically vary by country. They range from the lack of rural electrification and transportation, to the lack of credit markets, land property rights, and illiteracy, the latter two of which tend to lock labor in agriculture. Macroeconomic policy also matters. Policies that tend to protect the industrial sector from foreign competition can limit the demand for agricultural goods and the provision of intermediate farm inputs. Fiscal and monetary policies in some countries tend to turn the domestic terms of trade against agriculture. The nature of these impediments to structural transformation is typically country specific, and to vary over time, but that is a story for another time.

The "take away" of this limited discussion of a complex and dynamic process is to better understand growth from an economy-wide perspective in order to help diagnose impediments that tend to slow

structural transition from low to a higher income economy. Some of the features of structural transition are the decline in the share of agricultural value added in total GDP, a decline in the share of labor employed in agriculture, and an increase in the share of intermediate inputs in agriculture's gross value added. This rise in the share of intermediate inputs implies structural transition increases the "connectedness" of agriculture to the industrial and service sectors of the broader economy. Impediments to this process are argued to vary by county and the stage of development. Impediments for low income countries are likely to be in areas where markets are most likely to fail, such as in the provision of electricity, transportation, and credit. For advanced economies, impediments are likely to include the indirect effects of policies affecting the provision of intermediate inputs produced by the industrial and service sectors of the economy.

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¹ Roe is Distinguished Professor Emeritus of Applied Economics and Nelson is a former Visiting Faculty member of Applied Economics.

OUTSTANDING ALUMNI AWARD

Join us on Friday, October 4 at 2:00 pm as we honor this year's three Outstanding Alumni Award winners.

Pat Duncanson, '82, graduated with a degree in Agricultural Business and returned to his family's fifth generation farm in Blue Earth County, Minnesota. Highland Family Farms produces pork and grows a variety of crops. Duncanson utilizes a triple bottom line approach to farming, balancing economic returns with commitments to the community and the environment. Pat has served in many leadership and volunteer roles for the University of Minnesota including service on the Regent Candidate Advisory Council and as the University of Minnesota's representative to the Council for Agricultural Research, Extension, and Teaching. Duncanson was recently elected to a second term on the Alumni Association's Board of Directors.

Nancy Morgan received her M.S. in Agricultural Economics in 1982 under the supervision of Terry Roe. Her career took her to Togo and Cameroon with the Peace Corps, Washington DC with the USDA and the World Bank, and Rome, Bangkok, and Tunisia with the Food and Agriculture Organization of the United Nations. While at FAO, she focused on agricultural and trade policy analysis. Her career of work also included designing agricultural projects and investment plans, working with governments and farmers to design mechanisms to estimate cost of production, and strengthening intra-regional trade in Africa. Morgan retired from the FAO in 2016.

Scott Swinton earned his Ph.D. in 1991 under the supervision of Rob King. Swinton's research at Michigan State University looks at

agriculture as a managed ecosystem, focusing on decision analysis for enhanced ecosystem services. He concentrates on problems involving crop, pest, pollination, and nutrient management; precision agriculture; resource conservation; and bioenergy production. He teaches managerial economics and research design and writing. A recipient of MSU's Beal Outstanding Faculty award, Swinton's research has been cited over 9,000 times. He was Director of Graduate Studies in MSU's Department of Agricultural, Food, and Resource Economics before following in the steps of his UMN advisors, Rob King and Vern Eidman, to become President of the Agricultural and Applied Economics Association in 2017-18.

Congratulations to all of our outstanding recipients. Please join us to honor them on Friday, October 4, beginning with a forum discussion entitled "Perspectives on Sustainability in Agriculture" at 2:30 pm in B35 Ruttan Hall on the St. Paul Campus. The forum will feature Joleen Hadrich as moderator, along with panelists Pat Duncanson, Nancy Morgan, Scott Swinton and Distinguished Leadership Award for Internationals honoree Eugenie Maiga. The award ceremony will follow the forum and begin at 3:30 pm, where we will also take time to announce and honor our outstanding teaching assistants as well as our scholarship and fellowship recipients and their generous donors. We encourage you to stay and attend a reception following the forum and awards ceremony.

Friday, October 4
2:00 pm
OUTSTANDING
ALUMNI AWARD
CEREMONY

DISTINGUISHED LEADERSHIP AWARD FOR INTERNATIONALS

Eugenie Maïga obtained her Ph.D. in Applied Economics in 2010 under the supervision of Paul Glewwe. Following graduation, Maïga served as a researcher at the African Center for Economic Transformation in Ghana for three years, where after she returned to her home country of Burkina Faso an assistant professor at the Université de Koudougou (now called Université Norbert Zongo). She was promoted to associate professor in 2017, and then became the head of the Economics Department.

Maïga has excelled in her academic career, focusing on research that contributes to economic growth and poverty reduction in African countries. She both teaches and advises graduate students not only in Burkina Faso but also in neighboring countries such as Côte d'Ivoire.

Maïga has received numerous awards. In 2014, she was the first recipient of the Uma Lele Mentorship Fund award by the American Agricultural

Economics Association. In early 2017, she was one of only 20 individuals selected from over 3,000 applicants to be in the first cohort of the World Bank's Africa Early Years Fellowship (a program to support young African researchers). In late 2017, she was ranked first out of 37 candidates (faculty from 19 Francophone African countries) on a professional examination administered by the African and Malagasy Council for Higher Education. She was the first woman from these 19 countries to ever pass that examination. Finally, she was awarded Burkina Faso's "Chevalier de l'Ordre des Palmes Académiques" for her contributions to higher education.



APPLIED ECONOMICS GRAD STUDENT CONDUCTS FIELDWORK IN PERU

Over the summer, Applied Economics grad student Chris Boyd Leon visited Cajamarca, the poorest region of Peru, to conduct fieldwork on price risk and insurance. She recruited potato farmers to play lab-in-the-field games in which she invited them to make economic decisions in a simulated market situation. Farmers were asked to how much they would want to produce when the prices for their harvest were uncertain, under three scenarios: without insurance, with compulsory insurance, and with price insurance at discounted premiums.

Chris will use the data she collected as part of those experiments for one of her Ph.D. dissertation chapters. First, she will use the data to test whether farmers choose to produce more

when they are insured against price risk, as expected utility theory predicts. The second set of questions have to do with the design of the insurance product. Pooled insurance schemes based on observable weather measures have been proposed as a way to avoid adverse selection and moral hazard problems that would typically affect the insurance market. These schemes, however, have had low take-up rates in developing countries. Chris' experiments will help determine whether insuring producers against output price fluctuations works better than pooled insurance schemes. Other variations in her experiment include making the insurance product easier to understand and discounting the price of the insurance.



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KAREN ROUTHE RETIRES

Karen Routhe retired on June 28, 2019 after 27 years of service to the University. Karen provided a smiling face for every visitor who entered the main office, and was a dedicated member of the department. Prior to joining Applied Economics Karen held a staff position in the Department of Food Science and Nutrition. During her time with our department, Karen worked in the main office and supported the department head, administrative director, and the graduate program. Karen was the central point of information for all faculty, staff, students, and visitors. She kept the department's facilities operating smoothly, and organized the popular annual staff luncheon every December. Karen has strong ties to the department; her son Chris Routhe is an alumnus and her husband's uncle, Hal Routhe, was an alum and generous donor. We will miss Karen's helpful attitude, good humor, and friendly presence.

