GIANNINI · FOUNDATION
OF AGRICULTURAL ECONOMICS · UNIVERSITY OF CALIFORNIA

**8th Annual
Giannini Foundation of Agricultural and Resource Economics
Student Conference (GARESC)**

Programs and Abstracts

April 29, 2017

9–9:30 a.m.   **Registration and Breakfast**

9:30–10:50 a.m.   **Session I: Technology Adoption**

Locus of Control and Economic Decision Making: Perceptions of Agency in a Stochastic Production Process

Jonathan Malacarne, Davis

There is an increasing acknowledgement in economics that psychological components of decision-making offer a vital window into agent behavior. This includes operative notions of constraints and perceptions of risk and reward on which agents base decisions. In both the theoretical and empirical literature, efforts are being made to formalize, measure, and explore the relationship between a diverse set of psychological constructs and their economic analogues. In this paper, I formalize the psychological concept of locus of control into a model of economic decision making. Using simulation methods, I show how locus of control can map into different investment patterns and rates of learning and adoption. I make the case that locus of control is an intuitive concept of agency for thinking about decision-making in production processes that contain a stochastic—or otherwise external—component, and that low levels of investment and slow rates of adoption are rational responses to a strongly external locus of control. I then discuss empirical measures of locus of control and their relationships to drought risk and agricultural investment among maize farmers in central Mozambique.

Session I (continued)**: Technology Adoption**

Diffusing to Level Fields: Evolution of Laser Land Leveling Technology Markets in Uttar Pradesh, India

Kajal Gulati, Davis

The spatial and temporal heterogeneity in the diffusion of technologies continues to puzzle economists due to the strong linkages between technological innovation and structural economic growth. The adoption of laser land leveling (LLL) in the cereal-growing belt of northern India offers an excellent example of heterogeneous agricultural technology diffusion. LLL is a water-saving technology, the use of which allows farmers to reduce irrigation costs, improve farm yields, and increase farm profitability. The north Indian state of Uttar Pradesh (UP) offers an interesting case of differential LLL adoption as the western part of the state has witnessed high diffusion of LLL as compared to eastern UP (EUP). As part of a program intervention, LLL was randomly introduced in 24 villages in three districts in EUP for two consecutive years. The study design combines the supply and demand of laser land leveling (LLL) services in EUP through a survey of LLL service providers and a detailed mapping of villages where LLL has been adopted. The spatial spread of service provider villages and adopting villages in relation to the initial random exposure sites tests whether information asymmetry had stalled the emergence of LLL markets.

Dealing with Water Scarcity: Adoption of Water Saving Technologies and Management Practices by California Avocado Growers

Julie Escalera, Riverside

The irrigated agricultural sector has been facing a reduction in terms of both quantity and quality of water worldwide. Arid regions with little rainfall are hit hardest because they also contribute much of the agricultural produce. Furthermore, the sustainability of water-intensive crops, such as avocado, is threatened when water becomes both scarce and too expensive for growers. Irrigation technologies and water-saving management decisions can be utilized to help growers through times of limited water supplies, however, not all strategies and technologies are adopted by growers. This paper addresses how growers make decisions about water-saving technologies and management decisions. The paper argues that bundles of technologies and management practices rather than individual technologies and/or management practices are the way to deal with water scarcity and deteriorated quality. The hypotheses are inferred, using primary data collected by a survey instrument that was distributed to California avocado growers during 2012-2013. We also test a model where we look at adoption of either irrigation technology and/or management practices in a binary-choice framework, also explained by the same set of independent variables as the first model. Bundles of eight commercially used water management technologies and conservation methods were grouped into four bundles based on results from neural nets and multi correspondence models. The non-user, or zero bundle, was used as a baseline against all other bundles. Models were tested using multinomial logistical regressions and logistical regressions where the probability of each bundle was determined based on socioeconomic factors, farm characteristics and informational factors. Results show that in selecting bundles, farm location, share of income from agricultural production, use of Cooperative Extension advice, and farmer characteristics such as age and education play an important role in adoption of technologies and management practices that conserve water. Results from this study can help guide policy on how to help growers select effective water-saving technologies and methods for both avocado production and irrigated agriculture worldwide. Policy makers will be able to consider the use of Cooperative Extension as an effective tool for sustainable agriculture, as well as location of farms in arid regions with less access to fresh irrigation water. Orchard crops benefit from this research, along with crops that are grown in areas of the world where climate change and drought threaten agricultural production.

9:30–10:50 a.m.   ## Session I (continued): Technology Adoption

General Equilibrium Impacts under Imperfect Agricultural Markets

Anubhab Gupta, Davis

This paper integrates general equilibrium impacts of agricultural policies under imperfect competition by evaluating the spillover effects of technological change in the presence of agricultural market power. Using cotton industry data from the western cotton-growing area of Tanzania, preliminary results show that technological improvement in cotton production has significant spillover benefits for other households (not involved directly in cotton production) in the local economy, but market power of downstream cotton ginners might mitigate the direct benefits for poor cotton-producing households as well as the indirect benefits for non-cotton-producing households. The results could have important policy implications in showing how general equilibrium impacts of agricultural market power could have substantial direct and indirect impacts for beneficiaries and non-beneficiaries, respectively. Most agricultural models assume perfect competition and fail to take into account market power, and ignore potential spillovers arising from market interactions, resulting in biased evaluations. While the results are important from a policy point of view, the methodology and framework for this exercise extends the literature on agricultural research by integrating general equilibrium theory with market structure models.

10:50–11 a.m.   ## Coffee Break

11 a.m.–12 p.m.   ## Session II: Preferences, Behavior, and Biases

Identity, Time Horizons, and Conservation Easements

Reid Johnsen, Berkeley

We hypothesize that the degree to which landowners identify as ranchers has a causal impact on preferences between a lump sum and a perpetuity. Using original survey data from approximately 200 landowners in Sonoma and Marin Counties, we elicit measures of rancher identity and preferences among three compensation packages for the sale of a conservation easement. By randomly perturbing the identity of some landowners, we determine the causal impact of identity on preferences.

Smoothing Behavior in PROSPERA Recipient Households

Ruben Rojas Valdes

Under neoclassical conditions, income shocks do not have any effect on consumption and savings. This prediction fails under market imperfections such as credit constraints. The PROSPERA Program in Mexico (previously Progresa and Oportunidades) represents a considerable proportion of the recipient household's income and thus an expected shock every month. We use data from a sample of PROSPERA recipients that includes information on the timing of the transfer payment and on negative unexpected health and employment shocks to test the following hypothesis: Are recipient households able to smooth consumption differently in the presence of expected and unexpected shocks? How do economic outcomes in recipient households differ in the presence of expected and unexpected shocks? How is behavior affected by these shocks? We find evidence to support the neoclassical hypothesis of income consumption smoothing in the presence of the expected shock, but not for unexpected shocks. Puzzling, we do observe an increase in assets holdings when households are about to receive the PROSPERA transfer, together with a decrease in the likelihood of the transfer recipient to be depressed. This research provides partial explanation on why poor households hardly "graduate" from poverty.

11 a.m.–12 p.m. **Session II** (continued)**: Preferences, Behavior, and Biases**

A Liquid Bubble? The Potential Speculative Bubble in the Market for Superstar wines 2003–2016

Tor Tolhurst, Davis

I use the market for "superstar" wines to test a method for detecting speculative asset bubbles. The method is based on a theory for the price relationships between two related products. Intuitively, prices of related products should move together over time within some margin of error, but price premiums outside of this margin of error may be indicative of a bubble. In order to avoid dubious claims of a bubble, I set the threshold margin of error to be very high: the price premium has to exceed 4.5 standard deviations above its two-year mean (this would occur with probability less than 0.00002 with a standard Normal). I apply the bubble test to world prices of Bordeaux wines. The price premium for the superstar wines grew steadily around 10% from 2000 to 2006, to nearly 75% at the end of 2007. The bubble test detected a bubble in early 2007. The price premium stayed relatively constant around 50—75% until 2010, before increasing up to 150% in 2011. Again, the bubble test detected a bubble right at the beginning of 2010. The approach may be more broadly applicable to other markets with differentiated, but related, products such as housing yields.

12–1 p.m. **Lunch**

1–2:20 p.m. **Session III: Political Economy**

Poisoned by Policy: The Impact of the Flint Water Crisis on Political Participation

Kate Pennington, Berkeley

Unpacking the motivation to vote is a central goal in political science, political economy, and the pursuit of representative democracy, but it is difficult to study empirically. I examine the impacts of a massive municipal and state government failure that inflicted lead poisoning on a quasi-random sample of households in Flint, MI. Does evidence of government malfeasance motivate or deter voting? By combining spatial data on lead exposure with the Michigan Qualified Voter File, I identify the impact on turnout within Flint for voters who were poisoned compared to their neighbors who were not. Next, I look for evidence that the crisis in Flint motivated an increase in voting in racially similar school districts across Michigan by demonstrating racial discrimination in the quality of government. Finally, I show that two theories of voter motivation fail to offer satisfying insight into the results, underlining the need for theoretical advancements with testable, predictive power.

Do Farmers Make Good Neighbors? Evidence from Self-Regulation of Pesticide Applications near Schoolsites in California

Tor Tolhurst, Davis

This manuscript investigates a topical issue in California agriculture: pesticide applications near children at schoolsites. We consider if and how farmers near sensitive sites self-regulate their pesticide applications, an important policy issue but also a contribution to the academic literature on self-regulation. Self-regulation can be difficult to study because decisions made by private individuals are not typically observable and, for example, with a survey individuals have an incentive to bias their reports. Even when unbiased data can be collected, decisions may be confounded by strategic considerations. We use a unique data set that allows us to overcome these challenges: administrative data (reported and verified through mandatory reporting requirements) on field-level observations for all pesticide applications in 13 major agricultural counties, which account for two-thirds of the state's production by value. Our empirical strategy uses spatial variation in the distance in fields from schoolsites to examine if (and how) farmers alter their behavior when their pesticide applications are in the proximity of sensitive sites. Fields that are close to sensitive sites form a quasi-treatment group. Our control variables include weather; soil, crop, and pesticide type; and grower-site identifiers. Our preliminary findings suggest that, on average, farmers do self-regulate their applications near schoolsites.

1–2:20 p.m.   ### Session III (continued): Political Economy

Conflict and Elephant Poaching

Gabriel Englander, Berkeley

A large literature in economics studies the causes and consequences of armed, intergroup conflict. However, the effects of conflict on wildlife have mostly been examined by natural scientists through case studies. Do changes in conflict status – a new conflict beginning or an active conflict ending – affect elephant poaching? I find that conflict onset significantly increases poaching by about 22-37% relative to baseline poaching levels, while conflict ending has a positive but only marginally significant effect. I use elephant site and year fixed effects, find similar estimates with country-by-year fixed effects, and include relevant subnational, time-varying control variables. I bound the bias from potential confounders, explore temporal dynamics and test for reverse causality, and check robustness to specification assumptions. This paper extends the economics literature on conflict into a new area, provides causal estimates to check previous findings by natural scientists, and offers evidence for policymakers and practitioners interested in reducing poaching of elephants and other high-value species. (JEL codes: K42, O13, O17, Q28, Q34, Q56, Q57)

Public-Private "Partnership": Reducing Corruption in Haiti's Universal Primary Education Program

Benjamin Krause, Berkeley

Due to the acute challenges of governance in Least Developed Countries, donors are increasingly promoting Public–Private Partnerships to increase service provision. However, these hybrid arrangements create a different set of governance challenges as officials seek to hold private sector actors accountable for delivery. I examine one such effort in Haiti where the government attempted to achieve universal primary education by providing 200 million USD in subsidies directly to education entrepreneurs. I find evidence that the program's rollout coincided with a more than 30 percentage point increase in primary school enrollment and use a cohort study to identify causal evidence of both increased enrollment as well as household welfare improvements. Furthermore, I make use of multiple novel datasets to find that audited participants reduced grant claims by 18.9% – interpreted as a reduction in fraud – resulting in a directly observed savings of 875,000 USD per year for a conservative return of 11 USD for every dollar spent on auditing. I do not find any evidence of spillover effects, but am able to provide additional support for my findings through an event study.

2:20–2:30 p.m.   ### Short Break

2:30–3:30 p.m.   ### Session IV: Transportation and Resources

Assessing the Resilience of SoCal Farming Systems to Water Scarcity

Arisha Ashraf, Riverside

This study will illuminate our understanding of how water management practices, in addition to farm and irrigation district characteristics, may contribute to farm performance (gross revenue and land value). The study focuses on four Southern California counties (Imperial, Riverside, San Diego, and Ventura) using mixed methods: econometric analysis and a survey instrument. The diversity in farm size, crop mix, and institutional settings will allow for a robust cross-sectional analysis between the counties as well as separate county-level analyses. The specific water management practices are: irrigation technology type (as in many previous studies) and several important monitoring practices (unique to this study) that capture the engineering concepts of emission uniformity and irrigation efficiency. Ultimately, this work will inform farm conservation policy, particularly in generating appropriate incentives to adopt technologies/ practices that maximize both farm-level profits and water conservation. It may also reveal that technologically intensive practices are not necessarily related to superior farm performance.

2:30–3:30 p.m.   Session IV (continued)**: Transportation and Resources**

Impacts of the U.S. Ethanol Boom on Cross Price Elasticities in Corn Transportation Markets

Heidi Schweizer, Davis

The ethanol boom began in the early 2000s and since then the industry has continued to grow. Commodity Flow Survey data show that truck transport of grains and oilseed are usually less than 250 to 300 miles. Production of ethanol in the Midwest might increase the use of truck transportation through reduced shipping distances. This is an early-stage project investigating how the U.S. ethanol boom has changed intermodal and intramodal relationships in corn transportation markets.

I have obtained 29 years of Confidential Waybill Sample data from the Surface Transportation Board. Annual Waybill data are stratified samples containing detailed information about rail shipments. The freight revenue variable is regarded to be the best estimate for shipment cost as publicly available pricing schedules do not reflect the large amount of grain transportation that occurs under contract. This is the main source of data for estimating demand for rail transportation of corn originating near ethanol production.

This project contributes to the literature by considering corn transportation markets in recent years, particularly post-ethanol boom. Additionally, transportation costs are a significant portion of commodity values and a better understanding of geographic pricing patterns in these markets may be of value to agricultural economists.

Are Certain Consumers Myopic? An Evaluation of Product Groups in Used Vehicle Purchases

Derek Wolfson, Berkeley

I investigate whether used vehicle buyers can properly evaluate fuel efficiency savings within distinct sub-groups of the used car market. Specifically, I consider consumer choices among vehicles of the same model with different engine configurations. I first estimate changes in consumer willingness to pay across configurations with different underlying fuel efficiency ratings. Second, I pair these estimated price differentials with assumptions about annual mileage and vehicle survival rates to estimate discount rates for consumers in each sub-group of the used vehicle market. The discount rates implied by my analysis suggest it is likely that consumers properly value fuel efficiency across hybrid and non-hybrid configurations of the same model. However, the same analysis for vehicles offered in inline four cylinder and V6 (six-cylinder) configurations suggests that consumers do not properly value fuel efficiency in this segment of the market. I interpret this pair of results as suggesting that consumer attention to fuel efficiency may be moderated by the size and salience of the differences in fuel costs across different configurations of the same model. This ultimately suggests consumer heterogeneity may be an important driver of decision-making across vehicles with respect to fuel efficiency.

3:30–3:40 p.m.   Coffee Break

3:50–5 p.m.   **Session V: Agricultural Supply and Production**

Creepy Crawlies and Climate Change: Impact of Changing Temperature and Precipitation on Insecticide Application in the United States

Peiley Lau, Berkeley

This paper attempts to understand the causal effect of climate change on insecticide application in the United States. The author uses a fixed-effects model, along with temperature thresholds that are informed by insect biological processes, to calculate degree day measures by county in order to estimate the effect of additional degree days and precipitation patterns on insecticide application across different regions of the United States. Peiley finds that an increase in 1 growing degree day (GDD) during July and August could result in a 3-19% increase in pesticide application, which equates to an additional 2.5-15.2 million kg of pesticides in one year. Additionally, Peiley finds heterogeneous results in temperature's effect on insecticide application across different classes of insecticides, suggesting that an increase in 1GDD during July and August would lead to an additional 7.8 million kg of caramates and 1.9 million kg of organophosphates, while reducing the use of organochlorines by 6 million kg.

The Economic Viability of Suppressive Crop Rotations as an Alternative to Pre-plant Soil Fumigation for the Control of Verticillium Wilt in Organic Strawberry Production

Aleksandr Michuda, Davis

Organic strawberry production in California totaled $94 million in farm level sales in 2012. However, its potential for expansion is limited by soilborne diseases and the level of nitrogen in the soil. The "Mother Trial" tested a set of suppressive crop rotations coupled with either ASD (anaerobic soil disinfestation) or mustard seed meal (MSM). Each rotation was evaluated based on its capacity to suppress disease and its economic viability. The main economic question examined in the Mother Trial is whether it is better to adopt a two-year rotation in which one plants strawberries, a high-priced crop, every other year at the cost of lower yields, or whether it better to use a four-year rotation with another year of a non-host crop, such as broccoli, which may lead to low returns in the current period, but contribute to higher strawberry yields and revenue in the fourth year of the rotation. We find that the Mother Trial rotations' economic performance are sensitive to the rotation crops chosen and their prices. Strawberry yields in the fourth year of the four-year rotations are profitable and are the biggest driver of net returns. Relative to four-year rotations, the two-year rotations do not perform as well economically.

Micro-Climate Engineering for Climate Change Adaptation in Agriculture

Itai Trilnick, Berkeley

Can farmers change micro-climates around their crops as an adaptation to climate change? We present a novel adaptation technique for pistachio growers in California, meant to deal with warm winters. Climate predictions for California suggest that within 15-20 years, roughly one out of three winters will be too warm for a successful pistachio harvest. A potential solution for this is spraying a kaolin clay mud on dormant trees, lowering tree bud temperature at a low cost. Simulating market conditions, we estimate substantial welfare gains of this technique in several scenarios. We expect similar solutions, some based on existing technologies, to start playing a major role in climate change adaptation.

3:50–5 p.m.   **Session V** (continued)**: Agricultural Supply and Production**

Supply Response at the Field-level: Disentangling Area and Yield Effects

Matthieu Stigler, Davis

Agricultural price supply response is thought to occur mainly through acreage expansion rather than through yield increase. Many studies found indeed a very yield-intensive response to prices, leading to the counter-intuitive idea that yields are insensitive to prices. In this paper, we argue that this result is likely due to the use of aggregated data: county- or state-level yields are averages, whose composition itself is affected by price changes. When area expansion is done by cultivating less fertile fields or by foregoing rotation, this composition effect reduces average yields, even if yields increase on each individual field. To disentangle the effect of the intensive and composition effect on county-level yields, I will run an analysis at the field level. Taking advantage of the availability of remotely-sensed crop type and yield data for close to one million fields in the Midwest, I will be able to analyse response effects separately for fields in mono-culture and in rotation, giving estimates of the intensive versus rotational effects on yields. Using this measure, I intend to reconstruct county-level yields, and investigate the offsetting effects of intensive and rotational margin on aggregate yields.

6 p.m.   **Dinner: Woodstock's Pizza**