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**Doctoral Studies** University of California, Berkeley  
 PhD, Agricultural & Resource Economics, Expected completion Summer 2019  
 DISSERTATION: "Essays in Agricultural & Resource Economics"

PRIMARY FIELDS: Agriculture, Environment  
 SECONDARY FIELDS: Public, Labor

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**Prior Education**

<b>UC Berkeley</b>	M.Sc. Agricultural and Resource Economics	2015
<b>Ben-Gurion University</b>	M.Sc. Environmental Studies	2011
<b>Tel Aviv University</b>	B.Sc. Economics and Biology	2009

**Teaching**

<b>UC Berkeley</b>	Department of Economics, <i>Intermediate Macroeconomics</i> , Steven Wood	2014
<b>UC Berkeley</b>	Department of ARE, <i>Energy and Environment Regulation</i> , Meredith Fowlie	2015

**Languages**

English (fluent), Spanish (native), Hebrew (native)

**Grants, Fellowships, and Awards**

2017	ARE Travel Grant (\$900)
2015	ARE Travel Grant (\$1,500)
2015	Berkeley Institute for Jewish Law and Israel Studies - Research Grant (\$2,500)

**Job Market  
Paper**

**“Micro-Climate Engineering for Climate Change Adaptation in Agriculture: the Case of California Pistachios”**

Can farmers adapt to climate change by altering effective weather conditions on their fields? Technologies for small scale temperature adjustment allow farmers to cool down plants by a few degrees during critical periods, reducing the damage from excess heat. With non-linear effects of high temperature on yields, slight cooling can bring significant gains in many crops. We call this approach “Micro-Climate Engineering” (MCE), and note that it could be useful as a climate change adaptation concept. Climate change is predicted to harm crops mainly by change of the temperature distribution tails, rather than by change of the averages. We develop a model to analyze grower choice and market outcomes with MCE under adverse climate, and apply it to assess the potential gains from an existing MCE technology proposed for dealing with a climate challenge facing California pistachios. The expected net present value (as of 2019) of gains from MCE technologies in the years 2020-2040 is assessed at 1.6 - 4.8 billion US dollars under several scenarios. Simulation results show a total negative gain from MCE for the pistachio growing sector, but the positive gains for consumers surpass them. In a world with market power, the growing sector’s gains from MCE could be positive, and consumer surplus from MCE are surely higher.

**Published  
Work**

**“Agricultural GMOs: What We Know and Where Scientists Disagree (with David Zilberman and Tim Holland)”** *Sustainability*, 10(5): 1514. 2018

Population growth, climate change, and increasing human impact on land and aquatic systems all pose significant challenges for current agricultural practices. Genetic engineering is a tool to speed up breeding for new varieties, which can help farmers and agricultural systems adapt to rapidly changing physical growing conditions, technology, and global markets. We review the current scientific literature and present the potential of genetically modified organisms (GMOs) from the perspectives of various stakeholders. GMOs increase yields, lower costs, and reduce the land and environmental footprint of agriculture. The benefits of this technology are shared among innovators, farmers, and consumers. Developing countries and poor farmers gain substantially from GMOs. Agricultural biotechnology is diverse, with many applications having different potential impacts. Its regulation needs to balance benefits and risks for each application. Excessive precaution prevents significant benefits. Increasing access to the technology and avoidance of excessive regulation will allow it to reach its potential.

**“Research, Innovation, Supply Chains, and Precision Agriculture in California (with Ben Gordon, Olena Sambucci, and David Zilberman)”** in Marti, Goodhue, Write (Eds.), *California Agriculture: Dimensions and Issues*, Chp. 17, California:Giannini Foundation of Agricultural Economics 2018

California agriculture has benefited from modern sciences through the educational - industrial complex where public research and extension introduce new innovations that are implemented by the private sector. Key features of modern agriculture are continuous innovation and increased precision. Innovations result in new products and expansion of value-added provided by agrifood sector, and its implementation requires creative design of supply chains. Precision agriculture increases input use efficiency and reduces side effects. The efficiency of California agriculture is an outcome of public policy supporting research, regulating pollution, and providing education to California’s agrifood sector. We highlight two cases of innovation: a process innovation, the management of powdery mildew in wine grapes, and a product innovation, precise irrigation systems, to show the transformation of research to product and adoption. We also show how new cross-sector technologies, such as remote sensing and information technology, as well as shifting consumer preferences, demand and accelerate innovation and development, especially in response to 21st century challenges.

**“Should we blame the rich for clogging our landfills? (with Alon Tal)”** *Waste Management and Research*, 32(2): 91-96. 2014

Conventional wisdom often holds that relatively high consumption levels among the affluent contributes to the generation of high volumes of municipal solid waste (MSW). Comparing data from different cities in Israel suggests otherwise. Regression analysis reveals that aggregate per capita waste outputs of cities are only vaguely correlated with their socio-economic indicators. In fact, the apparent ‘hedonic’ waste of the richest cities, compared with the average ones, accounts for only about 2% of the total waste production. Israel’s main economic area, the Tel Aviv district, produces a quarter more MSW per capita than other districts, suggesting a need for special attention by policy makers. A surprisingly strong predictor of MSW per capita is water consumption by municipalities, dedicated for public gardening. The trimmings of the municipal landscape constituting an unobserved fraction of total MSW data, are estimated to be responsible for 15% of Israel’s MSW, making it an additional target area for consideration and intervention.

<b>Published Work</b>	<p><b>“What Drives Municipal Solid Waste Policy Making? An Empirical Assessment of the Effectiveness of Tipping Fees and Other Factors in Israel (with Alon Tal)”</b> <i>The Journal of Solid Waste Technology and Management</i>, 40(4): 364-374. 2014</p> <p>What factors influence the waste policy of local authorities? While central governments make efforts to promote recycling, the major players in municipal waste management are local authorities. This paper explores the factors influencing waste policies of local authorities in Israel in light of the new landfill tax legislated in 2007. Based on interviews with officials overseeing waste management and other stakeholders, a model of waste policy making in local authorities is proposed. A survey among waste officials of local authorities then evaluates the influence of general and specific factors on associated municipal policies. Cost of landfilling and a new landfill tax, is reported as highly influential on waste policies. Other factors, such as the Mayor’s motivation, managerial capacity in the municipality, and recycling markets are also highly influential. While the cost of landfilling is easily targeted by the central government, the latter factors are seldom addressed.</p>										
<b>Research in Progress</b>	<p><b>“The Value Of Weather Information”</b> with David Zilberman</p> <p>We assess the value of weather information provided by the California Irrigation Management Information System (CIMIS), a network of weather stations mostly located in rural areas, operated by the California Department of Water Resources. We find substantial gains from weather information provision in agriculture and research. A surprising new user sector are public and private stakeholders in urban areas, where high water prices make this information very valuable.</p> <p><b>“The effect of insufficient chill on pistachio yields: new estimations using enhanced weather data.”</b></p> <p>Estimating the effect of warm winters on pistachio yields has been an ongoing empirical challenge in the agronomic literature. I use a new yield panel of California county yields, enhanced with inner county weather data, to locate a threshold level of chill portions required for successful bloom and yield. As the panel of California county yields is very small, I use various estimation strategies: non-parametric, structural, and Random Forest predictions. As proof of concept, I test these strategies on a much larger panel of corn yields in the US. I get very similar results from the full corn panel and from a state collapsed corn panel the size of my pistachio data.</p> <p><b>“Climate Change and Rooftop Solar Efficiency”</b></p> <p>Photovoltaic (PV) panels lose efficiency at high temperatures. This is acknowledged by engineers, but model data often include only a linearized percent effect in ideal conditions. This projects sets to estimate the effect of warming climate on California rooftop PV generation. Initial estimations show a few percents decrease in generation, which could be significant as they also occur in peak demand times.</p> <p><b>“Disability Insurance Reform and Labor Supply: Evidence from Israel (With Yotam Shem-Tov)”</b></p> <p>In 2009, Israel reformed its Disability Insurance program, replacing a strict earning cap for beneficiaries with a gradual offset of benefits. This kind of program has been discussed in the US for over 20 years today. Using administrative data from Israel, the goal of this project is to estimate the effect of this reform on labor supply of beneficiaries, and on DI enrollment. Preliminary findings show strong labor supply effects on those beneficiaries who were employed prior to the reform; insignificant effect on those who didn’t; and no effect on the characteristics of newly enrolled beneficiaries.</p>										
<b>Prior Employment</b>	<table border="0"> <tr> <td style="vertical-align: top;"><b>UC Berkeley</b>, Graduate Student Researcher (David Zilberman)</td> <td style="text-align: right;">2016 - 2019</td> </tr> <tr> <td style="vertical-align: top;"><b>TheMarker Newspaper</b>, Energy and Environment Reporter</td> <td style="text-align: right;">2011 - 2013</td> </tr> </table>	<b>UC Berkeley</b> , Graduate Student Researcher (David Zilberman)	2016 - 2019	<b>TheMarker Newspaper</b> , Energy and Environment Reporter	2011 - 2013						
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<b>Refereeing</b>	<p><i>Journal of Public Economics</i>  <i>Resources, Conservation &amp; Recycling</i></p>										