

**The Impact of California Regulatory Compliance Costs on California Orange
Producer Profitability**

Jay E. Noel, Mechel Paggi, and Fumiko Yamazaki



Jay E. Noel is Director, California Institute for the Study of Specialty Crops and Agribusiness Professor, California Polytechnic State University. Mechel Paggi is Director, and Fumiko Yamazaki is Senior Research Economist, Center for Agricultural Business at California State University Fresno.

Introduction

Regulatory pressure is a source of increasing concern for California producers. Though regulations can have a positive impact on society in terms of cleaner air and water, as well as increased worker safety; they impose multiple costs to farmers in the state. Growers must comply with a myriad of rules, from local, state and federal levels; regardless of the type of farming or ranching. Other states have taken note. For example, at the World Ag Expo in Tulare, California, states such as Texas, South Dakota, Idaho, Iowa and Oregon sponsored booths in the dairy exhibit area, hoping to draw California's capital- and labor-intensive dairies to their "farmer friendly" states. Lower regulatory costs are a key selling point.

Recent studies have attempted to quantify the impacts of regulation on California farmers. Johnston and McCalla cite increased regulation as a relatively new driver among 20 major factors affecting the future of California agriculture, but one that will have increasingly negative impacts on the competitiveness of the industry. California producers pay the highest labor costs in the country, which account for approximately 21% of their costs of production (Hurley, 2004). The high minimum wage, relative to other states, coupled with very expensive workers' compensation insurance, liability insurance and health care benefits cost California producers millions more than farmers in states that have lower labor expenses. A preliminary study by the California Farm Bureau notes that recent increases in water quality permits and monitoring fees, air quality permits, chemical use permits and timber harvest permits can range into the thousands of dollars. No less than 25 separate laws at the state and federal levels govern the resource base employed by agriculture (Hurley, 2005).

The complexity and costs associated with the regulatory environment have also been evaluated. Hurley, et al (2006) conducted a survey of 10,000 specialty crop producers in California. There were 1990 completed useable returned. Results from the analysis of the producer's response to the survey questions indicated that the majority of the producers think the California regulatory environment is complex, duplication exists between government agencies that administer and monitor regulatory compliance, that the direct cost of environment regulation compliance has increased, that fees over the last five years have increased substantially (e.g. Burning permits averaged \$38 in 1999 and have increased to \$129 in 2004 representing a 240 percent increase in costs. Air quality fees have increased 940% from 1999 to 2004. Chemical use fees have increased by 125 %.)

The producers believe that the regulatory environment has affected their ability to effectively manage their farms. Producers have seen a 40% increase in their management time allocated toward regulatory issues. In 1999, producers estimate that they spent 7.31% of their time on regulatory issues, while in 2004 it increased to 10.27%. Nearly five percent of the respondents in the survey produce outside of California. Approximately 74% of this group found the California regulatory environment more restrictive than the other state they are producing in. The study concludes by providing an estimate of regulatory costs in relation to operating costs. That cost was estimated to

be between \$2.19 billion to \$2.21 billion. The study emphasized that this estimated range was a lower bound on the cost of regulatory compliance that producers must pay.

The Hurley et al study was followed by a study by Hamilton (2006). The goal of that study was to conduct a case study analysis of regulatory compliance costs on important specialty crops in the state, and to compare those costs with commercial-scale operations in other states where specialty crops are prevalent. Oranges and lettuce were chosen, as they are commonly among the top ten products in value of production in California, and like-sized operations could be identified in other states. Oranges and lettuce were also appealing because they represent two important production regions in the state that have very different environmental regulatory requirements.

The orange case study provided compelling evidence that the regulatory pressure is much more significant in the San Joaquin Valley of California than is evident in the comparison state of Texas. The California grower's regulatory costs amounted to \$347.12 for each acre of oranges produced. When taking into account that the cultural costs of production (not including harvest) were \$1,945, this adds 17.85% to the cost of raising oranges in California; if harvest and packing costs are included, it adds over 6% to the total cost. On the Texas orange operation, the regulatory costs were calculated to be \$31.71 per acre. In terms of the relative costs of production, this adds 3.29% to the grower's cost of production of \$963 per acre. If harvest costs are included, regulatory costs decrease to .75% of total production costs

The evidence provided by the lettuce case study showed similar results, though as Arizona's regulatory environment is more similar to California's than is Texas, the cost differences were not as dramatic. The Salinas Valley of California is in a less restrictive region with respect to air quality than is the San Joaquin Valley, although water quality regulations are still costly. The cooperating lettuce grower reported regulatory costs totaling \$114.84 per acre, or 4.82% of cultural costs. Workers' compensation is by far the highest regulatory cost for the California producer, which validates previous regulatory studies on California agriculture. In Yuma, Arizona, the cooperating grower reported a per-acre regulatory cost of \$70.10, or 2.5 % of the per-acre cost of production.

Methodology

The Hamilton study (2006) led to interest in studying the impact of regulatory compliance costs on specialty crop representative farms. A representative farm is a farm that best characterizes the size of a commercial farm for a specific crop in a specific region.¹

This study is concerned with evaluating the impact that regulatory compliance costs have on a representative orange farm. There were two reasons why orange production was selected. The first was that Hamilton (2006) had estimated California orange grower regulatory costs for 2006 and thus those results could be used as a comparison to 2008

¹ Suppose a region has the following farm sizes for a specific crop in a specific region of 300, 300, 300, 500, and 1000 acres. The 300 acre farm is defined to be representative.

orange farm regulatory costs that were estimated using information obtained from a panel of Southern San Joaquin orange producers in March 2008.

Second, a representative orange farm model had been developed at the California Institute for Specialty Crops. That model was recently updated by staff at the Center for Agribusiness (CAB) at California State University, Fresno.²

Specialty crop representative farm models are stochastic simulation models that are used to analyze the impacts of current and changing market conditions and government policies on a number of key operating variables (KOV). Examples of KOV's in a specialty crop representative farm models are yearly net income, cash flow position, financial ratios such as return on assets, debt to equity or liquidity, and net present values of net income. Currently 20 representative farm models have been developed for California specialty crops by staff at the California Institute of Specialty Crop and Center for Agribusiness.

The study undertaken was to determine the differences in probability distributions of net farm income, net present value, and return on land and equipment when regulatory compliance costs are included or excluded from the cost of production.

The representative orange farm yield and price data were obtained from California Agricultural Statistical Service reports, production costs were based on sample production cost studies done at UC Davis and updated with orange grower panel data in March 2008. Price and yield forecasts were obtained from the National Food and Agricultural Policy Project at Arizona State University.

Table 1 shows the representative orange farm operation information and general category cost of production data used in this study. Table 2 shows the comparison between the Hamilton (2006) study and the estimated 2008 regulatory compliance costs used in this study. It should be noted that these costs are inflated to account for inflationary and market factors for each year the representative farm model simulates farm financial information.

² Information on the California representative farm models and the CAB updates to the models can be found at www.cissc.calpoly.edu/research.

**Table 1
Farm and Cost of Production Information**

Farm Operation Information	
First Year To Simulate	2008
Acres on Farm	300
Acres in Production	240
Acres Owned	300
Investment in Land and Equipment	
Production Cost Data	
Total Cultural Costs (\$/acre)	\$2,000/acre
Total Fresh Market Harvest Costs	\$5.61/carton
Interest Expense (Average 2008 – 2012)	\$307/acre
Total Non-Cash (Depreciation)	\$1,303/acre

**Table 2
Regulatory Compliance Costs**

Regulatory Compliance Cost Category	Hamilton (2006) \$/Acre	Updated (2008) \$/Acre
Education/Training for Regulatory Compliance	\$7.40	\$23.79
Air Quality Requirements	\$208.22	\$218.01
Water Quality Compliance	\$0.28	\$0.30
Department of Pesticide Regulation	\$23.01	\$24.17
Labor Requirements (Workman's Comp)	\$95.60	\$32.51
Capital Investment	\$21.69	\$100.00
Risk Management	\$0	\$6.73
Total	\$356.20	\$401.51

The differences in the Hamilton (2006) and 2008 estimated regulatory compliance costs figures can be attributed to changes in different cost categories (e.g. workman's comp changes) and also differences in how different orange producers account for regulatory compliance costs.

The figures indicate that between when Hamilton (2006) reported her findings and the time when the study's costs were estimated that regulatory compliance costs have increased by \$45.31/acre.

Results

Table 3 shows the differences in simulated net income after taxes with and without regulatory compliance costs included in the cost of production.

Table 3. Comparisons of Net Income after Taxes with and without Regulatory Compliance Costs Included in the Cost of Production

Net Income after Taxes when Regulatory Compliance Costs are Included in the Cost of Production						2008 - 2012
Year	2008	2009	2010	2011	2012	Average
Mean	\$35,159	\$58,957	\$82,855	\$130,608	\$174,317	\$96,379

Net Income after Taxes when Regulatory Compliance Costs are Excluded from the Cost of Production						2008 - 2012
Year	2008	2009	2010	2011	2012	Average
Mean	\$112,784	\$133,211	\$154,697	\$199,226	\$239,942	\$167,972

Table 3 indicates that there is an approximately a 57% difference in the simulated 2008 – 2012 average net income after taxes when regulatory costs are included and excluded in the representative orange farm cost of production.

Charts 1A and 1B provide a comparison of the simulated 2010 probability distributions of net income after taxes when regulatory costs are included and excluded in the representative orange farm cost of production.

The inclusion of regulatory compliance costs in the orange farm cost of production reduce the probability of earning a net income after taxes of over \$300,000 by 7% and the probability of earning a net income after taxes between \$0.00 and \$300,000 by 3%. Those probability differences result in a 10% increase in the probability of experiencing a financial loss when regulatory compliance cost is included in the cost of production. Although the percentage differences associated with the net income after tax categories would change somewhat year to year the 2010 example illustrates that the probability of experiencing a financial loss is increased as regulatory compliance costs increase.

Two other financial measures can also be used to evaluate the impact of regulatory compliance costs on orange farm profitability. The first is the net present value of the net income after tax stream from 2008 – 2012 and the second is the net income after taxes return on orange farm land and equipment. Charts 2A and 2B show the differences in the 2008 – 2012 net present value (NPV) when regulatory compliance costs are included and excluded from the representative orange farm cost of production

Chart 1A

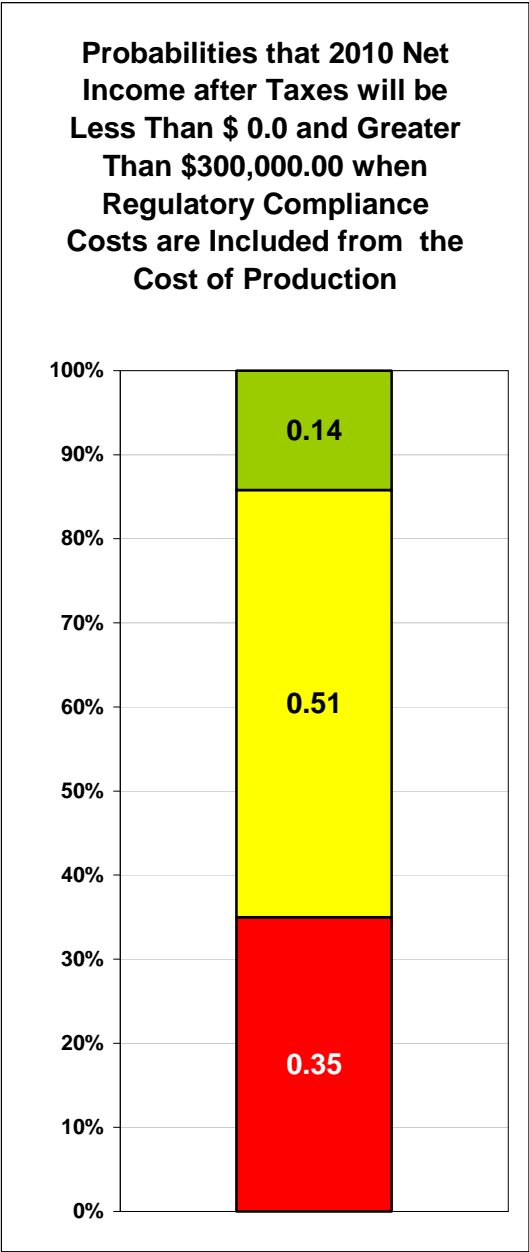


Chart 1B

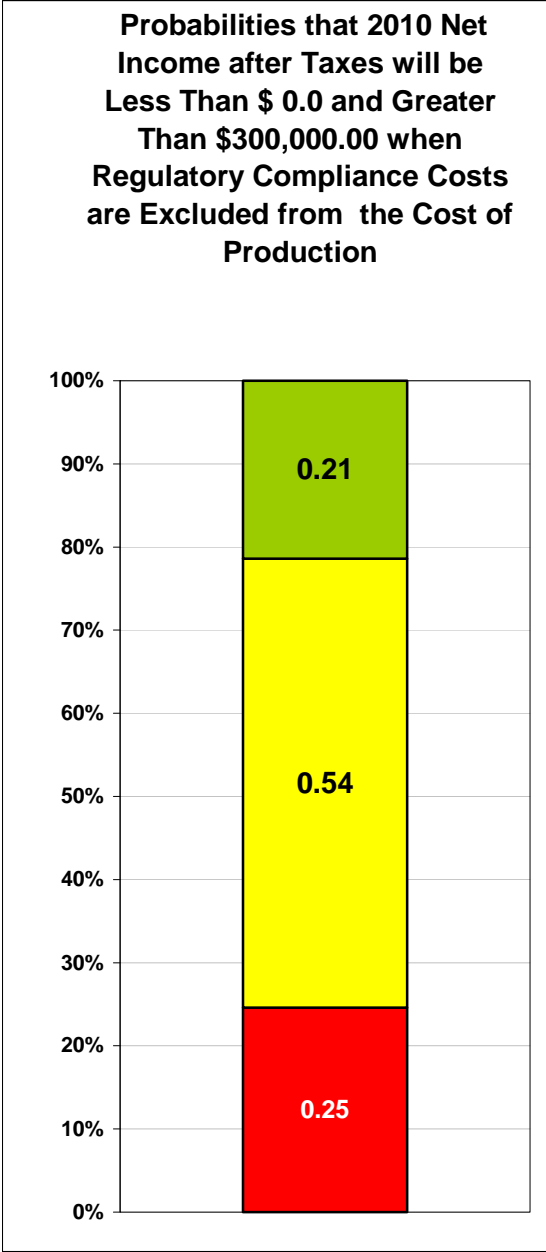


Chart 2A

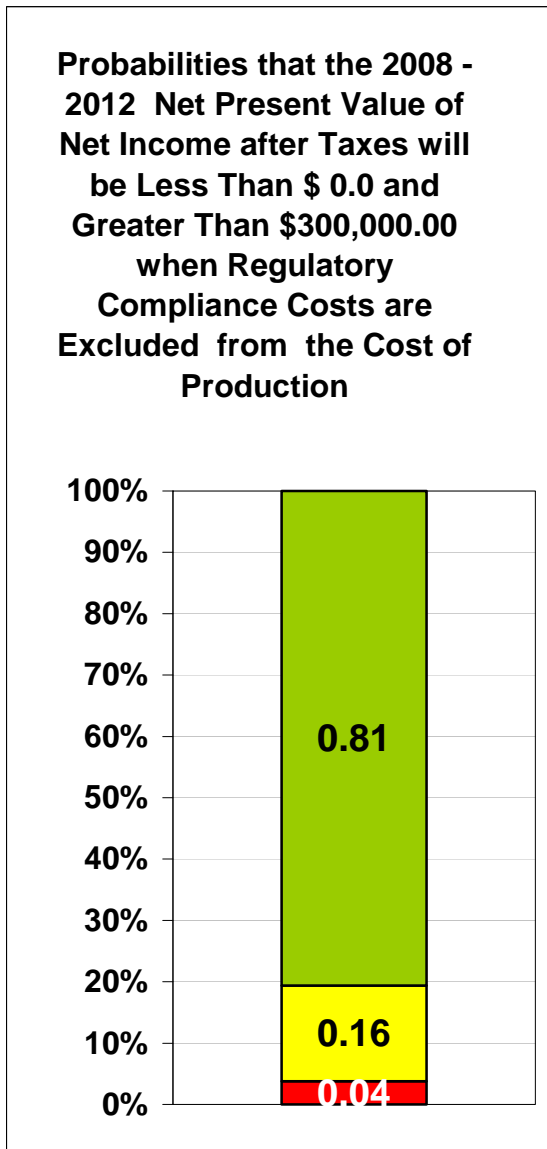
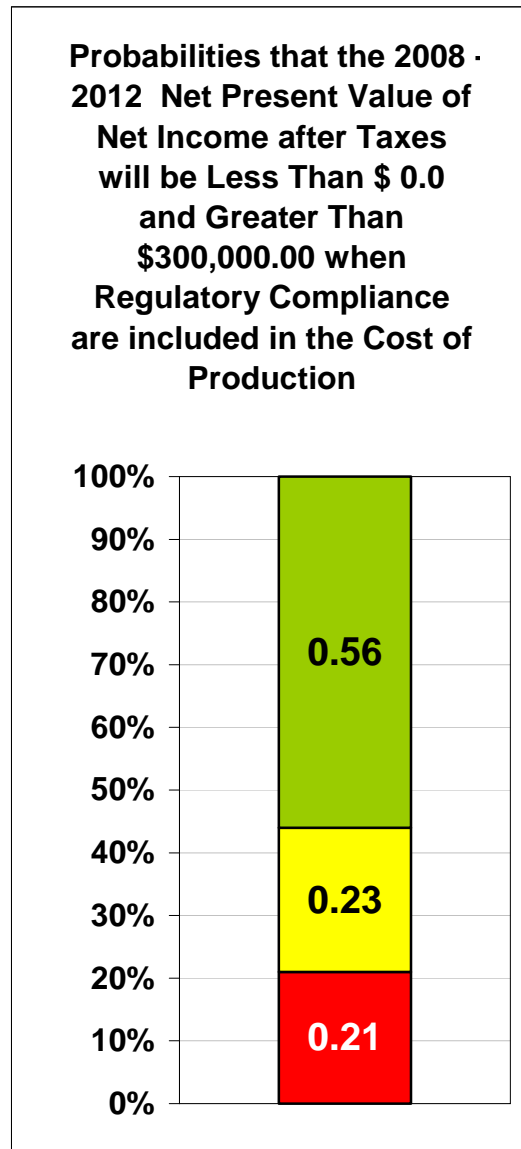


Chart 2B



These provide a similar result as to that provided by Chart 1A and Chart 1B. The probabilities for each of net income after tax net present value categories is lower when regulatory compliance costs are included in the cost of production.³ These charts indicate that there is a 17% increase in the probability of having a five year financial loss when regulatory costs are included into the representative orange farm cost of production.

³ The discount rate used for the net present value calculation was 4.3%. This figure is based on those presented in the Circular No. A-94 (revised) Appendix C White House Office Budget and Management (<http://www.whitehouse.gov/omb/circulars/a094/a094.html>). The 4.3% number is the five year nominal rate on treasury notes and bonds.

Table 4 shows the return on investment in land and equipment assets from mean net income after taxes for each of the years 2008 – 2012 and the average return on investment in land and equipment assets from mean net income after taxes for the 2008 – 2012 time period.

Table 4

		Net Income after Taxes Return on Land and Equipment						
		Year	2008	2009	2010	2011	2012	
Investment in Land and Equipment			\$4,745,379	\$4,762,479	\$4,802,499	\$4,842,943	\$4,883,816	
Mean Net Income After Taxes- Regulatory Compliance Costs Included in the Cost of Production			\$35,159	\$58,957	\$82,855	\$130,608	\$174,317	2008 - 2012 Average
Return on Land and Equipment			0.74%	1.24%	1.73%	2.70%	3.57%	1.99%
Mean Net Income After Taxes- Regulatory Compliance Costs Excluded from the Cost of Production			\$112,784	\$133,211	\$154,697	\$199,226	\$239,942	2008 - 2012 Average
Return on Land and Equipment			2.4%	2.8%	3.2%	4.1%	4.9%	3.5%

The information provide in Table 4 indicates that the return on investment on land and equipment for the representative orange farm from net income after taxes is lower when regulatory cost are included in the representative orange farm cost of production. The difference in the five year average is approximately 1.5%. This may seem to be a small difference until it compared to the size of the investment at risk. The 1.5% difference results in approximately a \$71,250 year mean difference in net farm income after taxes.

Summary

A representative farm model of orange production in the Southern San Joaquin Valley was used to estimate the impacts of including and excluding regulatory compliance costs from the orange farm cost of production figures. The model provided probability estimates of the differences in net income after taxes, net present values, and return on investment in land and equipment from mean net income after taxes for the years 2008 – 2012. The results indicate that the inclusion of regulatory compliance costs into the representative orange farm cost of production will reduce the profitability of the orange farming in the Southern San Joaquin Valley and will increase the probability of losing money.

The results should not be considered as absolute but rather a relative comparison of the impact that regulatory compliance costs have on orange farm profitability. The results will change as yield and price forecasts change and are based on estimated costs of production and regulatory compliance costs. The results, do however, indicate that if

regulatory compliance costs continue to increase, price and yield forecasts do not change appreciably over the next five years and the costs of production and regulatory compliance costs used in the study are indicative of actual production conditions then it is probable that the production of oranges in the Southern San Joaquin Valley will become less profitable and that returns on the land and equipment investment will continue to shrink

References

Hamilton, Lynn. "IPM in the Salad Bowl: Is it Cost Effective?" Selected Paper session, American Agricultural Economics Association Meetings, Chicago, Ill., and Aug. 5 - 8, 2001.

Hamilton, Lynn "Comparing California's Cost of Regulation to Other States: A Case Study Approach for Agriculture" Report prepared for California Institute for the Study of Specialty Crops, October 2006). Available at: <http://cissc.calpoly.edu>

Hurley, Sean. "A Cross-Comparison Between California and Its Domestic and International Competitors with Respect to Key Labor Issues." California Institute for the Study of Specialty Crops, June 2004. Available at: <http://cissc.calpoly.edu>

Hurley, Sean. "A Synopsis of the Regulatory Environment Affecting California Specialty Crops." Report prepared for California Institute for the Study of Specialty Crops, January 2005b). Available at: <http://cissc.calpoly.edu>