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The Bottom Line on the Conversion of Diamond Walnut Growers

by

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On July 1, 2005, members of Diamond Walnut voted to approve the conversion of the cooperative to a stockholder-owned corporation, by merging it into its wholly owned subsidiary, Diamond Foods. The analysis below is focused on the decisions Diamond Walnut members faced when they voted on the conversion proposal. While there are numerous economic issues related to this conversion, this analysis is limited to comparing the change in growers' status as members of a cooperative with that as shareholders and/or suppliers of a stockholder-owned corporation.

The history of Diamond Walnut can be traced back to 1912 when chaotic marketing conditions led to the formation of the California Walnut Marketing Association. This federation of local walnut packing cooperatives provided economic stability within the walnut industry. In 1956, it changed its name to Diamond Walnut Growers and built processing facilities in Stockton to expand its production of shelled walnuts in response to changing market conditions. The federated structure evolved into a centralized cooperative and Diamond Walnut became the nation's leading marketer and distributor of culinary nuts. In the late 1990s, Diamond Walnut broadened its product line of culinary and inshell nuts to be a more competitive supplier to U.S. grocery chains. In 2004, Diamond Walnut advanced further into value-added products with the launch of its Emerald line of snack nuts.

On March 24, 2005, Diamond Walnut filed a preliminary prospectus for an initial public offering (IPO) of Diamond Foods' common stock with the Securities and Exchange Commission (SEC) as part of its proposed conversion to a stockholder-owned corporation. The conversion was approved by over 80 percent of

Diamond Walnut members at a special meeting on July 1, 2005.

The final requirement to completing the conversion was the sale of at least four million shares of Diamond Foods stock during the IPO at a price of at least \$5.00 per share. On July 20, Diamond Foods announced the IPO of 6.0 million shares of its common stock at a price of \$17.00 per share. During the first week of trading, share prices ranged between \$20.50 and \$22.10; 5,027,300 shares were traded during the opening day.

In its S-4 filing to the SEC on June 14, 2005 (the last filing sent to members prior to the vote), Diamond Foods stated that it expected to sell 5,333,333 shares of Diamond Foods common stock in an IPO and raise an estimated \$70.9 million in net proceeds (based on the assumed IPO price of \$15.00 per share). From these proceeds, approximately \$17.1 million would be used to pay off a long-term loan. An estimated \$18.6 million would be paid to Diamond Walnut members who elected to receive cash in lieu of stock, while an estimated 6.7 million shares of common stock will also be issued to Diamond Walnut members, for total compensation of \$119.7 million. The balance of the proceeds from the IPO

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would be used primarily to develop and market value-added products, and to install new equipment to gain processing efficiencies.

Clearly, the proposed conversion provides significant financial benefits to Diamond Foods. In its prospectus, Diamond Foods indicated that the conversion is driven by the need to increase its financial strength through improved access to capital. Most of Diamond Walnut's equity is currently comprised of working capital retains which the cooperative typically redeems after one year; the Diamond Foods common stock would provide equity of a more permanent nature. Its debt/equity ratio will improve considerably because Diamond Foods' long-term debt is projected to decrease by \$15.5 million while its equity increases by \$21.6 million (based on the \$15 share price). This proposal is very different from Tri Valley Growers' conversion in 1996, which did not access outside equity capital.

The impacts of the conversion on current members of Diamond Walnut differ from those on the firm. As a cooperative, Diamond Walnut operates for the benefit of its members, and is owned and controlled by its members. In this analysis, the potential impacts of the conversion on members are assessed by comparing their status as members of a cooperative with that as shareholders and suppliers of Diamond Foods, a publicly traded firm. The analysis is based on information included in Diamond Foods' S-4 and preliminary S-1 registration statements filed with the

SEC, respectively, on June 14, 2005 and July 5, 2005. (Relevant changes that have occurred since July 5 are noted in parentheses.)

Potential Positive Impacts of Conversion

While the proposed conversion of Diamond Walnut provides numerous benefits to Diamond Foods, it could also have several positive impacts on Diamond Walnut's current members.

“...the common stock that growers will receive has the potential to appreciate in value as well as paying stock dividends.”

Liquidity of common stock. Members of cooperatives typically lack liquidity in their investment in their cooperative; they cannot freely sell their ownership interests. Although the proposed conversion terminates the user-financed relationship between Diamond Walnut and

its members, growers can own part of Diamond Foods as shareholders along with the executive officers, employees and other investors. They received common stock, allocated proportionate to their patronage for the two crop years with the highest patronage out of the last six crop years. (During the vote, members requested to convert 936,721 shares into cash, instead of the estimated 1,333,333 shares.) For the first 360 days after the completion of the stock offering, members have restricted ability to sell their shares.

The distributions of stock and cash to members are compensation to members for their ownership of Diamond Walnut. Members have invested directly in Diamond Walnut by providing revolving fund retains and working capital retains, and indirectly by funding the development of new products and marketing programs as expenses deducted before determination of their net proceeds. Between fiscal years 2000 and 2004, Diamond Walnut invested a total of \$48.6 million for brand development through advertising. These expenses represent an average annual reduction of approximately \$.037/lb. to members' net proceeds.

Stock dividends and appreciation. Members of cooperatives typically do not earn dividends on their investment in a cooperative, nor do they usually gain appreciation from their investment. Cooperatives are structured to provide returns to members primarily on the basis of their use of the cooperative rather



While the proposed conversion of Diamond Walnut provides numerous benefits to Diamond Foods, it could also have several positive and negative impacts on Diamond Walnut's current members. (Photo by Julie McNamara)

than on their investment in the cooperative. Unlike the revolving fund and working capital retains that members previously invested in Diamond Walnut, the common stock that growers will receive has the potential to appreciate in value as well as paying stock dividends.

Since Gold Kist, the nation's third largest integrated chicken company, converted from a cooperative to a publicly traded company in September 2004, its stock price has risen from \$10.15 to \$23.95. Shares of the former cooperative, Calavo, have ranged in value from \$7.10 to \$13.00 since they began trading publicly in 2002.

Diamond Foods expects to pay a \$0.03 per share dividend for the first quarter. Future stock dividends and gains in value of Diamond Food's stock will represent returns from its marketing investments and gains in efficiency. Diamond expects to become a significant force in the healthy snacks category. The additional equity capital will enable the firm to increase its sales by investing in new products, advertising and distribution to capitalize on consumers' growing awareness of the health benefits of nuts and enhance its ability to compete against the snack nut market leader, Planters, a subsidiary of Kraft Foods.

Dietary trends are strengthening demand for nuts in culinary uses and as nutrient-rich snacks. In July 2003, the Food and Drug Administration approved the health claim that eating one and a half ounces of most nuts may reduce the risk of heart disease when they are part of a diet low in saturated fat and cholesterol. USDA's Dietary Guidelines for Americans 2005 specifically lists walnuts as a source of omega-3 polyunsaturated fatty acids. For the 52-week period ending July 31, 2004, ACNielsen identified nuts as the second fastest growing category in the U.S. grocery channel, with a 13.7 percent sales increase over the previous year. The Walnut Marketing Board's reports reinforce these sales trends; they indicate domestic shipments have risen 26.7 percent over the past four years.

Board expertise. Board members are responsible for the performance of the firm they govern. One of the major drawbacks of the user-control principle practiced by cooperatives is that the boards of most agricultural cooperatives are homogeneous in composition. Currently, all 13 members of Diamond Walnut's board are producers who, as a group, lack experience

with the marketing and financing issues that are increasing in complexity as Diamond Walnut pursues its value-added marketing strategy. Diamond Foods' board includes five outside directors with considerable financial management and marketing expertise, as well as extensive experience in the packaged foods and dietary products industries, to guide the firm's growth in the healthy snacks category.

Thus, the conversion offers several potential financial benefits to members. In addition to having a board with broader expertise to provide strategic oversight, members benefit from the marketability of the Diamond Foods' stock and its potential for dividend payments and capital gains.

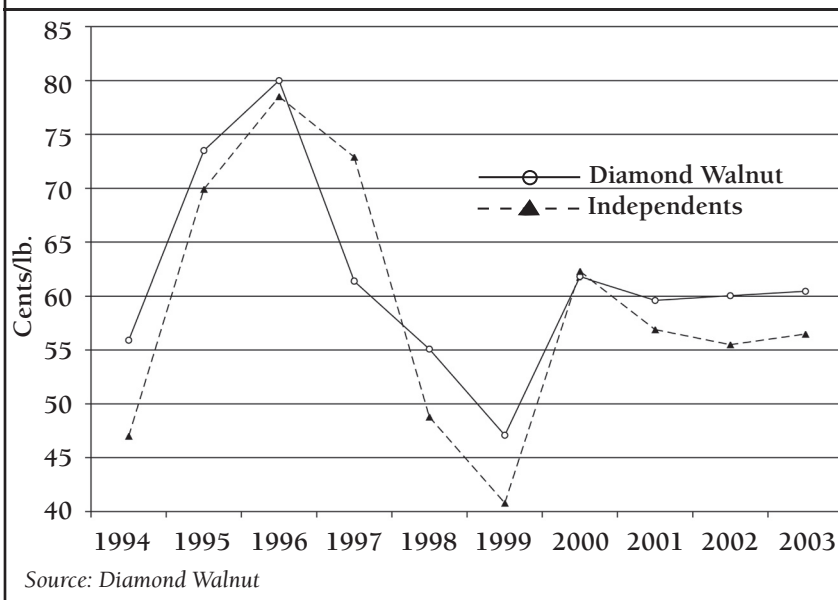
“The conversion transfers the market power currently held by Diamond Walnut’s members to Diamond-Foods...”

Potential Negative Impacts of Conversion

The conversion terminates the user-control, user-benefit and user-financed relationship between growers and the cooperative. This change has potential negative impacts on Diamond Walnut's current members.

Decline in grower control. As a cooperative, Diamond Walnut is controlled by its members. The conversion will result in some loss of grower control. Three of the thirteen members of Diamond Walnut's board have been appointed to the new Diamond Foods' nine member board, since companies listed on the NASDAQ are required to have a majority of outside directors on their boards. There will also be a Grower Executive Council, comprised initially of the ten members of the Diamond Walnut board who did not become members of the Diamond Foods board. However, this body will provide input solely in an advisory capacity regarding walnut grading and overall grower support and service.

Currently, Diamond Walnut's grower members have voting rights proportionate to their deliveries during the past two crop years. With the conversion, growers were expected to hold 6,726,874 shares of the 12,666,667 shares (53.3 percent) of common stock to be issued initially (including shares issued to grower members on the Board and the Grower Executive Council). If no member shares were exchanged for cash, growers would have held 57.8 percent of the stock initially, and potentially even more, if they purchase some of the 5.3 million shares to be sold to the public. Conversely, if all of the options granted to

Figure 1. Average Returns to Walnut Growers

the executive officers and board members are exercised, then growers would own 49.5 percent of the 13,621,667 shares of Diamond Foods stock issued. Since there are provisions for additional public offerings and employee stock purchases as well as the annual issuance of stock shares and options to board members, growers could lose majority control unless some of them choose to purchase additional stock. (After the vote and the IPO, growers actually hold 51.6 percent of the shares.)

Maximizing shareholder value. Growers have had market power as members of the cooperative. Prior to the creation of the federated cooperative in 1912, growers were bidding against each other as members of rival local cooperatives. Members have earned a premium over the independent handlers' average price during eight of the past ten years (Figure 1). During the past five years since Diamond Walnut began broadening its product mix, its price premium has averaged \$0.034/lb.. Its returns to members were lower than the average price paid by independents only once—a \$0.005/lb. shortfall in 2001, which followed the highest premium paid (\$0.063/lb.) in 2000.

The conversion transfers the market power currently held by Diamond Walnut's members to Diamond Foods because the firm's "...mission will shift from delivering annual net proceeds to members to maximizing long-term shareholder value" (S-4, p.18). Members of Diamond Walnut who become shareholders of Diamond Foods can benefit from dividends and stock appreciation. As suppliers, however, they

could be adversely impacted by Diamond Foods' strategy to maximize shareholder value by improving gross and operating margins. Diamond Foods cautioned growers that: "Payments under the new Walnut Purchase Agreement could be less than payments members are historically accustomed to receiving under the existing Marketing Agreement." (S-4, p.15). "...[E]ach March (following the harvest), Diamond Foods will determine a purchase price based on market conditions, quality, variety and other relevant factors." (S-4, pp.36-37). This statement provides Diamond Foods considerable latitude in establishing the price it will pay growers.

Growers who contract with Diamond Foods through the new Walnut Purchase Agreement will have their current Diamond Walnut marketing agreement extended by three, five or ten years, and must deliver their entire crop to Diamond Foods for the duration of the contract.

Thus, they will place themselves into a "monopsony" situation; by signing the exclusive contract, they have only one buyer for their walnuts. The contract offers no price protection or guarantee to pay market prices; the monopsonistic conditions make the contracting growers vulnerable to price manipulation.

In the longer term, Diamond Foods could also improve its operating margins through foreign sourcing, thereby reducing demand and depressing prices for California-grown walnuts. Diamond Walnut is already purchasing hazelnuts from Turkey, pecans from Mexico and pine nuts from China. Although the U.S. remains the dominant exporter of walnuts, China has displaced the U.S. as the world's largest walnut producer. Mexico is currently a small supplier to the U.S. The interests of investor shareholders seeking to increase profits by reducing raw product costs can conflict with those of the grower-shareholders trying to maximize their revenues as suppliers.

Uncertain compensation. Members voted on the conversion without knowing how much compensation they would receive for their current ownership in Diamond Walnut, because of the issuance of common stock. The estimated IPO price of \$15.00 per share used in the preliminary registration filings yields

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Industry Initiated Regulation and Food Safety: the New Federal Marketing Order for Pistachios

by

Daniel A. Sumner, Henrich Brunke, Julian M. Alston, Richard S. Gray and Albert K. A. Acquaye

The new California pistachio marketing order, designed to reduce risks of food safety problems and enhance demand, will likely increase net benefits for the industry and the nation.

On August 1, 2005 a new federal marketing order began regulating domestic marketing for California pistachios. The new regulations derived from the efforts of a group of California growers initiated to address concerns about food safety and consistent quality. The main provisions of the marketing order require the testing for aflatoxin, a cancer-causing mold found in many nuts and grains, and set some minimum quality standards.

The path to the new marketing order was long and complex. After about two years of preparation, in July 2002, a federal hearing was held under USDA oversight in Fresno. Industry proponents argued that the marketing order would increase consumer confidence and reduce the chance of an aflatoxin event in the pistachio market, and thereby stimulate demand and enhance consumer benefits and producer returns. The proposal was supported by a 90-percent majority of growers voting and also representing over 90 percent of the quantity produced in a January 2004 referendum.

This article, based on our Giannini monograph, investigates quantitatively the likely costs and benefits of the introduction of the marketing order for producers and consumers of pistachios. The full study identifies the costs of complying with marketing order specifications and weighs those costs against the benefits from increased demand for California pistachios under several alternative scenarios. See the full study for more details and references on all the issues discussed here in abbreviated form.

Here we present brief background information on the California pistachio industry and the specifications of the marketing order, before turning to the economic rationale behind collective action as a remedy for the perceived food safety and quality concerns in the industry. Finally we present a summary of our cost-benefit analysis.

Background on the California Pistachio Industry

Pistachio production in California has grown more than 200-fold since 1976, when the first commercial crop of 1.5 million pounds was harvested. In 2004, California pistachio production reached a new record of 347 million pounds valued at nearly \$440 million. Table 1 presents time-series data on the industry. The longer-term trends have shown steadily growing acreage, yields, quantity, and value of production, and a downward trend in prices. Fluctuations around those trends reflect, in part, the alternate-bearing nature of the crop and the impact of supply fluctuation on price.

It takes a pistachio tree 12-15 years to reach full potential. Bearing acreage in 2004 was estimated to be 93,000 acres, up more than three-fold from 25,773 bearing acres in 1980. The growth in area and production is expected to continue, with non-bearing acreage having reached 23,500 acres in 2001 (The industry no longer reports nonbearing acreage, but informal estimates indicated roughly constant nonbearing acreage in recent years). Falling returns per pound reflect the fact that supply has been growing faster than demand.

According to the Californian Pistachio Commission, California had approximately 650 pistachio producers

Table 1. Data on California Pistachio Area, Production, Yield and Value: 1980-2004

Year	Bearing	Non-Bearing	Production	Yield	Value	Average Return
	-----(acres)-----		(mil lbs)	(lbs/acre)	(mil \$)	(\$/lbs)
1980	25,773	8,989	27.2	1,055	55.8	2.05
1990	53,700	11,100	117.3	2,375	129.6	1.02
2000	74,578	21,730	241.6	3,239	239.2	1.01
2001	78,000	23,500	160.3	2,055	166.7	1.01
2002	83,000	*	302.4	3,644	332.6	1.10
2003	88,000	*	118.0	1,341	144.0	1.22
2004	93,000	*	346.8	3,729	437.0	1.26

Source: California Pistachio Commission

Note: * Due to inconsistent capture of new plantings, summary data is not reliable.

in 2002. There is one pistachio producer cooperative and 19 private handlers who process pistachios. About 70 percent of California pistachio producers produce less than 100,000 pounds per year, while about nine percent of growers produce more than 500,000 pounds per year. The largest handler (who is also a large grower) processes about 50 percent of industry production.

World production of pistachios has also grown rapidly during the past 20 years, but U.S. production has increased as a share of the world total (California production comprises 98 percent of U.S. commercial production). Iran produces about 57 percent of world supply (2001-2003 average), followed by the United States with 21 percent. Iranian exports account for 64 percent of world exports (2001-2003) again followed by the United States with 10 percent. The EU is the world's main pistachio import market, accounting for 38 percent of imports during the 2001-2003 period.

Specifications of the Marketing Order for Pistachios

The order sets standards for pistachios produced and handled in California by establishing maximum aflatoxin tolerance levels and mandatory aflatoxin testing and certification. In addition, the order establishes maximum limits for defects and minimum size requirements. External defects are defined as any abnormal condition affecting the hard covering around the kernel. Internal defects include any damage affecting the appearance of the kernel.

The marketing order will be administered by a 11-member committee, which consists of eight producers, two handlers of pistachios and one public member. An initial assessment rate of \$0.0014 per pound was set to cover costs of testing and administration. All specifications of the order apply solely to California pistachios marketed in the United States.

Rationale for Collective Action in Pistachio Markets

Mandated collective action programs, such as the marketing order for California pistachios, use the coercive powers of the federal government to require individual producers and processors to follow order specifications and contribute assessments to fund its operations. Such programs require the support of a large majority of producers, but they do not require unanimous support. Unlike truly voluntary collective action programs, such as cooperatives or clubs, once they have been established, these marketing orders are

mandatory for all producers of the commodity in the defined area, even those who may oppose them.

The economic rationale for the use of the government regulatory powers is that there are collective goods within the industry that will be undersupplied otherwise. In some cases, especially for products that are typically unbranded, perceptions of a food quality problem may not be specific to individual suppliers, but affect the industry in a collective way. Therefore, the private incentive to assure high quality nuts that are perceived as safe does not reflect the full, industry-wide or public benefit of these actions. In that case, all farms and firms would benefit from a stronger reputation for pistachios in general, but their own actions cannot assure such a reputation, unless the rest of the industry matches those actions. Individual farms and firms have the private incentive to keep their own direct costs low and invest less in safety testing and quality assurance than would be optimal from the view of the whole market. This is a classic "free-rider" problem where individuals cannot be precluded from sharing in the benefits even if they fail to make contributions, and where one individual benefiting from the better reputation does not preclude benefits to others.

Food-Safety Issues and Aflatoxin in Pistachios

Aflatoxin and the potential risk of experiencing a food scare involving pistachios were the main issues behind the industry-led effort to impose a marketing order for California pistachios upon itself. An event of aflatoxin poisoning in pistachios or the possibility of such an event, could have adverse effects on demand, and the idea of the marketing order is to reduce these potential adverse effects.

Many produce-related food scares have occurred in recent years. For the period from 1990 to 1999, the Center for Science in the Public Interest (CSPI) lists 55 cases in the United States alone. In 1996, the California strawberry industry lost an estimated five percent in total revenue due to the *Cyclospora* scare. The main aflatoxin event directly related to pistachios occurred in Europe. Iranian pistachio imports were banned in the European Union in September 1997 because shipments exceeded allowed levels of aflatoxins. The ban lasted for less than three months. However, the demand for pistachios was affected for a longer period. Aggregate imports into the EU, including those from the United States, the main alternative source, dropped from 102,698 metric tons in 1997 to 59,619 metric tons in 1998.

**Table 2. Consequences of the Marketing Order:
Simulation Results and Sensitivity Analysis**

	Most Likely	High-impact	Low-impact
<i>Induced changes caused by the marketing order</i>			
<i>Average of Annual Values, 2000-2050</i>			
Bearing area of California pistachios (acres)	1,669	2,502	1,159
Production of California pistachios (Million lbs)	8.62	12.97	5.97
U.S. consumption of CA pistachios (Million lbs)	9.92	14.76	6.87
Exports of California pistachios (Million lbs)	-1.25	-1.73	-0.87
New plantings (acres)	125.7	186.1	91.4
<i>Consequences over 50-year horizon, present values in 2004, millions of 2003 \$</i>			
Cost of compliance	32.67	31.49	33.66
Changes in U.S. consumer surplus	115.93	178.73	75.18
Net changes in foreign surplus	-32.57	-48.55	-21.24
Changes in California producer surplus	75.33	115.45	48.20
National benefits (Consumer and producer Surplus)	191.26	294.20	123.38
<i>Benefit-cost ratios over 50-year horizon</i>			
National B/C ratio	5.9	9.3	3.7
Grower share of costs	0.24	0.24	0.24
Grower B/C ratio	9.6	15.2	6.0

Benefit Cost Analysis of the Marketing Order

We developed a detailed dynamic model of pistachio supply and demand and used the model to evaluate the likely costs and benefits of the marketing order looking forward for 50 years from its introduction in 2005. Across the full range of parameters used in our analysis, the benefit-cost analysis was always favorable to the policy: the measured benefits to producers, the nation or the world always well exceeded the corresponding measure of costs, typically by many times. The benefits consist of a higher demand for pistachios following the certification of a high-quality product and thus higher willingness to pay for a certified quality product. Another benefit is derived from the reduced likelihood of an aflatoxin related food scare.

Table 2 reports results for the most likely scenario and for two more scenarios with particularly high and low-parameter assumptions. The resulting benefit-cost ratios were mostly greater than 5:1 and often greater than 10:1, which means there is substantial leeway to accommodate potential errors in assumptions and yet have favorable findings. In present value terms, the benefits to producers were estimated at \$75.3 million. Two-thirds of the benefits, \$115.9 million would accrue to domestic consumers. These values are large relative

to the cost of compliance with the program, which is estimated to be \$32.7 million.

Conclusion

Many California commodities have instituted marketing orders or similar programs to achieve objectives ranging from promotion to supply control. The California pistachio industry has just established a marketing order intended to reduce the odds of an adverse food-safety event, to mitigate the consequences if an event should occur, and to provide some quality assurance to buyers. Our modeling of the pistachio market and a resulting benefit-cost analysis indicate strongly that producers and the nation as a whole will experience a net gain from the marketing order.

For additional information, the authors suggest the following publication, on which this article is based:

Gray, R.S., D.A. Sumner, J.M. Alston, H. Brunke, and A. Acquaye, "Economic Impacts of Mandated Grading and Quality Assurance: Ex Ante Analysis of the Federal Marketing Order for California Pistachios," *Giannini Foundation Monograph Series No. 46*, Giannini Foundation of Agricultural Economics, Oakland CA, March 2005. (http://giannini.ucop.edu/Monographs/46_pistachios.pdf)

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The Relationship Between Price Risk Management Tools and Off-Farm Income

by

Steven C. Blank

California's agricultural producers indicate in surveys that the source of risk most important to them is "output price risk," but the level of use of price risk management tools is very low. Results indicate that farmers may be substituting off-farm income in place of price risk management strategies.

Agricultural producers face many types of risks in their business. The most important source of risk ranked by California farmers in a survey conducted by the author in 1993 was "output price risk." That risk comes from the uncertainty faced by producers when trying to estimate what price they will receive in the future for their crops and/or livestock currently in production or being planned. Two tools that can be used to manage price risk are hedging with commodity futures or options contracts, and forward cash contracts. Commodity producers stand to derive considerable price risk reduction benefit from either hedging or using forward cash contracts, according to economic theory. However, very few farmers or ranchers use these tools. For example, a 1977 national survey by the Commodity Futures Trading Commission (CFTC) found that only about seven percent of U.S. grain farmers used futures, and many of those farmers were speculating rather than hedging. Only 20 percent of the farmers surveyed by the CFTC had ever used forward contracting. In subsequent years little has changed. The 1993 survey in California found that only six percent of producers reported use of futures and 23 percent reported use of forward contracts. Also, the CFTC survey found that farmers prefer forward contracting to direct hedging with futures contracts. Forward contracts are a substitute for futures contracts, as both provide an opportunity to reduce price risk. Yet, the question remains: why do so few farmers manage price risk with either futures or forward contracts?

Several possible answers have been posed, but few have been tested with farm-level data that place the question into the context of California's dynamic farming environment. This article uses new survey data to explore the question further by investigating economic factors and firm characteristics that influence a producer's decision to manage price risk in California. In particular, a new potential explanation is tested that focuses on the relationship between price risk management tools and an increasingly important

characteristic of farm households. It is posed here that off-farm income earned by farm household members is a "hedging" tool for managing income risk (of which price risk is a subset) that producers substitute for futures or forward contracts when they wish to manage their level of risk exposure. The results of this study have wide-ranging implications for both agricultural markets and policy.

What is Hedging?

Hedging is generally described as a process of taking some action to reduce one's exposure to risk. There are many sources of risk, so there are many ways to hedge. Off-farm income, defined as income coming from any non-agricultural source (such as wages from a job), can be described as a hedging tool that reduces a farm household's income risk by making some portion of total household income more certain in its amount. Futures and forward contracts are both tools used to hedge against price risk. For example, a farmer who plans to sell some commodity in the future can reduce his uncertainty about the price he will receive by selling the products immediately using a forward contract. Such a contract is a legally binding agreement between seller and buyer that states what commodity is to be exchanged at a particular time in the future, plus it fixes the price per unit and the total quantity of the commodity to be exchanged. Forward contracts can be used by any two people wanting to exchange a product. Futures contracts essentially work the same as forward contracts except they are available only through a futures exchange, thus necessitating the assistance of a futures broker to make the transaction. Both forward and futures contracts can be useful price risk management tools.

Data and Methods of Analysis

Another survey of California producers was conducted in 2002. Questionnaires were mailed to over 35,000 farmers in the state who grew specialty crops (among

other things). In total, over 15,000 responses were received and approximately 10,400 of those were complete enough to be analyzed.

The survey was part of a project funded by the United States Department of Agriculture's Risk Management Agency with the goal of assessing the attitudes of California's specialty crop growers toward risk management. The project was a greatly expanded update of the 1993 survey, which the USDA also funded. A summary of the project and the data, including a copy of the questionnaire, is presented online at <http://giannini.ucop.edu/researchreports.htm> (See Report #348).

The data revealed that hedging with futures was available to only three percent of California producers, meaning that there were no futures markets for the commodities grown by 97 percent of farmers. This is partially explained by the fact that futures markets exist for a limited number of agricultural commodities, such as grain crops, cotton, cattle and orange juice. Forward contracting was available to only 13 percent of respondents in 2002. Forward contracts can be written by any two people wanting to arrange a sale, thus the low level of availability reported for forward contracting indicates that it is not a common practice in many California product markets. Although this self-reported availability data may understate the actual case, it clearly indicates that access to price risk tools has not significantly improved since the 1993 survey.

Conversely, the availability and use of off-farm income has greatly expanded over the past decade. The 1993 survey found that 63 percent of California farm households earned at least some off-farm income, and the average portion of total income coming from off-farm sources for those households was 47 percent. The 2002 survey showed that 98 percent of the state's farm households earned some off-farm income, with the average share being 63 percent of total income.

To test whether the expansion of off-farm income in California has any effect on producers' use of price risk management tools, a model was estimated to predict what type of producer will use forward contracts. The following ten variables were chosen to represent a producer's predisposition toward using that risk management tool: operation size (acres, assets, total sales); experience (years farming, age, education); financial variables (off-farm income, debt/asset ratio); price fluctuation (perceived price risk); and, use of other price risk tools (futures hedging). The goal was to estimate the probability of a producer using forward contracts.

Table 1. Forward Contract Model Estimation Results

Variable Name	Coefficient	t-Statistic	Marginal Effect(%)
Assets	-0.0744	-1.98 (**)	-0.0026
Acres	0.00004	1.64 (*)	0.0014
Price Risk	-0.0892	-2.30 (**)	-3.122
Age	-0.1993	-2.30 (**)	-6.976
TSales	0.2655	4.09 (**)	9.293
Hedge	0.9217	3.54 (**)	32.26
Off-Farm	-0.2294	-1.66 (*)	-8.029

*Coefficient is statistically significant at the 90% level
 **Coefficient is statistically significant at the 99% level

Forward Contracting Results

The estimation results are found in Table 1. The model includes a number of significant variables representing individual producer attributes, operation attributes and market attributes. The dummy variable *Age* embodies the experience and knowledge of hedging for that person. The sign of the estimated coefficient for the *Age* variable is negative, signifying that older producers are less likely to use forward contracts than are younger producers. *Age* may represent many different grower perceptions and characteristics that influence decision making, such as financial position (debt/assets), operator planning horizon, experience in crop diversification or experience in marketing.

The variables indicating size of operation are *Acres*, *Assets* and *TSales* (total sales). The coefficients for these variables have conflicting signs. While the coefficient on *Acres* is positive, supporting the notion that operations of larger physical size are more likely to forward contract, the negative coefficient for the *Asset* variable shows the contrary for financial size. One possible explanation for the conflict between these two similar variables is that tenant farmers, who have relatively few assets, may be forward contracting more often than owner operators. The coefficient on the *TSales* variable is positive and highly significant. This indicates a positive relationship between high total gross sales (income) and the propensity to forward contract.

The dummy variable indicating whether the grower is a futures hedger is highly significant and positive. This result signifies some correlation between a grower's use of the two price risk management tools.

The estimated coefficient for *Off-Farm* income is negative and significant, thus indicating a farmer has a lower probability of using forward contracts as household non-agricultural income increases as a percentage of total household income. Generally, small-scale

operators are more likely to have off-farm income. If total income is considered for the farmer, then diversifying income out of agriculture may have a stabilizing effect on the variability of total income from year to year. The proportion of total income susceptible to the fluctuations in agriculture is smaller when income diversity is present. Hence, income diversity is its own form of risk management tool which, when implemented, may make forward contracting less attractive to that farmer. For example, the marginal effect of a one percent change in the portion of household income coming from off-farm sources for an average producer is eight percent, as shown in Table 1. Thus, if off-farm income increases one percentage point, as a share of total household income, the probability of that average household using forward contracts decreases about eight percent.

The Effects of Off-Farm Income

The 1993 and 2002 surveys of California's producers show that access to price risk tools has not significantly improved in at least a decade. What has increased is producers' willingness to use the tools when they are available. For futures hedging, 29 percent of survey respondents who said the tool was available reported using it regularly in 2002. For forward contracts, 68 percent of producers used the tool when it is available to them. This implies (1) that farmers are well aware of their price risk exposure and want to manage it, and (2) that farmers will use well-designed risk management tools if they are available. Unfortunately, the poor level of availability for price risk tools has forced most producers to look for other risk management tools. This result is consistent with the large increase observed in the use of off-farm income. In 2002, 98 percent of the farm households surveyed earned at least some income from a non-agricultural source.

Off-farm income appears to have become a substitute for other risk management tools. This study found that off-farm income and use of forward contracts are negatively correlated, meaning that a farmer becomes less likely to forward contract as his/her off-farm income increases. This implies that substitution is occurring. However, it is unclear whether producers seek off-farm income because forward contracts are unavailable (or poorly suited to their needs), or if they seek forward contracts only when off-farm income is unavailable.

What is clear from survey responses is that off-farm income is a management tool used to reduce financial (income) risk, thus enabling many people to stay in

agriculture who could not do so without that income. The regression results show that total sales and off-farm income are negatively correlated, indicating that farmers earn less income off-farm as their farm sales increase. This implies that substitution of income between farm and non-farm sources is apparent, as economic theory expects. Also, for small-scale farmers, off-farm income is a necessary supplement to farm income if they are to continue operating.

A second result of this study that is also consistent with economic theory is that the availability of off-farm income seems to lead to the production of crops that are riskier than those that would be produced without off-farm income being available—although those risky crops are grown on a smaller portion of household acreage. The 2002 survey data show fruit/nut operations to be more risky and much smaller, on average, than vegetable operations. However, the attraction of tree crops is that they generate higher revenue on a per acre basis. Thus, it is not surprising that the average portion of total household income coming from off-farm sources is higher for the riskier operations: 64 percent of household income for fruit/nut producers, 42 percent for vegetable producers.

Finally, these two results can be combined to reach a third implication. Off-farm income may enable an increase in aggregate supply of specialty crops because more people are able to find an acceptable return-risk balance and continue producing those high-risk crops. This is due to the stabilizing effects of off-farm income on total farm household income. Without off-farm income, many producers would not be comfortable with the high degree of variability in farm incomes over time from tree crops and would have to leave those product markets. Ironically, because many growers are able to remain in the market due to off-farm income, their production adds to industry totals which lowers market prices, thus making the use of price risk management tools more important.

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\$119.5 million in compensation (including \$13.1 million in cash). However, the initial share price could be higher or lower. Diamond Foods advised members that it is not required to obtain new member approval unless it proposed to complete the IPO for fewer than 4,000,000 shares or at a share price below \$5.00. At the \$5.00 minimum price, members would receive only \$40.3 million for their ownership interest in Diamond Walnut. (Based on the actual IPO price of \$17, the aggregate value to members for the shares and cash paid in the conversion totaled \$154.3 million, which exceeded expectations.)

The cooperative, Gold Kist, filed registration documents for its IPO of 18 million shares using an estimated market price of \$15.00 per share. After members approved the conversion, Gold Kist completed its IPO for 12 million shares at \$11.00, yielding net proceeds of \$119.4 million instead of the projected \$248.4 million. It issued the unsold 6 million shares to its members and paid members \$88 million in cash, rather than the estimated \$120 million. However, Diamond Foods is in a different industry and its offering is considerably smaller.

The termination of the user-control, user-benefit and user-financed relationship between growers and the cooperative could have negative impacts on Diamond Walnut's current members. Members' compensation for their ownership in Diamond Walnut is dependent on the share price and the number of shares sold during the IPO. Members who become shareholders will share control with other shareholders who are not growers. The restructured business will operate for the benefit of the shareholders and growers will have no price protection in their multi-year supplier contracts.

The Bottom Line

The prototype 100-acre member discussed at grower meetings in April would receive \$10,759 less for his crop as a Diamond Foods grower than as a Diamond Walnut member, assuming that Diamond Foods pays the average market price and Diamond Walnut would have paid its \$0.034/lb. average premium. However, a



In 2004, Diamond Walnut advanced further into value-added products with the launch of its Emerald line of snack nuts. (Photo Courtesy of Emerald Nuts)

portion of the Diamond Foods grower's revenue will not be retained as member equity. With the conversion, the grower will earn \$972 annually from the 8,104 shares of Diamond Foods stock he holds if a \$0.03 per share dividend is paid quarterly. Although the dividends do not offset the grower's reduced crop revenues, the grower could earn significant capital gains by selling his stock if Diamond Foods has strong financial performance and its stock price increases accordingly. If the stock price remains at the estimated \$15/share value, the prototype grower will receive \$121,560 when he sells his 8,104 shares.

The long-term relative financial impact of the conversion will depend on an individual member's specific circumstances. In particular, members with diversified operations may have more capacity and tolerance for risk than members whose livelihood depends solely on their production of walnuts. Members who are planning to cease growing walnuts soon are likely to find the conversion to be more attractive than those members who expect to produce walnuts for at least ten more years. The length of time that a grower holds his stock could considerably affect his ability to offset his cumulative reductions in crop revenues (net of dividend payments) with the capital gains earned by selling his stock.

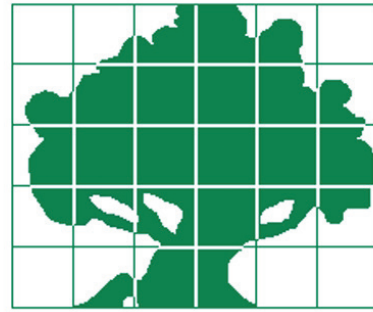
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