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Implications of the 2003 Tax Act for California Farmers and Ranchers

by
Hoy Carman

The 2003 Tax Act offers significant income tax saving opportunities for California farmers and ranchers. Careful planning and development of a tax management strategy is necessary, however, because of the temporary and time-phased nature of the major provisions.

The Jobs and Growth Tax Relief Reconciliation Act of 2003, signed by President Bush on May 28, 2003, is expected to reduce taxes by some \$330 billion by 2013. Described as the third largest tax cut in U.S. history, the purpose of the act is to stimulate economic growth and help fuel an economic recovery. Depending on individual circumstances, many California farmers and ranchers will be able to derive significant economic benefits from the 2003 Tax Act by carefully planning their future operating and investment decisions. Income tax rate reductions, new lower rates for capital gains and dividends, and increased deductions for Code Section 179 expensing will affect taxes, operating practices and asset values. Taxpayers with children or couples subject to the marriage penalty will see immediate benefits.

The 2003 Tax Act accelerates and expands portions of the Economic Growth and Tax Relief Reconciliation Act of 2001 (the 2001 Tax Act) and the Job Creation and Worker Assistance Act of 2002. Most of the tax cuts contained in the 2003 Tax Act are accelerations of provisions in the 2001 Tax Act, and all cuts are temporary. Timing and planning will be important because some of the provisions will expire after two years, some after six

years and all will expire at the end of 2010, unless Congress decides to make the changes permanent. While the 2003 Tax Act does not include provisions specifically directed to agriculture, the provisions for expensing capital expenditures, lower individual income tax rates, and reduced capital gains tax rates have important financial implications for farmers and ranchers.

Deduction of Capital Expenditures

The 2003 Tax Act increases the amount that businesses may expense (Code Section 179) for capital expenditures from \$24,000 in 2002 to \$100,000, and increases the investment limitation for expensing from \$200,000 to \$400,000 for tax years 2003 through 2005. During the same time period, small businesses may, for the first time, expense "off-the-shelf" computer software. Tangible personal property that qualifies for expensing includes machinery and equipment and livestock (horses, cattle, hogs, sheep, goats and fur bearing animals). Single-purpose agricultural (livestock) and horticultural structures also qualify for expensing. Single-purpose agricultural structures are any building or enclosure specifically designed, constructed and used to

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house, raise and feed a particular type of livestock and its produce. Single-purpose structures, for example, are qualifying property if used to breed chickens or hogs, produce milk from dairy cattle, or produce feeder cattle or pigs, broiler chickens or eggs. The facility must include, as an integral part of the structure or enclosure, equipment necessary to house, raise and feed the livestock. A greenhouse designed, constructed and used for the commercial production of plants is the most common horticultural structure. Timing is important because the limit for expensing and the investment limitation are reduced to \$25,000 and \$200,000, respectively, effective January 1, 2006. The act also increases the “bonus” depreciation provisions, allowing business taxpayers to expense 50 percent (up from 30 percent) of the cost of qualifying assets in the year of purchase for property placed in service after May 6, 2003, but before December 31, 2004.

New Individual Income Tax Rates

Individual income tax rate reductions scheduled by the 2001 Tax Act to have been effective in 2006 have been accelerated to January 1, 2003. Marginal tax rates for the two lowest brackets remain at 10 percent and 15 percent, but the taxable income limit for the 10 percent bracket has been increased from \$12,000 for joint filers in 2002 to \$14,000 in 2003 and 2004. This change yields tax savings of \$200 for taxpayers in the 15 percent bracket or above who file a joint return (\$100 for single filers). The taxable income limit is scheduled to drop to \$12,000 for the 2005, 2006 and 2007 tax years and then increase to \$14,000 on January 1, 2008. The 10 percent bracket will be eliminated in 2011. The top four 2002 marginal tax rates of 27, 30, 35 and 38.6 percent were reduced to 25, 28, 33 and 35 percent, respectively, with the changes retroactive to January 1, 2003. The top four rates are scheduled to return to 2002 levels on January 1, 2011. The alternative minimum tax (AMT) exemption amounts are increased to \$58,000 and \$40,250 for joint and single filers, respectively, but only for 2003 and 2004. The AMT exemption is then decreased to \$45,000 and \$33,750 for joint and single filers, respectively.

Capital Gains and Dividends

Effective May 6, 2003, the long term capital gains tax rate for taxpayers in the 10 percent or 15 percent tax brackets will drop to 5 percent (from 10 percent).

The 5 percent rate drops to zero for 2008, and then returns to 10 percent from 2009 forward. For the four highest income brackets, the act reduces the maximum tax rate for long-term capital gains to 15 percent (from 20 percent), effective for capital gains recognized or installment payments received on or after May 6, 2003. The 15 percent rate will be in effect through the end of 2008, when it is scheduled to return to 20 percent. To qualify for capital gains tax treatment, cattle and horses used in a trade or business for draft, breeding, dairy or sporting purposes must be held for 24 months or more. Other livestock and other business property must be held for 12 months or more to qualify for long term capital gains tax treatment.

Most dividends will be taxed at the same rate as capital gains—5 or 15 percent depending on the taxpayers’ income bracket. The rule for dividends applies for the same time frame as for long term capital gains, May 6, 2003 through December 31, 2008, (with a zero rate during 2008 for the lowest two tax brackets). Taxpayers must exercise care, however, because not all dividends are covered by the new lower rates. IRS Code Sections 246(c), 404(k), 501, 521 and 591 identify the types of dividends that qualify for the lower rates.

Child Tax Credit and Marriage Penalty Relief

The child tax credit increases from \$600 per year to \$1,000 per year per child, retroactive to January 1, 2003, but only for 2003 and 2004. It will be reduced to \$700 for the 2005 through 2008 tax years, then increase to \$800 for 2009 and \$1,000 for 2010. Under current “sunset” provisions, the child tax credit is scheduled to return to \$500 for 2011.

Marriage penalty relief increases the basic standard deduction for joint filers to 200 percent of the single filer amount and the 15 percent bracket size for joint filers to 200 percent of the 15 percent bracket size for single filers for 2003 and 2004. The basic standard deduction for joint filers is reduced to 174 percent of the single filer amount in 2005 and will increase annually, reaching 200 percent again in 2009. The 15 percent bracket size for joint filers is reduced to 180 percent of the single filer amount in 2005 and will increase back to 200 percent in 2008.

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Adjusting to Technological Change in Strawberry Harvest Work

by

Howard R. Rosenberg

A machine used by many Ventura County strawberry firms in 2003 holds economic promise for adopters throughout California. While significantly reducing the amount of labor needed in the harvest, it alters the jobs of crew members and raises several key questions for human resource managers.

California has long relied upon technological innovation to retain its place as a world leader in farm production. New methods based on biological, chemical, mechanical and information processing advances have been designed for various purposes, such as to improve the output quantity and quality of output, conserve natural resources, reduce exposure to workplace hazards and control runoff of fertilizers and pesticides. Almost always, however, a key objective for mechanical innovations in agriculture is to increase labor productivity.

Use of a recently developed machine by many strawberry growers in Ventura County this year exemplifies the potential of new technology to substantially reduce work hours and costs. The machine will not have an impact comparable to that of the tomato harvester or cotton gin, but it can cut the amount of human work time needed in strawberry harvest, which is one of the most labor-intensive operations in agriculture, by one-third or more. While not reducing the need for human eyes, judgment and hands in the most critical strawberry harvesting tasks, it eases the lower-skill part of the harvester's job.

As with all innovations, intended benefits of the new machine are not assured, and its use may have unexpected effects. The machine-aided system raises issues beyond the classic economic question of whether future labor savings provide a sufficient return to an immediate investment. Growers contemplating or already adjusting to the move face interrelated decisions about harvest crew configuration, work pace, pay scheme, ergonomic risk control and overall choreography of introducing the change.

Producing Berries in California

Strawberries are the fourth most valuable fruit crop produced in the United States, and they rank second only to apples in fresh market sales.

California growers produced 1.4 billion pounds of strawberries, 83 percent of the nation's total, worth some \$800 million in 2001. About three-fourths were harvested for the more lucrative fresh market, the rest for freezing and processing.

Strawberry production is expensive and labor-intensive. Total production costs are around \$25,000 per acre, of which harvesting accounts for about 63 percent. Harvest labor expense alone is more than 40 percent of the total. Statewide employment in berries peaks at nearly 30,000 in May and June.

California strawberry shipping starts each year in south coastal counties and proceeds northward in overlapping regional seasons. San Diego, Orange, Los Angeles and Ventura counties begin in January and continue through June, their fresh-market shipments peaking in April and May. Harvest in the Santa Maria area runs from March to August. The Watsonville and Salinas areas (Santa Cruz and Monterey Counties), home of almost half the state's strawberry acreage, produce from April through October, with about half their total volume in June and July. Ventura ships again during a short autumn season.

Strawberry plants continuously produce new fruit that is harvested in a three-day rhythm over the season. Harvest crews of 25-35 members customarily retrace an itinerary through planted acreage twice during a six-day work week.

The harvester job entails a cycle of tasks that require concentration, dexterity and stamina. Tasks of selecting, picking and packing ripe berries are performed with both hands in rapid sequence. Interspersed with them is the task of cleaning the plants of berries that are misshapen, bruised, moldy or otherwise unmarketable. The final task in the job cycle is delivering full trays, or "flats" weighing 10.5-12 pounds, to a collection point on a road bordering the field, and then returning to the row with an empty flat.

A checker at the collection point controls quality and records individual output, and a stacker piles the flats for loading on a truck that goes to a cooler.

To fill flats, a harvest worker selects and picks from plants on both sides of a furrow (row), covering the nearest half of each adjacent bed. Furrows are about one foot wide and 300 feet long with beds 14 inches high. A small wire cart, or “carrito” resembling a mini-wheelbarrow, facilitates packing by holding the flat above bed level and inclined toward the worker, who advances it down the row periodically when moving to pick from new plants.

Workers take their finished flats, one at a time, back up the furrow and then laterally on the road to the collection station.

A station is set up at each end of the field, so that the maximum one-way walk in the furrow is about 150 feet, the average 75 feet, and the average round trip between picking area and delivery table is 240 feet. Managers report that a majority of harvest injuries are due to slips and falls near the end of the row, where workers turn sharply as they hurry in with a full flat or back out with an empty one.

Core tasks of picking and plant cleaning are performed by workers while bending, kneeling (one knee on the raised bed), or crouching. Although workers shift from side to side of the row, occasionally stand for a breather, and change positions in various other ways, they spend most of their work time in “non-neutral” postures. Union leaders and other worker advocates have expressed concern about the long-term effects of these positions and repetitive task motions on workers.

Harvest System Changes

The new machine serves as a mobile station for receiving and accumulating packed flats of berries close to where they are picked. It slowly creeps down the field just ahead of where harvesters are picking. By allowing for immediate delivery within every row, it eliminates bottlenecks at a central collection point on the road as well as the need to walk or run down the row with a full flat to get there, which amounts to more than two miles per day.

Conceived by a Ventura County grower, a prototype was fabricated and first field-tested in 2000. A



Harvest workers traditionally carry each packed flat an average of 120 feet from where they pick. Photos by H. R. Rosenberg.

few second-generation machines entered the field in 2001, and additional units evolved from that design in 2002. Breakdowns sometimes disrupted berry production and forced reversion to the traditional harvest system, but lessons from experience led to a much-improved, third generation of machines. Some 50 of the new units served reliably to help harvest 30-40 percent of the Ventura County strawberry acreage in the 2003 spring season. Safety-oriented adjustments (e.g., hazard warning signs, protective gear for machine operators, remote engine-kill switches and additional first-aid kits) were made during the 2003 season, and further refinement is likely for 2004. A few machines were used briefly in the Santa Maria area this year, and some are now in Monterey County.

Workers in a machine-aided system pick and pack berries exactly as in a traditional harvest. However, they walk their full flats only a short way to place it on a shelf that runs along the machine “boom,” which extends across 15 rows. There, they write on the flat a number that identifies it as theirs, adjust berry placements, insert stacking guide wires and then move the flat forward to a conveyor belt. Two belts, one each on the left and right halves of the boom, move flats from all rows to an open area at a center, where one of two operator/stackers lifts them onto a platform for checking, crediting to the worker and intermediate stacking. From there, the flats are stacked onto pallets that are directly offloaded by a

forklift and taken to a truck bound for the cooler. This machine continues the substitution away from manual conveyance in strawberry harvest. Only within the past several years have forklifts become commonly used to load stacks of finished flats onto trucks. Previously, the lift/load operation mostly taxed human arms, legs and backs.

Outcomes to Watch

How will a move to machine-aided harvest play out for growers and workers? Growers can, of course, expect to incur new expenses of purchasing (or leasing) and operating the machine and to save on harvest labor cost. They also may realize gain or loss from changes in berry pack quality, capacity to meet unexpected surges in demand, employee absenteeism and turnover, ease of recruitment, and injury experience and related workers' compensation premiums. While the projected return on the \$125,000 investment for a third-generation machine looks good, actual results will depend on many decisions in the field and office.

Reducing the time and burden of carrying full flats can translate into harvest worker-hour savings of one-third or more. In one firm, a machine crew of 15 pickers performs the work that a traditional crew of 25 had in previous years. So in a 50-hour workweek, the machine effectively replaces 500 worker-hours there. Using \$10 as a conservative estimate of direct and indirect hourly labor costs, those hours saved are worth a gross of \$5000 per week—\$70,000 over a 14-week Oxnard spring season, or \$130,000 over 26 weeks in Watsonville.

Offsetting this gross cost savings are investment opportunity costs and current expenses for fuel, maintenance and repair. Setting aside the opportunity cost, if the weekly machine operating expense is around \$1200, net system savings come to \$53,200 for a 14-week season, or \$98,800 for 26 weeks. A key managerial decision is how to allocate portions of this savings to the machine purchase, worker wages and operating margin.

The Deal for Workers

Workers' central interest is their individual earnings per hour and over the season. Although the



Delivery to a machine in the field is faster and less hazardous, and it leaves more time to pick berries while bending or kneeling.

number of jobs and the total wage bill are smaller in a machine-aided system, remaining harvest workers could achieve much higher earnings, depending on the pay system. Most pay plans in the industry include a piece-rate component. Many firms pay an hourly rate plus an output-based supplement, such as \$4.60 per hour plus \$.80 per flat, and many pay totally on a piece-rate basis. All guarantee workers \$6.75 or more per hour for all time worked when piece-rate earnings would not meet that California legal minimum wage.

By reducing the time needed to complete a flat production cycle, the machine enables harvesters to turn out more units in a given time period. The more that pay is based on output (i.e., a piece-rate applied to number of units) and the closer the piece rate is to the non-machine rate, the greater the increase in individual earnings. The straight piece rate at a firm I visited is 80 percent of its former level, but the machine enables workers to produce 167 percent as many flats as they used to, so their average piece-rate earnings are one-third higher in the new system. More detailed discussion of pay parameters and effects is in the August, 2003 issue of *California Farmer*.

Other important effects to monitor are workers' physical and mental reactions to changes in the work environment and the job itself, particularly the decrease in time spent carrying flats and the increase in picking and packing. The moves (bending,

required to perform the latter tasks are linked more with risks of musculoskeletal injury. Carrying is performed upright but involves more risk of slips, falls and twisted joints while hustling down narrow, sometimes uneven or slippery rows. Time formerly-spent delivering full flats may have been valued as a respite from the stress of working in a bent posture. It remains to be seen whether workers will find comparable relief in the shorter walk to a machine, perhaps supplemented by more frequent stretches in place.

More subtle considerations are the noise emitted by the machine and the place the machine has for each worker to take completed flats. That place might be customized as a kind of work station at which water containers, clothing and personal items can be stored.

More Management Choices

The decision to adopt a different technology is clearly not the only important choice affecting results. Costs, benefits and ultimate success of the transition to machine-aided strawberry harvest depend on synchronizing the use of the machine with the attributes of the people whose labor remains the most essential factor of production. Human resource management issues to consider include:

- *Crew Configuration and Membership.* Does work in a machine crew require a different orientation or set of abilities than in conventional crews? Will employee recruitment, selection and assignment be designed to create crews who tend to work at a similar pace? Will crew members rotate through the stacker and machine operator jobs?

- *Speed of the Machine.* How fast will the machine creep down the field? More importantly, who decides?

- *New Pay Rates.* What share of efficiency gains will be allocated to compensate for the increased volume of berry handling and to raise individual worker earnings? How much will pay be based on time and how much on output? What is a fair relationship between old and new piece rates?

- *Scheduling, Rest Breaks and Safety Training.* Are any adjustments needed to explain or alleviate possible ergonomic risks of increased picking time?

- *Introduction of the New System Itself.* When and how will workers be informed about the machine system and the changes around it? Will they have a

choice of working in a traditional or a machine-aided crew?

In time, worker responses may drive grower decisions about using the machine, because as much as or more than in any other crop, humans make the strawberry production system run. As one grower recently told his business partners, “without the skilled people who work for us out there, we’re nothing.”

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Price Spikes and Forward Markets for Gasoline

by

Jeffrey Williams and Jennifer Thompson

The forward market for wholesale gasoline in California proves to be sufficiently active and its prices sufficiently sensible to attract imports during local refinery outages. California prices spike principally because of the time needed to ship California-grade gasoline, about one month, which, not coincidentally, is the time frame in the forward market.

In response to the refinery outages in 1999 that caused the price of gasoline in California to spike relative to prices elsewhere in the country, the California Legislature (Assembly Bill 2076) directed the California Energy Commission (CEC) to investigate the feasibility of the State operating a “strategic fuel reserve.” The CEC reported back to the legislature in July 2003 with a recommendation against such a gasoline reserve. Before drawing this conclusion, the CEC sponsored a number of studies, not only of state storage of gasoline but also of alternatives for mitigating price variability, such as expanded marine infrastructure for imports or more liquid forward markets.

We participated in the study of the gasoline forward market in California, conducting interviews with market reporters and some twenty traders who ranged in size from small independent jobbers to integrated multinationals. Surprisingly little was known about wholesale markets for gasoline in California, even such basic facts as the number of trades per day and their typical size. Perhaps it would be more accurate to say that these facts had not been documented, for the traders themselves knew them. Among policy makers and energy economists, the prevailing belief was that the gasoline forward market in California was relatively illiquid and did not cover very far into the future, at least in comparison to forward markets centered on the U.S. Gulf Coast, New York Harbor (including the active futures market on NYMEX), northwest Europe, Singapore and Tokyo Harbor (including the new futures market on TOCOM).

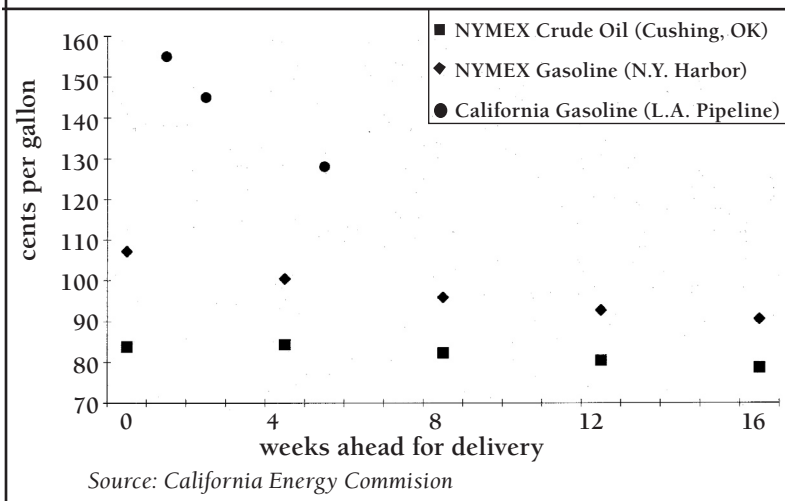
In the forward market, traders buy and sell forward contracts specifying the conditions (e.g. price, delivery date, grade) for future delivery of gasoline. Ideally, forward prices serve as the signal guiding the accumulation or release of inventories because storage, by its nature, allows adjustment between current and future conditions. Forward prices also serve as the signal for attracting imports of gasoline, because imports take time to arrive. Forward prices can serve as signals for a particular firm even if it does

not trade in the forward market, provided the trades of others are reported. For those who do trade, the forward market converts highly risky ventures, such as a cargo sent across the Pacific with the hope that the spot price in California will still be high when the tanker arrives, into nearly certain, arbitrage-like operations.

Despite their advantages, forward markets are delicate institutions, easily disrupted by disputes over the performance of contracts after months have passed and conditions have changed. For a prospective importer of gasoline, the difficulty of finding counterparties who reliably perform their side of contracts acts much like a tariff. Such an “illiquidity tariff” might be sufficiently high to preclude those imports. It was thought a likely contributing factor to California’s relatively illiquid forward market is a lack of buyers relative to the number of possible sellers of forward contracts. A variety of state agencies purchased gasoline in bulk under contracts tied to wholesale spot prices, thus it was thought that the state could enhance the volume in the forward market if these agencies were to purchase their fuel under contracts tied to forward prices. The additional volume prompted by the state might contribute the critical level of liquidity required to facilitate forward sales by gasoline importers.

Gasoline Forward Markets in California

Unlike most commodities, gasoline has two levels that could be called “wholesale.” Gasoline arrives at retail outlets by truck, each carrying some 8,000 gallons. But that gasoline has traveled most of the distance by pipeline, and in even larger quantities—the minimum shipment being over one million gallons. One pipeline system, originating in the refineries and storage facilities ringing San Francisco Bay, serves Northern California and Nevada, while another pipeline system, originating in the zone of refineries between the Ports of Los Angeles and Long Beach, serves Southern California, Arizona and Nevada. Gasoline moving within California through

Figure 1. Constellations of Prices on September 7, 2000

these pipelines is identical, although it varies from season to season and from gasoline elsewhere, according to the specifications set by the California Air Resources Board. In addition to the integrated “majors” involved in all phases from obtaining crude through retailing gasoline, “independents” specialize in refining, importing and distribution, which concerns the pipeline flows, or “jobbing,” which concerns the truckload deliveries to retail outlets. Altogether, some 30 or 40 enterprises could participate in a forward transaction, which is based on deliveries through pipelines.

With an ever-increasing gasoline demand of roughly one million barrels per day (42 million gallons at 42 gallons per barrel) in California, one might expect comparable volume in a forward market. According to all gasoline traders interviewed, the forward market for gasoline in California does not approach close to a volume of one million barrels per day, but neither is the volume trivial. Many traders estimated the volume to be on the order of 100,000 barrels per day, corresponding to four trades per day, the typical trade being a “piece” of twenty-five thousand barrels. (No central exchange records these deals. Private market-reporting services, namely Platts and OPIS, are the principal source for the traders’ sense of what others are doing.) The range around this mean estimate is surprisingly wide, and with it the perceived “depth” of the forward market. Some traders thought it unlikely that they could sell as many as 100,000 barrels without a detrimental effect on the price, while a few thought that the forward market could absorb 300,000. Most traders

agreed that a transaction for twenty-five thousand barrels, or 2.5 percent of the daily California gasoline flow, can influence the forward price for gasoline.

The forward trading that does occur in California extends one month ahead, sometimes two months ahead, but almost never any further. Sometimes individual weeks are distinguished. For example, three weekly cycles (the “prompt,” two-week-forward, and one-month-forward cycles) traded in early September 2000 at different prices, as is illustrated in Figure 1. Prices for “prompt” shipment during the next week-long cycle on the pipeline are what OPIS and Platts report as the “spot

market price” of the day; those for more distant cycles are the reported forward prices. (Scheduling constraints on a pipeline make it impossible to obtain gasoline for same-day delivery, that is, a true “spot” trade.) Even those who do not trade routinely are aware of prevailing prices.

The nature of the gasoline forward market is heavily influenced by the logistics within California. As the principal pipeline operator, Kinder Morgan is flexible about the scheduling process, allowing rescheduling of delivery and substitutions of the recipient until one week before a cycle begins, at which moment the arrangements “freeze.” That flexibility up to one week ahead allows those who bought gasoline, but never truly wanted the physical barrels, to sell the piece later to someone else or to “roll” the shipment to a later cycle. Pipeline traders, along with the cargo traders (often a combined role), appear to be the primary bridge for price formation between prompt and forward markets in California gasoline.

Impediments to forward trading are not obvious. It seems anyone in the wholesale gasoline business – not many firms to be sure – can trade in the forward market. The impediment to new entrants is the same as in the spot market: the minimum transaction involves \$1 million. Although one default occurred several years ago, the market has not been plagued by the fear of defaults and bankruptcy. There are very few disputes over grade, quantities and delivery timing that plague other commodity markets. Nor does there seem to be the systematic imbalance, meaning far more willing sellers than willing buyers, that was thought to exist. As a result, there is much

less scope for the strong leadership of, say, the State of California to insist on customs sensible for the market as a whole, to apply to standards of credit analysis, to balance buyers and sellers or to go out of its way to include excluded traders.

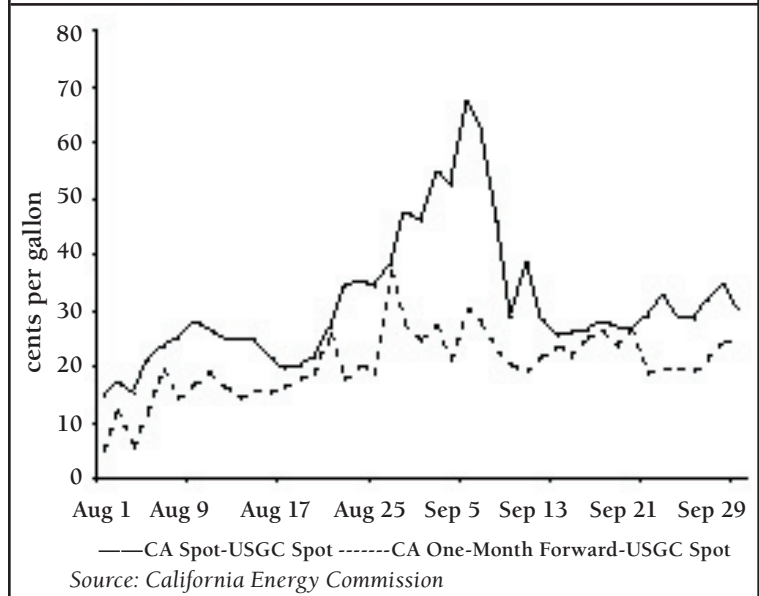
California as an Island in Gasoline

Increasingly popular is the metaphor of California as an island, where separated by distance and the specifications mandated by the California Air Resources Board, gasoline prices move somewhat independently of prices in other regions. Many of the gasoline traders interviewed invoked the island metaphor at some point, especially regarding the effects of the California-specific specifications. The metaphor of an island indeed succinctly represents California's circumstances arising from the state's geographical separateness from refinery centers, especially those few now able to produce gasoline to California specifications.

The metaphor of California as a price island in gasoline needs some elaboration, nevertheless. First, because many environmental authorities endorse regional, cleaner-burning fuel programs, each with unique specifications, California is not the only island market for gasoline in the country. Presumably, local price spikes in other islands ripple through to California to some extent. No island is disconnected entirely, because crude itself can be redirected. Second, California is better thought of as two close islands, one served by the San Francisco Bay pipeline system and the other served by the Los Angeles system. Prices differ in these two locations within California, although not nearly as much as either California location sometimes differs from those elsewhere in the U.S. Third, the island metaphor includes the dimension of time as well as space. If California-specific specifications preclude gasoline coming from Seattle so it must come from farther away, the increase in distance alone implies that California gasoline prices must rise more than previously to attract imports. But that increased distance also implies that California must rely on local production longer, since shipments from farther away take longer to arrive.

As regards California's price spikes, the relevant comparison of spatial prices should allow for the time required for the shipment. The comparison of

Figure 2. California and U.S. Gulf Coast Prices, August 1, 2000-Sept. 29, 2000



spot prices in two distant locations, say California and the U.S. Gulf Coast as is Figure 2, is irrelevant for judging arbitrage possibilities suggested by prices in California being 60 cents higher than on the U.S. Gulf Coast. During late August and early September of 2000, this spot spatial spread was sustained well over the estimated import parity of 30 cents, largely due to disruptions in California refining and to California pipeline shipments. For the spot spatial spread to reflect import incentives, however, gasoline must be transported from the U.S. Gulf Coast within one day. No one can move gasoline on that route in less than two or three weeks. The relevant comparison is thus between the spot price on the U.S. Gulf Coast and the price relevant for the time taken in transit, namely the one-month-forward price in California. Over those days in August and September 2000 with a noticeable price spike, the California forward price minus the U.S. Gulf Coast spot price was within the range of 30 cents (or less) on all but one day, and just barely over 30 cents on that one day. According to Figure 2, any arbitrage opportunities were fleeting and were acted upon, since the differential closely approximated shipping costs. Indeed, a number of cargoes were sent to California during that period. Similarly, during other price spikes, the one-month forward price is almost always within 30 cents of the U.S. Gulf Coast price, whatever the relationship between the two regions' spot prices. During those periods, exports were sent on their way to California.

Most often when a spike occurs in the spot price of gasoline, the one-month-ahead forward price is substantially below the spot price, as is the constellation in Figure 1. This discount, of 10, 20, even 30 cents per gallon, does not measure the illiquidity in the forward market. The discount reflects the pressure for immediate delivery of gasoline. Because that pressure can be relieved in one month, no large premiums for California can be sustained many months forward. This explains both why California prices in Figure 1 converge to NYMEX New York prices and why distant California forward contracts are not actively traded. This premium for immediate delivery is a “backwardation” in the terminology of other commodity markets, where it is common even in the most active forward markets. That is to say, the gasoline forward market, as it exists in California, looks to display intertemporal price relationships much as do other forward markets.

Conclusions

The forward market in California neither functions poorly nor flourishes. A number of participants and prospective participants perceive the market as relatively illiquid, especially for the larger quantities associated with a tanker, some 350,000 barrels. If that illiquidity were converted to a cost, perhaps it would be between one and two cents per gallon. Although a higher transaction cost by an order of magnitude compared to active forward markets, one to two cents per gallon does not seem the principal impediment to shipments to California, compared to freight rates on the order of 20 cents from plausible export points, or the extra cost of producing California-specific gasoline, some five to seven cents.

From the observation that forward markets are delicate institutions, it does not follow that the absence of a forward market is necessarily indicative of some problem. Rather, the absence of the forward market may indicate that it is not needed because of features of the logistical and distribution system. Just as it makes little sense to have retail stations sell twenty-five different octane levels of gasoline – three seem to suffice – it makes little sense to expect active forward contracts for all conceivable delivery weeks. The forward market in California extends one month or so, which is the time necessary for most shipments from other regions to arrive in California. Logistical constraints within California are also on the order of one month. Schedules on the two principal

pipeline routes, one from Los Angeles, the other from San Francisco Bay, are settled within a month (namely, within four weekly cycles). In this logistical situation, the lack of two-month and higher maturity in California forward markets is neither surprising nor troublesome, given that other regions have active forward markets for gasoline.

State agencies weekly buy a quantity of gasoline (i.e., about one million gallons) on the order of one pipeline piece. An increase in volume of one piece per week would make some difference to the functioning of the forward market, since the daily volume is only a few pieces, but the state’s trading would be unlikely to transform the market. In any case, because the state agencies need gasoline at many locations (and in small amounts), the state itself could not disperse one pipeline piece. Yet more problematic, all the state’s procedures for procurement and inventory control exemplify the rigidity opposite to the flexibility needed for sophisticated trading in forward markets.

Thus, our study of the gasoline forward market revealed that no quick fix is possible because the state itself cannot provide a fix, and more fundamentally, because the forward market is not broken. This conclusion came as a disappointment to those concerned about the political repercussions of price spikes. Our study of gasoline forward markets further revealed a false premise behind this concern over price spikes. Many point to periods when the price of gasoline was much higher in California than elsewhere, much higher than the known costs of transportation, and imagined that such violations of arbitrage indicate a failure on the part of the marketing system. That comparison of spot spatial prices rests on the false premise that gasoline can move from far away to California within a day. The forward market’s prices, which allow for the necessary time for shipments, have accorded with arbitrage: The marketing system has been mitigating price spikes by attracting imports into California.

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Taxes - Continued from page 2

Some Implications of the 2003 Tax Act

While the expected impact of individual provisions on farmers and ranchers is typically straight forward, the combined effects of the total package of tax law changes can be ambiguous because of offsetting effects. For example, by reducing the after-tax cost of capital expenditures, the 2003 Tax Act can be expected to increase purchases of machinery, equipment and other items eligible for expensing. At the same time, reductions in tax rates reduce the after-tax value of the expensing provisions. Suppose, for example, that a farmer in the 30 percent tax bracket purchases and expenses a piece of equipment for \$25,000. His after-tax cost of the purchase is 70 percent of the cost (\$17,500), but his after-tax cost increases to 72 percent of the cost (\$18,000) when his tax bracket is reduced to 28 percent. Increasing the amount of investment eligible for expensing to \$100,000 will increase incentives to invest through December 31, 2005, but after that date, the reduction in tax rates will dominate.

Livestock investment and operating decisions are affected by individual and capital gains tax rates. Since the sale of raised livestock (held for more than two years) is subject to capital gains treatment, a producer can adjust taxable income by varying the replacement interval for cows. Shortening the replacement interval increases the proportion of income from cull cows that is subject to favorable capital gains treatment. Reduced capital gains tax rates, other things being equal, encourage ranchers to cull younger cows, and these younger cows tend to be sold as breeding stock rather than as slaughter cows. At the same time, reduced tax rates on ordinary income reduce the comparative advantage of capital gains and tend to increase the optimum culling age for cows. Overall, high income producers will tend to reduce the culling age for beef and dairy cattle operations, while lower income producers will tend to focus on cow productivity.

Lower capital gains tax rates will likely increase the demand for farmland but may also increase the availability and turnover of farmland as owners who had been waiting for lower tax rates put their property on the market. The short-run impact on prices is thus difficult to predict, but prices for land should increase over time in response to increased demand.

Planning Considerations

Most farm taxpayers will be able to increase their benefits from the Tax Reform Act of 2003 by planning and consulting with their tax advisors regarding the timing of machinery and equipment purchases, investments in single-purpose structures and the disposition of farm assets. Livestock producers making culling decisions will want to consider the difference in tax rates between capital gains for selling a raised cull cow versus ordinary income for selling a raised replacement heifer. The optimal decision will change as taxable income changes and as capital gains and ordinary income tax rates change. Farm taxpayers using cash accounting should continue to be careful about the timing of income and expenditures at the end of the tax year to take advantage of rate changes when they occur. Those taxpayers with estate plans and assets that are likely to appreciate will want to consider gifting or intra-family sales to take advantage of the low capital gains tax rate. It is especially important that farmers and their tax advisors keep current on "sunset" provisions in the Tax Reform Act of 2003 and changes that occur over time.

Which provisions in the 2003 Tax Act are most important to farm taxpayers? All taxpayers benefit from rate reductions, taxpayers with children will receive larger tax credits and the marriage penalty is reduced. Farmers who purchase large amounts of depreciable assets will realize important tax savings from the two-year increase in Code Section 179 expensing to \$100,000. Reductions in capital gains tax rates are also important to a smaller number of farm taxpayers with livestock enterprises or land sales.

Readers interested in a comprehensive review of the effects of federal income taxes and tax law changes on agriculture may want to obtain a copy of Professor Carman's book. The reference is Hoy F. Carman. *U.S. Agricultural Response to Income Taxation*. Ames, Iowa: Iowa State University Press, September, 1997, 220 pp.

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