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As ethanol prices slump, concerns about the immediate expansion of the ethanol industry are escalating. According to Chadbourne & Parke LLP, a New York City-based law firm, some of these fears may be unwarranted.

By Todd Alexander

It's hard to pinpoint when and where the U.S. ethanol industry's current over-production scare originated. It was briefly mentioned in various presentations at the 2005 National Ethanol Conference in February. Later, a top executive of Archer Daniels Midland Co. (ADM) publicly announced that the nation's largest producer had put a ceiling on production—at least temporarily. Now, the issue is in the back of everyone's mind: Will prices continue to drop as more and more capacity comes on line? Historically, expansion has been the industry's ultimate goal. By most measures, it still is. But at what rate—and at what cost—should the industry proceed?

Prior to 2004, the ethanol industry managed to grow profitably and quietly for half a decade while, for the most part, avoiding the attention of large institutional investors and money-center banks. That changed last year. Institutional investors and money-center banks moved in, attracted by record-high ethanol prices coupled with historically low corn prices and the potential for extraordinary returns. This change was evidenced by the issuance of \$160 million in bonds by Aventine Renewables, the \$185 million Term B loan arranged by Credit Suisse First Boston for two projects sponsored by Whitney & Co., and the attendance of several well-known financial sponsors at this year's National Ethanol

Conference, hosted by the Renewable Fuels Association.

However, the continued growth and profitability of the industry have been called into question recently by some notable industry experts, including Edward Swinderman of Jim Jordan & Associates—who forecasted a looming ethanol glut in his National Ethanol Conference presentation—and in articles published this year by *The Wall Street Journal*, *Project Finance* magazine and Bloomberg.com. The critics warn that production capacity is growing more rapidly than demand. They also point to the marked weakness in ethanol pricing, which started in February when ethanol began trading at a significant discount to gasoline.

Although there is no denying that the critics have a point, the fundamental question is whether the growth in the industry's capacity should be cause for alarm. There are several factors at work that could increase demand and several market financing structures in use in the market that mitigate capacity risk. These two factors could alleviate many of the critics' concerns related to overcapacity. In addition, participants with greater financial wherewithal who entered the market in the past 12 to 18 months will introduce the possibility of industry consolidation, which should also serve to rationalize production.

Is there cause for alarm?

Since 2000, fuel-grade ethanol use in the United States has more than doubled while annual ethanol production has increased correspondingly from 1.63 billion to 3.41 billion gallons.

In 2005, fuel-grade ethanol demand is anticipated to near an all-time high of 4 billion gallons, with ethanol being blended in more than 30 percent of all gasoline sold domestically.

This rapid growth has been attributed, in part, to the Clean Air Act, which requires the addition of oxygenates (e.g., ethanol) to gasoline, and to the banning of MTBE in 14 states, including California and New York. To a lesser extent, the use of ethanol as an octane enhancer and as a volume extender has also driven growth. Ethanol is a useful octane enhancer because it has an octane rating of 113 while regular gasoline customarily has an octane rating of approximately 87. Ethanol is useful as a fuel extender because when blended with gasoline (usually E10), it increases the volume of fuel available at the retail level.

While demand for fuel grade ethanol is expected to approach 4 billion gallons in 2005, domestic industry capacity at the end of 2005 is expected to exceed 4.4 billion gallons per year and 5 billion gallons per year by the end of 2006.

Several major industry players have announced plans to move forward with the construction of new facilities in 2005 and 2006, including Morgan Stanley Capital Partners, Whitney & Co. and Fagen Inc. Existing producers, such as Midwest Grain Processors, have announced plans to expand their current capacity.

To some, these are distressing facts. However, there are several promising happenings that could counter these developments.

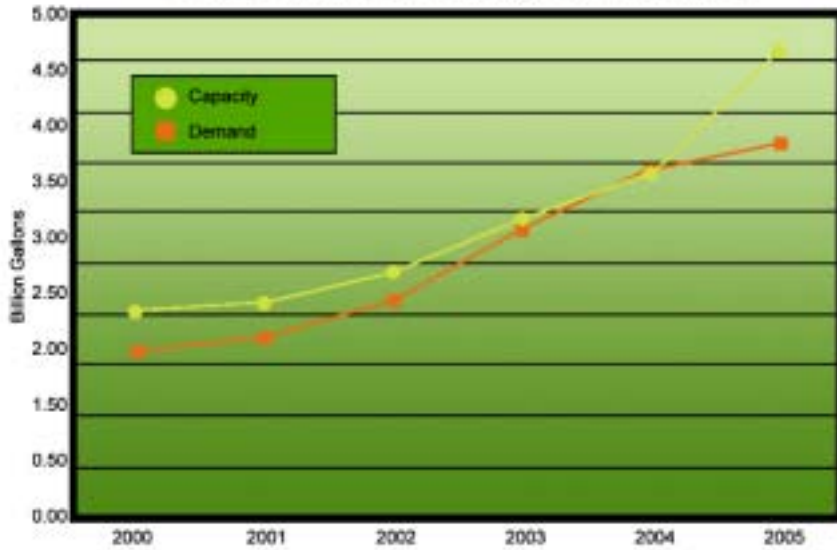
First, the U.S. Congress could adopt a renewable fuels standard (RFS) sometime this year. Two bills that are in play in the House would require consumption of 6 billion gallons of renewable fuels, such as ethanol and biodiesel, per year by 2014, and require all gasoline sold in the United States to contain at least 10 percent ethanol by 2011. The Senate is also expected to debate whether or not to set an RFS. One proposal in the Senate would require the use of 4 billion gallons of renewable fuels by 2006 and 8 billion gallons by 2012, and another would require the use of 6 billion gallons of renewable fuels by 2012. Importantly, Congress could also ban the use of MTBE.

Second, there are several favorable developments at the state level that are expected to increase ethanol demand. For example, an MTBE ban has been enacted—but not yet taken effect—in six states in addition to the 14 states in which MTBE bans have already been implemented. These new markets for ethanol are Ohio, Kansas, Missouri, Kentucky, New Hampshire and Maine. In addition, Hawaii has recently implemented a rule requiring 85 percent of its fuel supply to contain at least 10 percent ethanol by April 2006. The governor of Minnesota has announced a proposal to require the state's gasoline be blended with 20 percent ethanol rather than the 10 percent currently required by law. Legislatures in Iowa, Missouri, Wisconsin and Montana are all considering legislation that would require a 10 percent blend. Moreover, the Atlanta metro region may soon require approximately 250 million gallons of additional ethanol if the federal courts deny Georgia's bid to receive an exemption from the reformulated gasoline rules under the Clean Air Act in the Atlanta metro area.

Third, it is very likely that blenders will increase their ability to use ethanol as a fuel extender by retrofitting many of their distribution terminals in the Midwest and on the East Coast to accommodate addi-

Are Fears of Overcapacity Overblown?

U.S. Ethanol Supply & Demand



Source: Jim Jordan & Associates LLP

On the import side of the equation, it is estimated that the United States imported 160 million gallons in 2004 from Brazil, Central America and the Caribbean Basin. All of this imported ethanol was produced using sugarcane as the feedstock. These imports are not likely to be cost competitive with domestic production in 2005 if sugar continues to trade in the neighborhood of 8.5 cents per pound. On the export side, U.S. exports to Canada and Europe could increase by up to 100 million gallons in 2005 if U.S. ethanol prices remain at current levels.

New financial structures

Several new or improved financial structures mitigate exposure for owners and lenders to the risk of low ethanol prices, and they should make for a more stable industry than in past years.

The newest financial instruments available to ethanol producers are the corn-based futures contracts, which began trading on the Chicago Board of Trade on March 23 and on the Chicago Mercantile Exchange on March 29. For the first time, owners of corn-based ethanol plants were able to use these futures contracts to hedge their exposure to the price volatility of ethanol. No one knows yet how liquid these contracts will become and how much interest there will be in the marketplace for trades more than six months forward.

Another way to mitigate price volatility is for the owners of an ethanol plant to share the risk of price movements with their major

tional ethanol deliveries and to allow for more blending and storage. Today, few blenders have taken these steps, but the current prices provide an incentive to act. For instance, a blender today can purchase ethanol for less than \$1.25 per gallon and blend it with gasoline that costs at least \$1.55 per gallon. The blender is also entitled to a tax credit of 51 cents per gallon of ethanol used in blending. The available ethanol incentives should lead to several million gallons of additional demand in 2006 and an even greater increase in demand thereafter, as refiners and blenders modify their existing infrastructure to increase blending capacity and amend air permits to allow existing storage terminals to be convert-

ed into ethanol storage tanks.

Fourth, a sizeable share of the nation's ethanol is produced in older, smaller plants that do not benefit from recent technological improvements in the production process or from economies of scale. Swinderman said he estimates that up to 15 percent of U.S. production capacity has a marginal cost of more than \$1.30 per gallon (assuming a price for corn of \$2.10 per bushel and a fuel cost of \$7 per MMBtu). If these estimates are correct, then the new ethanol plants under construction should displace existing capacity at these older plants rather than add to overcapacity.

Finally, the cross-border trade in ethanol should provide some relief to the industry.

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suppliers and marketers. For example, an owner can create a “collar” around ethanol prices by entering into corn supply and ethanol sales agreements. If structured properly, such collars should allow a project to operate profitably in any pricing environment. The tradeoff is that the equity may sacrifice a large portion of the project’s upside potential in exchange for locking in a profit margin. If the sacrifice is too great, a project can also have its corn supplier and ethanol marketer agree to share a portion of its added costs or reduced revenues when prices move outside an agreed band. These types of partial hedges are available at a lower cost to the equity, and they preserve more of the upside earnings potential.

A third option is to arrange for a larger working capital facility. This gives the managers more flexibility to schedule purchases of feedstock and sales of ethanol on favorable terms by holding out until prices are most advantageous. Most lenders today recognize there is value in having an adequately-sized working capital facility since it can contribute to more predictable cash flow in the long run.

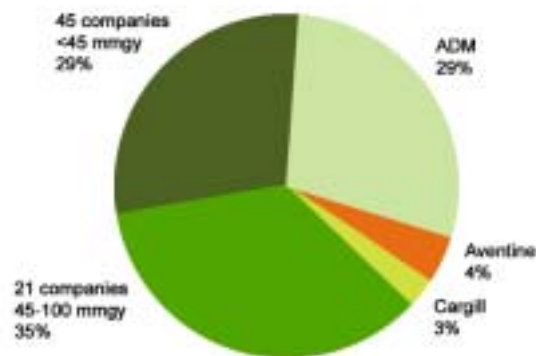
A fourth option is to couple a cash

sweep with an amortization schedule that permits the borrower to repay principal at low levels or in increasing amounts with a “balloon” at final maturity. These amortization schedules allow the borrower to prepay the loan during periods when market conditions are favorable while avoiding defaults when market conditions deteriorate. This structure was not commonly used in the market by plants financed prior to 2004 but is gradually becoming the preferred approach due to its inherent benefits when long-term, fixed-price contracts are not available due to the higher returns it potentially offers to the equity.

Consolidation

Regardless of whether ethanol demand increases commensurately with supply for the reasons discussed above or whether owners properly structure their contracts to mitigate their risks, the ethanol industry is likely to enter into an unprecedented period of consolidation as a result of the recent

Ethanol Producers



Source: Renewable Fuels Association

entrance of sponsors with greater financial backing and expertise. The process of consolidation should foster an environment in which production is rationalized and instances of long-term overcapacity are less likely occurrences.

Existing ethanol production is extremely fragmented because the industry has its origins as a means for domestic corn producers to hedge the price of corn against the price of ethanol. This meant most existing ethanol plants were designed to optimize a

rural community's needs rather than to produce for a national ethanol market.

As with many maturing industries, this fragmented ownership structure appears to be changing. Several large agri-businesses and financial sponsors have plans either to build new plants or acquire existing ones with the aim of controlling at least 300 million gallons per year of production capacity. Several smaller plant owners, who are inclined not to sell, appear to have recognized that they will be too small to compete in the new marketplace and have made offers to purchase other small operations.

As the industry consolidates, the remaining larger producers will have several advantages that were not available to the fragmented industry. First, the larger producers will be able to capitalize on economies of scale in all aspects of operations, including grain procurement and scheduling, and the marketing of ethanol and distillers grains. These larger producers should be able to leverage their size into more favorable commodity prices and lower commissions. Second, the larger producers will be able to use arbitrage on a nationwide basis to ensure that they maximize their operating margins.

Third, they will be able to attract and appropriately compensate a more talented class of management based on their higher revenues. Fourth, they will have access to lower cost capital through their ties to the banking community and their ability to borrow on a portfolio basis. Fifth, many are likely to attempt to integrate their operations vertically to capture the full value of the ethanol manufacturing process at each point along the value chain. This will reduce the risk of potential disputes at the project level between the project and its various service providers, and will ensure that the incentives of all parties involved in the procurement and marketing process are better aligned. Finally, many of these larger producers may be willing to infuse their operations with cash from their other businesses during lean periods, thereby creating a more stable investment climate and providing the petroleum industry and others who rely on ethanol with more certainty.

Outlook

Since 2000, the ethanol industry has both grown steadily and produced high returns on invested capital. This, in turn, has

attracted increased investment from large financial sponsors and money-center banks, as well as plans for ever-increasing amounts of new production capacity.

Although current production capacity appears to exceed demand, it remains to be seen whether this will hinder the growth of the industry in the medium-term. There are several legislative initiatives at both the federal and state levels that would increase demand. A compelling economic case can be made that a new equilibrium in supply and demand will be achieved in part through increased use of ethanol as a fuel extender, the closing of older and smaller plants and cross-border trade. Moreover, the introduction of more sophisticated financial structures and the almost certain consolidation of the industry should help to promote stability and further rationalize production. EP

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