

## Frozen Concentrated Orange Juice

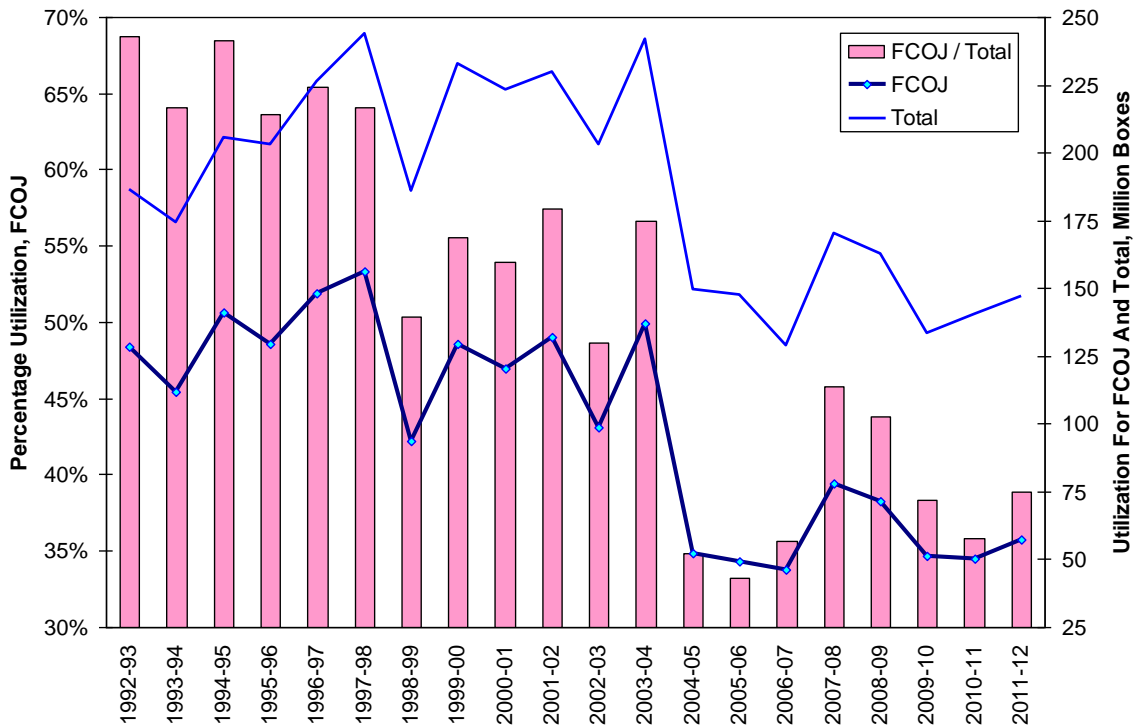
Intercontinental Exchange® (ICE®) became the center of global trading in “soft” commodities with its acquisition of the New York Board of Trade (NYBOT) in 2007. Now known as ICE Futures U.S.®, the exchange offers futures and options on futures on soft commodities including coffee, cocoa, sugar, cotton and frozen concentrated orange juice (FCOJ).

FCOJ futures have traded in New York since 1967, first on the New York Cotton Exchange, then on the successor New York Board of Trade and now on ICE Futures U.S. Options on FCOJ futures were introduced in 1985. Futures and options on futures have been used by the domestic and global citrus and juice industries to price and hedge transactions. ICE Futures U.S. is the exclusive global market for FCOJ futures and options.

### THE ORANGE JUICE MARKET

FCOJ represents a combined triumph of academic research, agriculture and marketing. It was developed at the University of Florida’s Citrus Research and Education Center in 1948. FCOJ competes with two other forms of juice not squeezed directly at the point of consumption: reconstituted liquid juice and not-from-concentrate, or NFC, juice. While NFC juices surpassed FCOJ in market share during the 1980s, the readily storable and easy-to-ship FCOJ remains the industry’s pricing benchmark. Even though the share of Florida’s orange crop going to FCOJ has declined compared to other types of juice, FCOJ remains the most visible price discovery mechanism for the industry. Ultimately, the importance of the juice industry to Florida’s citrus growers cannot be overestimated; approximately 90% of the crop goes into juice in all forms.

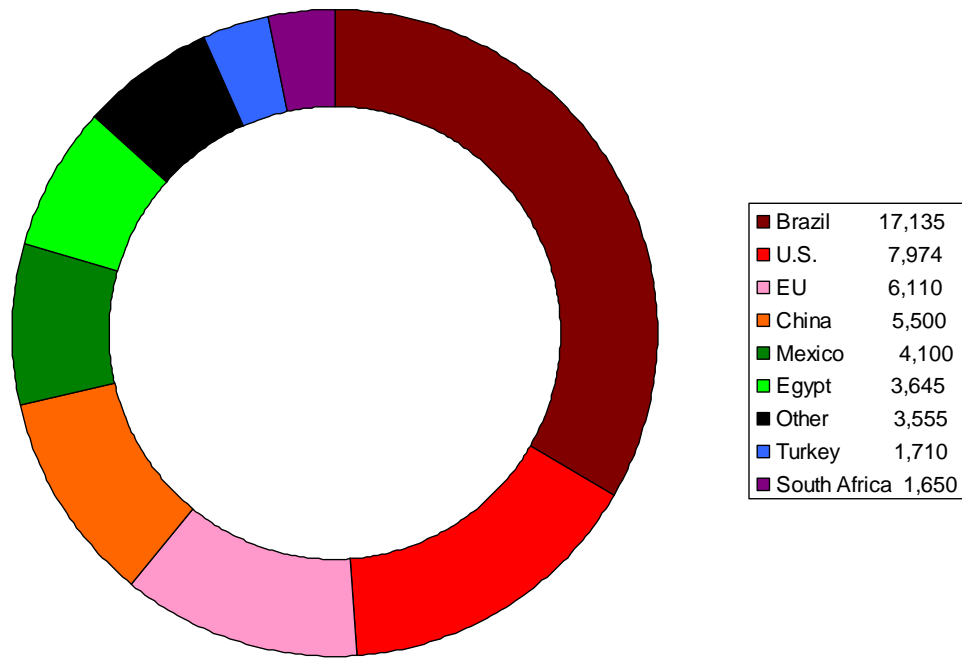
**USDA Florida Orange Crop Utilization**



Source: Florida Department of Citrus

While Brazil is the largest global supplier of oranges, Florida dominates U.S. production. Global demand for orange juice has attracted strong supply growth from the European Union, China and Mexico in recent years.

**Global Orange Production 2010-2011**  
(1,000 Metric Tons)

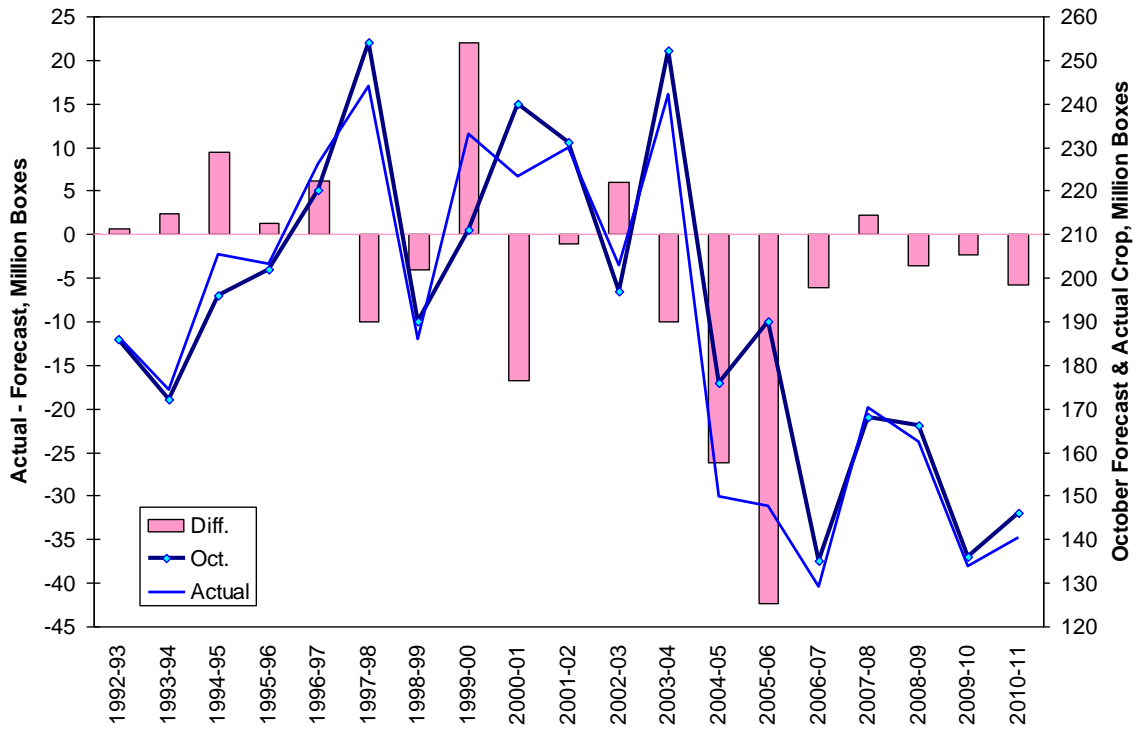


Source: U.S. Department of Agriculture

The citrus and orange juice markets share an odd characteristic with many other grain, oilseed and soft markets -the difficulty even experts have in assessing supply. Why this should be true in an age of satellite reconnaissance is not clear. After all, trees do not sneak into groves when no one is looking, and both the groves and the health of the trees in them are visible from both the ground and the air.

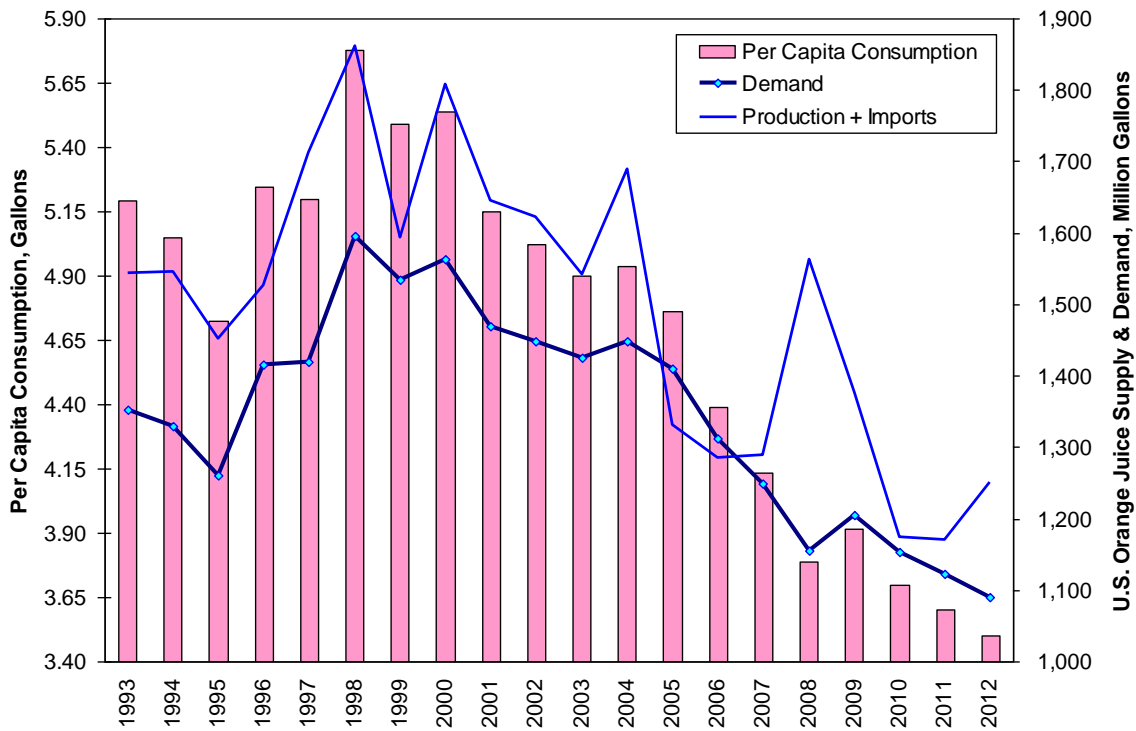
The U.S. Department of Agriculture makes a production estimate each October for the forthcoming crop year. While the Department's forecast errors from the 2003-04 crop year onward have been on the negative side with the exception of the 2007-2008 crop year. A general decline in the crop produced and occasional supply shocks from key import sources such as Brazil have contributed to a series of price increases even though per capita consumption of orange juice has been declining steadily.

### USDA Florida Orange Crop Forecast And Actual Production



Source: United States Department of Agriculture

### USDA Orange Juice Supply & Demand Estimates

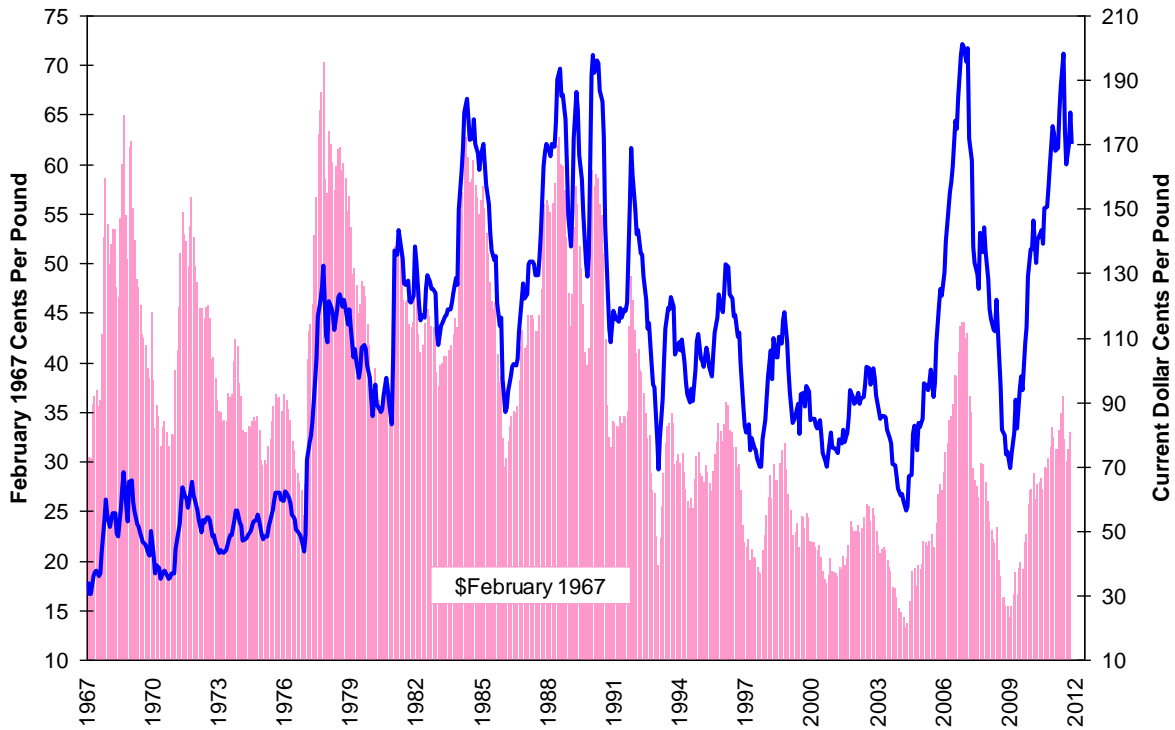


Source: United States Department of Agriculture

The volatile nature of FCOJ pricing is what makes this market so vital for hedgers and so interesting for speculators. The market is prone to sharp price spikes in anticipation of weather-related disruptions in supply, including freezes and hurricanes, and to retracements of those spikes when the damage was not as bad as feared initially, or when imports of FCOJ from Brazil and other suppliers enter the U.S. market.

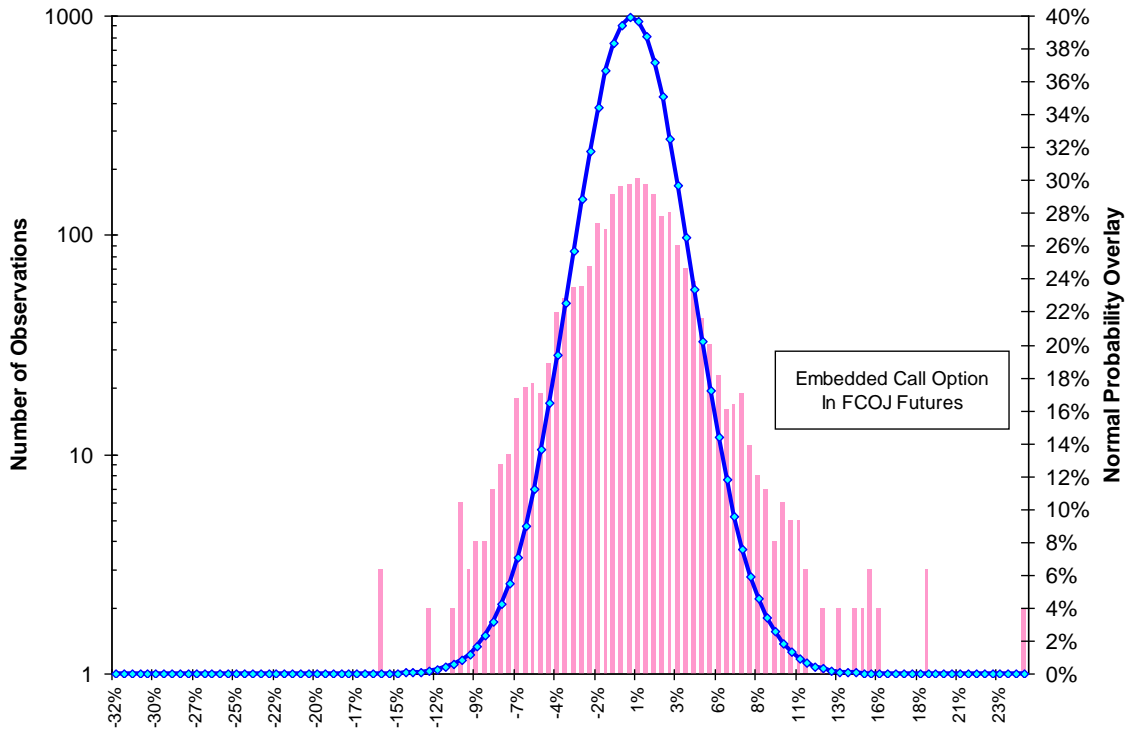
The nature of FCOJ prices over time can be viewed in two ways. The first perspective is a simple price chart in current- and constant-dollar terms. The second perspective is weekly percentage changes compared to a normal probability distribution. Here the preponderance of price spikes shows up as both the very positive “skew,” or shift to the right, and as the greater-than-expected number of large positive returns. A long position in FCOJ futures is in many ways equivalent to owning a call option on a supply disruption.

### Even Constant-Dollar Frozen Concentrated Orange Juice Prices Are Volatile



Source: CRB-Infotech CD-ROM

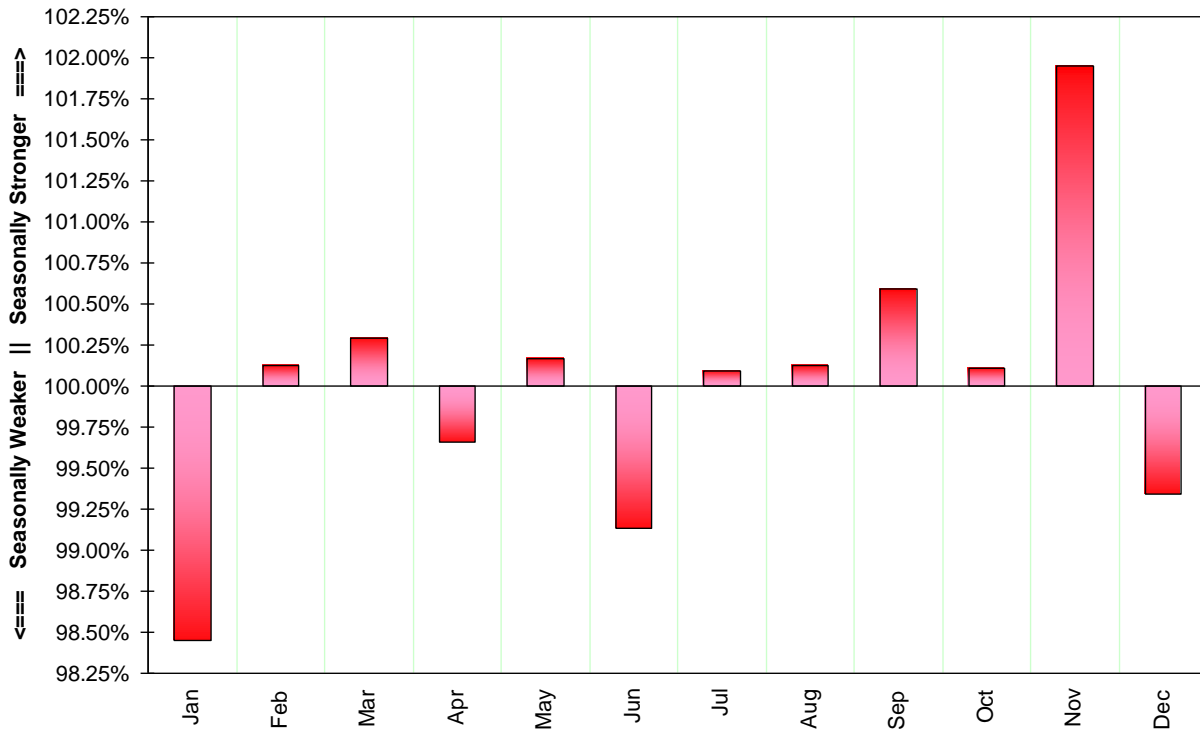
**Weekly Returns Skewed Heavily To Upside**  
 Skew = .344



Source: CRB-Infotech CD-ROM

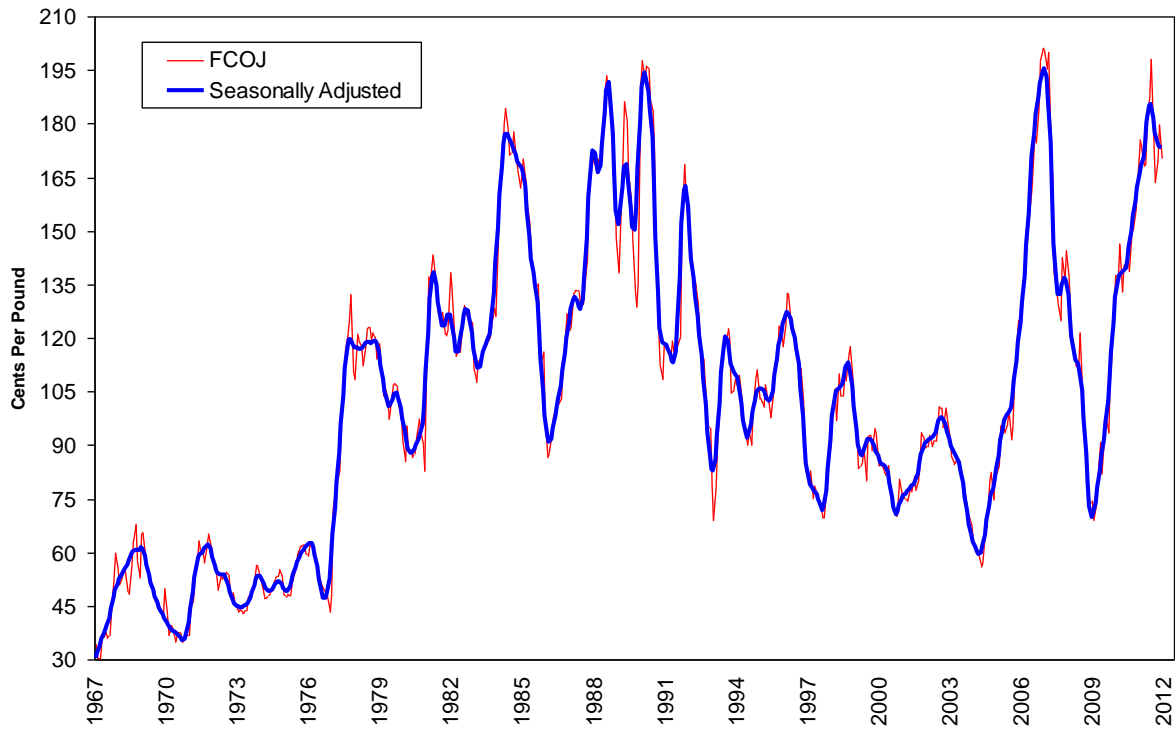
If FCOJ prices are in fact an embedded call option, do we see some seasonal distortions in their pricing structure? The answer here is rather surprising in one respect and reassuring in another. Not only are the seasonal divisors for FCOJ prices amongst the weakest of all agricultural commodities - in fact, they are not statistically significant at a rigorous 1% level - the seasonally adjusted price chart for FCOJ shows just how efficient the market has been in moderating price swings. This is what we hope for in any stored commodity. A seasonal analysis indicates the strongest month for FCOJ futures is November, the time when traders are hedging against a freeze. The seasonally weakest month is January, when many “freeze-protection” trades are lifted.

### Monthly Seasonality For FCOJ Futures



Source: CRB-Infotech CD-ROM

### FCOJ Futures Market Efficient In Moderating Seasonal Swings

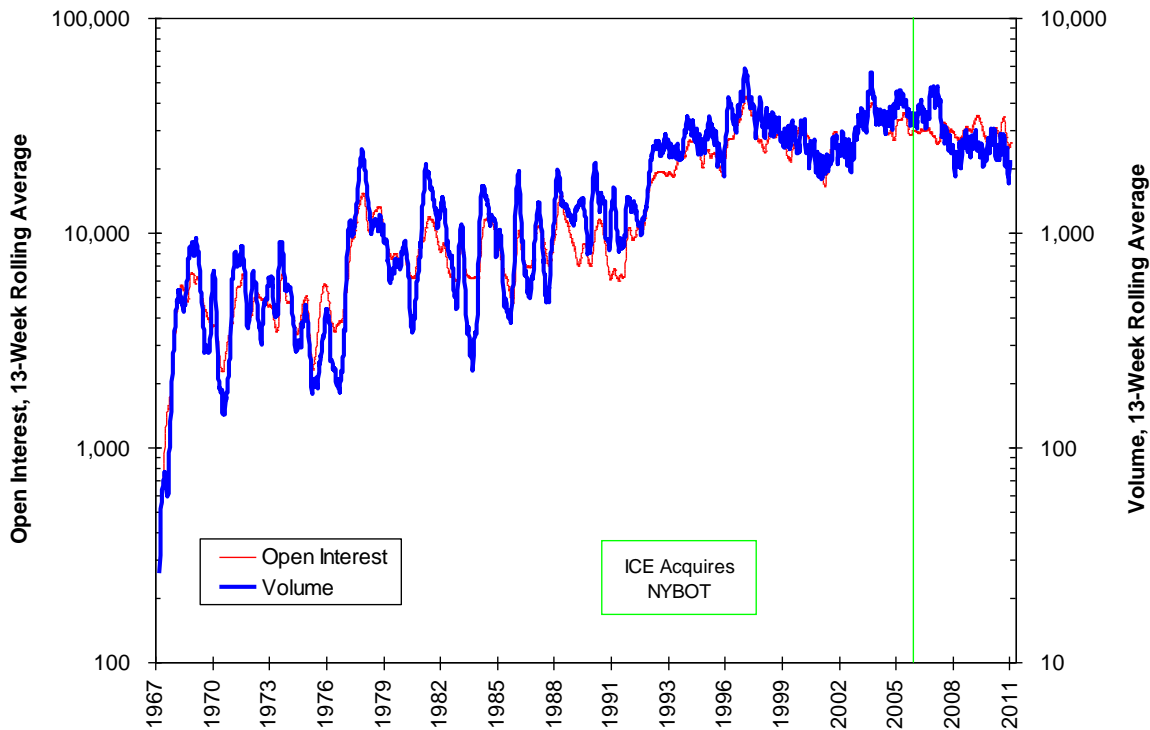


Source: CRB-Infotech CD-ROM

## FCOJ TRADING AT ICE FUTURES U.S.

This price history and market structure tells us clearly why juice sellers such as grocery chains and juice processors need to hedge their price risks, and why FCOJ futures and options have been so successful over the contracts' lives. The success of the contract grew even as the physical nature of the orange juice market shifted from FCOJ to NFC. Commodity trading advisors and commodity-based hedge funds like the contract not only for its trading opportunities, but also because of its diversifying properties vis-à-vis other commodity futures.

### Long-Term Success Of Frozen Concentrated Orange Juice Contract



Source: CRB-Infotech CD-ROM

## ICE FUTURES U.S. FROZEN CONCENTRATED ORANGE JUICE CONTRACT

The ICE Futures U.S. FCOJ futures contract is for the physical delivery of USDA frozen concentrate, not less than 62.5° Brix, to an exchange-licensed warehouse in Florida, New Jersey or Delaware. The key specifications are:

### ICE Futures Frozen Concentrated Orange Juice Futures Specifications

Hours	0800 Eastern Standard Time to 1400 Eastern Standard Time Trading platform available for order entry 2000 EST previous day
Symbol	OJ
Size	15,000 pounds of orange juice solids (3% or less)
Quotation	Cents and hundredths of a cent per pound to two decimal places
Contract Cycle	Jan-Mar-May-Jul-Sep-Nov
Minimum Fluctuation ("tick")	.05 cent; each .05 cent = \$7.50 fluctuation
Settlement	Physical delivery to exchange-licensed warehouses in Florida, New Jersey and Delaware
Deliverable Origins	U.S., Brazil, Costa Rica and Mexico
Grade	USDA Grade A with a Brix value not less than 62.5 degrees
Daily Price Limit	10 cents per pound above/below the previous day's settlement price. See FCOJ Rule 13.08 for expansion of limit conditions
First/Last Notice Day	First business day of the contract month / fifth business day prior to the last business day of the contract month
Last Trading Day	Fourteenth business day prior to the last business day of the contract month Last notice day is twelve business days from end of spot month

A complete list of specifications, including deliverable growths, trading fees and margins is available at:

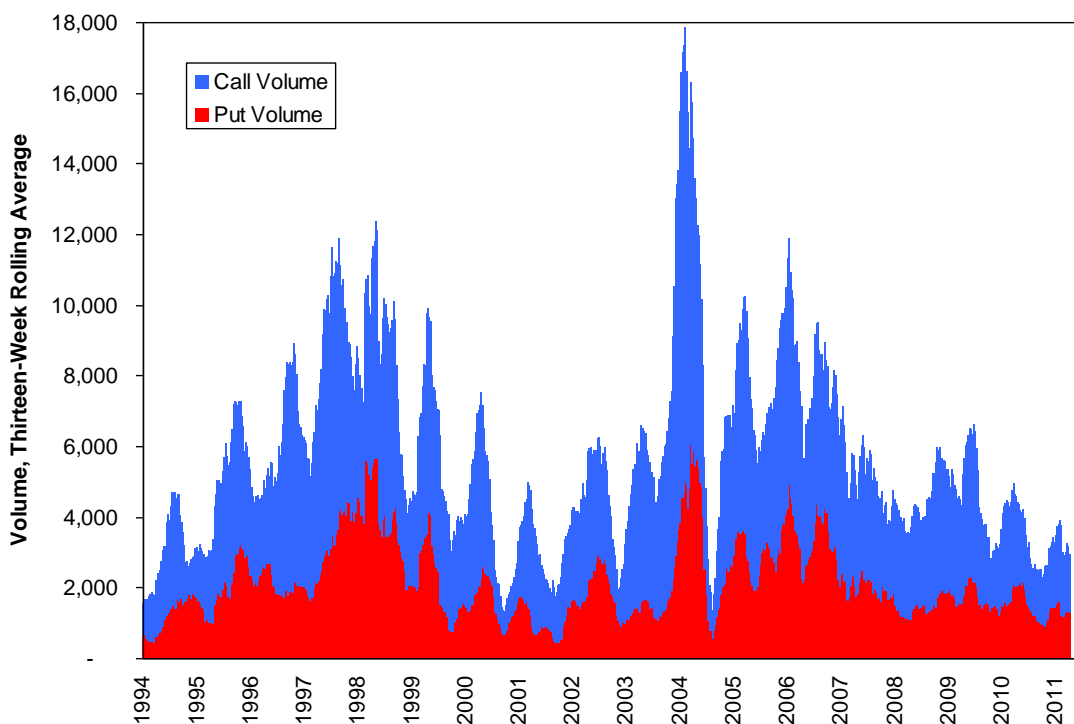
<https://www.theice.com/productguide/ProductDetails.shtml?specId=30>

Options on the FOCJ futures contract are also available. Each futures contract has options that settle into that contract along with a serial option expiring in the month prior to the futures contract. For example, the January future has both a December and a January option priced thereto. Option strikes are spaced 5 cents apart. The last trading day is the third Friday of the month preceding the named option month. A complete list of option specifications is available at:

<https://www.theice.com/productguide/ProductDetails.shtml?specId=29>

Options trading volume and open interest on the FCOJ futures contract have stayed at a high level, with surges around weather-related events such as the 2004 hurricane season in Florida. Options tend to be used by two groups of sophisticated traders. The first is commercial participants hedging their physical positions. The second is experienced speculative traders.

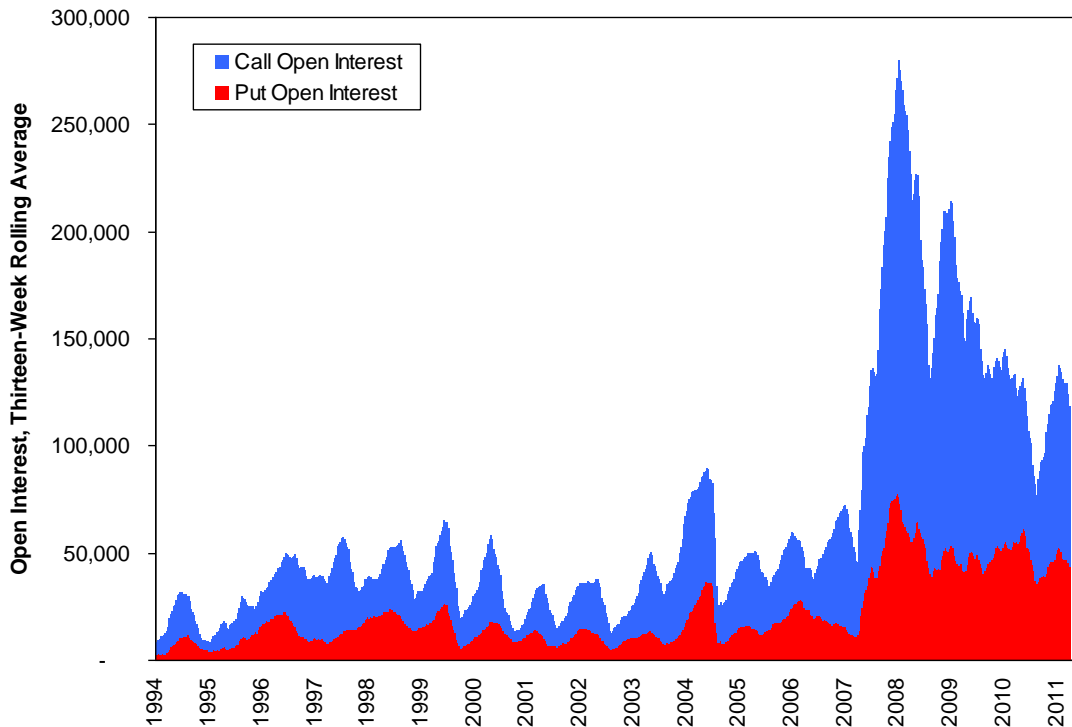
### Long-Term Success Of FCOJ Options: Volume



Source: ICE Futures U.S.



## Long-Term Success Of FCOJ Options: Open Interest



Source: ICE Futures U.S.

### TRADING ICE FUTURES U.S. FCOJ FUTURES AND OPTIONS

Futures markets exist for the purposes of price discovery and risk transfer. Price discovery requires buyers and sellers to meet in a competitive marketplace; prices resulting from each transaction signal to other traders what a given commodity might be worth.

Anyone approved by a clearing member or futures commission merchant can participate in the price discovery process, regardless of their participation in the citrus and juice business. A market participant who is not in the citrus, juice-packing or retail business will be classified as a non-commercial or speculative trader. A market participant active in those businesses will be classified as a commercial trader or hedging trader. For a speculator, the price discovery trade is simple and straightforward; if you believe the price of FCOJ will rise, you “go long” a futures contract; if you believe the price of FCOJ will fall, you “go short” a futures contract.

These same market views can be expressed in options as well. If you believe prices will rise, you can buy a call option, sell a put option or engage in a large number of spread trades tailored to your specific price view and risk acceptance. If you believe prices will fall, you can buy a put option, sell a call option or engage in a different set of spread trades. A long call (put) option is the right, but not the obligation, to go long (short) the underlying future at the strike price at or by expiration. A short call (put) option is the obligation to deliver (take delivery) of the underlying future at or by the expiration if that option is exercised.

Hedgers use ICE FCOJ options frequently. Producers can set a floor beneath a selling price with long put options, and buyers can establish a ceiling over costs with long call options, among other strategies.

In a futures trade, you and the counterparty to your trade will post initial or original margin with your futures commission merchant or clearing member. Minimum margins are set by ICE Futures U.S., and your futures commission merchant may require additional funds. The margin schedule for ICE Futures US is available at:

<http://www.theice.com/margins.jhtml>

There are no margin requirements for long option positions. Margin requirements for short option positions vary according to the relationship between the option strike price and the futures price.

If the market moves in your favor - higher for a long position (or commitment to take delivery of FCOJ or to offset the contract by selling it prior to delivery), or lower for a short position (or commitment to deliver FCOJ or to offset the contract by buying it prior to delivery) - the equity in your account will increase. You may withdraw these funds down to the “maintenance margin” level, depending on your account agreement.

If the market moves adversely - lower for a long position or higher for a short position - your futures commission merchant will require you to post additional funds, called variation margin, to sustain your maintenance margin level. These “margin calls” assure both your futures commission merchant and ICE Clear U.S.<sup>®</sup>, the exchange clearinghouse, that you can perform according to your contractual commitment. All futures accounts are marked-to-market daily, and participants deficient in margin obligations may have positions liquidated involuntarily.

As the designated clearinghouse, ICE Clear U.S. serves as the counterparty to every futures contract traded on ICE Futures U.S. As a AAA-rated entity, the clearinghouse clears trades matched by ICE Futures U.S. and guarantees performance in delivery even if a trader defaults. The financial integrity and anonymity provided by ICE Clear U.S. are increasingly important in the financial system.

What do the financial flows look like in a futures trade? Let’s say a five-contract futures position is initiated at 217.00¢ per pound and the market rises to 218.30¢ per pound on the following trading day.

- For the long position, the gain is:  
 $5 \text{ contracts} \times [218.30 - 217.00] / \text{contract} \times \$1.50 \text{ per } .01¢ = \$975$
- For the short position, the loss is equal and opposite:  
 $5 \text{ contracts} \times [217.00 - 218.30] / \text{contract} \times \$1.50 \text{ per } .01¢ = -\$975$

If we reverse the price path, we reverse the gains and losses. Let’s change the starting price to 216.50¢ per pound and have the market decline to 214.25¢ per pound the next day.

- For the long position, the loss is:  
 $5 \text{ contracts} \times [214.25 - 216.50] / \text{contract} \times \$1.50 \text{ per } .01¢ = -\$1,687.50$
- For the short position, the gain is equal and opposite:  
 $5 \text{ contracts} \times [216.50 - 214.25] / \text{contract} \times \$1.50 \text{ per } .01¢ = \$1,687.50$

Options traders see the same directional profit and loss profiles relative to price, but the actual profit and loss is subject to a range of additional factors, including market volatility, time to expiration, interest rates and the relationship between the current futures price and the option’s strike price.

## RISK TRANSFER

Risk transfer is the second purpose of a futures market. Any producer of FCOJ, any holder of FCOJ inventories, or any party at risk to the price of FCOJ declining can seek protection in the futures markets. These participants are long the market and can offset risk by going short a futures contract. Any juice packer or retailer at risk to the price of FCOJ increasing is short the market and can offset risk by going long a futures contract.

The mechanics and financial flows are identical to those outlined above. A FCOJ producer at risk to prices falling can acquire a financial asset, the short futures position, which will rise in value as the market declines. The opposite is true for a juice packer at risk to prices rising; there a long futures position will rise in value as the market rises. While the financial flows should offset the economic gains and losses of the physical FCOJ position, there are two important things to remember. First, even though futures prices converge to cash prices at expiration, the convergence process is subject to what is called “basis risk” or differences resulting from changes in hedging demand and location of the FCOJ. Certified stock reports are available at:

<https://www.theice.com/productguide/Reports.shtml?specId=30>

Second, while the economic gains on, for example, a warehouse full of FCOJ are real, they are not realized until the FCOJ is sold. If this inventory is hedged with a short futures position and the market rises, the beneficial owner will have to keep posting additional funds in the margin account.

Nothing in the above discussion of hedging tells you when or at what price to hedge. This is one of the reasons options are valuable to hedgers. While the FCOJ producer may wish to have downside protection or a price floor, that same producer probably wants to participate in any future price increases.

The producer concerned about a decline in the value of FCOJ between now and the time he expects to be able to sell his inventory could buy a January 215¢ put option, which is the right, but not the obligation, to receive a short position in a January future at 215¢ for 8.65¢, or approximately \$1,298. The purchased put guarantees the producer the right to sell the January future for an effective price of 206.35¢ per pound (the 215¢ strike price less the premium paid of 8.65¢). This right gives him protection if FCOJ prices have fallen by the expiry of the January option, but at the same time preserves his ability to profit should the price of FCOJ move higher over the period.

The juice packer wishing to cap the price of FCOJ, but not be exposed to margin calls if the price continues to rise, can do an opposite trade and buy a January 120¢ call option, which is the right, but not the obligation, to receive a long position in a January future at 220¢ for 8.40¢, or approximately \$1,260. The purchased call gives the juice packer the right to buy the January future at an effective price of 228.40¢ per pound (again, the strike price of 220¢ cents plus the premium paid of 8.40¢), offering protection against an unfavorable rise in the price of FCOJ while preserving the ability to take advantage if prices decline.

It should be noted that the risk profile for sellers of options is dramatically different than for buyers of options. For buyers, the risk of an option is limited to the premium or purchase price paid to buy the option. For sellers, the risk profile is unknown and can potentially quite large.

Options can become complex very quickly, with trading influenced by variables including time remaining to contract expiration, underlying commodity volatility, short-term interest rates and a host of expected movements collectively called “the Greeks.”

#### ABOUT ICE

In addition to agricultural commodities, ICE operates existing futures and options markets for crude oil, refined products, natural gas, power, emissions, and foreign currency and equity index futures and options.

ICE conducts its energy futures markets through ICE Futures Europe<sup>®</sup>, its U.K. regulated London-based subsidiary, which offers the world’s leading oil benchmarks and trades nearly half of the world’s global crude oil futures. ICE conducts its soft commodity, foreign exchange and index markets through its U.S. regulated subsidiary, ICE Futures U.S., which provides global futures and options markets, as well as clearing services through ICE Clear U.S., its wholly owned clearinghouse. ICE’s state-of-the-art electronic trading platform brings market access and transparency to participants in more than 50 countries.

ICE was added to the Russell 1000<sup>®</sup> Index in June 2006. Headquartered in Atlanta, ICE also has offices in Calgary, Chicago, Houston, London, New York and Singapore. ICE also conducts futures and options trading in canola oil, milling wheat, durum, barley and western barley through ICE Futures Canada<sup>™</sup>, a regulated market in Manitoba, Canada.

#### LEADING ELECTRONIC TRADING PLATFORM

ICE’s electronic trading platforms provides rapid trade execution and are amongst the world’s most flexible, efficient and secure commodities trading systems. Accessible via direct connections, telecom hubs, the Internet or through a number of front-end providers, ICE offers a 3 millisecond transaction time in its futures markets, the fastest in the industry. ICE’s platform is scalable and flexible – which means new products and functionality can be added without market disruption.

ICE offers numerous APIs for accessing futures and OTC markets, including a FIX API.

#### INTEGRATED ACCESS TO GLOBAL DERIVATIVES MARKETS

ICE’s integrated futures and OTC markets offer cleared and bilateral products on a widely-distributed electronic platform, with quick response times to participants’ needs, changing market conditions and evolving market trends.

#### TRANSPARENCY

Price transparency is vital for efficient and equitable operation of markets. ICE offers unprecedented price transparency and ensures that full depth-of-market is shown. Trades are executed on a first-in/first-out basis,

ensuring fair execution priority. ICE also displays a live ticker of all deal terms, and maintains an electronic file of all transactions conducted in its markets.

#### ICE FUTURES U.S. REGULATION

ICE Futures U.S., Inc. is a designated contract market pursuant to the Commodity Exchange Act, as amended, and is regulated by the Commodity Futures Trading Commission. For well over a century, the Exchange has provided reliability, integrity and security in the global marketplace.

#### GETTING INVOLVED

A list of ICE education programs is available at: [www.theice.com/education](http://www.theice.com/education); an overview of ICE capabilities is available at: [www.nxtbook.com/nxtbooks/ice/overview/#/0](http://www.nxtbook.com/nxtbooks/ice/overview/#/0). In addition to our other education offerings, ICE provides contract specific webinar presentations. A list of these presentations can be found at: [www.theice.com/webinars](http://www.theice.com/webinars).

The ICE website: [www.theice.com](http://www.theice.com) should be your first place to start. The home page for frozen concentrated orange juice is: <http://www.theice.com/productguide/ProductDetails.shtml?specId=30>. The link: [www.theice.com/clear\\_us](http://www.theice.com/clear_us) provides you with the technical details on exchange rules, margins and fees and delivery and expiration.

To contact ICE Futures U.S., visit: [www.theice.com/contact](http://www.theice.com/contact)