



## Coffee 'C'

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 cotton, cocoa, frozen concentrated orange juice, sugar and Coffee “C,” a contract based on Arabica (as opposed to Robusta) coffee.

Coffee futures have traded in New York since 1882, first on the New York Cocoa Exchange (later part of the Coffee, Cocoa and Sugar Exchange), then on the New York Board of Trade and now on ICE Futures U.S. Options on coffee futures were introduced in 1986. Futures and options on futures are used by both the domestic and global coffee industries to price and hedge transactions. The ICE Futures U.S. Coffee “C” contract is the benchmark for world coffee prices. The contract’s depth, liquidity and volatility, along with its diversifying properties vis-à-vis other commonly traded futures, have made it a preferred instrument among commodity trading advisors and hedge funds. ICE Futures U.S. is the exclusive global market for Coffee “C” futures and options.

### A BRIEF HISTORY OF COFFEE

The coffee tree is named after the Ethiopian province of Kaffa, where legend has it a goat herder noticed his goats seemed livelier than usual after chewing the local trees’ red “cherries.” Whether true or not, we know two facts today: first, the roasted beans, two of which are found in every coffee cherry, produce a flavorful and aromatic drink. Second, an alkaloid contained in those beans, caffeine, is a stimulant that arguably has done more to advance the cause of human productivity than all management seminars combined. (Green coffee beans can be decaffeinated prior to roasting.)

Coffee moved across the Red Sea to the Yemeni port of Mocha. The trees, which are not freeze-hardy, were smuggled into the Netherlands in the early 17th century, and were taken to India and to the Dutch East Indies. “Java,” the name of an Indonesian island, remains one of coffee’s nicknames. The French brought coffee to the Caribbean,

and the Dutch to their South American colony of Surinam, where it was moved by land to Brazil. The large-scale commercialization of the East and later West African coffee industries occurred at the height of European colonialism on the continent in the late 19th and early 20th centuries. Robusta and Arabica coffees are produced by two botanically different trees. Arabica, which is more labor-intensive in its cultivation and is grown at higher altitudes, produces a milder, more aromatic and more complex coffee than Robusta. Coffees made from the hardier Robusta tree have higher caffeine content and a stronger taste.

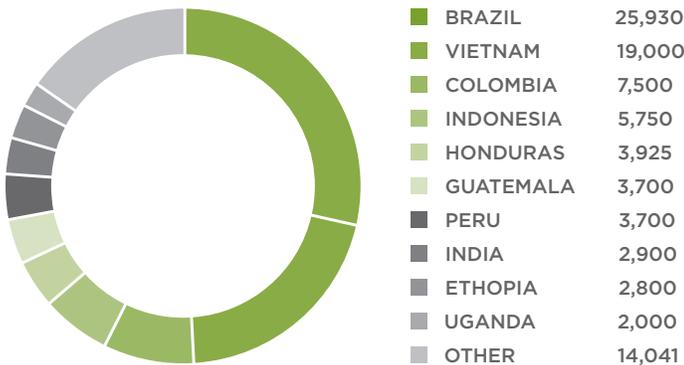
### COFFEE AND INTERNATIONAL TRADE

Almost no coffee is grown in or exported from Organization for Economic Cooperation and Development (OECD) countries, and these countries dominate the import picture. Unlike other soft commodities such as sugar, cotton and frozen concentrated orange

juice, the issue of subsidization of coffee production and exports is absent from international trade forums. This makes the global coffee trade and the stabilization of global coffee prices one of the most enduring issues in international economics.

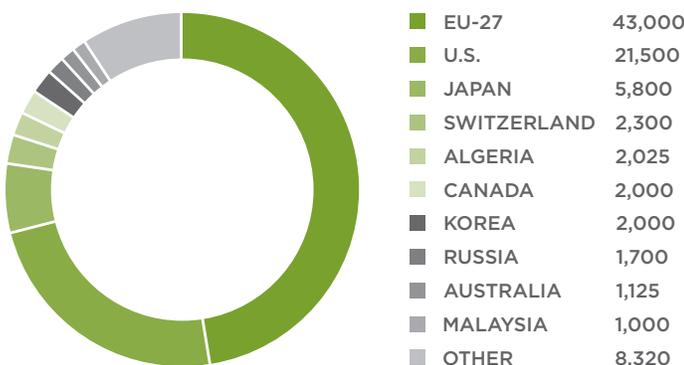
A U.S. Department of Agriculture analysis of Arabica coffee exports and imports is shown below. The income and wealth disparities between coffee importing nations and exporting nations are substantial. While coffee imports and prices are a minor matter for the large coffee-importing countries, they can be critical for major coffee-exporting countries. Recognition of this imbalance of importance and interests, along with a number of Cold War political considerations, prompted the formation of the International Coffee Organization in 1963. The ICO has administered six International Coffee Agreements designed to promote a sustainable world coffee economy. ICO member countries account for over 97% of world coffee production and approximately 80% of world coffee consumption.

**2011-2012 USDA ARABICA COFFEE EXPORT ESTIMATES  
(1,000 60-Kilogram Bags)**



Source: U.S. Department of Agriculture

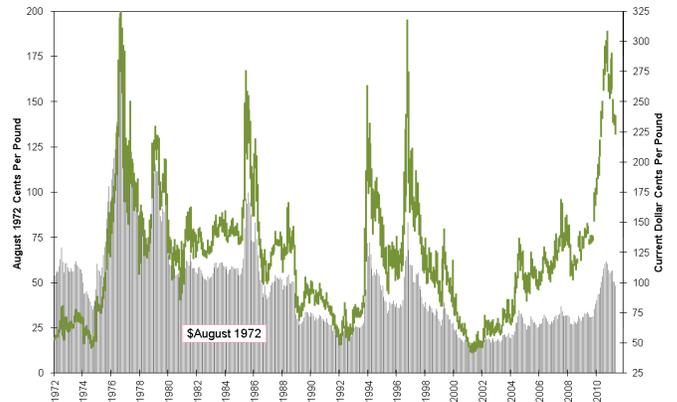
**2011-2012 USDA ARABICA COFFEE IMPORT ESTIMATES  
(1,000 60-Kilogram Bags)**



Source: U.S. Department of Agriculture

The price of coffee has been extraordinarily volatile over the years, both in current- and constant-dollar terms. It is subject to supply disruptions such as freezes in the Brazilian highlands, and to new exporters buying market share via lower prices, as was the case for Vietnam in the late 1990s and early 2000s. The intraday volatility of coffee "C" futures is just as high, which has made the contract a favorite for day-traders over the years.

**PRICE OF COFFEE "C" HIGHLY VOLATILE**



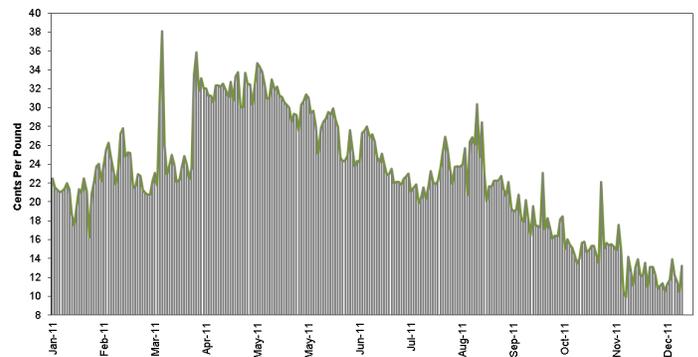
Source: CRB-Infotech CD-ROM

**INTERMARKET ARBITRAGE**

Any consumer knows coffee is not coffee; there are many grades and varieties. Still, traders can and do trade one coffee future against another. Two common trades are the spread between the ICE Futures U.S. Coffee "C" contract and the Brazilian Bolsa de Mercadorias & Futuros (BMF) International Arabica contract and the spread between Coffee "C" and the London International Financial Futures (LIFFE) Robusta contract.

**THE NEW YORK - SÃO PAULO ARBITRAGE**

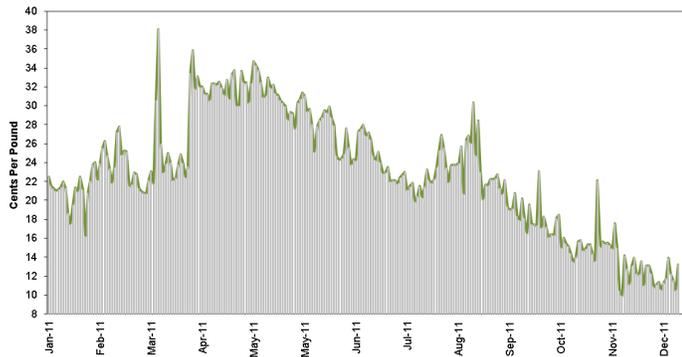
(Long ICE July 2012, Short BMF September 2012)



Source: Bloomberg

## THE NEW YORK - LONDON ARBITRAGE

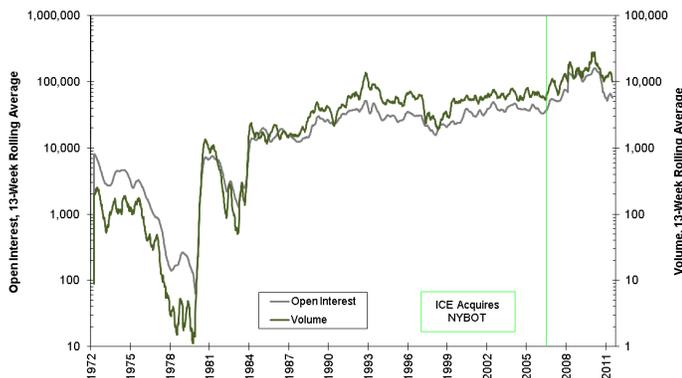
(Long ICE March 2012, Short LIFFE May 2012)



Source: Bloomberg

The deep, liquid cash market for coffee, price volatility and the critical need for risk management by coffee exporters and roasters has created a highly successful futures contract, as demonstrated by its volume history.

## LONG-TERM SUCCESS OF COFFEE "C" CONTRACT



Source: CRB-Infotech CD-ROM

## ICE FUTURES U.S. COFFEE "C" CONTRACT

The ICE Futures U.S. Coffee "C" futures contract is delivered physically. The key specifications are:

### Contract specifications including fees, margins and delivery standards

**Options** on Coffee "C" futures contracts are also available. Each futures contract has options that settle into that contract along with serial options for the months between the delivery month and the previous delivery month. For example, December futures underlie option contracts expiring in October and November as well as December. Option strikes are spaced 2.5 cents apart. The last trading day for regular options is the second Friday of the calendar month

preceding the option contract month, provided there are a minimum of four trading days between the last trading day of the expiring option and the first notice day of the expiring future.

Options trading volume on the Coffee "C" futures contract has grown significantly since the late 1990s. 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. The growing use of these markets by both groups is an important indicator of the Coffee "C" futures contract's success.

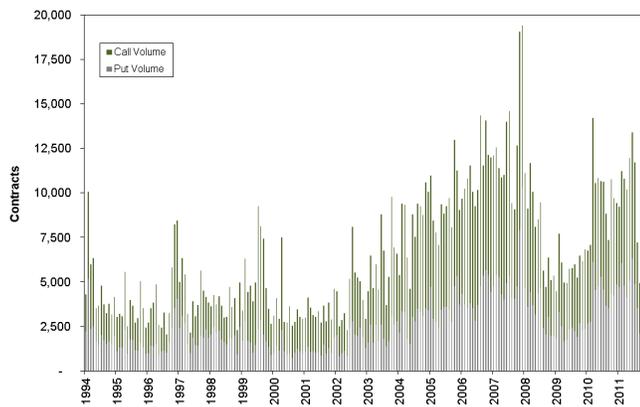
## TRADING ICE FUTURES U.S. COFFEE "C" FUTURES AND OPTIONS

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 coffee business. A market participant who is not in the coffee business will be classified as a non-commercial or speculative trader. A market participant active in the coffee business 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 Coffee "C" will rise, you "go long" a futures contract; if you believe the price of Coffee "C" will fall, you "go short" a futures contract.

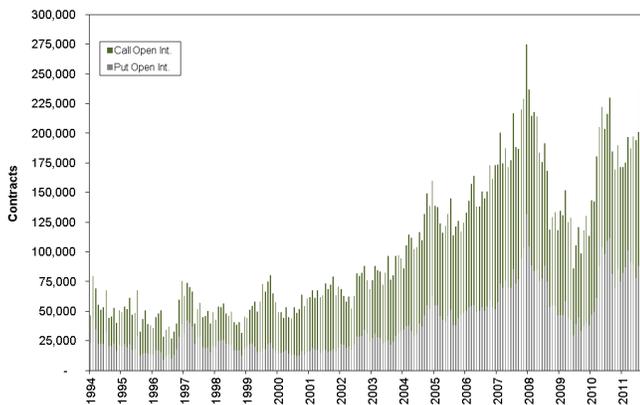
These same market views can be expressed in options as well. If you believe prices will rise, you can buy a call option, sell a put option or engage in a large number of spread trades tailored to your specific price view and risk acceptance. If you believe prices will fall, you can buy a put option, 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.

## AVERAGE DAILY TRADING VOLUME BY MONTH: COFFEE "C" OPTIONS



Source: ICE Futures U.S.

## AVERAGE MONTHLY OPEN INTEREST: COFFEE "C" OPTIONS



Source: ICE Futures U.S.

Hedgers use ICE Coffee "C" 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.

### Margin schedule

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 coffee or to offset the contract by selling it prior to delivery), or lower for a short position (or commitment to deliver coffee 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.®, the exchange clearing house, 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 clearing house, ICE Clear U.S. serves as the counterparty to every futures contract traded on ICE Futures U.S. The clearing house clears trades matched by ICE Futures U.S. and guarantees performance in delivery even if a trader defaults.

What do the financial flows look like in a futures trade? Let's say a five-contract futures position is initiated at 215.75¢ per pound and the market rises to 218.30¢ per pound on the following trading day.

- For the long position, the gain is:  
 $5 \text{ contracts} \times [218.30 - 215.75] / \text{contract} \times \$18.75 \text{ per } .05¢ = \$4,781.25$
- For the short position, the loss is equal and opposite:  
 $5 \text{ contracts} \times [215.75 - 218.30] / \text{contract} \times \$18.75 \text{ per } .05¢ = -\$4,781.25$

If we reverse the price path, we reverse the gains and losses. Let's change the starting price to 246.10¢ per pound and have the market decline to 243.40¢ per pound the next day.

- For the long position, the loss is:  
 $5 \text{ contracts} \times [243.40 - 246.10] / \text{contract} \times \$18.75 \text{ per } .05¢ = -\$5,062.50$
- For the short position, the gain is equal and opposite:  
 $5 \text{ contracts} \times [246.10 - 243.40] / \text{contract} \times \$18.75 \text{ per } .05¢ = \$5,062.50$

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 originating seller or marketer of Arabica coffee, any holder of Arabica coffee inventories, or any party at risk if the price of coffee

declines is long the market. These participants are long the market and can offset risk by going short a Coffee "C" futures contract. Any Arabica coffee roaster, or anyone who is at risk of increasing Arabica coffee prices, is short the market and can offset risk by going long a Coffee "C" futures contract.

The mechanics and financial flows are identical to those outlined above. An Arabica coffee grower at risk to prices falling can acquire a financial asset, the short Coffee "C" futures position, which will rise in value as the market declines. The opposite is true for a coffee roaster at risk to prices rising; there a long Coffee "C" futures position will rise in value as the market rises.

While the financial flows should offset the economic gains and losses of the physical coffee 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, location of the coffee or grade differentials.

#### Daily report of Coffee "C" stocks in warehouses

Second, while the economic gains on, for example, a warehouse full of Arabica coffee are real, they are not realized until the Arabica coffee is sold. If this inventory is hedged with a short futures position and the market rises, the beneficial owner of the Arabica coffee 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 Arabica coffee grower may wish to have downside protection, or a price floor, that same grower probably wants to participate in any future price increases. The grower concerned about a decline in the value of Arabica coffee between now and the time he expects to be able to sell his cash crop at harvest in the fourth quarter could buy a December 215¢ put option, which is the right, but not the obligation, to receive a short position in a December Coffee "C" future at 215¢ for a premium of 8.27¢, or approximately \$3,101 per contract. The purchased put guarantees the grower the right to sell the December Coffee "C" future for an effective price of 206.73¢ per pound (the 215¢ strike price less the premium paid of 8.27¢). This right gives him protection if Coffee "C" prices have fallen by the expiry of the December option, but at the same time preserves his ability to profit should the price of Arabica coffee move higher over the period.

The Arabica coffee roaster wishing to cap the price of Arabica

coffee, but not be exposed to margin calls if the price continues to rise, can do an opposite trade and buy a December 220¢ call option, which is the right, but not the obligation, to receive a long position in a December Coffee "C" future at 220¢ for a premium of 6.93¢, or approximately \$2,599 per contract.

The purchased call gives the Arabica coffee roaster the right to buy the December Coffee "C" future at an effective price of 226.93¢ per pound (again, the strike price of 220¢ cents plus the premium paid of 6.93¢), offering protection against an unfavorable rise in the price of Arabica coffee, 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 be 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 range of expected movements collectively called "the Greeks."

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ICE Futures	WTI	Jun12	+	2	101.00	101.84	3	101.82	101.27	101.60	101.11	1017	0
ICE Futures	WTI	Jun13	+	2	100.92	100.84	3	100.95	99.95	100.65	100.28	2632	0
ICE Futures	WTI	Dec15	+	2	100.33	100.39	3	100.65	100.65	100.65	100.28	2632	0
ICE Futures	WTI	Dec16	+	2	94.41	94.47	1	0.00	0.00	100.28	0.00	0	0
ICE Spr	WTI	Jun12Dec12	+	3	98.88	98.92	2	0.00	0.00	98.28	0.00	18	0
ICE Spr	WTI	Jun12Jun13	+	12	-0.41	-0.39	8	-0.29	-0.58	100.52	-0.47	427	0
ICE Spr	WTI	Dec12Jun13	+	7	0.92	0.97	3	0.91	0.91	100.52	0.91	11	0
ICE Spr	WTI	Jun12Dec13	+	7	1.23	1.26	3	1.39	1.25	1.38	1.32	33	0
ICE Spr	WTI	Dec12Dec13	+	2	2.79	2.82	19						0

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CONTACT US

Telephone: +1 212 748 4000

Online: [theice.com/coffee](http://theice.com/coffee)

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