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Real Estate Futures and Options – Innovative Financial Products

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Abstract

The stock and commodities exchanges are in a development process, characterized by mergers and acquisitions and innovation of financial products. Traditionally, the exchanges provide spot, futures and options markets for a broad range of products like coffee, cocoa, cotton, frozen concentrated orange juice, ethanol, metals, currency, shares, bonds, interest rate and indexes. In the last years, exchanges have launched futures and options for different assets like weather, volatility or real estate. In this paper, we analyze real estate futures and options that are available at Chicago Mercantile Exchanges.

Key words: *real estate, futures, options*

The Importance of Real Estate Futures and Options

Commercial real estate futures and options and housing futures and options represent the most innovative derivatives designed to hedge risk in American real estate market. The tremendous importance of these products is demonstrated by the dimension of the domestic commercial real estate which was valued at US$ 5.3 trillion at the beginning of 2006, representing 35.3% of the global estimated total of US$ 15 trillion [1]. The commercial real estate market includes five real estate property categories: retail (36% of the U.S commercial real estate value), office (29%), apartments (24%), hospitality (7%) and industrial properties (4%). This classification has a great deal of importance in the calculation of U.S. Commercial Real Estate Indexes (CREX).

Also, the total value of residential real estate held by households and non-profit organizations was estimated at US$ 22.4 trillion in 2006, more than the US$ 19.3 trillion held in domestic equities and comparable to the US$ 25.9 trillion held in fixed income assets [2][1].

All these figures presented above are mentioned in order to demonstrate the importance of the US real estate market as a distinct asset class. Furthermore, the fact that this market performed well in the past and continues to generate attractive returns for investors, gives us the right to consider it as being a huge potential market for commercial real estate derivatives.

Commercial real estate futures and options represent derivative products that use real estate indexes as an underlying asset. These products allow institutional and retail investors in

[1] http://www.indeces.standardpoors.com

commercial real estate to manage risk in most significant property categories, providing readily tradable risk-shifting tools. They also have a huge potential for growth that results from the size of the underlying commercial real estate marketplace in the United States. Their notional value would equal $106 billion if commercial real estate derivatives were to comprise only 2% of the total market.

The Commercial Real Estate Indexes (CREX)

Commercial real estate derivatives and other derivatives products are designed in a similar way, meaning that they have identical specifications. The aspect that makes the difference refers to the underlying asset which in the first case is represented by a commercial real estate index. The Commercial Real Estate Indexes (CREX) are computed in order to reflect underlying real estate and capital market trends by measuring the change in commercial real estate prices by property and geographic region. There are ten commercial real estate indexes: a national composite index, five geographic regional indexes and four national property sector indexes (table 1).

Table 1. Commercial real estate indexes:

Regional indexes (covering four property types)		**Property types indexes** (covering five regions)		**Composite index** (covering five regions and four property types)	
Name	Ticker	Name	Ticker	Name	Ticker
Northeast	NEI	Office	OCI	National	NCI
Midwest	MID	Warehouse	WCI		
Mid-Atlantic South	MAS	Apartment	ACI		
Pacific West	PCW	Retail	RCI		
Desert Mountain West	DMW				

Source: http://www.cme.com

So, the five regional indexes are comprised of the four property types including office, warehouse, apartments and retail. The Northeast region includes significant markets such as Boston, New York City, Washington D.C.(Baltimore and Richmond) and Philadelphia. The Midwest region includes Chicago, Detroit, Cincinnati, Cleveland, Columbus and Kansas City. The Mid-Atlantic-South region includes Miami, Ft. Lauderdale, Orlando, Tampa Bay, Jacksonville and Atlanta. The Desert Mountain region includes Phoenix, Tucson, Denver, and La Vegas. Also, the Pacific West region includes Seattle, Portland, San Francisco, Oakland, San Jose, Sacramento, Los Angeles, Orange County and Riverside-San Bernardino. The four national sector indexes reflect the market transaction prices for property types including office, warehouse, apartments and retail.

The indexes reflect commercial real estate price changes, excluding certain specialty property types such as medical office, call centers, laboratories, student and military housing, casinos, super high luxury retail and others. Also, properties under 20,000 square feet are excluded.[3]

The CREX indexes represent market capitalization ("cap weighted") price indexes. So, they are calculated using the transaction prices in the market. Extreme high and low prices are excluded. The same thing happens to transactions that do not meet completeness standards. This allows for the final mean price to better reflect the market trend. [5] Extreme values are eliminated by taking the log of the price data (***lnPt***) and eliminating transactions outside two standard deviations from the mean:

$$LnPt = Log(pt) \tag{1}$$

$$\text{Eliminate Extreme Values} = \text{Avg}(LnPt) \pm 2\sigma,$$

where:
LnPt is the log price per square foot,
σ is the standard deviation,
Avg(*LnPt)* is the average of all log prices.

The level of each commercial real estate index is calculated by multiplying the final mean prices by a weighting factor (*WF*) and applying a divisor. Also, the weighting factor is derived by multiplying the stock in square feet (St(2005)) by the average price per square foot in the base year (Pt(2005)).

$$WFt = (\mathrm{Pt}(2005)) \text{ X } (\mathrm{St}(2005)) \tag{2}$$

The national composite index is constructed to track movements in the total domestic value of commercial real estate and it can be calculated using the correlations presented above:

$$NCI\ t{+}1 = \frac{\sum (P_{it+1} \times WF_{it})}{\sum (P_{it}^{*} \times WF_{it})} \times 100 \tag{3}$$

where:
NCI is the national composite index calculated for the current period;
Pit+1 is the average price per square foot for each property sector and geographic region for the current period;
*P*it* is the average price per square foot for each property sector and geographic region for the base year period (January 2000);
WFit is the corresponding weighting factor;
*Σ (P*it x WFit)* is the divisor, which is the sum of all sector – metro weighted market caps for the base period (January 2000).

CREX futures and options are traded at Chicago Mercantile Exchange (CME) and they are constructed much like other index-based derivatives. The contract's value is determined by multiplying the value of the underlying commercial real estate index by $250 times (contract multiplier).

For example, if the CREX office index reaches 150.00 index points, the futures contract is nominally valued at $37,500, because the multiplies is $250.

Contract value = Contract multiplier x Index value = $250 x 150.00 = $37,500

Assuming that an investor buys 50 contracts at 150.00 and subsequently sells the 50 contracts at a value of 156.60, the implied profit is:

Long 50 contracts		150.00 index points
Short 50 contracts		156.60 index points
Profit per contract	=	<u>6.60 index points</u>
		x 50 contracts
		<u>x $250</u>
Gross profit/loss	=	$82,500

Also, an investor can have sold or gone short on futures. Assume that one sells 35 contracts at 156.60 and subsequently buys the 35 contracts at 152.60. This implies a profit of $35,000.

Short 35 contracts		156.60 index points
Long 35 contracts		152.60 index points
Profit per contract	=	<u>4.00 index points</u>
		x 35 contracts
		<u>x $250</u>
Gross profit/loss	=	$35,000

The minimum price fluctuation or “tick size” is 0.20 index points, which means a minimum fluctuation of $50 (= contract multiplier of $250 x 0.20 index points). Investors can go long (buying a specific contract) or short (selling a specific contract). In both cases, they are required to post initial performance bonds (margin), which equals 5% of transaction’s value. Positions are marked-to-marked each day and in cash. [6]

Conclusions

Commercial real estate futures and options provide an innovative solution to participate in the real estate market without having to sell or buy properties. They also reduce the very significant costs associated with commercial real estate portfolio diversification, construction and concentration and, in the same time, offer the opportunity for investors to benefit from down price movements.

The most important benefits of these products refer to:

- create a new means of risk transfer to a broad range of investors;
- bring liquidity and transparency to the commercial real estate marketplace.

The most significant participants in this market are:

- institutional investors – pension and hedge funds may gain exposure to their real estate investments and, in the same time diversify their portfolios;
- lenders – insurance companies and commercial banks can achieve downside risk protection on commercial real estate loan portfolios;
- real estate portfolio managers;
- real estate developers – can hedge development risk by development period, product type and geographic location;
- foreign investors – have a simplified way to invest in the U.S. commercial real estate market, which implies low costs and pricing transparency.

References

1. *** http://www.cme.com/CmeCommREStratPaper.pdf
2. *** http://www.indeces.standardpoors.com
3. *** http://www.cme.com/Cmehousing_brochure.pdf
4. *** http://www.cme.com/CmeREStratPaper.pdf
5. *** http://www.GRAglobal.com
6. *** http://www.cme.com/housing

Contractele futures şi options pentru sectorul imobiliar – produse financiare inovatoare

Rezumat

Bursele de mărfuri şi de valori se află într-un proces de dezvoltare, caracterizat prin preluări internaţionale şi inovarea de produse. În mod tradiţional, bursele oferă pieţe spot, futures şi options pentru o gamă largă de produse cum ar fi cafea, cacao, bumbac, concentrat congelat de portocale, etanol, metale, valute, acţiuni, obligaţiuni, rata dobânzii şi indici. În ultimii ani, bursele au lansat contracte futures şi options pentru active cum ar fi vremea, volatilitatea sau bunurile imobile. În acest articol se analizează contractele la termen pentru sectorul imobiliare, care sunt disponibile la Chicago Mercantile Exchanges.