

Options Clearing Corp.

Major Rating Factors

Strengths:

- Effective monopoly on clearing security options and futures
- Mutualization of risk among the membership; strong support from the capital markets
- Strong risk management function; highly effective margining procedures
- Ample financial sources; US\$4.2 billion clearing fund

Weaknesses:

- High degree of operating leverage
- Financial performance dependent on option trading volumes
- High degree of operational risk

Rationale

The counterparty credit rating on Options Clearing Corp. (OCC) reflects its critical role in the U.S. capital markets as the exclusive clearinghouse for exchange-traded stock derivatives. Further underlying the rating are OCC's members' mutual incentives to protect the organization from settlement losses, its conservative financial and procedural safeguards, and its substantial and readily available financial resources. However, OCC's business model exhibits both a high degree of operating leverage and operational risk. The rating applies to OCC's obligations to clearing members and not to clearing members' option obligations to customers.

OCC's risk profile is determined by its role as central counterparty to all clearing members and the guarantee it provides in that process. The clearinghouse's principal risk is an event of clearing member default and the potential market risk from any open positions of such clearing member. Also, because of the large number of transactions processed every day and

Counterparty Credit Rating

AAA/Stable/—

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the resulting need for flawless execution and exceptional technology and back office operations, operational risk is considered very high. In addition, because revenues are variable and dependent on the volume of options activity, while expenses are generally fixed, there is a high degree of operating leverage.

Standard & Poor's Ratings Services considers OCC's enterprise risk management to be strong. The clearinghouse manages clearing risk through a comprehensive set of financial safeguards including rigorous admission standards and clearing member surveillance activities, the collection of high-quality collateral, and mutualization of risk among its financially strong clearing members in the form of a clearing fund and the power to assess members for funds to cure a clearing member's default. In line with the nature of its business, operational risk is high but receives appropriate attention and resources and is well managed.

Chicago-based OCC is the sole issuer and settling agent for all stock options, equity index options, and single-stock futures listed on U.S. exchanges. OCC has an effective monopoly so it can concentrate its resources on supporting market integrity. In this capacity, the OCC maintains a proper balance between market liquidity and the safety of the clearing mechanism, while also promoting operating efficiencies for its participants. Therefore, OCC has strong support from its members and the financial community at large.

Outlook

The stable outlook incorporates the substantial financial safeguards that protect OCC from counterparty risks even during times of significant market volatility. The clearing organization's robust risk management techniques proved their mettle following the events of Sept. 11, 2001, and the stock market's sharp fall-off during the summer of 2002. The ratings would be subject to change if the financial safeguards were materially weakened or in case of a marked deterioration of the quality of OCC's clearing membership base.

Profile

Founded in 1973, OCC is a stand-alone clearinghouse that issues and clears options on common stocks, indices, currencies, and interest rate composites listed on six participating exchanges of which five are owners. OCC cleared 2,872 million options and futures contracts during 2007, an increase of 41% from the previous year. Ninety percent of the contracts cleared were individual stock options and 9% were equity index options.

There is little concentration in terms of trading volumes as the six participating exchanges list derivative instruments on approximately 3,000 underlying instruments. In 2007, the Nasdaq 100 Trust, SPX, IWM, and SPY index contracts accounted for 6.5%, 5.5%, 5.4%, and 5.0% of trading volume, respectively. No other stock or index contract accounts for more than 3% of trading volume.

As it is a self-regulatory agency, all of OCC's by-laws and rules, and any changes thereto, must first be approved by the SEC. The SEC gives the clearinghouse the powers to discipline, fine, restrict the business of, and even expel, members who violate clearinghouse or SEC rules.

OCC is equally owned by five participating exchanges: the American Stock Exchange (ASE); the Chicago Board Options Exchange (CBOE); the International Securities Exchange (ISE); the Philadelphia Stock Exchange; and NYSE Arc, formerly the Pacific Exchange. ISE became an owner-participant of OCC in May 2000, following its approval as a registered securities exchange by the SEC.

In February 2004, the Boston Options Exchange (BOX) joined as a sixth participating exchange. Unlike the other four participants that conduct open outcry trading, ISE and BOX are all-electronic marketplaces, which have been growing rapidly and, in their brief existence, have already captured significant market share from the more traditional floor-based exchanges. Because OCC clears all listed stock options in the U.S., the migration to electronic trading from open outcry has not cannibalized total processing volumes at the clearinghouse. Similarly, dual listing has no effect on OCC processing requirements.

OCC is also the clearing agent for the following futures exchanges: CBOE Futures Exchange, OneChicago LLC, Chicago (OCX), and Philadelphia Board of Trade Inc., Philadelphia. OCX is a joint venture between the CBOE, the Chicago Mercantile Exchange (CME), and the Chicago Board of Trade. OCX lists single-stock futures, as well as futures on narrow-based equity indices and exchange-traded funds. The CME maintains an associate clearinghouse agreement with OCC to facilitate the clearance of trades originating through the CME. OCC does not provide a guarantee for trades cleared through CME and does not collect margin or clearing fund deposits from the cross-town commodity exchange. The CBOE Futures Exchange lists regular commodity futures. Clearing for CFE was added in 2004.

Risk Profile And Management

OCC's risk profile is determined by its role as central counterparty to all clearing members and the guarantee it provides in that process. The clearinghouse's principal risk is an event of clearing member default and the potential market risk from any open positions of such clearing member. Also, because of the large number of transactions processed every day and the resulting need for flawless execution and exceptional technology and back office operations, we consider operational risk to be very high.

OCC's enterprise risk management is strong. Clearing risk is managed through a comprehensive set of financial safeguards including strict membership rules, the collection of high-quality collateral, and mutualization of risk among its financially strong clearing members. In line with the nature of its business, operational risk is high but receives appropriate attention and resources and is well managed.

Standard & Poor's believes that OCC's clearing risk is well managed and that the financial safeguards provide a reasonable level of protection without tying too much liquidity.

Operational risks: Well-established redundancy and disaster recovery processes

As a processor of thousands of transactions daily, OCC is exposed to a high degree of operational risk. The company must meet the demands of its members and the trading community at large, which demands exceptional technology and back office operations. Reliability, availability, scalability, security, and constant innovation are only a few of the challenges.

OCC operates duplicate computing systems using multiple power sources and secure, leased communications lines between its primary data processing site and its local disaster recovery site. OCC's operations are highly scalable where, because of the added complexity and related risk management requirements, challenges occur through the introduction of new products rather than increased trading volumes. OCC handles multiples of its peak volumes with additional resources available within two hours to increase its transaction processing capacity significantly.

OCC's operations were not directly affected by the terrorist attacks of Sept. 11, 2001, on the World Trade Center, although the clearinghouse did need to reconnect telecommunication links with the ASE

and certain clearing members whose own operations were affected. Even under these extreme conditions, OCC collected all margin requirements on time. Similarly, the Aug. 14, 2003, east coast blackout did not directly affect OCC, but again, the clearinghouse collected all margin in a timely manner.

Limited clearinghouse risk

As a clearinghouse, OCC is a financial services company that provides clearing services for financial transactions. In the normal course of business, OCC is not exposed to market risk because it only accepts matched trades. When a market participant places an order that is filled on one of the exchanges, the exchange matches the two sides of the order and reports back to its executing members information confirming matched trades or highlighting unmatched trades. The matched order is sent to OCC, which issues a novated contract to the clearing members that represents each side of the contract. By issuing a novated contract, OCC becomes the buyer for every seller and the seller for every buyer.

The clearinghouse's principal risk is an event of clearing member default. Only then does OCC become exposed to market risk. At the time a member defaults, OCC's mandate is to limit the length of time it is exposed to market risk. To that end, the OCC tries to transfer all the positions and all deposited collateral of the defaulting member to other clearing members. If a transfer is not feasible, OCC closes out the defaulted member's positions in open market transactions using the margin collateral as the source of funds. In the eight instances of clearing member liquidations, all unbalanced positions were closed or rebalanced within the trading day.

To protect itself from such risks, the clearinghouse has established a number of financial safeguards, which take effect in the following order:

- Clearing member admission standards
- Margin requirements
- Clearing fund
- Assessment rights

Broad membership base minimizes credit risk

Membership in OCC is balanced between providing broad access, which diversifies risk, and maintaining high credit standards. With 115 clearing members at Dec. 31, 2007, OCC has a sufficiently large membership base over which to spread clearing risk. The decrease in the number of clearing members (there were 127 in 2003) is mainly the result of consolidation among clearing members. The financial strength of the clearing members can be demonstrated by their collective capital, which totaled US\$258 billion at Oct. 31, 2007. The members are predominantly U.S.-registered broker-dealers owned by domestic securities firms and a handful of major European banks and investment houses.

As its first line of defense and to assure high credit standards, OCC defines membership standards spanning initial membership qualification as well as the daily monitoring of existing members. The clearinghouse by-laws set admission standards with regard to financial requirements, operational capability, and the management competence of clearing members. OCC staff conducts a rigorous on-site due diligence of all applicants who must then be recommended by the Membership/Risk Committee and be approved by the board of directors.

Clearing members are required to be U.S. broker-dealers and capitalized as listed in table 1.

Table 1

<i>Options Clearing Corp.—Capital Requirements</i>		<i>Mil. \$</i>
Initial required capital		2.5
Minimum net capital		2
Firms providing facilities management services	\$4 million + \$200,000 x number of firms >4 that it services	

Actual net capital requirements might be higher depending on the clearing member's volume and type of trading activity.

Clearing members that do not have sophisticated operational capabilities have to operate through a facility-management agreement under which another approved clearing member handles back-office operations. The minimum capital requirement for clearing members providing facilities management services is US\$4 million plus US\$200,000 for each agreement greater than four that it services (see table 1).

During OCC's 30-year history, eight relatively small firms were liquidated following suspension by their designated examining authority. In only one case did liquidation result in a small loss to the OCC clearing fund.

Clearing volume is concentrated within a small group of clearing members that handle a large volume of trading activity. This concentration of trading volume does not necessarily result in more credit risk to OCC because these clearing members are required to post higher margin and have provided OCC with the right of offset against individual market-maker positions.

OCC staff continually monitors the creditworthiness, positions outstanding, and potential risk exposures of its clearing members. Members having financial or operational difficulties or who have excessive position risks are placed on a Watch list. At the lowest Watch level, a clearing member might be assessed increased risk requirements (margin). At the highest Watch level, a clearing member might be restricted from booking additional business.

Clearing members guarantee the performance and monitor the creditworthiness of their customers, including market makers. Market makers are subject to a risk-based haircut computation based on OCC's previous margin methodology. To the extent that the market makers' daily haircut exceeds their account equity, that clearing member must deduct the difference calculating its own net capital. The clearing member must submit daily pro forma net capital computations to OCC that reflect the changes in the market-maker haircut deductions and any profit or loss in its own proprietary trading.

Risk requirement (margin): STANS

Option writers are required to deposit either the underlying security and/or acceptable collateral, otherwise known as margin, in approved banks or depositories for the benefit of OCC. Margin protects OCC against the possibility that daily option price changes, in the event of a clearing member default, would expose the clearinghouse to losses. OCC's policy is to maintain prudent, but not excessive, margins that would impair market liquidity. Margin payments to clearing agencies are protected by law from bankruptcy claw-back.

OCC employs its new proprietary System for Theoretical Analysis and Numerical Simulations (STANS) to calculate each clearing member's margin requirement. The system was introduced on Aug. 4, 2006, and replaced the previous system (TIMS).

The total margin requirement consists of two parts: The net asset value (NAV) calculation or mark-to-market component, which is the cost to liquidate an option position at current market prices; and risk component, which provides a cushion to cover one-day market risk.

NAV is equal to the daily mark-to-market value of the option contract in which the option writer pays margin and the option buyer receives margin credit. In essence, NAV covers the credit risk of a clearing member default. In a theoretical world in which prices are held constant, NAV would fully cover the cost of a member default because OCC could use the margin on deposit to buy an offsetting position in the open market at no gain or loss to the clearinghouse. In reality, prices are not constant and that is why there is a risk component.

The additional risk component covers the market risk portion of the total margin requirement by means of dynamic expected shortfall risk measures. These measures are obtained from large-scale Monte Carlo implementation of copula-based approach with heavy-tailed marginal distributions.

STANS simulates a set of 10,000 hypothetical market scenarios to produce a profit/loss distribution for the approximately 250 distinct clearing member portfolios. These simulated scenarios incorporate information extracted from the historical behavior of each individual security (risk factor) as well as its relationship to the behavior of other securities (risk factors). Scenarios are generated for more than 7,000 risk factors, including a broad range of individual equities, exchange-traded funds, stock indices, currencies, and commodity products. OCC uses a dynamic model to update volatilities on a daily basis. Dependence among risk factors is reflected in three ways: the base case is historical copula-based dependence, estimated from the historical data, which is supplemented by stress test simulations of perfectly correlated risk factors and independent (zero correlated) scenarios for single stock risk factors. The portfolio margin (risk) requirement is a function of expected shortfall (ES) measures from different dependence structure simulations. The ES measure is the mean beyond the VAR cut-off level and reflects the expected tail loss.

The total margin requirement for a given portfolio is the sum of NAV and risk component as described above. The new methodology generally leads to lower (higher) margin requirements for well (poorly) diversified portfolios with low (high) correlation among its holdings, compared to TIMS' requirements. As STANS is available to all clearing members, it allows them to measure, monitor, and manage the level of risk exposure of their portfolios. It is also designed to be used as a flexible risk analysis tool to identify areas of increased risk and dependence and to offer a new set of analytical tools to analyze the risk of clearing members' portfolios at much more detailed levels.

Margin requirements can be reduced in a number of ways that promote market efficiency but without a concomitant increase in risk to the clearinghouse. For example, OCC's hedge program allows clearing members to lend or borrow stock to reduce the risk of their options positions that are part of intermarket hedge transactions. For example, the stock loan program allows clearing members to facilitate short sales of equities that are part of option reverse conversions, a common arbitrage strategy. (A trader has a reverse conversion when he is long the call, short the put, and borrows the underlying stock.)

Stock loan transactions are negotiated between the lender and buyer, but OCC acts as central counterparty. Nevertheless, OCC's risk exposure is low and essentially limited to the daily mark-to-

market. These securities loans are monitored in the same manner as all clearing member positions. OCC marks the stock loan position to market value on a daily basis and has full rights to cash flows from the arbitrated positions, including liquidation.

OCC has also set up a cross-margining arrangement with several U.S. futures exchanges. Under cross margining, a clearing member's index option position can be offset by a position in an index future or an option on an index future listed at one of the participating futures exchanges. The margin collateral is deposited in a bank account jointly held by both clearinghouses. Should OCC or the other clearinghouse suffer a loss liquidating a cross-margined account, the loss is to be shared between the two organizations.

Acceptable margin collateral consists of underlying securities, valued securities, LOCs, U.S. Treasury securities, government sponsored debt, money market mutual funds and cash. Index escrow receipts, which are baskets of stock that replicate major stock indices, are also held as collateral on short index call options. Valued equity securities are haircut by 30% and no one issuer can exceed 10% of the daily margin requirement in one underlying security. All U.S. Treasury bonds are haircut at a level that increases along with the maturity of the instrument. All collateral is marked-to-market on a daily basis.

OCC faces the risk of a margin shortfall if a clearing member defaults and the LOC-issuing bank is unable to honor its financial obligations. OCC and other U.S. clearing houses have a uniform LOC form, which requires payment within 60 minutes. In the eight episodes of clearing member liquidation, an LOC was drawn only once and without difficulty.

Clearing fund

The size of the clearing fund is a direct function of the risks in clearing members' positions. The clearing fund is based on clearing member margin requirements, which in turn are based on the size and volatilities of clearing member positions. Only cash and U.S. government securities (in other words, no LOCs) can be used to meet clearing members' obligations to the clearing fund.

Clearing fund contributions are 6% of average (NAV plus risk) margin requirement with a minimum aggregate clearing fund of US\$1 billion, subject to a cap of 7% of average margin requirement. On Dec. 31, 2007, the OCC clearing fund totaled US\$4.2 billion.

The total size of the clearing fund depends on the average daily total margin requirements during the preceding calendar month. Clearing members have to make up any shortfall in their clearing fund deposits within the first three to five days of the new month. This methodology does leave a potential for a short-term gap between actual and required clearing fund deposits, especially if volumes or volatilities had increased.

A clearing member's minimum contribution to the clearing fund is US\$150,000. The minimum contribution for execution-only members is US\$150,000 plus US\$15 times the average daily executed volume for the preceding calendar month.

The clearing fund has been used once: to close out the positions of H.B. Shaine the day after the 1987 stock market meltdown. The amount tapped was small, but was needed because of the turbulence of the market.

OCC is currently evaluating possible changes to the methodology of clearing fund requirements to align it with the concepts used under the new margining system STANS.

Power of assessment

Under OCC's rules, clearing members have agreed in advance to pay an amount of up to their original clearing deposit to replenish the clearing fund if a default were to deplete it. In a given default situation, OCC can make further assessments against clearing members, but they can withdraw from the clearinghouse after closing out their positions.

Although this is a very powerful tool and factors positively in our ratings on OCC, this financial safeguard is a contingent call and not held in cash, which is of lower quality than highly liquid collateral in hand. However, this form of mutualization of risk provides an element of self policing since theoretically, at this point, all clearing members are liable for a defaulted clearing member's losses. The combined financial strength of the clearing members as measured by their excess capital provides backing for this layer of protection.

Well-Established Procedural Safeguards

OCC's payment schedules are short in order to minimize the amount of time before a default can be declared. Margin calls are made at 6:30 a.m. and have to be met by 9:00 a.m. Payment instructions are sent directly to the clearing members' banks, which then inform OCC if the money is already in the account or if the bank will finance the margin on behalf of the clearing member.

OCC establishes all its payment schedules so that it receives any payments due from paying clearing members an hour before it pays any credits to receiving clearing members. When customers buy options, the premium is paid to OCC an hour before it pays premium to option writers.

OCC keeps three groups of accounts—customer, market makers, and proprietary accounts—separated to prevent the inappropriate use of margin collateral. In addition, the long positions in one customer's account are not allowed to be used as a risk offset for positions in another customer's account. This procedure increases the margin requirement and protects the clearing member and its customers from the default of another customer.

Intraday margin calls are a key way to limit risk during periods of market turbulence. OCC rules authorize the clearinghouse to require additional collateral to protect OCC, other clearing members, or the general public, typically when extreme market moves lead to significant unrealized portfolio losses. Intraday collateral calls are currently made when unrealized losses exceed the greater of 100% of the VAR level or 50% of total risk charges.

When the stock markets reopened following the events of Sept. 11, 2001, OCC made intraday margin calls for US\$1.97 billion on Sept. 17, 2001, and for US\$2.28 billion on Sept. 19, 2001.

Liquidity

In the case of member default or liquidation, OCC rules require that it convert margin assets to cash to transfer, close out, or repurchase positions. The clearinghouse views the clearing fund as one source of liquidity should margin assets take too long to monetize. OCC also maintains various lines of credit with a group of domestic and foreign banks of about US\$370 million as of Dec. 31, 2007. OCC has never tapped these lines. No borrowings were outstanding under this facility as of Dec. 31, 2007.

Financial Performance: Highly Scalable, High Degree Of Operating Leverage

Profitability is not a major ratings factor as OCC operates as a utility for its members, focusing on cost recovery rather than on maximizing profit. There is a high degree of operating leverage because

revenues are variable, highly unpredictable, and dependent on the volume of options activity, and expenses are generally fixed. The clearinghouse also faces the cost of technology improvements, introducing new products, and expanding services to its members. As a mutual service organization, however, OCC has tremendous flexibility to reduce rebates, and if need be, raise clearing fees. Bottom-line profitability after refunding clearing members historically has been, and likely to remain, flat.

As a business, OCC is capable of very strong profitability, but a large part of the transaction fees it collects are refunded to clearing members. At Oct. 31, 2007, and Dec. 31, 2006, rebates equaled 68% and 62% of clearance fees, respectively.

In recognition of the continuing strong volume in securities options, OCC has reduced its clearing fees several times in the past years. Clearing fees are now about half of what they were at the beginning of 2004. The changes benefit clearing members and other market participants by further reducing trading cost and adding to a more efficient market. As its business is highly scalable, such fees changes do not adversely affect OCC's ability to meet its expenses and maintain acceptable levels of retained earnings.

OCC's retained earnings, which stood at US\$48.9 million on Dec. 31, 2006, are small compared with its daily financial obligations. Standard & Poor's does not look to OCC's own capital for protection, but rather at the financial safeguards and credit standards of clearing members. OCC pays no dividends on its common stock.

Table 2

Options Clearing Corp.—Financial Statistics

	—Year ending Dec. 31—				
<i>Market statistics</i>	2007*	2006	2005	2004	2003
<i>Volume (mil. contracts)</i>					
Equity	2,592.1	1,844.2	1,369.0	1,083.6	830.3
Index	270.7	183.5	135.1	98.2	77.3
Currency	0.08	0.1	0.2	0.2	0.3
Total	2,862.8	2,027.8	1,504.3	1,182.0	907.9
Open interest (mil. contracts; year-end)	281.6	232.4	193.0	158.1	128.5
Approx. notional value (bil. \$)	3,292	2,544	1,721	1,200	870
Approx. market value (bil. \$)	178.0	79.4	58.1	41.0	33.7
<i>Membership</i>					
Number of members¶	115	116	122	122	127
Equity and sub. debt (bil. \$)¶	258.0	219	198	177	158
Margin collateral					
Margin requirements (mil. \$; year-end)	49,706	46,673	44,118	37,675	30,189
Margin collateral after haircuts (mil. \$)	63,461	39,981	49,804	40,701	34,340
Collateral holdings (% of total; year-end)					
Cash	2.8	0.9	0.4	0.3	0.7
Treasuries	25.9	30.8	19.7	26.3	21.6
Letters of credit	18.3	12.4	11.6	13.0	14.8
Valued securities	53.0	55.9	68.3	60.5	62.9
Underlying securities (mil. \$)	19,557	18,002	14,311	14,273	10,122

Table 2

Options Clearing Corp.—Financial Statistics (cont. 'd)

	—Year ending Dec. 31—				
<i>Market statistics</i>	2007*	2006	2005	2004	2003
Index escrow receipts (mil. \$)	18,270	14,580	11,574	5,271	2,621
Total collateral (mil. \$)	101,287	72,562	75,689	60,245	47,083
Equity contracts with specific deposits (mil.)	4.42	4.58	3.71	4.12	2.95
Index contracts with specific deposits (mil.)	0.16	0.14	0.12	0.05	0.03
Market value/contract (\$)	631.96	341.65	301.04	259.33	262.26
Margin requirement/(contracts less specifics) (\$)	179.41	204.99	233.22	244.75	240.51
Margin collateral/(contracts less specifics) (\$)	229.06	175.60	263.28	264.41	273.58
Clearing fund					
Total deposits (mil. \$; year-end)	4,531	2,918	2,440	2,048	1,634
Deposits/contract (\$; year-end)	16.09	12.56	12.65	12.96	12.71
Deposits/margin req.(%; year-end)	9.1	6.3	5.5	5.4	5.4
Performance (mil. \$)					
Clearance fees	278.9	277.6	209.6	162.7	145.4
Other income	17.9	17.9	17.2	10.8	9.2
Expenses and taxes	117.4	124.1	119	126	121.4
Rebates or discounts	179.4	172	107.8	47.4	33.1
Net income	0	0	0	0	0.05
Rebates/clearance fees (%)	64.3	61.7	51.4	29.3	22.8
Retained earnings (%; year-end)	48.4	49.2	49.3	48.9	45.0

*Year-to-date as of Dec. 31, 2007. Unaudited. †2007 figures as of Oct. 31.

Ratings Detail (As Of 31-Jan-2008)***Options Clearing Corp.**

Counterparty Credit Rating AAA/Stable/—

Counterparty Credit Ratings History

28-May-1997 AAA/Stable/—

19-Jan-1993 AAA/—/—

Sovereign Rating

United States of America AAA/Stable/A-1+

*Unless otherwise noted, all ratings in this report are global scale ratings. Standard & Poor's credit ratings on the global scale are comparable across countries. Standard & Poor's credit ratings on a national scale are relative to obligors or obligations within that specific country.

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