Chapter 20

ONLINE TRADING

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Abstract

The proliferation of the Internet has led to the rapid growth of online brokerage. As the Internet now allows individual investors access to information previously available only to institutional investors, individual investors are profiting in the financial markets through online trading schemes. Rock-bottom fees charged by the online brokers and the changing attitude toward risk of the Internet-literate generation prompt the practitioners to question the validity of the traditional valuation models and statistics-based portfolio formulation strategies. These tactics also induce more dramatic changes in the financial markets. Online trading, however, does involve a high degree of risk, and can cause a profitable portfolio to sour in a matter of minutes. This paper addresses the major challenges of trading stocks on the Internet, and recommends a decision support system for online traders to minimize the potential of risks.

Keywords: Internet; day trading center; web-based brokers; online trading; valuation models; decision support systems; risks management; portfolio formulation strategies; financial market; stock investment; institutional investors

20.1. Introduction

In the past decade, one of the most phenomenal changes in investment markets is the burgeoning number of online brokers, and its subset, the so-called day-trading centers. Instead of doing business using the old style face-to-face approach, or over the phone with stockbroker, investors have been using the Web to explore a wealth of free information and have been making investment decisions with a new fleet of Internet-based brokers. Concepts of online trading have been around for quite some time. Before the proliferation of the Internet, however, online trading was primarily used as a vehicle for trading by institutional investors. With the help of the Internet, individual investors are now able to access the stock markets in ways similar to those of the major players, the institutional investors (Barnett, 1999b; Smith, 1999a). The direct use of the Internet to trade stocks also raises doubt among investors about the validity of the traditional stock valuation models as well as portfolio formulation strategies.

Inspired by the successful story of E*Trade, the pioneering Internet-based broker, many Web-based brokers have joined the throng that has forced traditional full-service firms to respond with bigger changes. Although, by the end of 1998, online brokers still controlled only $800 billion of assets in customer accounts as compared with $3,200 billion managed by full-service brokers, transactions done through online traders now represent more than 15 percent of all equity trades, a two-fold increase in just two years. And the online brokerage industry has doubled customer assets to more than $420 billion, and doubled accounts managed to 7.3 million by early 1999.

The Internet has revolutionized the way in which consumers perform research and participate

in the buying and selling of securities. As of January 2003, there are an estimated 33 million U.S. consumer online trading accounts that control roughly $.6 trillion in customer assets (Mintel International Group, 2002). The convenience of online trading has introduced millions of new consumers to the possibilities of online money management. At the same time, the Internet and wireless devices have transformed the way in which capital markets operate and have made it possible for individual investors to have direct access to a variety of different markets, and to tools that were at one time reserved only for the investment professional.

20.2. The Issues

The proliferation of online trading sites has created major changes in the ways stocks are traded. Traditionally, an investor who wants to purchase a stock has to go through a broker. The broker will send a buy order to a specialist on the exchange floor, if the stock is listed on the NYSE. The specialist then looks for sellers on the trading floor or in his electronic order book. If the specialist finds enough sellers to match his offer price, the specialist completes the transaction. Otherwise, the specialist may purchase at a higher price, with customer permission, or sell the stock to the customer out of his own inventory.

If the stock is listed on the NASDAQ, the broker consults a trading screen that lists offers from the market makers for the said stock. The broker then picks up the market maker with the best price to complete the transaction. On the other hand, for buying stock online, the broker such as E*Trade simply collects order information, and completes the transaction through the electronic communication network (ECN).

For traditional brokerage services, the broker usually charges hefty fees. For example, Morgan Stanley Dean Witter charges $40 per trade for customers with at least $00,000 in their accounts and if they make at least 56 trades per year. Merrill Lynch charges $6 per trade for a $00,000 account, with 27 trades per year. Typically, fees for a single trade at the full-service brokerage can be anywhere from $00 to $000 depending upon the services involved. Charles Schwab, however, charges $9.95 per trade up to 1000 shares, and the champion of the online trader, E*Trade, charges merely $4.95 per market-order trade up to 5000 shares. Alternatively, the investor can choose unlimited number of trades and access to exclusive research and advice for a yearly fee (Thornton, 2000).

The reduced cost offered by online trading has encouraged investors to increase the frequency of trading. Since the fee paid to complete a transaction through traditional brokerage is enough to cover fees of many trades charged online, the investor can afford to ride the market wave to try and realize a windfall caused by the price fluctuation on a daily basis. Perhaps, this helps explain why in two short years, Island, Instinet, and seven other ECNs, now control a whopping 21.6 percent of NASDAQ shares and nearly a third of the trades and are seeking to expand their operations to include NYSE company shares (Vogelstein, 1999a; Reardon, 2000).

Although investors of all sizes could use online brokers, the most noteworthy change in financial markets is the increasing number of individual investors. These are the new breed of investors armed with the knowledge of information technology and a very different attitude toward risk in the investment market place (Pethokoukis, 1999). Their changing attitudes have contributed to several major changes in stock market strategies (Becker, 1998; Barnett, 1999a; Gimein, 1999; Pethokoukis, 1999; Vogelstein, 1999b; Sharma, 2000).

1. *Webstock frenzies*. Although day traders represent a small percentage of all active traders on a daily market, the industry makes up about 15 percent of NASDAQ's daily volume (Smith, 1999b). The aggressive trading behavior of day traders, fueled by margin loans supplied by day-trading centers, is one of the

driving forces behind the runaway price of many Internet-related stocks. Since the beginning of 1999, for example, Yahoo stock rose $80 in one day. eBay shares fell $30. Broadcast.com gained $60 a share, and then lost $35 two days later. Webstocks as a whole gained 55 percent in the first days of trading in 1999, then a free-fall started in the early summer. Since April 1999, American Online stock price has dropped almost 67 percent. And the Goldman Sachs Internet Index currently stands nearly 43 percent below its all-time high in April. By Spring 2000, many of the tech stocks have recorded more than 80 percent of share price corrections. Some of these corrections actually happened in just a matter of few days (Cooper, 2001). These stocks have taught the online/day traders the real meaning of "volatility" (McLean, 1999).

2. *Changing goals of investment*. The easy money mentality has led to new goals for formulating investment portfolios. Traditional portfolio models have been based on a mean-variance modeling structure, and for years numerous variations of such models have filled the academic journals. Today, however, investment professionals have been forced to abandon the investment strategies developed by academics, focusing instead on strategies that achieve instant profits. As Net stocks became the horsepower to help pump the DJ index near to the 11,000 mark by early 2000, investors have renounced traditional buy-and-hold strategies and have switched to holding stocks for minutes at a time. In addition, the changing investment goals are partially caused by the change in the valuation system.
3. *Different valuation models*. Many of today's hot stocks are not worth anywhere near where they trade.. For example, Netstock Amazon.com, one of the hottest, sold just $610 million in books and CDs in 1999 and is yet to make its first penny. However, its $30 billion market value makes it worth $ billion more than Sears. In fact, with the exception of Yahoo, all Webstocks have infinite P/E ratios. This anomaly prompts practitioners to question traditional models of valuing the stock, and forecasters everywhere concede that old models are suspect (Weber, 1999).

Online trading also engenders some changes in the traditional investing scenario. First, the wide variation in investor knowledge of the stock market and of trading is crucial in the online setting. The costs to investors of bad judgment are likely to be borne by new entrants to the world of individual investing; these investors are pleased with the simplicity of the interactive user-friendly formats of e-brokerages, but are seldom proficient in the mechanisms and arrangements beyond the interface. Experienced investors can better identify the benefits and costs of choosing specific e-brokerages.

Second, the frequency of online investor trading deserves special attention. Many market analysts suggest that the growing U.S. economy and the low commissions charged by e-brokerages influence investors to trade more often. For example, an average Merrill Lynch (full-service broker) customer makes four to five trades per year while the core investors in an e-brokerage such as E*Trade make an average of 5.4 trades per quarter. Frequent trading is generally contrary to the recommendations of financial theory. Ultimately, it is possible for an e-brokerage to allow investors to trade frequently at very low or even zero costs per trade while earning large profits on the fraction of the increasingly large bid–ask spread that is pushed back by the market maker. At the same time, the investor may be unaware of the indirect costs incurred with each trade.

Third, the evolution of electronic trading may increase market fragmentation in the short run. E-brokerages may increasingly channel trades away from exchanges and toward market makers to compensate for lost revenue resulting from low direct commissions. Market fragmentation may have a negative impact on prices, increasing the bid–ask spread and potential for arbitrage oppor-

tunities (e.g. buy low in one market and sell high in another market within a short period of time). This is contrary to the belief that electronic markets may force centralization and increase liquidity (i.e. the ability to buy and sell securities quickly).

Clearly, people's attitudes toward risk have been changing constantly. Many behavioral factors that have not been successfully incorporated into traditional quantitative models have now become decisive factors in valuing investments. Several new models have thus been developed in an effort to better explain why all of a sudden investors do not see the stock market as the dangerous place they once did.

20.3. Some New Portfolio Structure Models

Among the new models, which overturn statistical relationships that have held true for decades, the major ones are (Glassman,and Hassett, 1998):

1. *Fed model*. Edward Yardeni, an economist at the Deutsche Bank, developed this model. The model relates earnings yield on stocks to interest rates. When the earnings yield is equal to the current yield on a 10-year U.S. Treasury bond, stocks are at fair value. If the earnings yield is above the interest rate, stocks are a buy; if below, stocks are overvalued.
   For example, over the next 12 months, the consensus earnings forecast of industry analysts for the S&R 500 is $2.78 per share. This is a 19.1 percent increase over the latest available four-quarter trailing sum of earnings. The fair value of the S&R 500 Index was 1011.11, derived as the 12-month forward earnings divided by the 10-year Treasury bond yield, assuming at 5.22 percent. If the S&R 500 closed at 1318.31, then the market would be 30.4 percent overvalued. Individual investors can enter their projected bond yield and estimated growth in corporate earnings to check the valuation of the stocks at Yardeni's Web site.
2. *Campbell–Shiller model*. The valuation model developed by John Y. Campbell of Harvard University and Robert J. Shiller of Yale University looks at price earnings ratios over time to determine a long-term market average (Campbell, 1987, 1996; Campbell and Shiller, 1991). When the current P/E exceeds that average, the market is overvalued. For example, the long-term average of P/E is 15. Therefore, at its current ratio of over 33, the stock price is overvalued.
3. *Cornell model*. This model discounts future cash flows and compares that to the current market level. The discount factor is a combination of the risk-free interest rate and a risk premium to compensate for the greater volatility of stocks. When the value of the discounted cash flows is above the current price, the market is cheap. Otherwise, it is overvalued.
4. *Glassman–Hassett model*. Similar to the Cornell model with one major exception, Glassman and Hassett argue that the risk premium, historically at 7 percent, is heading toward 0 percent. This means the discount factor that applies to stocks drops sharply, thus raising the fair value of the market.

The Internet has drastically changed the way investors make investment decisions. Technology empowers individual investors through many inventions and innovated services. Much information traditionally available only to institutional investors is now accessible to individual investors through the World Wide Web. For example, the Thomson Investors site allows individual traders to view the institutional pre-trade activity and get a bird's eye view of the activity on the NYSE floor. One very useful source of information is from StarMine. Investors can use this Web site to identify experts worth listening to, then use Multex to get the full detail of the relevant information (Mullaney, 2001). At Bestcalls.com, visitors can examine conference call information, and in the near future, individuals will be able to see corporate officers deliver the bullet points of their business

models to institutions at www.eoverview.com, Net Roadshow's Web site.

These services may not bring individual investors up to par with institutional investors. However, they are now able to make investment decisions based on information with similar quality and currency as the big investors. The saved costs of trading through online brokers might provide individual investors an edge over their big counterparts. Since the individual investors' activity usually involves only small volumes of a given stock, their decisions will not likely cause a great fluctuation in the price. This will enable them to ride the market movement smoothly. Nevertheless, online traders must be aware that not all online brokers are competent. It is very important to sign up services with reputed brokers, who are backed with solid Internet infrastructure to minimize the frustration with those brokers (Gogoi, 2000).

Trading online, however, involves an unusually high degree of risks. Since most online traders are looking for profits in a relatively short period of time, their investing targets are primarily in tech-concentrated NASDAQ markets where volatility is the rule (McNamee, 2000; Opiela, 2000). Yet, many online investors forget that online or off, disciplines for managing portfolio to minimize risk are still indispensable (Campbell 1996; Brockman and Chung, 2000; Farrell, 2000).

20.4. Conclusion

Online trading provides convenience, encourages increased investor participation, and leads to lower upfront costs. In the long run, these will likely reflect increased market efficiency as well. In the short run, however, there are a number of issues related to transparency, investors' misplaced trust, and poorly aligned incentives between e-brokerages and market makers, which may impede true market efficiency.

For efficiency to move beyond the user interface and into the trading process, individual investors need a transparent window to observe the actual flow of orders, the time of execution, and the commission structure at various points in the trading process. In this regard, institutional rules, regulations, and monitoring functions play a significant role in promoting efficiency and transparency along the value chain in online trading markets.

REFERENCES

Barnett, M. (1999a). "Day trading can damage your wealth." *The Industry Standard*, 5: 19.

Barnett, M. (1999b). "Individual investors are becoming institutions." *Industry Standard*, 19–26, 33–34.

Becker, G. (1998). "You want high returns? Brace yourself for high risk." *Business Week*, 19: 15.

Brockman, P. and Chung, D. (2000). "Informed and uninformed trading in an electronic, order-driven environment." *Financial Review*, 125–146.

Campbell, J. (1987). "Stock returns and the term structure." *Journal of Financial Economics*, 18: 373–399.

Campbell, J. (1996). "Understanding risk and return." *Journal of Political Economy*, 104: 298–345.

Campbell, J. and Shiller, R. (1991). "Yield spreads and interest rate movements: a bird's eye view." *Review of Economic Studies*, 58: 495–514.

Cooper, J. (2001). "Hey, chicken littles, the sky isn't falling." *Business Week*, 12: 43.

Farrell, C. (2000). "Online or off, the rules are the same." *Business Week*, 22: 148–149.

Gimein, M. (1999). "Playing the net stock game." *The Industry Standard*, 25: 20–21.

Glassman, J. and Hassett, K. (1998). "Are stocks overvalued? Not a chance." *The Wall Street Journal*, 30.

Gogoi, P. (2000). "Rage against online brokers." *Business Week*, 20: EB98–EB102.

McLean, B. (1999). "Net stocks have their seasons too." *Fortune*, 6: 305–308.

McNamee, M. (2000). "Trading online: It's a jungle out there." *Business Week*, 22: 168–169.

Mintel International Group Ltd. (2002). "Online trading market – US report," 1.

Mullaney, T. (2001). "What's an investor to do?" *Business Week*, 19: EB14–EB15.

Opiela, N. (2000). "Online trading: Opportunity or obstacle?" *Journal of Financial Planning*, 54–60.

Pethokoukis, J. (1999). "The young and the fearless." *Business Week*, 1: 63–64.

Pethokoukis, J. (1999). "Forget the cyclone. The net ride is scarier." *US News & World Report*, 22: 55.

Reardon, T. (2000). "The price is right." *Accountancy*, 81.

Sharma, M. (2000). "The growth of web-based investment." *Information Systems Management*, Spring, 58–64.

Smith, G. (1999a). "Day of reckoning for day-trading firms?" *Business Week*, 18: 88–89

Smith, G. (1999b). "Muing those Internet stocks." *Business Week*, 8: 87.

Thornton, E. (2000). "Take that, cyber boy." *Business Week*, 10: 58–59.

Vgelstein, F. (1999a). "Online traders beware!' *US News & World Report*, 18: 41–42.

Vgelstein, F. (1999b). "A virtual stock market." *US News & World Report*, 26: 47–48.

Weber, J. (1999). "The market: Too high? Too low?" *Business Week*, 5: 92–93.