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STOCK MARKET SIMULATION

An interactive Qualifying Project Report

submitted to the Faculty

of the

WORCESTER POLYTECHNIC INSTITUTE

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Degree of Bachelor of Science

by

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1. **finance**
2. **stock market**
3. **economy**

ABSTRACT

A simulation of the stock market was performed with a focus on studying Internet stocks. The primary objective was to "beat the market" and acquire basic knowledge about stock market and trading. A research of companies of buying interest was performed and their financial fundamentals and market performances analyzed to decide whether to buy their stocks. Finally, the performance of our stocks was analyzed and tips for future beginning investors were summarized.

PREFACE

This project report was written at the end of an 8-week simulation of Stock Market activities. The purpose of this report is to provide readers with a thorough explanation of the activities performed during the simulation, as well as the reasons and consequences. Because of the enormity of information collected during the simulation, only select parts of it will be included in this report.

This project report will encompass the motivation, reasoning, and results of the project. The motivation is explained in the introduction. The core of this report is the reasoning behind decisions made at the start of the simulation. This was felt to be necessary by the group due to the results of the simulation. The consequences of many of the initial assumptions made in the beginning are then accounted for and analyzed in a separate section, and a conclusion made to the project report.

The group would also like to use this opportunity to acknowledge the support of all the people whose efforts allowed us to finish this project. In particular, we wish to convey our gratitude to Professor Dalin Tang of the WPI Mathematics Department for his patience and encouragement during the project. We would also like to thank Virtual Stock Exchange for our use of its website and stock market simulator. Lastly, we acknowledge the support of the TeleChart 2000 program, which aided us in creating our graphs and helped us in finding out the past performance of our chosen stocks.

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CHAPTER 1

INTRODUCTION

Throughout history, the pursuit of wealth has been the driving and deciding factor of economic activities in the world. People of the working class, though, have had very few means for accumulating wealth. However, for the upper classes the option of investment, or entrusting money to a business venture for a return in profit, has always been open. Investment is clearly a superior means for accumulating wealth, for the returns can be significantly more rewarding for those who make the right choices. It is clear though, that people of the working class could not access this possibility simply because they had few assets with which to invest. The 20th century changes all that with its incredible levels of economic growth. In developed countries, working classes suddenly find themselves with more money than they can reasonably spend to fulfill their basic needs. This opened for them the option of investment.

With more and more people drawn to the activity of investment, two markets naturally form to accommodate this need. The first is the bond market, where individuals or organizations invest large sums of money as a loan to companies. This market is relatively stable and, because bonds are long-term in nature, offers few possibilities for quick profit taking. The second type of investment market is the stock market, in which company owners trade their ownership for money. Because, unlike a bond, a stock is not a debt of the company, the stock market can operate more like a general market where commodities (in this case stocks) can be bought and sold relatively freely anytime with

few long-term penalties. As a result, the stock market is very volatile, which allows near-constant profit taking by players. However, for most of their existence, both markets have always been somewhat exclusive in nature, allowing only trained brokers and full-time investors to participate directly. The advent of the Internet changed all that. Anyone with network access can now theoretically participate directly through one of the many online brokerage firms in operation. Most people, of course, choose not to do this, opting instead for the much safer, professionally managed Mutual Funds. However, the lure of the stock market is very much like that of gambling, as stock trading itself is actually a gamble. The potential for profit is great, but so is the potential for loss. The true attraction of stock trading, at least from the point of view of this team, is that it offers a statistically higher chance of gaining profit compared to other forms of gamble while providing more financial security at much longer periods. It also happens to be legal everywhere. These factors became our motivation in doing the project.

1.1. General Purpose and Objectives

The general purpose of this project is to simulate activities in stock trading by using an Internet site that provides the group with day-to-day information on a select number of stocks. However, due to the length of the simulation and the sheer size of its resulting data, the project itself will not be based on daily activities. Instead, only the transactions performed during simulation will actually be recorded in detail and analyzed. The remaining data will be presented as graphs with patterns of interest outlined for further analysis.

Three objectives were chosen at the start of the project. However, during the course of the project, expansions to these objectives were made. The resulting final objectives, then, were split into three categories:

1) Educational:

   a) To familiarize group members with the stock market and stock trading activities.

   b) To simulate activities in the stock market and make decisions based on prior knowledge and conceptions about the stock market.

   c) To study the results of the simulations and find the cause behind each result.

2) Market-related:

   a) To "beat the market", meaning to attempt gaining more and losing less than the market majority.

   b) To learn the patterns of the stock market and attempt to predict market movement to a certain degree with all the information available to the group, therefore allowing the group to achieve the primary objective (beating the market).

3) Stock-specific:

   a) To follow the fluctuations of a select number of volatile stocks and using said stocks to establish a knowledge base on stocks of the same type.

   b) To focus on and study Internet stocks; defined as stocks belonging to companies related to the Internet or providing Internet services.

c) On the side, an attempt was made to gain a high Equity percentage for each stock.

Additionally, because only two members of this group of four actually have experience with the stock market, the other two members will use this opportunity to learn and become familiarized with stocks and stock trading activities. The disadvantage of this situation is that only half the group can be trusted with making the right decisions at the right time. As a result, the responsibility of running the simulation and performing simulated trading is placed on the experienced group members with the other members doing mostly "scut" work.

1.2. Selection of Stocks

During the first meeting with the advisor, we decided to focus on Internet stocks and stocks from companies related to or operating in the Internet. These stocks have highly volatile fluctuations that cannot be directly related to the activities of the companies themselves. This tendency of Internet stocks makes them an especially interesting case study, while offering both a chance for some excitement and a way for the group to actually achieve something substantial in the short (eight weeks) course of the project. By choosing stocks with such a potential, the group can make as its objective "beating the market". This simply means that the group will try to keep pace with the market and gain more while losing less along the way. The final performance of the group will decide whether or not this objective is achieved. Simply put, if the group gains a profit margin higher than the market average, or lose less than the market as a whole, the project is considered a success.

Although Internet stocks will be the focus of this project, several other types of stocks were also picked to provide a comparison. Because the Internet is, in essence, a media for communication and information transfer, the non-internet stocks chosen for this project are those of communication-related companies, in this case telephone companies and Disney. Since internet connectivity is currently dependent on telephone connections, the group reasons that a comparison between the old (telephone) and new (internet) means of electronic communication will also provide a representative view of the preferences and expectations of stock market players with regards to the telecommunication industry. Regarding non-internet stocks, a special note must be made regarding one of the companies chosen for this project. This company is Disney, an entertainment giant that has recently begun diversifying into the multimedia industry. While it is clear that Disney is not an Internet company, it now has the potential of exerting a major influence on the Internet industry due to its recent agreements with Infoseek. This will be discussed further in a special section of the Backgrounds chapter of this report. Another aspect that makes Disney interesting with regards to the business world is its status as a leading multimedia company. Disney is perhaps the only true multimedia company because it does business in practically all aspects of the media industry, be it printed media, radio, television or, now, the internet. What the group wishes to see is whether or not Disney's diversification strategy provides it with stability, especially with regards to its stocks.

The division of stocks by business groups is as follows below. Note that the placement of Disney as an independent group is due to its special nature, as explained above.

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1.3. Division of Tasks

By way of general agreement, and because of the aforementioned disparity in group members' experience, a division of work was devised at the start of the project to ensure the group's ability to meet project goals. This will be reflected in the final form of the project report. Each group member will have responsibility over at least a chapter of the final report, which also requires each member to perform the tasks needed to write the chapter. The division of tasks, per group member, is as follows:

1. Michael Christianto was responsible for running the simulation on a day-to day basis, as well as making decisions concerning stock transactions. This decision was based on his relative experience with regards to the stock market when compared to the rest of the group. Of the four group members, Michael Christianto is also the one most interested and knowledgeable about the business and financial world. At the end of the simulation period, Christianto was assigned the task of compiling simulation results and providing a detailed outline of each transaction made during simulation. Additionally, data analysis was assigned to Matt Kewriga with Christianto as support. Christianto is responsible for the Transactions and parts of the Analysis chapters of this report.

2. Matt Kewriga was assigned the initial task of aiding Christianto in making decisions regarding the simulation and transactions. Again, the reason for this was the relative level of experience between group members. At the end of the simulation, Kewriga was assigned the task of analyzing the data obtained during simulation and providing

the group with his insight into the condition of the stock market, which may or may not have influenced the final results. Kewriga is responsible for the Analysis chapter and the Introduction of Stocks section, which functions as a glossary for this report.

3. Andrew Suryali was made team leader by general consensus and suggestion from Professor Dalin Tang, the project advisor. During the course of the simulation, Suryali's task was to create a focus for the project as well as assigning objectives, work division, and providing control. At the end of the simulation, Suryali was assigned the task of compiling the work of all team members into a coherent report. Suryali is responsible for the Introduction and Conclusion chapters of this report, as well as the final form of the report itself.

4. Henry Susanto was assigned background research before the simulation was started. His primary task was to find background information for every company included in the project. However, this initial research did not include actual publications of company description (i.e. prospecti and press releases). This was added later for the project report. Susanto is responsible for the Backgrounds chapter of this report.

1.4. Expectations

Because this project is done over two seven-week terms, the final report was begun at the start of the second term, after the simulation is completed. This unfortunately means that, with the current division of work, some members will finish

their assigned tasks long before the others. The general agreement, therefore, is to accept this disparity and simply assign members to support status as their tasks are completed.

One of the objectives chosen at the start of the project is "beating the market". Naturally, this creates two new expectations for this project: Losing less than the market and gaining more than the majority. To be more specific, the group originally intended to achieve at least a 5% profit, or less than 5% loss, which should have been possible with the kinds of stocks chosen. Unfortunately, as will be shown in later chapters, this initial expectation was completely dashed due to the fact that the market itself went down and only rebounded after the simulation ended. That and some bad judgements made along the way caused a total loss of $283,430.15, which amounts to roughly 60% of the initial capital. To explore new possibilities of investment, a margin was also made during simulation. The consequences of this act will be explained in detail in later chapters.

CHAPTER 2

BACKGROUNDS

Before making initial stock purchases, the group performed a background research on the companies chosen for the project. This was needed both to justify our decisions and to assess the confidence level these companies can build into public consciousness. Initially, only short histories of the companies and the past performance of their stocks were researched. This was considered acceptable since we did not need to justify our decisions to ourselves. However, as the simulation progressed and losses began to mount, the group decided that more justification would be needed in this report than what we had initially.

This chapter contains the descriptions provided by the companies themselves of their businesses and expectations. While many aspects of these descriptions may seem irrelevant to the project, we consider them relevant to the public and, by extension, the stock market. Because of the sheer number of people investing in the stock market, individual views have little significance in market behavior. In the end, what the public sees is what they would base their actions on.

As outlined in the Introduction chapter, the companies chosen for this project are divided into groups.

2.1. Group 1: Internet Service Providers

2.1.1. America Online (AOL)

Provider of online services including electronic mail, Internet access, news, magazines, sports, weather, stock quotes, mutual fund transactions, software files, computing support and online classes. America Online, headquartered in Dulles, Virginia, is a media company that is helping to define how the Internet will impact consumers worldwide. The company provides consumers and businesses with a user-friendly online experience involving proprietary entertainment, information gathering, and electronic commerce opportunities. AOL users also have unlimited access to the World Wide Web.

AOL stocks are traded in NYSE.

Founded in 1985, America Online, Inc., based in Dulles, Virginia, is the world's leader in interactive services, Web brands, Internet technologies, and e-commerce services. America Online, Inc. operates:

1) Two worldwide Internet services, America Online, with more than 18 million members, and CompuServe, with more than 2 million members.
2) Several leading Internet brands including ICQ, AOL Instant Messenger and Digital City, Inc.
3) The Netscape Netcenter and AOL.COM portals; and the Netscape Navigator and Communicator browsers; and AOL MovieFone, the nation's largest movie listing guide and ticketing service.

Through its strategic alliance with Sun Microsystems, the Company develops and offers businesses operating in the Net Economy easy-to-deploy, end-to-end e-commerce and enterprise solutions under the alliance iPlanet brand.

AOL International operates the AOL and CompuServe services outside the United States. Since the launch of AOL's first international service in Germany in 1995, the AOL and CompuServe services outside of the United States have surpassed 3.2 million members, making AOL International the No. 1 global Internet online service. Today, AOL International operates the AOL and CompuServe branded Internet online services in 12 countries and in five languages.

Through a combination of AOLNet, AOLGlobalnet and other networks, America Online offers the largest dial-up network in the world, with access in more than 100 countries and 1,500 cities. Countrywide access and local or 800 coverage of all major cities are available throughout the United Kingdom, France, Germany, Austria, Sweden, Australia, Japan and Canada.

AOL was just expanding its reach in the Internet business when the Royal Bank of Canada bought 20% of AOL Canada Inc, AOL's Canadian unit. The agreement with Royal Bank of Canada consists of two parts:

1) Royal Bank of Canada will pay U.S.$60 million for a 20% equity stake in AOL Canada, Inc. AOL Canada will use the proceeds to augment broadband initiatives, content, brand building, and customer service. Given AOL Canada's subscriber base of 180,000 (including CompuServe subscribers), it can be imputed that Royal Bank of Canada paid approximately $1,667 per subscriber for its acquired equity stake. If this value per subscriber rate is applied to the rest of AOL, the parent company is worth

approximately $35 billion. The discount to AOL's current value of about $125 billion is attributable to the advanced development of the U.S. market versus Canada's base, which is still in its formative stages. U.S. advertising and e-commerce is significantly more established, implying substantial growth potential for the Canadian market.

2) Royal Bank and its subsidiaries, such as Security First Network Bank and Bull 4% Bear Securities, have committed to marketing agreements across AOL properties totaling U.S.$7.5 million. AOL Canada users will be invited to use retail banking, discount brokerage, bill payment, credit card balance, and other financial services, to be provided by Royal Bank companies.

This agreement is designed to increase the customer base of both AOL Canada and Royal Bank of Canada. While Royal Bank has the option to purchase further interest in AOL Canada, regulatory issues prevented the firm from disclosing the terms of the extent of potential ownership. AOL Canada has indicated it will continue to seek additional marketing partners in the effort to build its market share.

Confidence in AOL

Of all the Internet stocks chosen for this project, AOL appeared to be the most promising. Although the group had to wait for AOL stocks to reach its local low point, or at least what we thought to be the low point, the general expectation was for the stocks to rebound quickly, as it has done in the past. Another factor that played a role was the fact that AOL stocks are traded in NYSE, which already had a reputation as the no.1 stock exchange in the world.

The primary confidence factor that prompted the group to choose AOL initially was its steady transformation into a more stable enterprise. In particular, the Royal Bank agreement with the Company showed that the business world is confident enough in the potential and profitability of the Company to make a major investment in it. As the Company becomes more conservative in appearance, if not in operation, a stable public loyalty base should form that would allow the Company's stocks to fluctuate less. The group reasoned that the best time to invest in the Company is just before public confidence in it increases sufficiently for the stocks to stop fluctuating radically. In this way, we hoped to get an Internet-type stock price increase followed by a more conservative high period. This would allow the group to hold the stocks at a more stable high point. Though the simulation period was obviously too early to implement this expectation, the outlook was good enough at the time to try it.

2.1.2. Infoseek

Infoseek is a leading provider of Internet services and software products. Infoseek produces GO Network and the Infoseek Service. GO Network and the Infoseek Service include Infoseek Search as well as other leading Internet sites like ABCNEWS.com and ESPN.com in partnership with Disney affiliates.

Infoseek was incorporated in August 1993 in California to develop products and services that enable users to find and use content and information on the Internet.

In April 1998, Infoseek acquired WebChat Communications, Inc., a developer of chat and homepage applications.

On November 18, 1998, Infoseek acquired Starwave Corporation from Disney, entering into various agreements regarding a strategic relationship with Disney. In January 1999, Infoseek launched GO Network and enhanced the Infoseek Service. At approximately the same time, Infoseek acquired Quando, Inc., an Internet technology developer. This represents the last significant growth in the Infoseek business family.

Current risk factors:

- If GO Network is not successful, Infoseek's business would be seriously harmed. This is because the promotion of GO Network may result in potential confusion or a decline in loyalty among users of the Infoseek Services.
- GO Network may not succeed without Disney's cooperation. This is because Disney has to effectively promote GO Network in conjunction with Infoseek.

- Accounting charges from Infoseek's acquisitions of Starwave and Quando will delay and reduce profitability.
- Infoseek's future success depends on the continuation and integration of joint venture relationships, especially those made with Disney.
- Infoseek expects fluctuations and losses in the future. As of October 3, 1998, Infoseek had an accumulated deficit of $53.7 million, while Starwave had an accumulated deficit of $115.7 million. On a pro forma basis, this translates into an accumulated deficit of approximately $130.7 million.

Infoseek's common stock has been traded on the NASDAQ National Market under the symbol "SEEK" since June 11, 1996.

Confidence in Infoseek

The primary confidence factor that prompted the group to choose Infoseek was its recent agreement with Disney. Despite Infoseek's own admittance that it was expecting losses, the group believed that this would not affect the Company's stocks too much since public confidence in the Company was on the increase. However, the group also realized that the Company, unlike AOL, still had the pure image of an Internet company. We expected a very small loyalty base due to a lack of tangible long-term profitability. What we did not expect was for this to surface during the simulation period.

Another factor that the group considered in choosing Infoseek stocks was its move towards diversification, although admittedly on a very limited scale. As stated before, we started the project with the assumption that diversification improves public confidence, and therefore may improve stock performance.

2.2. Group 2: E-commerce

2.2.1. Amazon.com

Amazon.com stocks are traded in NASDAQ.

Amazon.com is an online retailer of books. Amazon.com offers more than 4.7 million books, music CDs, videos, DVDs, computer games and other titles. The company offers its customers compelling value through innovative use of technology, broad selection, high-quality content, a high level of customer service, competitive pricing and personalized services. Customers entering the company Web site can, in addition to ordering books and other products, purchase gift certificates, conduct targeted searches, browse highlighted selections, and other features, search for books by subject category, read and post reviews, register for personalized services, participate in promotions and check order status. The key components of the company's offerings include browsing, searching, reviews and content, online community, recommendations and personalization, a gift center and an out-of-print book service.

Amazon.com's main site now offers millions of books, CDs, videos, and gifts. It also conducts auctions for items ranging from dolls to musical instruments to computers. Its services include a scheduler/address book and a comparison-shopping tool. Aggressive expansion is propelling the company in many online directions; it owns stakes in companies offering pet supplies, prescription drugs, and groceries. Amazon.com has become a model for Internet companies by putting market share ahead of profits and making acquisitions funded by meteoric market capitalization. Founder Jeff Bezos and his family own about 42% of the company.

Confidence in Amazon

The group's confidence level in Amazon was admittedly very low from the start. The Company is notorious for its lack of profitability. By the Company's own admittance, profit takes second place to market share. Although in the long run this strategy would allow the Company to dominate its field, there were obvious doubts that the Company would survive that long. The effect this has on stocks is a very small loyalty base. Amazon stockholders are more likely than others to let go of their stocks and then scramble back to repurchase them. This automatically creates the potential for radical fluctuations, a common pattern in Internet stocks.

Given that investing in Amazon created a huge risk factor, the group decided from the start to use this Company as a model of the expected behavior of Internet stocks. The objective of beating the market would be achieved by other stocks. We hoped, though, that the Amazon stocks we had would not enter a sudden drop during the simulation.

2.2.2. eBay Inc.

eBay is the world's largest personal online trading community. eBay created a new market: efficient one-to-one trading in an auction format on the Web. eBay stocks are traded in NASDAQ.

Individuals--not big businesses—use eBay to buy and sell items in more than 1,600 categories, including collectibles, antiques, sports memorabilia, computers, toys, Beanie Babies, dolls, figures, coins, stamps, books, magazines, music, pottery, glass, photography, electronics, jewelry, gemstones, and much more. Users can find the unique and the interesting on eBay—everything from chintz china to chairs, teddy bears to trains, and furniture to figurines.

As the leading person-to-person trading site, buyers are compelled to trade on eBay due to the large amount of content available. Similarly, sellers are attracted to eBay to conduct business where there are the most buyers. They provide over two million new auctions, and 250,000 new items every day from which users may choose.

eBay will continue to enhance the online trading experiences of all its constituents—collectors, hobbyists, small dealers, unique item seekers, bargain hunters, opportunistic sellers, and browsers. The growth of the eBay community comes from meeting and exceeding the expectations of these special people.

eBay was conceived initially as a result of a conversation between Pierre Omidyar and his wife, an avid Pez™ collector (she currently covets a collection of more than 400 dispensers). She commented to Pierre how great it would be if she were able to collect Pez dispensers and interact with other collectors over the Internet.

As an early Internet enthusiast, Pierre knew that people needed a central location to buy and sell unique items and to meet other users with similar interests. He started eBay to fulfill this need.

eBay has developed a Web-based community in which buyers and sellers are brought together in an auction format to buy and sell items such as antiques, coins, collectibles, computers, memorabilia, stamps and toys. For the 6 months ended 6/30/99, revenues totaled $92.3M, up from $33.5M. Net income rose 10% to $4.6M. Results reflect increased activity on the eBay website, partially offset by $4.4M in merger related costs.

eBay was launched in September 1995. The first auction was conducted on Labor Day, and, within a few weeks, buyers and sellers began flocking to the service.

The eBay community includes more than 5.6 million registered users. eBay users buy and sell items in more than 1,600 categories. Each day, eBay hosts over 2.5 million auctions, with over 250,000 new items joining the "for sale" list every 24 hours. Over 1.5 billion page views per month. More than 50 million auctions have been completed on eBay since its inception.

In June 1999, eBay users averaged more than 111 minutes on the site – making eBay the third most popular web site by user minutes according to online research company MediaMetrix, the leading Web audiences measurement company.

To dispel hesitancy sometimes associated with Internet commerce, eBay invented the industry's first electronic information exchange exclusive to one-to-one trading: the Feedback Forum. Through eBay's innovative Feedback Forum, users can submit

comments about their dealings with one another. In addition, eBay established SafeHarbor™, an in-house customer support team dedicated to providing, to the very best of its ability, a safe trading environment, and protecting the eBay community against fraud.

In terms of online privacy, eBay displays its TRUSTe-approved privacy statement, which clearly outlines how eBay protects users' privacy. In addition, eBay is a founding member of the Online Privacy Association, a cross-industry coalition to protect consumer privacy on the Internet.

Confidence in eBay

Because eBay is an Internet-based auction-house for collector items, it has the advantage of providing collectors with a medium of exchange without the associated exclusivity of conventional auction houses such as Christy's. This translates into great potential and long-term sustainability. As the Internet is increasingly becoming the communication method of choice for a majority of the US and European population, special service providers like eBay may well lead the way in how personal commerce is conducted in the future. The relatively high price of eBay stocks, being traded in the hundred-dollar region, seems to show public support for this assessment.

Given the great potential of eBay as both an e-business and a conventional enterprise, the group placed great hopes in the company, especially since analysis of past stock performance indicated a trend towards sustained increase.

2.2.3. Onsale Inc.

Onsale is a leading electronic retailer specializing in on-line auctions. Onsale currently offers auctions 24-hours a day, seven days a week. The company specializes in selling refurbished and closeout computers, peripherals and consumer electronics, but also sells housewares and sporting goods. The group believed Onsale is well positioned to take advantage of the Internet as a new medium for marketing and commerce. The group also believed that the company had already established itself as one of the first, leading on-line auctioneers.

Onsale stocks are traded in NASDAQ.

Investment risk: Among the risks are that the emerging market is evolving rapidly and there has been no validation of the Internet as an effective commerce medium. The company faces an extremely competitive landscape, including other on-line auction services and new entrants and on-line service companies.

Confidence in Onsale

The confidence factor for Onsale is much similar to that of eBay. The group reasoned that people in the business community view Internet-based commerce as having a strong potential for success. Because of this, we thought, there would be a tendency for e-commerce stocks to enter a period of increase as public confidence builds up. Onsale should not be an exception. However, research into the past performance of Onsale stocks showed that there was a strong tendency for the stocks to fluctuate in a radical manner. The lower price of Onsale stocks when compared to eBay also served as a

warning to us that any negative fluctuation may result in the stocks falling in value in larger percentages than eBay stocks.

Another important factor that prompted the group to choose Onsale stocks was personal experience. Being college students who must deal with computers on an everyday basis, at least two of us have used Onsale services in the past. We have learned from using these services that we could rely on Onsale for our computing needs. Extending this view to the large community of computer users, we realized that Onsale had a large, stable, and potentially loyal consumer base. Working from the assumption that people in the business world can also see this, we expect a generally bright future outlook for Onsale stocks.

2.3. Group 3: Internet Brokerage Firms

2.3.1. Charles Schwab and Company Inc. (sch)

Schwab Inc. stocks are traded in NYSE.

Schwab Inc. engages, through its subsidiaries, in securities brokerage and related financial services. Schwab Inc. strategy is to attract and retain customer assets by focusing on a number of areas within the financial services industry-retail brokerage, mutual funds, support services for independent investment managers, 401(k) defined contribution plans and equity securities market-making. To pursue its strategy and its objective of long- term profitable growth, Schwab Inc. plans to continue to leverage its competitive advantages. These advantages include a nationally recognized brand, a range of products and services, multi-channel delivery systems and an ongoing investment in technology.

Schwab Inc. primary focus is serving retail investors in the U.S., either directly or through independent investment managers, who want access to a selection of products and services, as well as investment news and information, tailored to meet their financial needs. Schwab Inc., through Schwab, serves 5.6 million active customer accounts. Customer assets in these accounts totaled $491.1 billion at December 31, 1998.

Schwab's Mutual Fund Marketplacer provides customers with the ability to invest in over 1,600 third-party mutual funds from 261 fund families. Within the Mutual Fund Marketplace, Schwab's Mutual Fund OneSourcer service enables customers to trade 1,024 mutual funds from 179 fund families without incurring transaction fees.

Schwab's Mutual Fund OneSource service allows investors to access multiple mutual fund companies, avoid brokerage transaction fees, and achieve investment diversity among fund families. Fees received by Schwab for providing services, including record keeping and shareholder services, from the Mutual Fund OneSource program are based upon the daily balances of customer assets invested in the participating funds through Schwab and are paid by the funds and/or fund sponsors. Customer assets held by Schwab that have been purchased through the Mutual Fund OneSource service totaled $69.9 billion at the end of 1998.

Charles Schwab currently operates SchwabLink, a computer-based information network which enables investment managers to access information about their customers' accounts directly from Schwab's computer systems and to enter their customers' trades online. The SchwabLink Web site enables investment managers to use the Internet to communicate directly with Schwab service teams, as well as receive news and information. In 1998, Schwab introduced the Managed Account ConnectionT, which enables investment managers to provide their clients with personalized equity portfolio management by a variety of institutional asset managers. During 1998, Schwab customer assets held in accounts managed by approximately 5,400 active independent investment managers increased $40.6 billion, or 38%, to a total of $146.4 billion. Independent investment managers generated approximately 12% of total commission revenues during the last three years.

Confidence in Schwab

Charles Schwab Inc. is a highly respected brokerage firm that already had a large non-Internet consumer base. When the group opted to include Charles Schwab stocks in

the simulation, there was very little hesitation or doubt. We reasoned, quite simply, that although the Company now operates in the Internet, it already had a stable consumer base and public confidence from its previous operations outside the Internet. The entrance into the Internet was considered just an expansion of its existing operations. Of all the stocks considered to be Internet stocks, we expected Schwab to be the most stable.

Given that stability was the primary confidence factor in choosing Charles Schwab stocks, the group did not expect to gain much from them. What we expected Schwab stocks to be was a market behavior meter, or a control. By comparing our total gains to Schwab gains during simulation, we would have a general idea whether or not the objective of beating the market was still achievable.

Another minor factor the group took into account was the fact that Schwab stocks were traded in the NYSE. This placed it, in the group's view, ahead of the race when compared to other companies' stocks.

2.3.2. E(*)Trade Inc.

E (*) Trade Inc. stocks are traded in NASDAQ.

E (*) Trade Group is an electronic brokerage firm that provides consumers easy access to trading via multiple gateways, including the Internet, on-line services, touch-tone phone, and direct modem. Using its proprietary processing technology, E (*) Trade provides consumers with easy-to-use and cost-effective secure on-line brokerage services. E (*) Trade offers automated order placement, portfolio tracking and related market information, news and other information services 24 hours a day, 7 days a week. The market opportunity appears significant as individual investors look to take more control from retail brokers, first through mutual funds, and now through informed on-line trading. The company has more than 909,000 accounts, averaging 8-10% monthly new account growth. E (*) Trade has established itself as a price leader due to its efficient cost structure, enabling the company to offer its services at a much lower cost than a traditional brokerage firm. The group believes E (*) Trade has a strong business model with steady recurring revenues. E (*) Trade's considerable investments in its infrastructure can be leveraged, contributing to margin expansion moving forward. New account growth can be boosted by additional service offerings, including mutual funds. E (*) Trade has significant incremental revenue and profit opportunities over the next few years from international license fees, advertising, enhanced content like pay-per-view research, and other services.

E*TRADE Group, the #3 online brokerage firm (Charles Schwab is #1) lets its almost 550,000 account holders trade stock through online services, the Internet (about 80% of trading volume), and by phone. It also offers market data, portfolio management

services, and options trading. International ventures, subscriptions, advertisements, and other services make up about 30% of sales. Through joint ventures, E*TRADE operates in several countries; the company purchased international brokerage TIR Holdings to further boost overseas operations. SOFTBANK, E*TRADE's joint venture partner in Japan, owns 28% of E*TRADE, which is buying Internet-based bank TeleBanc. The company plans to initiate after-hours trading.

E (*) Trade will try to maintain its position as an early leader in the online brokerage services market. The prize for first place in this growing market could be significant as the Company leverages its investment in its brand and technology.

Investment risk: Among the risks are the potential for fluctuations in operating results due to changing market conditions, which could slow trading volumes and new customer additions. The management of rapid growth could pose risk to the business model if customer service issues cannot be resolved with technology or if systems capacity cannot keep up with customer growth. Any degradation or failure of the Company's systems or any other systems in the trading process could cause losses for customers and subject the Company to claims from those losses. Costs may be impacted by changes in Federal and State government, SEC and NASD regulations. Furthermore, the volume and pricing environment may weaken as well; larger players with deeper pockets trying to enter the market may forego profitability in on-line services for the sake of gaining market share.

Confidence in E (*) Trade

Unlike Charles Schwab, E (*) Trade started its business as an Internet brokerage company. By the Company's own admittance, this creates a major investment risk since

the Company is totally dependent on electronic systems to remain operational. Any glitch in the system could mean major losses and lawsuits that would endanger the Company's survival. This creates an obvious obstacle for the necessary buildup in public confidence. The group expected the Company's stocks to behave more like Internet stocks than a conventional brokerage company's stocks. In this respect, we intended to put the volatility of the stocks into better use than we did with Schwab. A comparison with Schwab stocks was also planned from the start.

2.4. Group 4: Telephone Companies

2.4.1. Inter-Tel, Inc.

Inter-Tel stocks are traded in NASDAQ.

Inter-Tel is a single point of contact, full service provider of digital business telephone systems, call processing software, call accounting software, Internet Protocol (IP) telephony software, computer telephone integration applications and long distance calling services. Inter-Tel's products and services include the AXXESS and Inter-Tel Axxent digital business communication software platforms, the AXXESSORY Talk voice processing platform, the Inter-Tel IP telephony family of products for the enterprise and carrier markets, and Inter-Tel.net, an IP telephony packet switched long distance service. The company also provides maintenance, leasing and support services for its products.

Established in 1969 to bring technologically advanced, cost effective telecommunications systems to businesses, Inter-Tel is headquartered in Phoenix, Arizona employing more than 1300 people and servicing more than 250,000 business customers through a network of more than 30 direct sales offices and more than 1,000 dealers worldwide. Annual revenues for the 1997 fiscal year were over 220 million. The company's common stock is quoted on the NASDAQ national market system under the symbol INTL.

Digital communication software has been a consistent focus for Inter-Tel. One of the first manufacturers to base a digital communication software platform on Digital Signal Processing (DSP) technology, Inter-Tel has also expanded its product offerings to

utilize advanced digital services such as T-1 and ISDN. Just recently, Inter-Tel introduced AXXESS Networking, which allows Inter-Tel customers to interconnect and form internal networks of AXXESS systems. The first in a new line of IP telephony products that transports voice, fax and data communications across corporate IP or frame relay networks, the Inter-Tel InterPrise 400, was released in 1999. Inter-Tel.net, an alternative long distance service comprised of Inter-Tel Vocal'Net gateways, is already deployed in several major cities throughout the United States. Calls currently can be originated from these cities and terminated anywhere in the United States.

Over the past year, Inter-Tel has expanded its international presence through alliances and international partnerships aimed at distributing and deploying new technologies such as IP telephony worldwide, including North America, Europe, South America and Asia. One of Inter-Tel's first alliances was with NTT International Corporation (NTTI), a subsidiary of Nippon Telephone and Telegraph. Pursuant to an agreement between Inter-Tel and NTTI, Inter-Tel has granted NTTI software licensing and distribution rights to the Inter-Tel Vocal'Net gateway for sale in Japan and other countries. In addition, both Ingram Micro and MicroAge have entered into agreements with Inter-Tel to distribute the Inter-Tel Vocal'Net to their worldwide reseller customers. Inter-Tel also has a long-established relationship with Natural MicroSystems, and, most recently, signed a Memorandum of Understanding to jointly develop IP telephony products with Motorola. In addition to its U.S. sales offices, Inter-Tel has sales offices in both Japan and the United Kingdom.

Confidence in Inter-Tel

A special note has to be made here. The group initially purchased Inter-Tel stocks because we thought it to be Intel Corporation. The reason for this was the INTL symbol used by the Company on NASDAQ. When we finally figured out our mistake, a fast research into past stock performance revealed two factors that made it interesting:

1) Inter-Tel is a relatively new company. As a result, its stocks were being traded at a lower price than any other company we chose.

2) Inter-Tel stocks are "strong" in the sense that they were on the increase from the time we made the purchase. This gave us a chance to achieve the objective of beating the market, albeit with a non-Internet stock.

Basing our decision on these two factors, the group decided to proceed with Inter-Tel stocks. In the larger scheme of the project, Inter-Tel would provide an interesting model of a fledgling but successful non-Internet company while providing us with a chance to make profit.

2.4.2. Nokia Corporation

Nokia stocks are traded in NYSE.

Nokia is a supplier of telecommunications systems & equipment. Its core businesses include the development, manufacture & delivery of operator-driven infrastructure solutions and end-user-driven mobile phones. For the three months ended 3/31/99, sales rose 55% to EUR3.87B. Net income from continuing ops. before U. S. GAAP rose 90% to EUR505M. Results reflect increased telecommunications and mobile phone sales and higher margins. Nokia is a global company whose key growth areas are wireless and wireline telecommunications. A pioneer in mobile telephony, Nokia is the world's leading mobile phone supplier as well as a top supplier of mobile and fixed telecom networks and services.

Nokia also creates solutions and products for fixed and wireless data communications. Multimedia terminals and computer monitors round out its expertise in communications technology. For many companies, it is a challenge to simplify these technologies of the future and still offer feature-rich products. Nokia employees accept it as their everyday goal.

Nokia's history dates back to 1865, when the Finnish mining engineer Fredrik Idestam established a wood-pulp mill in Southern Finland and started manufacturing paper. Since those early days, the company has evolved first into a conglomerate encompassing several industries ranging from paper to chemicals and rubber, and in the 1990s with a clearly defined strategy into a dynamic telecommunications company. The groundwork for telecommunications was already laid in the 1960s, as Nokia was

researching the field of radio transmission in its electronics department. In the late 1970s, mobile phones and telecommunications infrastructure products were developed for both domestic and international customers. In the 1980s and 1990s, Nokia became a global leader in digital communication technologies.

Nokia comprises three business groups: Nokia Telecommunications, Nokia Mobile Phones and Nokia Communications Products. In addition, Nokia includes a separate Nokia Ventures Organization and the corporate research unit, Nokia Research Center.

Although Nokia has built a solid reputation for manufacturing stylish, high-quality mobile phones, without networks the phones could not function. That is where Nokia Telecommunications comes in. Nokia Telecommunications develops and manufactures the equipment and systems needed to run communications networks.

Nokia offers systems and infrastructure for both analog and digital wireless networks and fixed access networks. Their dedicated network products include switching, transmission, network management, and intelligent network (IN) solutions. These products are designed to meet the diverse needs of wireless, fixed, and convergent environments.

Nokia works closely with telecom operators so they can better serve their customers. Nokia offers operators a full range of network equipment and services, including tools for transmission, network management, and network planning. Operators can use these tools to construct an efficient network that meets both customer needs and their own business objectives.

Nokia's global market share in GSM-based infrastructure is well over 20%, and the company has achieved success in the US market with its GSM 1900 products. Nokia has also managed to retain its lead in NMT analog systems, which it has supplied since the mid-1970s. Furthermore, Nokia customers benefit from Nokia's proven total systems capability - Nokia is a top manufacturer of mobile phones and has unsurpassed network testing and integration facilities.

Nokia is the world's largest manufacturer of mobile phones. Nokia develops sophisticated mobile phones and accessories for all major digital (GSM, AMPS, CDMA, TDMA, and so on) and analog standards.

Nokia Ventures Organization expands Nokia's business scope into promising new areas in communications solutions, products and services. Seeking to exploit growth opportunities in the competitive arena emerging from the convergence of the telecom, datacom and IT industries, Nokia Ventures Organization focuses primarily on new telecommunications and datacommunications solutions. Our other major focus is software for corporations and other multiple-customer groups.

Today, Nokia Ventures Organization includes two business units:

1) Wireless Business Communications focuses on the development of new wireless solutions for corporate customers.

2) Wireless Software Solutions focuses on the development of software solutions based on the Wireless Application Protocol (WAP) and other platforms.

To fuel future growth and to boost both new product development and long-term business development, Nokia has also established a USD 100 million Venture Capital

Fund. Based in Silicon Valley, California, the fund's global investment scope covers start-up businesses and new technologies, with a special emphasis on innovation centers..

Confidence in Nokia

The group's confidence in Nokia was high from the start, due to its being a conventional company. We expected to use Nokia as one of our market meters, along with Charles Schwab and Disney. The conservative behavior of Nokia stocks in the past prompted us to expect little growth in our investment during the simulation period. The Company's diversification strategy in a sense makes it a "mini-Disney". Nokia's continuing focus on the telecommunications field is the only thing limiting it from becoming a true conglomerate.

Two other minor factors also played a part in the group's decision to include Nokia. The first is the fact that the Company's stocks are traded in NYSE. The second is its rather strange history. Until we read about the company's history, the group did not know of Nokia's beginning as a paper mill. That alone, while irrelevant to the project, was enough of a surprise to make us look more closely at the Company.

2.5. Group 5: The Walt Disney Company

Disney stocks are traded in NYSE.

DIS, a diversified worldwide entertainment company, operates in 3 segments: Creative Content, Broadcasting, and Theme Parks and Resorts. For the 9 months ended 6/30/99, revenues increased 5% to $17.62B. Net income decreased 22% to $1.22B. Revenues reflect growth at the Walt Disney World Resort and increased revenues at ESPN, the Disney Channel and at the radio network. Earnings suffered from a $246M equity in Infoseek loss. The group will discuss all the segments of Disney's business with relevance to the telecommunication industry in general and to the project in particular.

Walt Disney Pictures and Television, a subsidiary of the Company, produces and acquires live-action motion pictures. The Company also produces and distributes animated motion pictures under the banner Walt Disney Pictures. In addition, the Company distributes films produced or acquired by certain independent production companies. The Company is in the process of implementing a new motion pictures strategy, which is being phased-in over the next several years. In 1997, the Company's international distributor, Buena Vista International, became the first international distribution company to gross more than $1 billion at the box office for three consecutive years.

The Company develops, produces and distributes television programming to broadcasters, cable and satellite operators. The Company owns nine very high frequency (VHF) television stations, five of which are located in the top ten markets in the United States; one ultra high frequency (UHF) television station; eleven standard (AM) radio

stations; and fifteen frequency modulation (FM) radio stations. All of the television stations are affiliated with the ABC Television Network, and 21 of the 26 radio stations are affiliated with the ABC Radio Networks. The Company's television stations reach 24% of the nation's television households, calculated using the multiple ownership rules of the Federal Communications Commission (FCC).

The Company owns The Disney Channel, 80% of ESPN Inc., 37.5% of the A&E Television Networks, 50% of Lifetime Entertainment Services, 34.4% of E! Entertainment Television and has various other international investments. During the first quarter of 1998, the Company acquired the Classic Sports Network.

The Company produces and distributes soundtracks for animated films and read-along products, directed at the children's market in the United States, France and the United Kingdom, and licenses the creation of similar products throughout the rest of the world. The Company's Hollywood Records subsidiary develops, produces and markets recordings from new talent across the spectrum of popular music, as well as soundtracks from certain of the Company's live-action motion pictures. The Company also has a Nashville-based music label, Lyric Street Records. In September 1997, the Company purchased Mammoth Records, which develops, produces and markets a diverse group of artists in the popular and alternative music fields.

The Company's worldwide licensing activities generate royalties, which are usually based on a fixed percentage of the wholesale or retail selling price of the licensee's products. The Company licenses characters based upon both traditional and newly created film properties. The Company continually seeks to create new characters to be used in licensed products. The Company believes it is the largest worldwide

licenser of character-based merchandise and producer/distributor of children's audio and film-related products.

Disney Interactive is a software business that licenses, develops and markets entertainment and educational computer software and video game titles for home and school.

Disney and Infoseek

Of particular relevance to the project is Disney's entry into the Internet industry through the purchase of Infoseek. As admitted by Infoseek itself, Disney has now entered a position from which it can exert a great influence over Infoseek and, by extension, the GO Network. Because Infoseek is one of the leading Internet companies in operation, it is clear that Disney has also positioned itself to create a significant impact on the Internet industry. This might be a significant move for Disney as well. As will be shown in the analysis page, Disney stocks experienced a slump in July and flattened out during the simulation period. The deal with Infoseek might prove to be the revitalizing boost needed by the Company.

Confidence in Disney

The group started the simulation with the knowledge that Disney stocks behave as those of a conventional corporation. Disney stockowners have a great level of confidence in the profitability of Disney as a corporation. The long-term benefits of owning Disney stocks tend to justify the advantage of holding on to their stocks. Because of this level of

confidence, the group believed that Disney would prove to be the most stable of all the chosen companies.

An analysis of Disney businesses shows the reason behind the level of confidence in the Company's profitability. The Company has three low-risk, highly stable ventures limited only in their potential for profit. However, it also has another three unstable, high-risk, but potentially lucrative ventures. The stable ventures are:

1) Home Video. While short-term home video sales can fluctuate depending on consumer taste and preference, long-term sales will ensure a steady source of income. Although it is true that some titles get deleted due to lack of success, the sheer volume of titles Disney constantly puts on the market provides damage control. Additionally, since Disney specializes on the children market, there is an added security factor in that the venture can sustain itself indefinitely. The only true drawback is the lack of diversification in products released by this venture, creating a risk of consumer indifference.

2) Television Production and Distribution. This is slightly less risky than the Home Video business due to the relatively unchanging consumer taste in television programming. History shows that major changes in consumer taste actually follow changes in television programming. Because these changes happen at most once a generation, the long-term profitability in this venture is also secure. Problems do exist in this venture, primarily with the decreasing ratings of several Disney-owned channels, ABC for instance. In this regard, the Company has apparently decided to invest in stable channels like ESPN to minimize potential damage.

3) Character Merchandising. This venture has admittedly created the most constant source of income, albeit limited in volume, for Disney. The risk factor in this venture is very small and actually absorbed by another Disney venture. Once an introduced character has achieved success, its usage as an icon and source of income is secure. Mickey Mouse, for instance, still generates income for Disney nearly a century from its conception. Disney's strategy of constantly introducing new characters ensures that this venture will not stagnate and makes it a very inviting isle of stability with regards to Company income.

The less stable but potentially lucrative ventures are:

1) Theatrical Films. Arguably the riskiest of all, this Disney venture has in recent years exhibited a tendency of losing its profitability. Many reasons have been cited for this, foremost of all the unyielding, conservative attitude of Disney studios. The strict guidelines limiting Disney artists have created a "copy production" attitude, which in turn creates consumer indifference. However, the recent release of the animated movie Tarzan shows signs of relaxed limitations, which may allow the Company to get back on track. On the side, this venture is also significant because it absorbs the risk of introducing new characters for Disney to merchandise.

2) Audio Products and Music Publishing. This is a riskier venture compared to any other Disney business save Theatrical Films. Consumer preference towards music changes all the time, and there is no repeatable formula for success in the industry. However, Disney has taken a strategy that ensures diversification in this field, reducing the chances of the entire venture folding up due to lack of sales. This venture also holds the highest potential of being profitable.

3) Multimedia. This segment of Disney business has great potential due entirely to the constantly changing landscape of the multimedia/computer industry. However, here Disney again shows its conservative attitude. The range of multimedia products released so far does not utilize their whole potential. The recent agreement with Infoseek will hopefully change that.

Overall, the Company's background left the group with an image of Disney stocks as highly stable. Out of the six main ventures, three have disadvantages that can be canceled out by the advantages of the other three. Disney can be considered a long-term company subject to the traditional rules of investing and the sharing of profit through dividends. The group hoped that Disney stockholders have the same image and would not let go of their stocks easily, thus helping the stocks maintain their value during simulation. In a sense, the simulation worked out as expected.

2.6. Conclusion

Many of the decisions made by the group during simulation can be attributed to what we knew of the companies involved. The backgrounds gathered were initially intended for use only as reference. In the end, however, our performance became so poor that we felt the need for a justification of our decisions. The initial confidence the group had in the companies provided some of this.

One major factor of confidence that the group discovered throughout was potential for stability. In retrospect, this is not a factor that should even be considered for the project. Internet stocks are inherently volatile, and it is this volatility that we were

interested in. The group expected, however, that market players would include the potential of stability in their decisions, therefore causing them to build up more confidence in their stocks.

The final result of the group's background research is to provide readers with an insight into how we functioned as stock market participants within the time allotted for simulation. Within this chapter lies the justifications and reasons behind most of the decisions made before and during simulation. The rest of them can be found in the later chapters of this report.

CHAPTER 3

TRANSACTIONS

The focus selected for the project is Internet stocks, or stocks of companies related to or operating on the Internet. We wanted to study and analyze this market segment to gain knowledge about the market. These stocks exhibit highly volatile fluctuations daily and will allow us to gain experience on the ups and downs of the stock market. In order to make money on the market one has to buy low and sell high. The challenge is therefore to guess the low point for a stock and whether it will go up in the near future.

Over the course of our simulation we made seventeen transactions to our portfolio. From day 1 we tried to pick stocks that were market leaders and had a proven track performance in order to minimize our risk. This gave us the foundation for our portfolio. The breakdown of purchases made is as follows:

1) Transaction 1 (6/7/99): purchase of Amazon stocks.

2) Transaction 2 (6/7/99): purchase of eBay stocks.

3) Transaction 3 (6/7/99): purchase of Infoseek stocks.

4) Transaction 4 (6/7/99): purchase of Onsale stocks.

5) Transaction 5 (6/7/99): purchase of E*trade stocks.

We then scanned the market over the course of the simulation for stocks that we felt would be on an upward swing due to a recent low point. This led to several subsequent transactions including:

6) Transaction 7 (6/21/99): purchase of Disney stocks.

7) Transaction 8 (6/21/99): purchase of Schwab stocks.

8) Transaction 9 (6/21/99): second purchase of eBay stocks.

9) Transaction 10 (6/29/99): purchase of Intl stocks.

10) Transaction 17 (7/29/99): purchase of AOL stocks.

11) For transaction 13 (7/1/99) Nokia was purchased because of a new product announcement and market expansion to new countries.

12) Transaction 16 (7/9/99) was to purchase Sch because they recently split and this sometimes results in a slight run up in the stock price.

Our sell transactions were made for various reasons including profit taking because the stock has made at least 5 percent, or the stock has lost over 15 percent in value. The breakdown of sell transactions is as follows:

1) Infoseek was sold at transaction 6 (6/11/99) for profit taking as were:

2) Schwab at transaction 11 (6/29/99).

3) Amazon at transaction 12 (7/1/99).

4) Onsale at transaction 14 (7/2/99).

5) Intl at transaction 15 (7/7/99).

No stocks ended up being sold at a loss as we decided to hold on to them for the long run. We felt that they would go up if we had a longer period of time to track as the overall market was in a slight slump and these stocks were not an exception. A side note must be made here that, since we bought at a margin, this would not be possible in real-life as the creditors might demand a return in their investment. For a real life comparison, the results at the end of the simulation can be considered final.

The table in the following page lists all the transactions made during the simulation.

Table. 3.1. Transaction Record.

order date	trans. Date	trans.	Symbol	quantity	Price	commision	quan * price	total
7-Jun	7-Jun	buy	Amzn	1000	112.25	29.95	112250	112280
7-Jun	7-Jun	buy	Ebay	1000	172.75	29.95	172750	172780
7-Jun	7-Jun	buy	Seek	1000	40.25	29.95	40250	40279.95
7-Jun	7-Jun	buy	Onsl	1000	17.8125	29.95	17812.5	17842.45
7-Jun	7-Jun	buy	Egrp	1000	40.25	29.95	40250	40279.95
11-Jun	11-Jun	sell	Seek	1000	47.375	29.95	47375	47404.95
20-Jun	21-Jun	buy	Dis	5000	30.3125	29.95	151562.5	151592.5
20-Jun	21-Jun	buy	Sch	2944	88	29.95	259072	259102
21-Jun	21-Jun	buy	Ebay	750	154.438	29.95	115828.125	115858.1
28-Jun	29-Jun	buy	Intl	1000	18.378	29.95	18378	18407.95
29-Jun	29-Jun	sell	Sch	2944	98.0625	29.95	288696	288726
30-Jun	1-Jul	sell	Amzn	1000	125.25	29.95	125250	125280
1-Jul	1-Jul	buy	Nok	1000	93.5625	29.95	93562.5	93592.45
2-Jul	2-Jul	sell	Onsl	1000	25	29.95	25000	25029.95
7-Jul	7-Jul	sell	Intl	1000	19.75	29.95	19750	19779.95
9-Jul	9-Jul	buy	Sch	4000	53.875	29.95	215500	215530
29-Jul	29-Jul	buy	Aol	500	99.4375	29.95	49718.75	49748.7

Table 3.2. Simulation Records

date	long value	short value	cash	total equity	return
	$ -	$ -	$ 500,000.00	$ 500,000.00	0
7-Jun	$ 403,875.00	$ -	$ 116,537.75	$ 520,412.75	4.08%
8-Jun	$ 402,000.00	$ -	$ 116,550.51	$ 518,550.51	-0.36%
9-Jun	$ 401,125.00	$ -	$ 116,563.28	$ 517,688.28	-0.17%
10-Jun	$ 401,687.50	$ -	$ 116,576.04	$ 518,263.54	0.11%
11-Jun	$ 325,500.00	$ -	$ 163,933.86	$ 489,433.86	-5.56%
14-Jun	$ 275,687.50	$ -	$ 163,987.72	$ 439,675.22	-10.17%
15-Jun	$ 279,500.00	$ -	$ 164,005.68	$ 443,505.68	0.87%
16-Jun	$ 314,125.00	$ -	$ 164,023.64	$ 478,148.64	7.81%
17-Jun	$ 312,500.00	$ -	$ 164,041.61	$ 476,541.61	-0.34%
18-Jun	$ 310,312.50	$ -	$ 164,059.57	$ 474,372.07	-0.46%
21-Jun	$ 891,357.38	$ -	$(362,439.00)	$ 528,918.38	11.50%
22-Jun	$ 861,140.62	$ -	$(362,498.50)	$ 498,642.12	-5.72%
23-Jun	$ 864,951.62	$ -	$(362,558.08)	$ 502,393.54	0.75%
25-Jun	$ 814,738.00	$ -	$(362,677.21)	$ 452,060.79	-10.02%
28-Jun	$ 837,674.88	$ -	$(362,855.97)	$ 474,818.91	5.03%
29-Jun	$ 588,250.00	$ -	$ (92,654.48)	$ 495,595.52	4.38%
30-Jun	$ 621,218.75	$ -	$ (92,669.70)	$ 528,549.05	6.65%
1-Jul	$ 577,585.94	$ -	$ (61,057.32)	$ 516,528.62	-2.27%
2-Jul	$ 545,531.25	$ -	$ (36,097.30)	$ 509,433.95	-1.37%
6-Jul	$ 541,000.00	$ -	$ (36,121.03)	$ 504,878.97	-0.89%
7-Jul	$ 519,625.00	$ -	$ (16,406.91)	$ 503,218.09	-0.33%
8-Jul	$ 509,203.12	$ -	$ (16,409.60)	$ 492,793.52	-2.07%
9-Jul	$ 726,375.00	$ -	$(231,942.25)	$ 494,432.75	0.33%
12-Jul	$ 710,093.75	$ -	$(232,056.57)	$ 478,037.18	-3.32%
13-Jul	$ 699,062.50	$ -	$(232,094.69)	$ 466,967.81	-2.32%
14-Jul	$ 699,250.00	$ -	$ 232,132.82	$ 931,382.82	99.45%
16-Jul	$ 700,570.31	$ -	$(232,209.09)	$ 468,361.22	-49.71%
19-Jul	$ 675,453.12	$ -	$(232,323.55)	$ 443,129.57	-5.39%
22-Jul	$ 636,078.12	$ -	$(232,438.06)	$ 403,640.06	-8.91%
23-Jul	$ 630,296.88	$ -	$(232,476.24)	$ 397,820.64	-1.44%
26-Jul	$ 619,906.25	$ -	$(232,590.83)	$ 387,315.42	-2.64%
27-Jul	$ 617,796.88	$ -	$(232,629.03)	$ 385,167.85	-0.55%
28-Jul	$ 639,109.38	$ -	$(232,667.25)	$ 406,442.13	5.52%
29-Jul	$ 667,515.62	$ -	$(282,454.17)	$ 385,061.45	-5.26%
30-Jul	$ 648,765.62	$ -	$(282,500.57)	$ 366,265.05	-4.88%
2-Aug	$ 625,687.50	$ -	$(282,639.81)	$ 343,047.69	-6.34%
12-Aug	$ 608,093.75	$ -	$(283,057.95)	$ 325,035.80	-5.25%
18-Aug	$ 704,359.38	$ -	$(283,337.05)	$ 421,022.33	29.53%
19-Aug	$ 670,875.00	$ -	$(283,383.60)	$ 387,491.40	-7.96%
20-Aug	$ 693,406.25	$ -	$(283,430.15)	$ 409,976.10	5.80%

Below is a graph of the simulation.

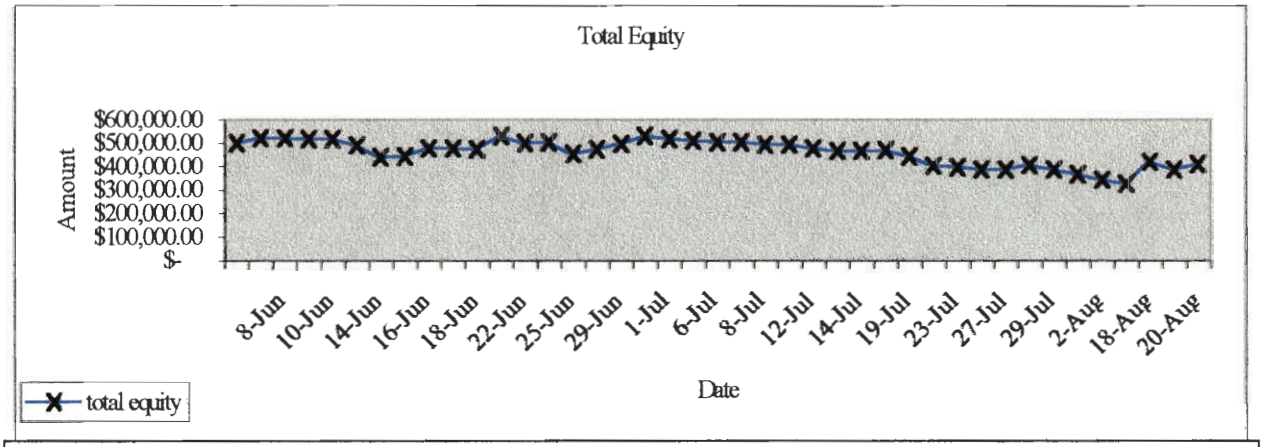


Fig. 3.1. Simulation Graph

CHAPTER 4

ANALYSIS

The decisions made by the group during simulation created a total loss of $283,430.15. Considering the fact that we also took the liberty of getting a margin, in real life we would have gone bankrupt. This chapter is meant to explain how the losses were incurred. To keep with the flow of the report so far and to provide a direct correlation to the Backgrounds chapter, this chapter will be divided by company as was the background chapter. As will be seen, many of the original assumptions made during background research were proven to be overoptimistic. Since the market started going down in July, some of the assumptions made also became outdated since they were made with the expectation that the market was going up.

4.1. Group 1: Internet Service Providers

4.1.1. AOL:

AOL is a leader in interactive services, Web brands, Internet technologies and electronic commerce services. It operates the AOL and CompuServe Internet services, the Netscape Communicator client software, ICQ, Spinner Networks Incorporated and Nullsoft, Inc. AOL is a market leader for Internet services with a 1999 earning per share of $0.60.

The reason we bought the stocks was due to some speculation that it had its local low point in its share price. It was purchased on July 29, 1999 at the price of $99.4375. We were hoping the stocks would rebound to a new high price in order to gain a little profit. Therefore, we had a price target of a minimum of 5% gained. However, we could not meet our expectation during the time of simulation. The price of the stocks started to decrease and beat our hopes.

We believe the reason why the stock price went down was because the market was not doing so well. In addition to the unstable market in USA, the Internet service provider market was becoming more competitive, for example: Microsoft Networks (MSN) was offering $400 rebate on new computers in exchange for the consumers signing up for three years of service with the MSN.

Another factor that weakened the stocks was the recent news out of the European market concerning free Internet access for consumers in Europe. Several companies were offering free Internet access, which was threatening AOL dominance in the European market because AOL charge money for their services. Therefore, the investors started running away from AOL stocks and the price began to decline.

We believe AOL did this because they did not want to lose their European market share, so they are willing to give such a free access to their customers.

For future reference, we predicted that the stocks would go up because of the service and from the past, the graph shows some tendency to go up.

4.1.2. SEEK:

As one of the leaders in Internet search engine industry, Infoseek has developed more and more powerful search engines.

One major reason why we bought the stocks was because of Infoseek's reputation. Its reputation was so good that many people go online using Infoseek to find information they need regarding any research they are doing. We believed that since many people use the Internet as one of their primary tools to find info, our stocks would go up. Another major factor considered was because Disney Co. was going to buy 57% of Infoseek. Since there was strong news regarding the two companies, we acquired the stocks. The outcome of the stocks was not too bright. We ended up losing several thousand dollars, although in the end of June and in the beginning of July the price of the stocks went up. Those increases did not meet our goal of 5%. Therefore, we kept the stocks until the end of simulation since we did not make any profit.

For future prediction, since Internet usage is going down, we believe that the stocks would keep going down. However, if many students, scientists, and professors, etc., need some help in their research, and would use the Internet as one of their resources, we are positive that the stocks would go back up. If we had more time in running the simulation we are sure that at least we could gain our capital back and even make small amount of profit. It is a good time to buy this stock because the semester for this year is in its mid year, where many schools are having their mid term, which means research papers are due and students need help in finding their sources.

4.2. Group 2: E-commerce

4.2.1. AMZN:

Amazon is a leading online retailer of books, music and other products and services over the web. Customers can also purchase gift certificates, conduct targeted searches, browse highlighted selections, view bestseller lists, and read and post reviews.

Amazon is one of the leaders in electronic commerce (E-commerce). Over the last few months, Amazon has shown some good rebound whenever they go down. For example: In February 1999, their stock price went down and two months later, it went up to higher levels. We can see this from the graph. We purchased our stocks at the price of $112.25 and we sold them at the price at $125.25. We made approximately 10% profit, twice as much as our expectation.

The reason why we bought the stocks was because of its past performance. We took our chances that the stocks would fluctuate radically as they did in the past. We were lucky that they went up. One major effect to the stocks' performance was that Amazon was giving free music on the Internet, which means that more customers would visit the site, meaning more income for Amazon. In addition, Amazon also built two new warehouses for their products, so they would have inventories on hand, in case the demands from the customers were greater than their prediction. Also these warehouses are being used to cut time to Midwestern cities for books, CDs, videos and other items sold directly from Amazon's site.

The products they sell have become another key factor in their revenues. Their lower price compared to the manufacturers' suggested retail price has made them well known, which make more customers purchase items such as books through Amazon.

One other key factor influencing our decision to buy the stocks was that Amazon went into the Internet auction business. Their Internet auction has become a rival for eBay. With their good reputation in retailing, Amazon with confidence entered the auction business, hoping they would have a better market share. If Amazon had done this earlier, the price of the stocks would have increased to a higher level.

4.2.2. EBAY

eBay has pioneered the world's largest and most popular and most popular person-to-person trading community on the Internet. EBAY provides buyers and sellers a place to socialize, to discuss topics of common interest and, ultimately to buy and sell personal items. EBAY has the name brand and currently controls its market as the place to go to look for esoteric items that people are selling. They had revenues of 48 million in 1998 and a profit of 2 cents per share. .

We purchased EBAY as a cornerstone to portfolio as it is a major player in the overall Internet industry and has been solidifying its position recently. They made an interesting purchase of the third largest auction firm in the United States. Butterfield and Butterfield conducts auction of everything from stamps to fine art with a highly reputable image. It seems EBAY wants to perhaps add some expert knowledge to their auctions and diminish the ability of fakes and forgeries from showing up on the auction website. They perhaps may start offering the service of actually writing people's lots for them. For this reason we thought it was an opportune time to purchase their stock.

What prevented the stock from making any real gains was the news that Amazon was entering the Internet auction business. This worried and scared away investors who were concerned over eBay's ability to sustain their growth rate and profits.

The stock was purchased at $154.4375 per share at a low point in the price. We felt it would rebound in the near future and net us a small profit. The stock went down and never recovered over the course of our simulation.

4.2.3. Onsale

Onsale is an Internet retailer selling retail and wholesale goods to businesses, resellers, and consumers. It operates through two online stores, Onsale atAuction and Onsale atCost. It offers a wide range of excess and closeout products and vacation packages. This company does retailing only on the Internet and can offer the lowest prices due to its low transaction costs on the Internet.

We purchased Onsale at a price of $ 17.8125, as its curve shows that it had reached a low point in its price. We tracked the stock for the next several weeks and it made some small gains before we decided to sell it at a price of $ 25.00. As it turns out this was a local high point that the stock would drop from. We made the maximum amount by selling at this point.

The overall chart shows some very bad news for Onsale investors. As you see it has dropped sharply from its all time peak in December 99. This was probably due to speculation on holiday sales and a good point to buy their stock would be right about now in October. The company has problems earning money posting a large loss for 1998 while revenues jumped considerably. This may only be a temporary thing as with other Internet companies including Amazon.

4.3. Group 3: Internet Brokerage Firms

4.3.1. SCH:

Charles Schwab as one of the best online brokerage firms has been doing very well in the past few months. With the addition of data from their prospectus, we decided to add SCH to our portfolio.

The stocks were rising very smoothly for several days during the simulation. It went up as much as 11% and we sold it at the price of $98. We believe this increase was caused by several reasons.

One reason for the increase was that because Charles Schwab has agreed to buy a seat on Hong Kong's stock exchange. Christina Hui Siu-wing, Schwab Hong Kong's general manager for Asia said that arrangements had been made to buy a dormant seat from Bond's Securities for about $3 million. Instead of competing on price, Schwab would position itself as a full-service broker providing a wide range of investment aids and the company would be handling local share transactions in the first half of next year. The seat in Hongkong Stock Exchange will give Schwab access to three trading terminals, through which it intends to handle both on and off-line transactions.

After we sold the stocks, we kept watching the progress of the stocks and a few days later, on July 2, 1999, the stocks split 2 for 1. One week following the split, we purchased the stocks with higher quantity than the previous one, with the expectation that the stocks would go up. Our expectation was far from reality. The stocks kept on going down. We believe that this was caused by their press release, mentioning that the Charles Schwab Europe would allow online trading for the European market.

Although this is a good indication for the customers, as it would make them feel easier, there are several constraints that we have to keep in mind. Among them are the investors in the US market who would not be pleased because of the current economic situation that has been going in Europe. The Euro has been volatile for the past year, which make the investors stand on edge. If the Euro went down deeper, what would happen is that there would be less investment in Europe, which would make the market worse. With this indication, we were sure that this caused the problem on our stocks.

4.3.2. EGRP

E*Trade Group Inc. is a provider of online investing services and has established a popular, branded destination Web site for self-directed investors. It offers automated order placement and execution, along with a suite of products that can be personalized.

Just like Charles Schwab, E*Trade Group is a brokerage company influenced by many factors. The other competitors also influence their performance in the stock market. Different services that they offer would put them in a different confidence level with respect to the industry and to their customers.

The head to head battle within the Internet Brokerage industry would have many repercussions for the firms. This is especially true with regards to E*Trade, since they only deal with online investment. The big players such as Charles Schwab and Merrill-Lynch would play a big factor. For example, on July 12, 1999, Merrill-Lynch launched its online trading strategy that includes online trading, but only as an added convenience. The real thrust in this strategy is to offer clients a full range of Merrill services, including access to an actual broker, financial planning advice, and a Visa card. All these will be available for an annual fee based on a percentage of assets in a client's account and with a flat rate that is also competitive among the industries.

The decision of buying E*Trade stocks was based on their past performance and the belief that Internet trading was growing up. From the past performance data, the company's stock value was increasing until the first quarter of 1999. Starting on the second quarter, the stock value was decreasing. Due to this decrease we made our decision to buy the stocks, hoping that the stocks would rebound to a higher level. It

indeed rebounded to a higher level and stayed high for a few days in the month of July. However, entering the third quarter of 1999 and our final few weeks of simulation, the stocks were diving on to a worse situation.

In addition to their performance, we believe one major event that had a serious effect on the performance of this company was Mr. Alan Greenspan's speech in June, in which he announced the increase of the interest rate. This affected not only the company but also the industry and all markets in general. We believed many customers would not invest, since there was a fear that many companies would not be able to run their business as expected due to the increase on the interest rate.

4.4. Group 4: Telephone Companies

4.4.1. INTL

Inter Tel Inc. is a full service provider of digital business telephone systems, call processing software, voice processing software, call accounting software, Internet Protocol telephone software, computer telephone integration applications, and long distance calling services. This company does not entirely fulfill our requirement of studying the Internet market segment but it does deal in high technology and Internet applications.

We purchased this stock at $18.375 on June 29, 1999 by a mishap thinking it was Intel Corporation. We later noticed our mistake and decided this was a strong company and worth our investment. Their financials look very good with an average year to year revenue growth rate of 21.88 percent out pacing the industry average of 13.05 percent. The earning per share dropped in 1998 to a decent 0.32 cents but started giving a dividend in 1998 of 0.03 cents. This company is relatively small ($500 million market capitalization), and is growing at a steady clip with potential for something larger, making it hold in our opinion.

The chart for INTL shows that we purchased it a low point in its curve. The second part of June is where its stock began to steadily increase to the point where we had made a slight profit of $1.375 per share. We decided to sell at this point because we didn't know exactly what to expect the company to do after this point and felt a little uneasy. We later say that they hit a peak in late July after a sharp increase. We were not

sorry that we missed out on this peak but happy to have made a little money and learned a little.

4.4.2. NOKIA:

Nokia focused on the key areas of wireline/wireless telecommunications in which it is a significant supplier of advanced transmission systems and access networks, multimedia equipment, satellite and cable receivers and other telecommunications related products.

One major reason that influenced our decision in purchasing the stocks was their press release of the incoming new product. The new product was the Nokia cellular phone for the US market, the 8000 series. We believed that with the new product, this would shoot up the price of the stocks into new, higher levels. It indeed shot up, but did not reach our expectation of 5% or more increase; it only went up approximately 4%, so we decided not to sell the stocks. We waited until it would go beyond so that we could sell it, but it turned out that the stock prices actually decreased over the simulation period. This decrease is believed to have been caused by their delay in releasing the new product. The product was supposed to be released after the second quarter of 1999 or in midyear of 1999, which was around the month of June to August. However due to some technical difficulties, Nokia postponed the release until October of 1999. Therefore, the price of the stocks went down.

Several issues which made us hold the stocks were: their earning for the second quarter was up to 73%, their new deals with Chinese business people, newly released products in Asian market, and the high sales of cellular phones in the world. We just could not figure out why the stocks did not go up as much as their earnings.

4.5. Disney

Disney is a worldwide diversified entertainment company which, together with its subsidiaries, operates in three business segments: (1) Creative content, (2) Broadcasting, and (3) Theme Parks and Resorts. Some recent company acquisitions include the purchase of the ABC network that includes ESPN, and other smaller web properties. Disney had 1998 revenues of $22,976,000,000 with an earnings per share of 0.89 cents.

Disney has made several major business moves over the last year or so to improve their financial situation and improve their lagging stock price. They launched a major campaign advertising for their GO network. Their website is a multifunctional search engine and company network. They have been trying to building the brand name through advertising on ESPN and ABC networks as free advertising with both their websites also found within the GO network. Disney can use its far-reaching power in the media industry to market their own company products and build their image.

1999 also marked the addition of the Disney cruise ship line and the announcement of an expansion of Disney theme parks home and abroad. Disney built several cruise ships to enter this lucrative market that will fit very nicely with their theme park business. The cruises will run from the Orlando area, thus bringing vacationers to their flagship park perhaps staying a few extra days to visit. They are expanding the Disneyland in Anaheim, Cal. And they are looking to add another theme park in Asia, most likely in Hong Kong. Theme parks provide a large chunk of Disney's profit and revenue, with profit margins in the area of 25-30 percent. The real problem for Michael Eisner is turning around the ABC unit with the main network remaining unprofitable as ESPN posts a tidy profit of around five hundred million dollars.

The Disney stock price had been in a rather flat curve since it started declining in July 1998 (when it split its stock). We felt the stock was due for an upward trend with good news that they had finally launched their cruise ship line. We didn't see that upward tend during our simulation and we actually ended up losing money. We didn't lose enough to warrant us to sell the stock but we were confident in the price rising in the future. Disney stock tends to start rising in late November and continuing until summer. What bucked this trend were the delays in the launch of the cruise ship lines and the bad profit news from ABC networks.

4.6. Conclusion

In the final analysis, the project failed to achieve its objectives because the initial expectations did not factor in many possible influences that may hurt the whole stock market in the short term. Many of the decisions made during simulation were based on lack of choice instead of careful planning. It must be noted that the decision to buy at a margin destroyed any hopes of achieving the objectives. Although the group decided in the end to keep the stocks and wait for a rebound, this would have been impossible in real life due to the margin. The end results can be considered final, since in real-life such a loss would not be tolerated by creditors. The fluctuations in stock prices can be seen from the graphs appended to this report.

CHAPTER 5

CONCLUSION

At the end of the simulation period, a total loss of $283,430.15 was calculated. This is made worse by the fact that during the course of the simulation, the group actually did a margin by "borrowing" money from Virtual Stock exchange. Clearly, the initial objective of beating the market was not achieved. Instead of making profit, we ended up owing money to the "broker". The only consolation we had at the time was that the entire market was going down during the simulation. Although the market and, by extension, our stocks later rebounded, the rebound took place only after the simulation ended. As a result, no effort to capitalize on it could be made. We therefore gracefully accepted defeat and took what we could learn from it.

The following list summarizes what the group learned about the stocks we held during simulation:

1) All the stocks held during simulation decreased in value during the simulation period. This is mostly due to the market itself decreasing in value as companies entered their fiscal report deadlines and anxiety crept in. Later on, most of the stocks rebounded to approach their starting values. However, the decrease and increase in value was different in size and speed for each stock.

2) The Internet stocks proved to be as volatile as expected. The most extreme example was perhaps Onsale. In July, the stock reached its quarterly high of 25.41. In a little over a month, however, the price dropped to 12.81, a staggering 50.4% of its original

value. By contrast, Nokia lost only 20% of its value over the same time period. This can be seen in the appended graphs. A close examination of the graphs will show that, percentage-wise, all Internet stocks have significantly larger fluctuations than telecommunications stocks.

3) Many of the assessments of expected company performance made when the group started the simulation were proven false. One surprising example for this is Amazon. As can be seen from the Backgrounds chapter, the public confidence level for Amazon stocks was low from the start. However, as explained in the Analysis chapter, the past performance of said stocks suggested a potential that we may try to harvest. We were lucky that we did, since Amazon was one of the few stocks that gained us some profit, although ultimately insignificant compared to our losses. Company backgrounds, especially as supplied by the companies themselves, do not make a good indicator for stock performance.

4) The group does not have an experience level as yet that would allow us to make predictions of how the public would behave with regards to the stock market. Although we made some correct predictions during the first few weeks of the simulation, we failed to repeat this during the later part when stock prices began to drop. What this says is that the group was able to keep track of a winning situation but unable to adapt to a losing situation.

5) Stock prices for the telephone company Inter-Tel were on an upward slope during the entire simulation, although they did slump and level out in the end. This shows that there is much public confidence in the vitality of a new corporation.

6) Disney stocks, used as a reference, had a maximum fluctuation of only 17% over the entire quarter. This confirmed our theory that a multimedia conglomerate, by virtue of its diversified nature, has a better chance of maintaining public confidence in its performance. A comparison to its partner Infoseek, however, shows that Disney was apparently unaffected by both the decline in confidence in Internet stocks and Infoseek's own internal difficulties. This clearly shows the advantage of being a conglomerate. Interestingly, it also shows that an Internet company still cannot expect to build a stable confidence level through mergers with large corporations.

7) The margin was a bad idea. As pointed out in other chapters, in real life, this would have killed any hopes the group might have had of recuperating from our losses. The size of the margin was another factor that should have been limited. The group's losses at the end were greater than the margin we had. Since the margin amounted to roughly 1/3 of the total sum of money the group used for investment, if the creditors were to call we would have lost over 50% of our initial capital just to repay them.

The final conclusion to be made is that Internet stocks are far too volatile for the short-term investor unfamiliar with the workings of the stock market. Public confidence in these stocks is simply too unpredictable. No loyalty base as yet exists for Internet stocks as can be found for other types of stocks. Stockholders are as likely to let go as they are to scramble for the stocks. The group, being relatively inexperienced and somewhat naïve, simply picked a bad time to start the simulation.

APPENDIX A

DEFINITION OF STOCKS AND EXCHANGES

Stocks are equity securities offered to the public that is a share of the company. The owner of a stock owns a part of the company and may have voting rights in regards to choosing the directors. There are two types of stock: preferred and common. Preferred stocks are stocks that have preference over common stock in the payment of dividends and in the distribution of corporate assets in the event of liquidation. Preference means only that the holders of the preferred shares must receive a dividend (in the case of an ongoing firm) before holders of common shares are entitled to anything. Common stock is shares that have no special preference either in dividends or in bankruptcy. Owners of common stock are referred to as shareholders or stockholders in the company. Our project will deal with trading common stock only.

Exchanges

Stocks are offered for trade or sale on several exchanges around the world with the largest in the United States. The New York Stock Exchange is the largest in the United States including the NASDAQ, AMEX, Boston, Chicago, etc. The amount of money that is held on the NYSE is around 13 trillion dollars.

New York Stock Exchange

The New York Stock Exchange (NYSE) is the largest agency auction market in the United States. The NYSE uses an agency auction market system that is designed to

allow the public to meet the public as much as possible. The majority of volume (approx. 88%) occurs with no intervention from the dealer. Specialists (specs) make markets in stocks and work on the NYSE. The responsibility of a spec is to make a fair and orderly market in the issues assigned to them. They must yield to public orders which means they may not trade for their own account when there are public bids and offers. The spec has an affirmative obligation to eliminate imbalances of supply and demand when they occur. The exchange has strict guidelines for trading depth and continuity that must be observed. Specs are subject to fines and censures if they fail to perform this function. NYSE specs have large capital requirements and are overseen by Market Surveillance at the NYSE. Specs are required to make a continuous market.

Most academic literature shows NYSE stocks trade better (in tighter ranges, less volatility, less difference in price between trades) when compared with the OTC market (NASDAQ). On the NYSE 93% of trades occur at no change or 1/8 of a point difference. The system on the NYSE is very different than NASDAQ and has been shown to create a better market for the stocks listed there. This is why 90% of US stocks that are eligible for NYSE listing have listed.

Every listed stock has one firm assigned to it on the floor. Most stocks are also listed on regional exchanges in LA, SF, Chi., Phil., and Bos. All NYSE trading (approx. 80% of total volume) will occur at that post on the floor of the specialist assigned to it.

The New York Stock Exchange imposes fairly stringent restrictions on the companies that wish to list their shares on the exchange. Some of the guides used by the NYSE for an original listing of a domestic company are national interest in the company and a minimum of 1.1 million shares publicly held among not fewer than 2,000 round-lot

stockholders. The publicly held common shares should have a minimum aggregate market value of $18 million. The company should have net income in the latest year of over $2.5 million before federal income tax and $2 million in each of the preceding two years. The NYSE also requires that domestic listed companies meet certain criteria with respect to outside directors, audit committee composition, voting rights and related party transactions. A company also pays significant initial and annual fees to be listed on the NYSE. Initial fees are $36,800 plus a charge per million shares issued. Annual fees are also based on the number of shares issued, subject to a minimum of $16,170 and a maximum of $500,000. For example, a company that issues 4 million shares of common stock would pay over $81,000 to be listed and over $16,000 annually to remain listed.

The NASDAQ

NASDAQ is an abbreviation for the National Association of Securities Dealers Automated Quotation system. It is also commonly, and confusingly, called the OTC market.

The NASDAQ market is an interdealer market represented by over 600 securities dealers trading more than 15,000 different issues. These dealers are called market makers (MMs). Unlike the New York Stock Exchange (NYSE), the NASDAQ market does not operate as an auction market (see the article on the NYSE). Instead, market makers are expected to compete against each other to post the best quotes (best bid/ask prices).

A NASDAQ level II quote shows all the bid offers, ask offers, size of each offer (size of the market), and the market makers making the offers. The size of the market is

simply the number of shares the market maker is prepared to fill at that price. Since about 1985 the average person has had access to level II quotes by way of the Small Order Execution System (SOES) of the NASDAQ.

SOES was implemented by NASDAQ in 1985. Following the 1987 market crash, all market makers were required to use SOES. This system is intended to help the small investor (hence the name) have his or her transactions executed without allowing market makers to take advantage of said small investor. "SOES Bandits" is slang for people who day-trade stocks on the NASDAQ using the SOES. A SOES bandit tries to scalp profits on the spreads.

A firm can become a market maker (MM) on NASDAQ by applying. The requirements are relatively small, including certain capital requirements, electronic interfaces, and a willingness to make a two-sided market.

The brokerage firm can handle customer orders either as a broker or as a dealer/principal. When the brokerage acts as a broker, it simply arranges the trade between buyer and seller, and charges a commission for its services. When the brokerage acts as a dealer/principal, it's either buying or selling from its own account (to or from the customer), or acting as a market maker. The customer is charged either a mark-up or a mark-down, depending on whether they are buying or selling. The brokerage can never charge both a mark-up (or mark-down) and a commission. Whether acting as a broker or as a dealer/principal, the brokerage is required to disclose its role in the transaction. However dealers/principals are not necessarily required to disclose the amount of the mark-up or mark-down, although most do this automatically on the confirmation as a matter of policy. Despite its role in the transaction, the firm must be able to display that

it made every effort to obtain the best-posted price. Whenever there is a question about the execution price of a trade, it is usually best to ask the firm to produce a Time and Sales report, which will allow the customer to compare all execution prices with their own.

In the OTC public almost always meets dealer which means it is nearly impossible to buy on the bid or sell on the ask. The dealers can buy on the bid even though the public is bidding. Despite the requirement of making a market, in the case of MM's there is no one firm who has to take the responsibility if trading is not fair or orderly. During the crash of 1987 the NYSE performed much better than NASDAQ. This was in spite of the fact that some stocks have 30+ MMs. Many OTC firms simply stopped making markets or answering phones until the dust settled.

Academic research has shown that an auction market such as the NYSE results in better trades (in tighter ranges, less volatility, less difference in price between trades).

APPENDIX B

AVERAGES / INDEXES

Averages and indexes help to track the market's performance.

Dow Jones Industrial Average

The Dow Jones averages are computed by summing the prices of the stocks in the average and then dividing by a constant called the "divisor". The divisor for the Dow Jones Industrial Average (DJIA) is adjusted periodically to reflect splits in the stocks making up the average. The divisor was originally 30 but has been reduced over the years to a value far less than one. The current value of the divisor is about 0.35; the precise value is published in the Wall Street Journal and Barron's.

According to Dow Jones, the industrial average started out with 12 stocks in 1896. Those original stocks were American Cotton Oil, American Sugar, American Tobacco, Chicago Gas, Distilling and Cattle Feeding, General Electric (the only survivor), Laclede Gas, National Lead, North American, Tennesee Coal and Iron, U.S. Leather preferred, and U.S. Rubber. The number of stocks was increased to 20 in 1916. The 30-stock average made its debut in 1928, and the number has remained constant ever since.

The Dow Jones Industrial Average is computed from the following 30 stocks:

AA Alcoa, ALD Allied Signal, AXP American Express, BA Boeing, CAT Caterpillar, CHV Chevron, C CitiGroup, DIS Disney, DD Du Pont, EK Eastman

Kodak, GE General Electric, GM General Motors, GT Goodyear Tire, HWP Hewlett-Packard, IBM International Business Machines, IP International Paper, JNJ Johnson & Johnson, JPM JP Morgan Bank, KO Coca Cola, MCD McDonalds, MMM Minnesota Mining and Manufacturing (3M), MO Philip Morris, MRK Merck, PG Procter and Gamble, S Sears, Roebuck, T AT&T,UK Union Carbide, UTX United Technologies, WMT WalMart Stores, XON Exxon.

Standard and Poor's 500 - $SPX

The S&P 500 index - ($SPX), more formally known as the S&P 500 Composite Stock Price Index, is a European-style, capitalization-weighted index (shares outstanding multiplied by stock price) of 500 stocks that are traded on the New York Stock Exchange, American Stock Exchange and NASDAQ National Market. The advantage of "cap-weighting" is that each company's influence on index performance is directly proportional to its relative market value. It is this characteristic that makes the S&P 500 such a valuable tool for measuring the performance of actual portfolios.

NASDAQ Composite Index

The NASDAQ Composite Index measures all NASDAQ domestic and non-U.S. based common stocks listed on The NASDAQ Stock Market. The Index is market-value weighted. This means that each company's security affects the Index in proportion to its market value. The market value, the last sale price multiplied by total shares outstanding, is calculated throughout the trading day, and is related to the total value of the Index.

Today the NASDAQ Composite includes over 5,000 companies, more than most other stock market indexes. Because it is so broad-based, the Composite is one of the most widely followed and quoted major market indexes.

Nasdaq-100 Index

The Nasdaq-100 Index includes 100 of the largest non-financial domestic companies listed on the NASDAQ National Market tier of The NASDAQ Stock Market. Launched in January 1985, each security in the Index is proportionately represented by its market capitalization in relation to the total market value of the Index.

The Index reflects NASDAQ's largest growth companies across major industry groups. All index components have a minimum market capitalization of $500 million, and an average daily trading volume of at least 100,000 shares.

As of the end of 1996, the Nasdaq-100 Index has outperformed other major indices. The Nasdaq-100 Index was up 43%, while the Dow Jones Index rose 26% and the Standard and Poor's 500 Index climbed 20%. Individual stocks within the Nasdaq-100 Index varied with 69 stocks finishing the year with higher prices. Dell Computer was the best performing stock within the index with a 206.9% price increase from $17.31 per share to $53.12 per share.

The AMEX Composite Index - (XAX)

The American Stock Exchange introduced a new AMEX Composite Index with a new ticker symbol, XAX, on January 2, 1997. The XAX is a market capitalization-weighted, price appreciation index, and replaces the AMEX Market Value Index (XAM)

which, since its inception, has been calculated on a "total return basis" to include the reinvestment of dividends paid by AMEX companies. The new AMEX Composite Index is more comparable with other major indexes, which reflect only the price appreciation of their respective components.

Appendix C

Stock Market Terms

Securities and Exchange Commission SEC

The federal agency created by the Securities Exchange Act of 1934 to administer that act and the Securities Act of 1933. The statutes administered by the SEC are designed to promote full public disclosure and protect the investing public against fraudulent and manipulative practices in the securities markets. Generally, most issues of securities offered in interstate commerce or through the mails must be registered with the SEC.

Short Term Gain

The profit realized from the sale of securities or other capital assets held six months or less.

Spread

The spread for a company's stock is influenced by a number of factors, including: Supply or "float" - the total number of shares outstanding available to trade. Demand or interest in a stock, and total trading activity in the stock.

Stock Dividend

Payment of a corporate dividend in the form of stock rather than cash. The stock dividend may be additional shares in the company, or it may be shares in a subsidiary being spun off to shareholders. Stock dividends are often used to conserve cash needed to operate the business. Unlike a cash dividend, stock dividends are not taxed until sold.

Underwriter

The investment banking firm that brought the company public. In the IPO Summary section we include both the primary Underwriter, called the Lead Manager and the Co-Manager, when available.

Volatility

The degree of price fluctuation for a given asset, rate, or index; usually expressed as a variance or standard deviation.

Volume

Total volume in each stock reported to The NASDAQ Stock Market from NASD members and exchanges trading NASDAQ securities between the hours of 8:00 A.M. and 5:15 P.M. EST.

Market Capitalization (MCAP)

Price per share multiplied by the total number of shares outstanding; also the market's total valuation of a public company.

Earnings Per Share-(EPS)

EPS represents the portion of a company's profit allocated to each outstanding share of common stock. Net income (reported or estimated) for a period of time is divided by the total number of shares outstanding (TSO) during that period; See growth rate measures for EPS.

Market Value

The market price; the price at which buyers and sellers trade similar items in an open marketplace. The current market price of a security as indicated by the latest trade recorded.

Total Shares Outstanding (TSO)

The number of shares of capital stock that have been issued and are in public hands.

APPENDIX D

PERFORMANCE MEASURES

The following measures aid in selecting stocks and evaluating their performance.

Net Income

Income after all expenses and taxes have been deducted, and used in calculating a variety of profitability and stock performance measures.

P/B Ratio (Price/Book Ratio)

A stock analysis statistic in which the price of a stock is divided by the reported book value (as of the date specified) of the issuing firm.

P/C Ratio (Price/Cash Flow Ratio)

A financial ratio that compares stock price with cash flow from operations per outstanding shares.

P/E Ratio (Price/Earnings Ratio)

A stock analysis statistic in which the current price of a stock (today's last sale price) is divided by the reported actual (or sometimes projected, which would be forecast) earnings per share of the issuing firm; it is also called the "multiple".

P/S Ratio (Price/Sales Ratio)

A financial ratio that compares stock price with sales per share (or market value with total revenue).

Debt to Equity Ratio

Long-term debt divided by shareholders' equity, showing relationship between long-term funds provided by creditors and funds provided by shareholders; high ratio may indicate high risk, low ratio may indicate low risk.

Quarterly Report (10 Q)

A report, which public companies are required to file quarterly with the SEC, that provides unaudited financial information and other selected material.

Retained Earnings

Net profits kept to accumulate in a business after dividends are paid.

Return of Capital

A distribution of cash resulting from depreciation tax savings, the sale of a capital asset or of securities in a portfolio, or any other transaction unrelated to retained earnings.

Return on Equity

(Net income divided by shareholders' equity) a measure of the net income that a firm is able to earn as a percent of stockholders' investment.

Return on Total Assets

(Net income divided by total net assets) a measure of the net income that a firm's management is able to earn with the firm's total assets.

Yield

In general, a return on an investor's capital investment. For bonds, the coupon rate of interest divided by the purchase price, called current yield. Also, the rate of return on a bond, taking into account the total of annual interest payments, the purchase price, the redemption value, and the amount of time remaining until maturity.

APPENDIX E

BROKER TERMS

Short Selling

Short selling is the selling of a security that the seller does not own, or any sale that is completed by the delivery of a security borrowed by the seller. Short selling is a legitimate trading strategy. Short sellers assume the risk that they will be able to buy the stock at a more favorable price than the price at which they sold short.

The NASDAQ Short Sale Rule prohibits NASD members from selling a NASDAQ National Market stock at or below the inside best bid when that price is lower than the previous inside best bid in that stock.

Limit Order

A Limit Order is an order to buy or sell a stock at a customer specified price.

Market Order

A Market Order is an order to buy or sell a stock at the market's current best displayed price.

Mutual Fund

Fund operated by an investment company that raises money from shareholders and invests it in stocks, bonds, options, commodities or money market securities.

APPENDIX F

PAST PERFORMANCE GRAPHS

The tables in the following pages list the performance of chosen stocks over a 15-month period starting in February of 1998 and ending in May of 1999. The graphs are listed as follows:

1) AOL

2) Infoseek

3) Amazon

4) eBay

5) Onsale

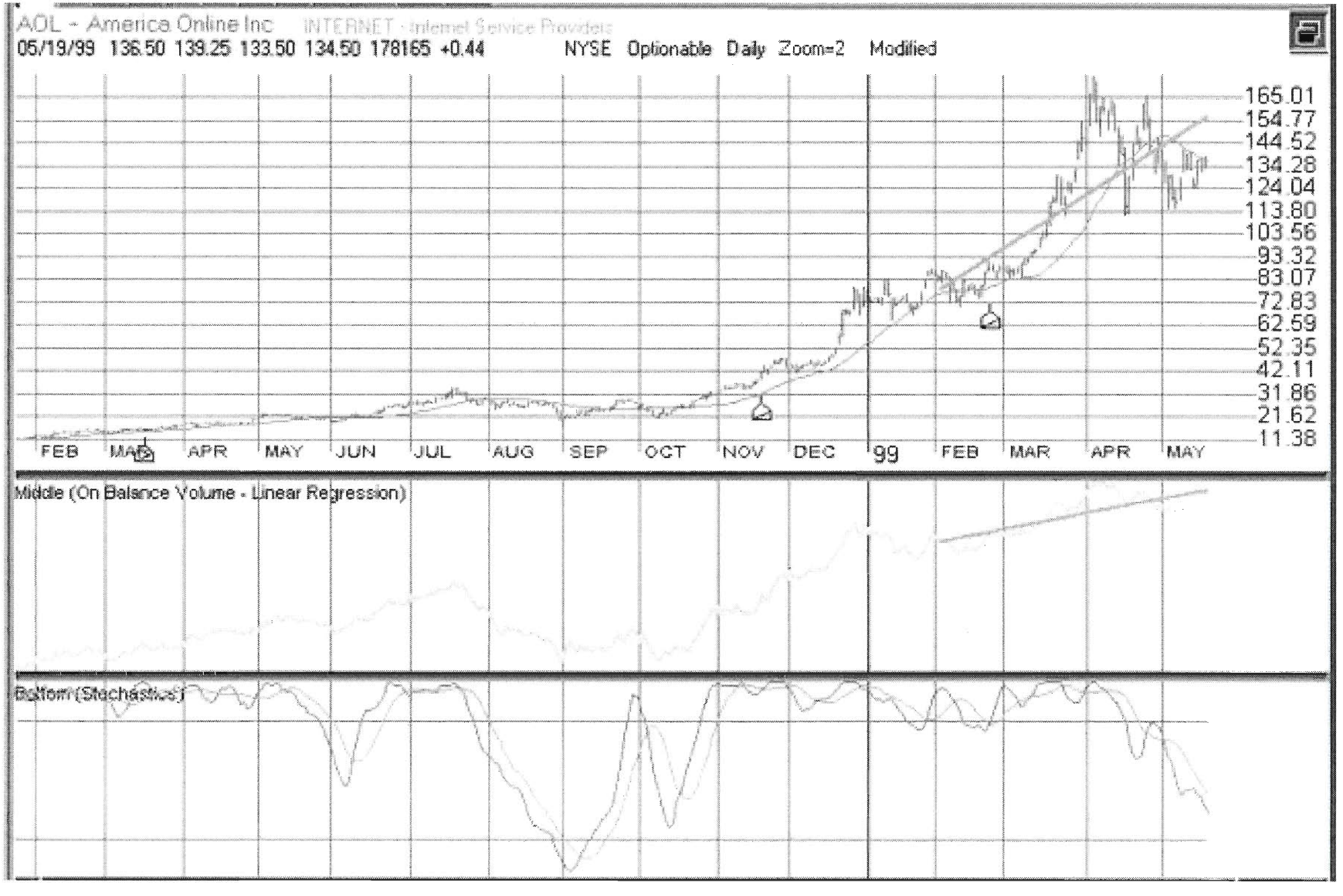
6) Charles Schwab, Inc.

7) E*Trade

8) Inter-Tel

9) Nokia

10) Disney


AOL - America Online Inc INTERNET - Internet Service Providers
05/19/99 136.50 139.25 133.50 134.50 178165 +0.44 NYSE Optionable Daily Zoom=2 Modified
165.01
154.77
144.52
134.28
124.04
113.80
103.56
93.32
83.07
72.83
62.59
52.35
42.11
31.86
21.62
11.38
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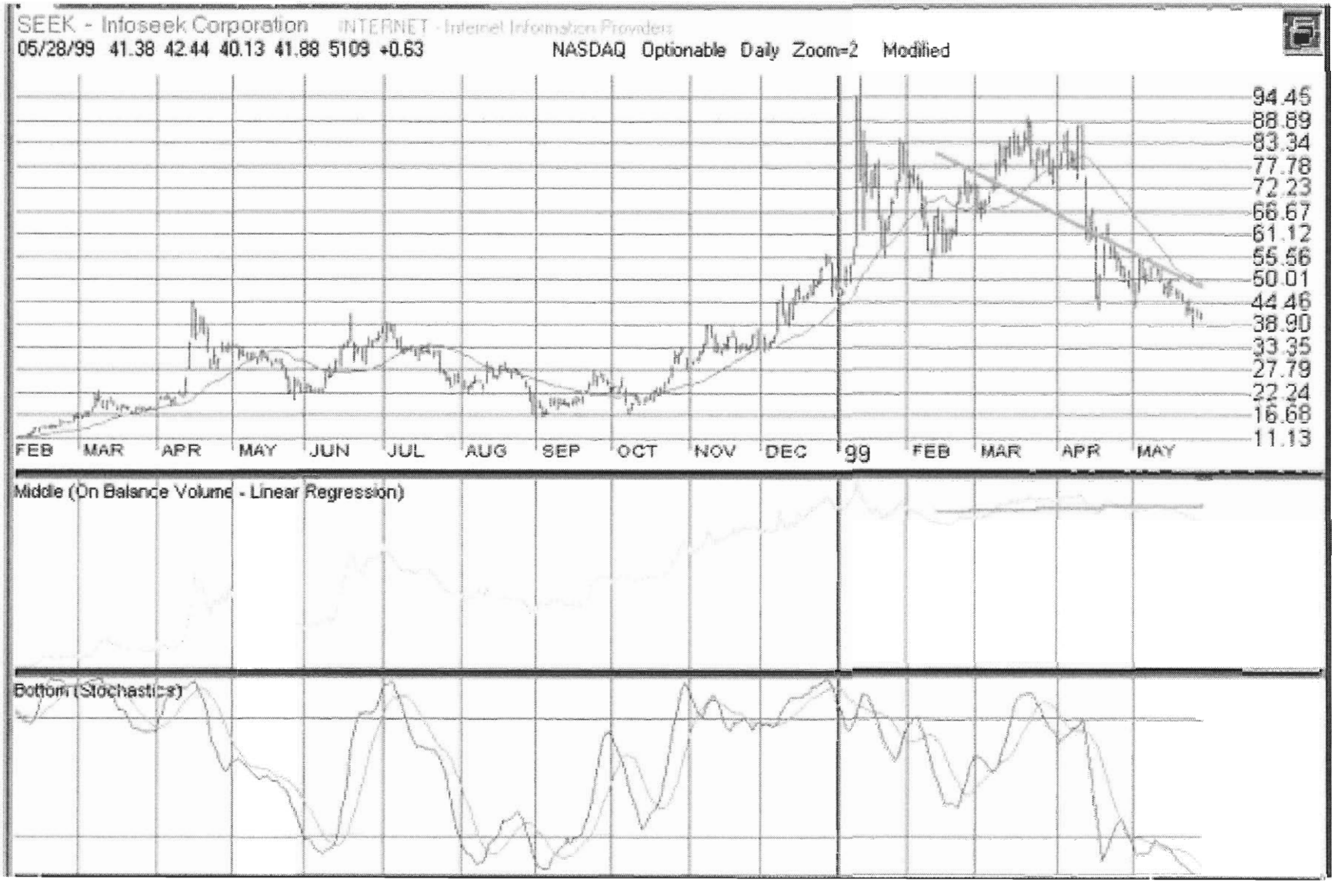
Middle (On Balance Volume - Linear Regression)
Bottom (Stochastics)


SEEK - Infoseek Corporation
INTERNET - Internet Information Providers
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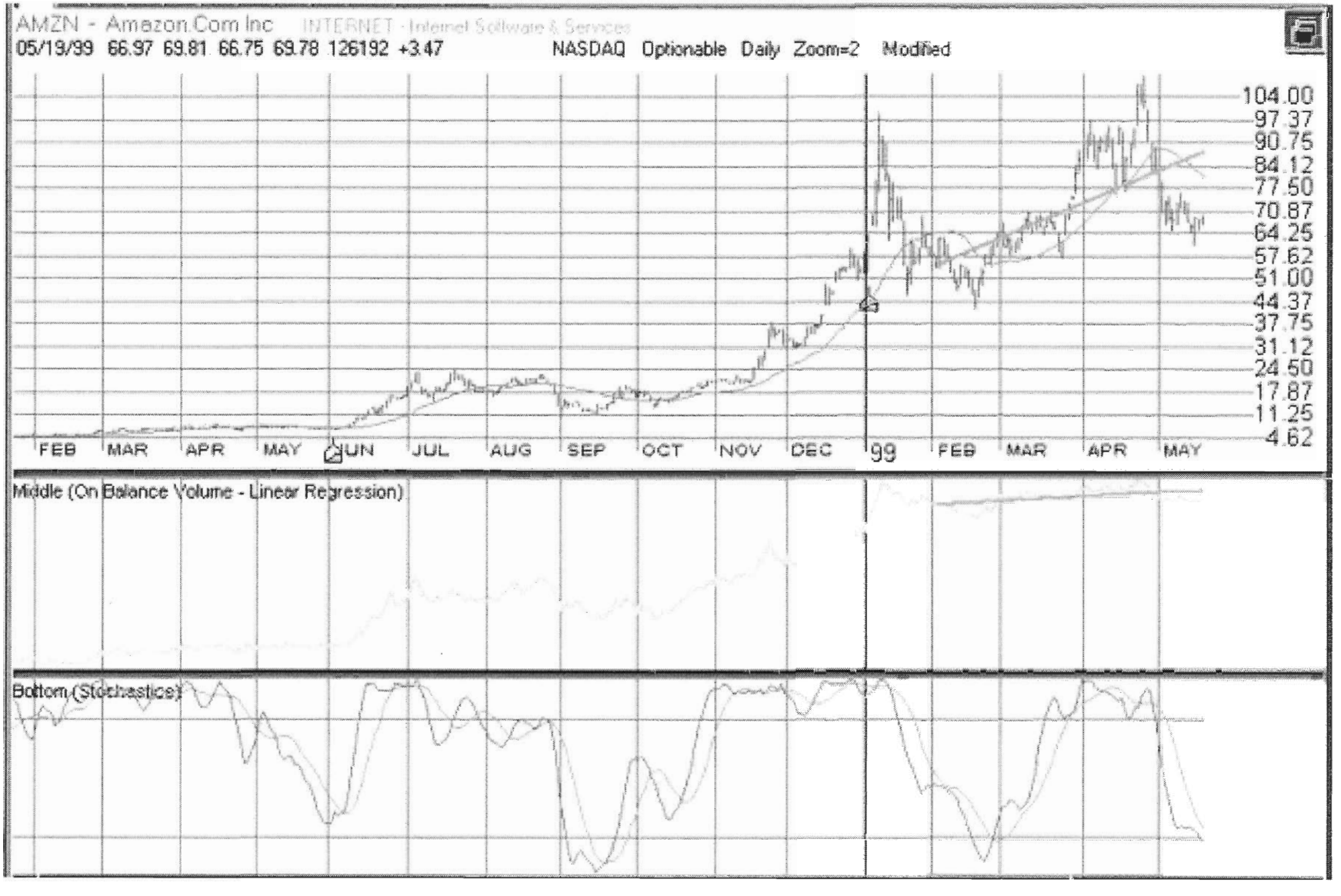
94.45
88.89
83.34
77.78
72.23
66.67
61.12
55.56
50.01
44.46
38.90
33.35
27.79
22.24
16.68
11.13
FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC 99 FEB MAR APR MAY
Middle (On Balance Volume - Linear Regression)
Bottom (Stochastics)


AMZN - Amazon.Com Inc INTERNET - Internet Software & Services
05/19/99 66.97 69.81 66.75 69.78 126192 +3.47 NASDAQ Optionable Daily Zoom=2 Modified
104.00
97.37
90.75
84.12
77.50
70.87
64.25
57.62
51.00
44.37
37.75
31.12
24.50
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4.62
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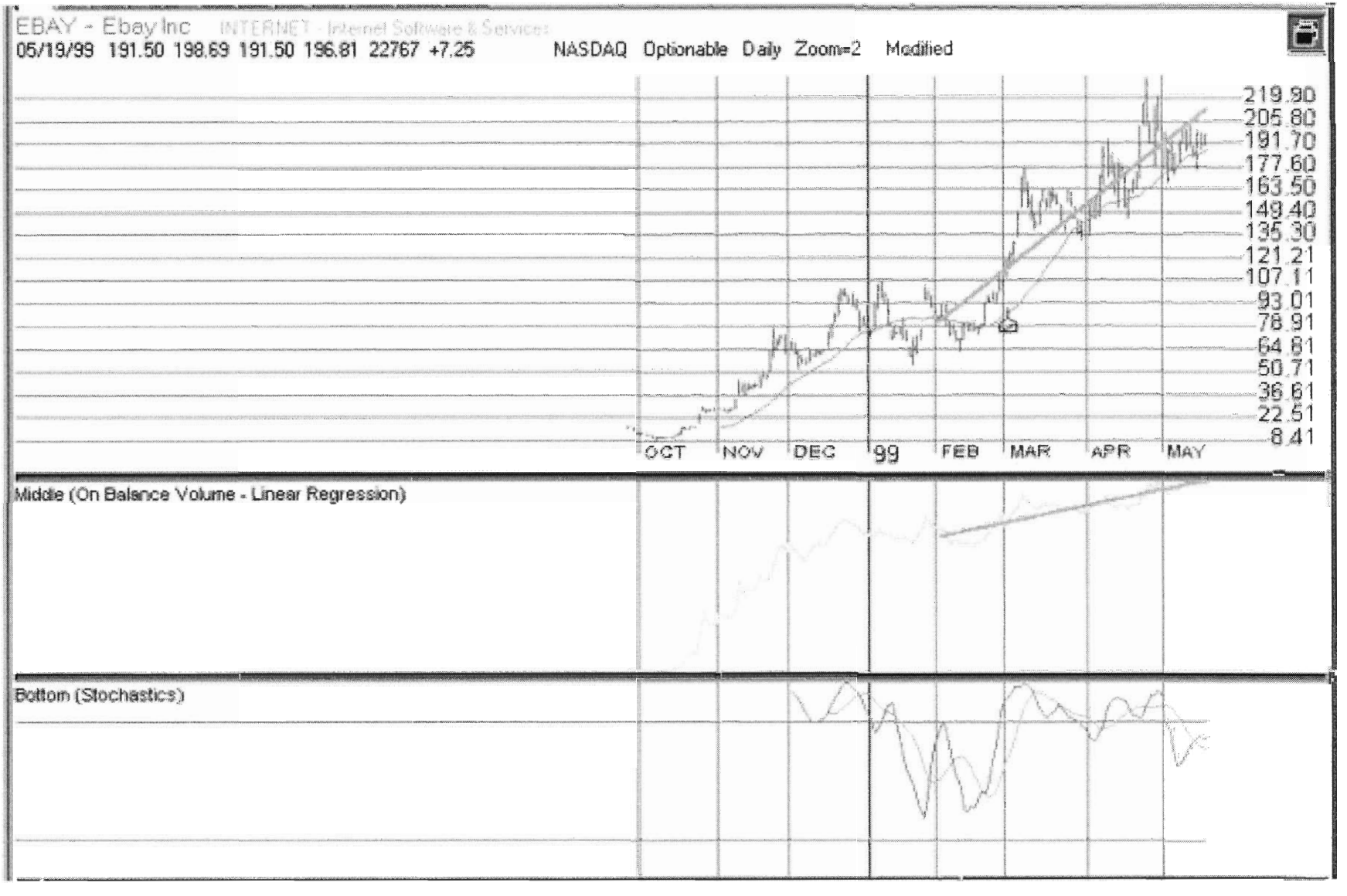
Middle (On Balance Volume - Linear Regression)
Bottom (Stochastics)


EBAY - Ebay Inc INTERNET - Internet Software & Services
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NASDAQ Optionable Daily Zoom=2 Modified
219.90
205.80
191.70
177.60
163.50
149.40
135.30
121.21
107.11
93.01
78.91
64.81
50.71
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MAR
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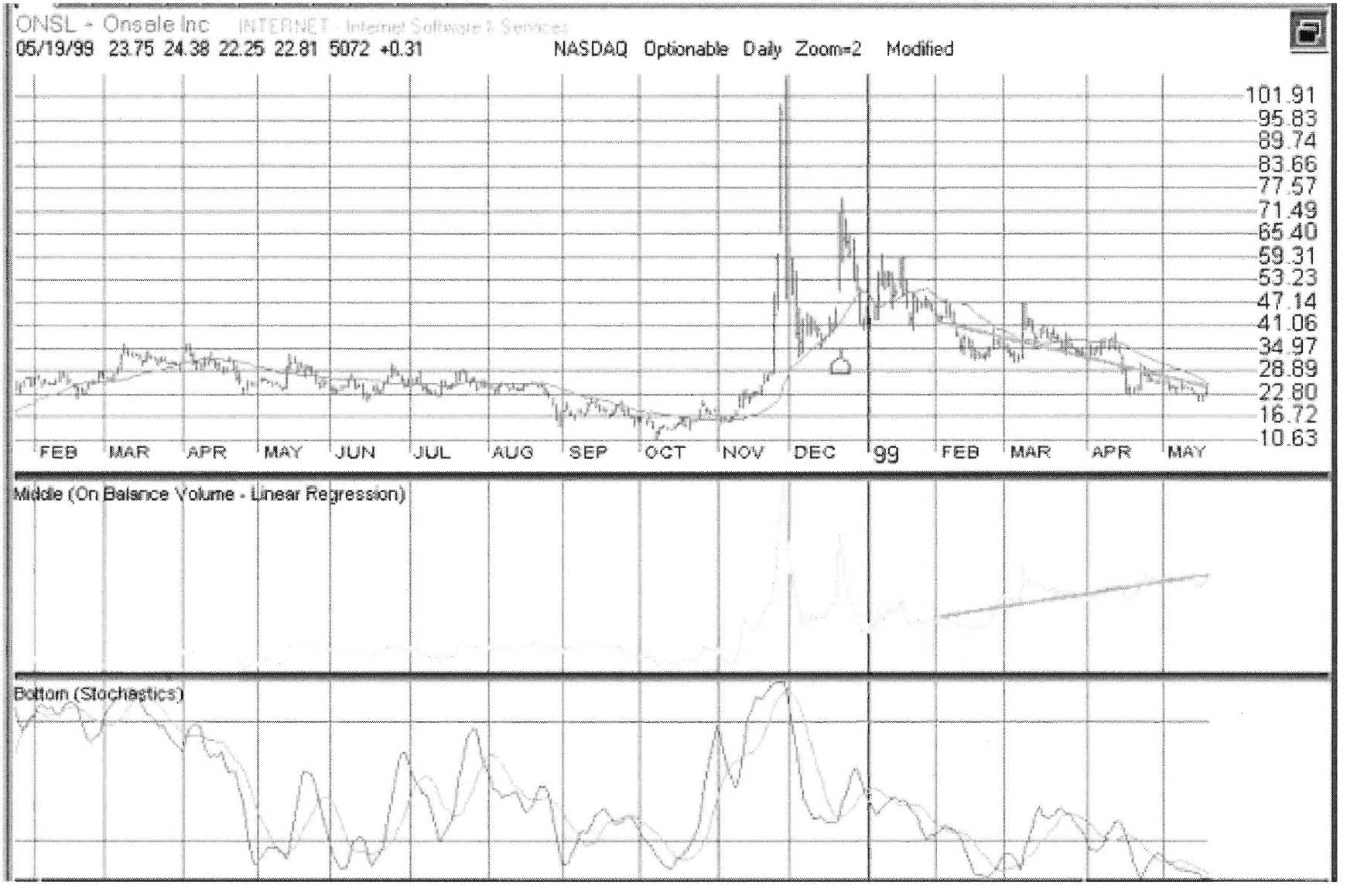
MAY
Middle (On Balance Volume - Linear Regression)
Bottom (Stochastics)


ONSL - Onsale Inc INTERNET - Internet Software & Services
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95.83
89.74
83.66
77.57
71.49
65.40
59.31
53.23
47.14
41.06
34.97
28.89
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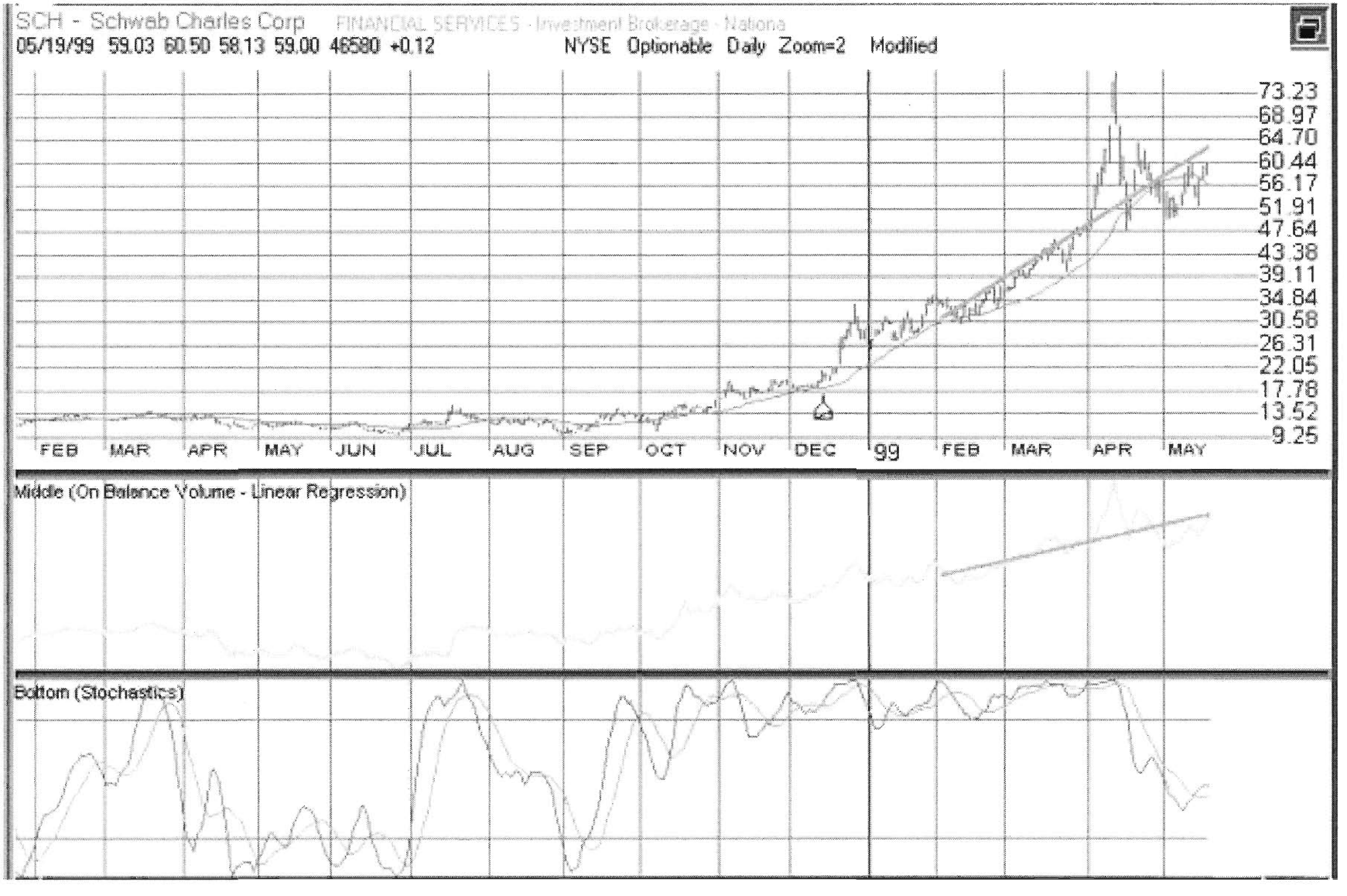
Middle (On Balance Volume - Linear Regression)
Bottom (Stochastics)


SCH - Schwab Charles Corp
FINANCIAL SERVICES - Investment Brokerage - Nationa
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68.97
64.70
60.44
56.17
51.91
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30.58
26.31
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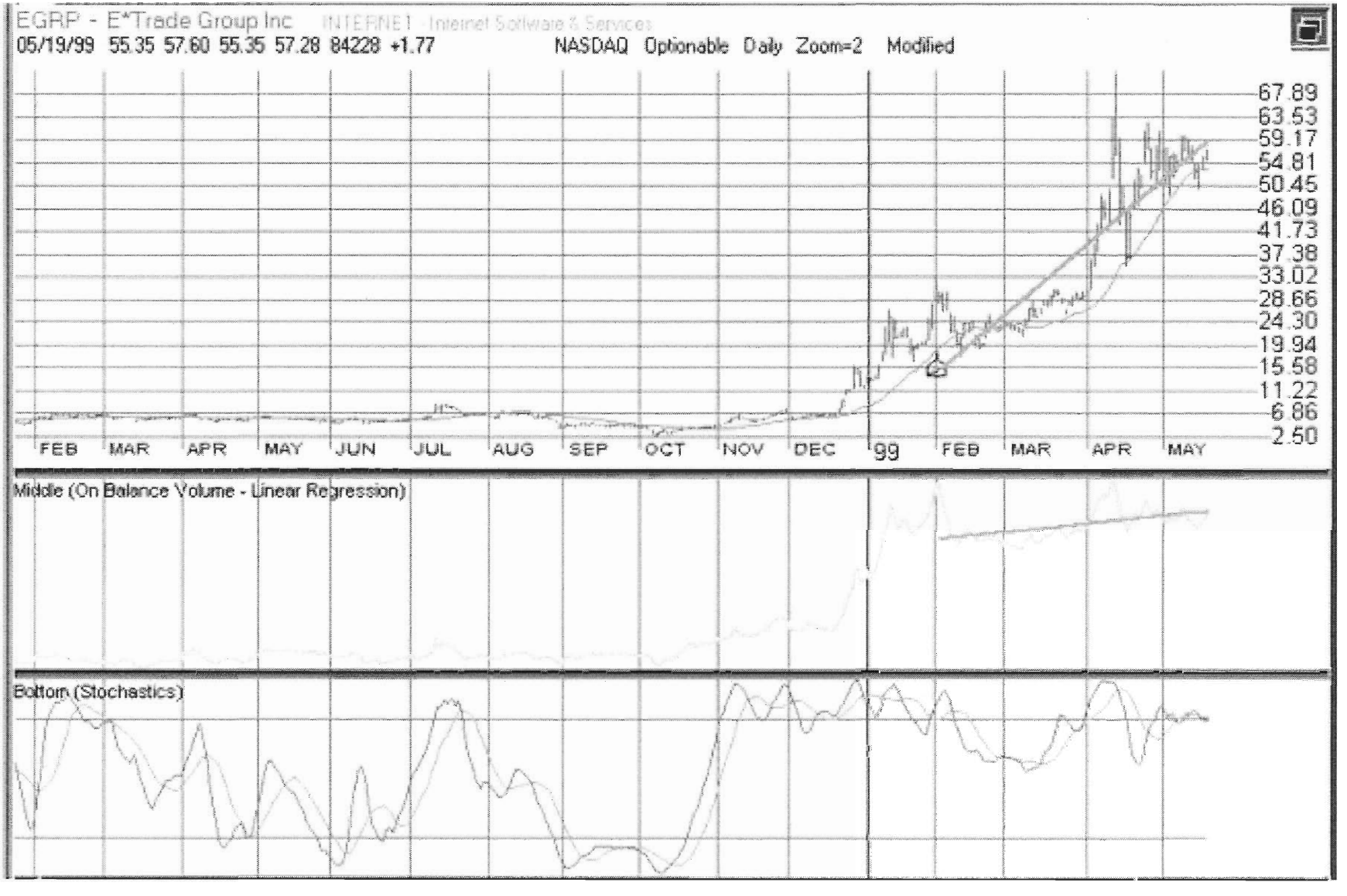
Middle (On Balance Volume - Linear Regression)
Bottom (Stochastics)


EGRP - E*Trade Group Inc INTERNET - Internet Software & Services
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NASDAQ Optionable Daily Zoom=2 Modified
67.89
63.53
59.17
54.81
50.45
46.09
41.73
37.38
33.02
28.66
24.30
19.94
15.58
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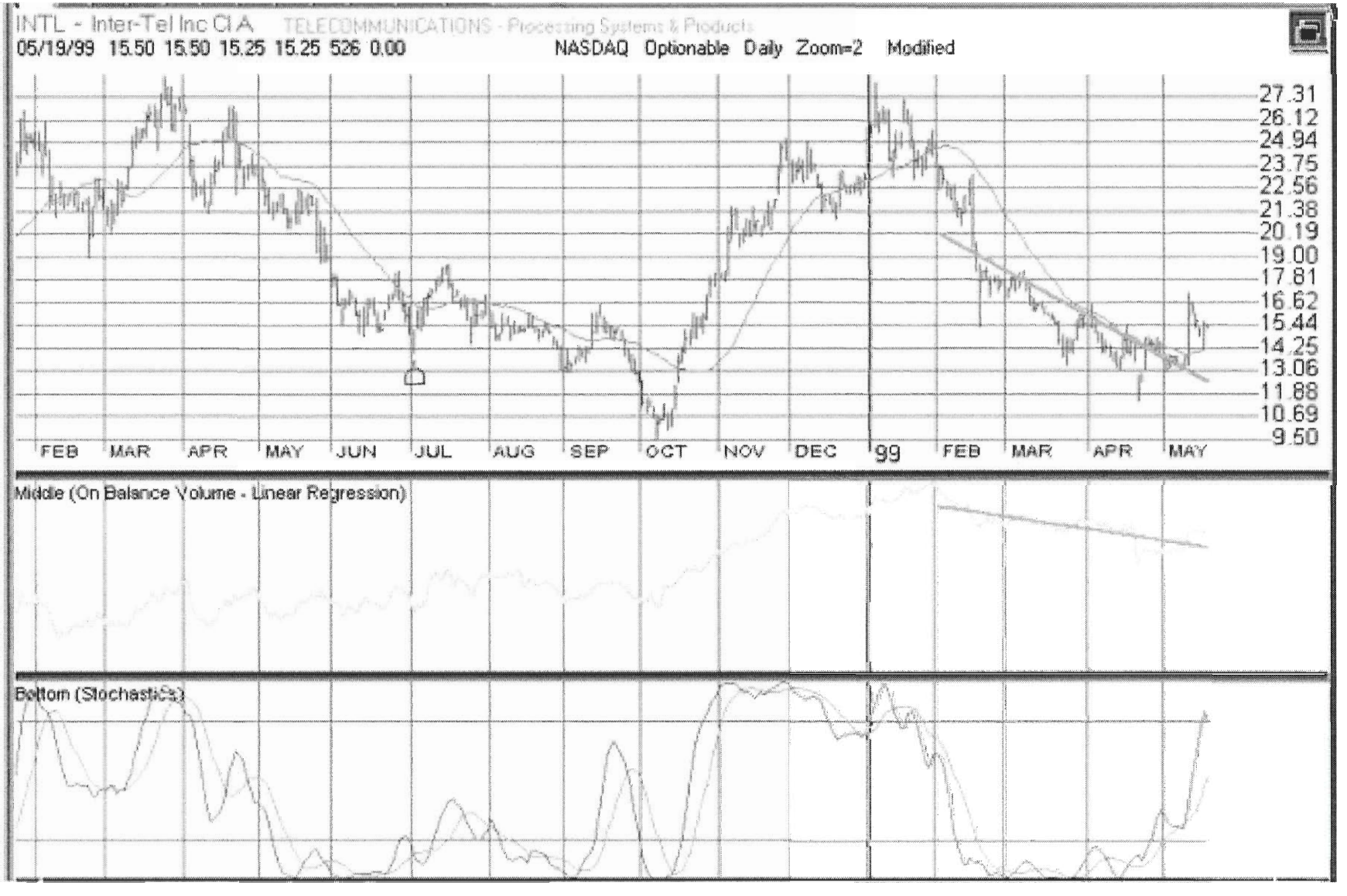
Middle (On Balance Volume - Linear Regression)
Bottom (Stochastics)


INTL - Inter-Tel Inc Cl A
TELECOMMUNICATIONS - Processing Systems & Products
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26.12
24.94
23.75
22.56
21.38
20.19
19.00
17.81
16.62
15.44
14.25
13.06
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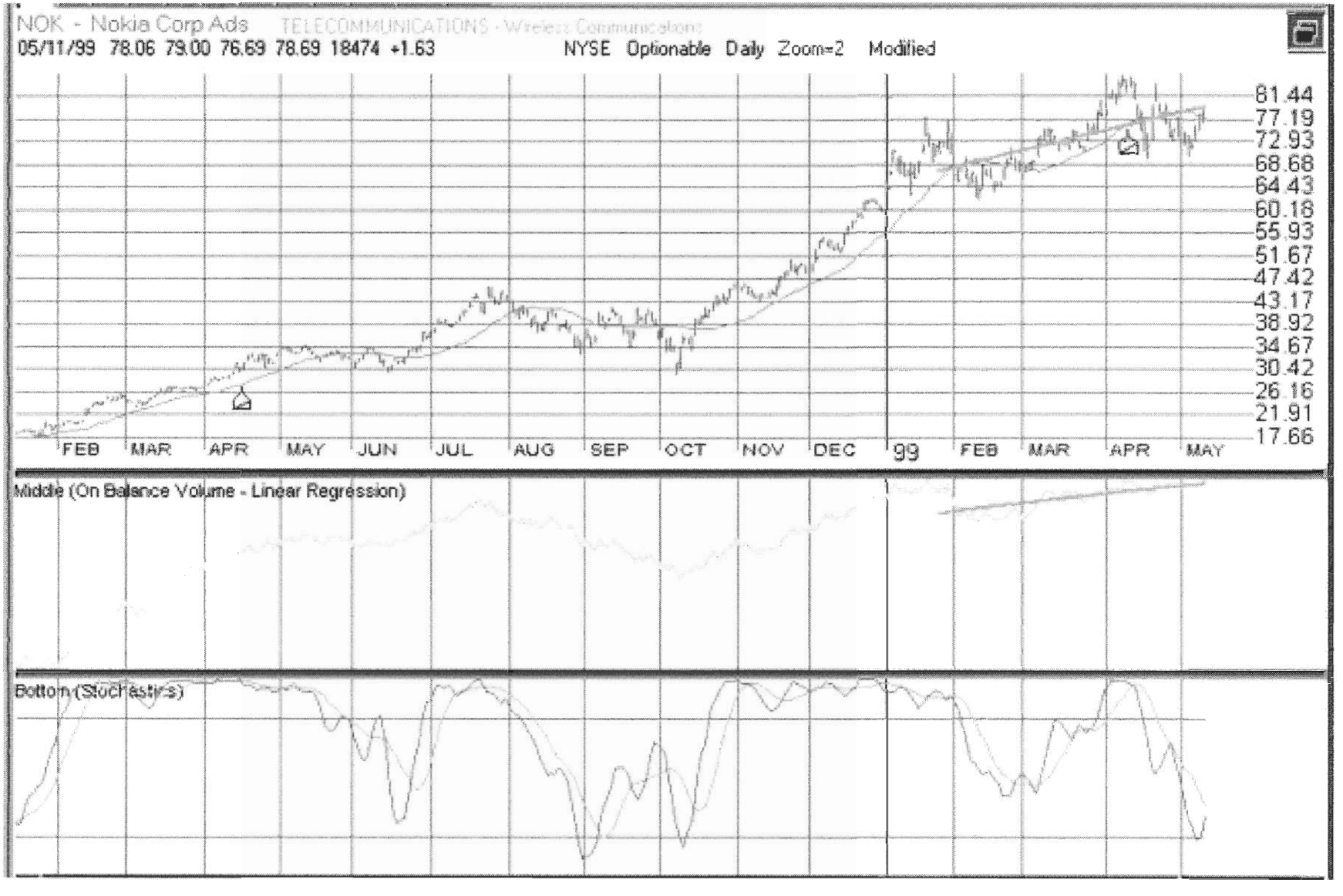
Middle (On Balance Volume - Linear Regression)
Bottom (Stochastics)


NOK - Nokia Corp Ads
TELECOMMUNICATIONS - Wireless Communications
05/11/99 78.06 79.00 76.69 78.69 18474 +1.63
NYSE Optionable Daily Zoom=2 Modified
81.44
77.19
72.93
68.68
64.43
60.18
55.93
51.67
47.42
43.17
38.92
34.67
30.42
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17.66
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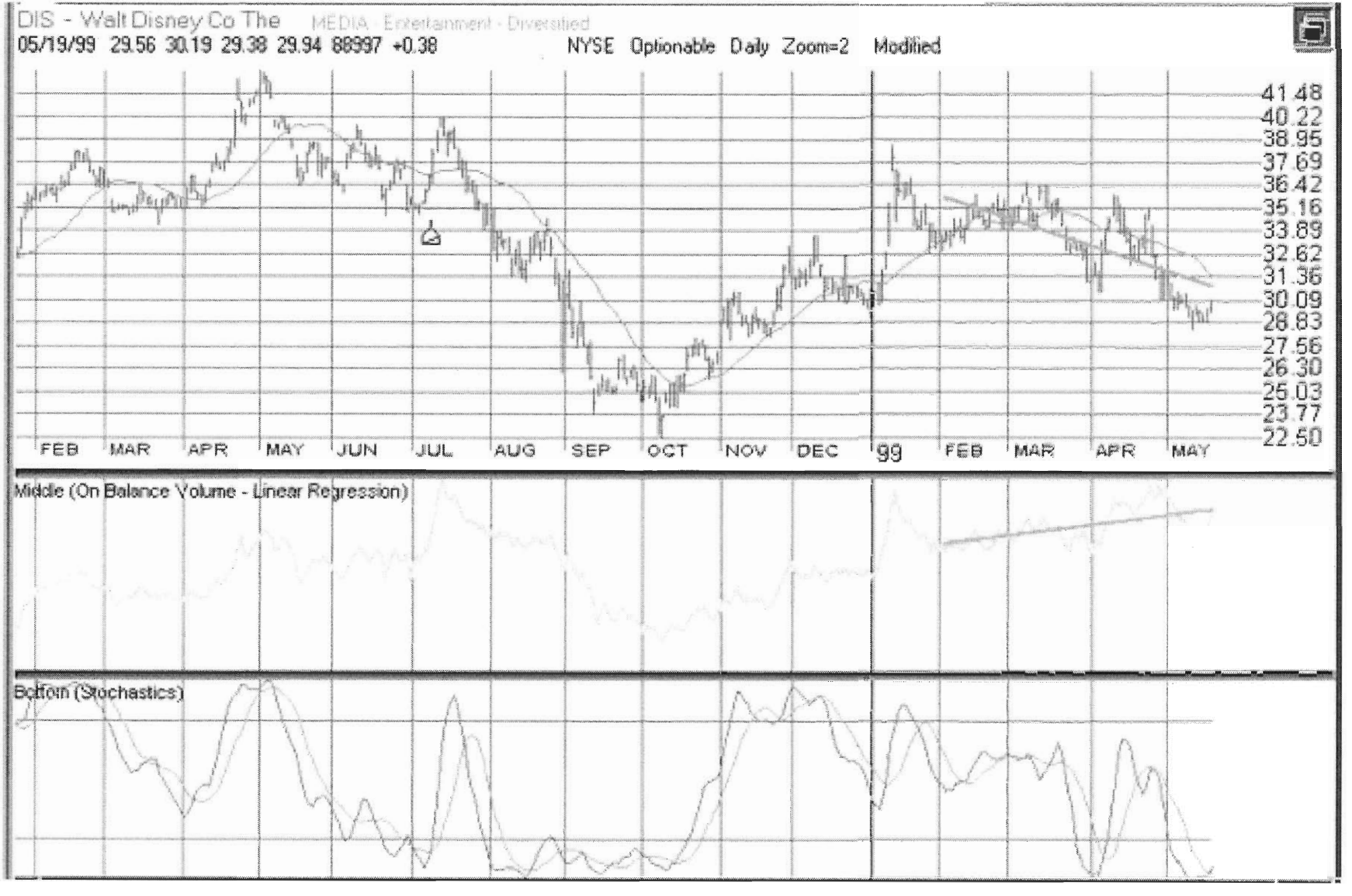
Middle (On Balance Volume - Linear Regression)
Bottom (Stochastics)


DIS - Walt Disney Co The
MEDIA - Entertainment - Diversified
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40.22
38.95
37.69
36.42
35.16
33.89
32.62
31.36
30.09
28.83
27.56
26.30
25.03
23.77
22.50
FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC 99 FEB MAR APR MAY
Middle (On Balance Volume - Linear Regression)
Bottom (Stochastics)

APPENDIX G

SIMULATION GRAPHS

The tables in the following pages list the performance of chosen stocks over the simulation period starting on the 7th of June 1999 and ending on the 20th of August 1999. The graphs are listed as follows:

1) AOL

2) Infoseek

3) Amazon

4) eBay

5) Onsale

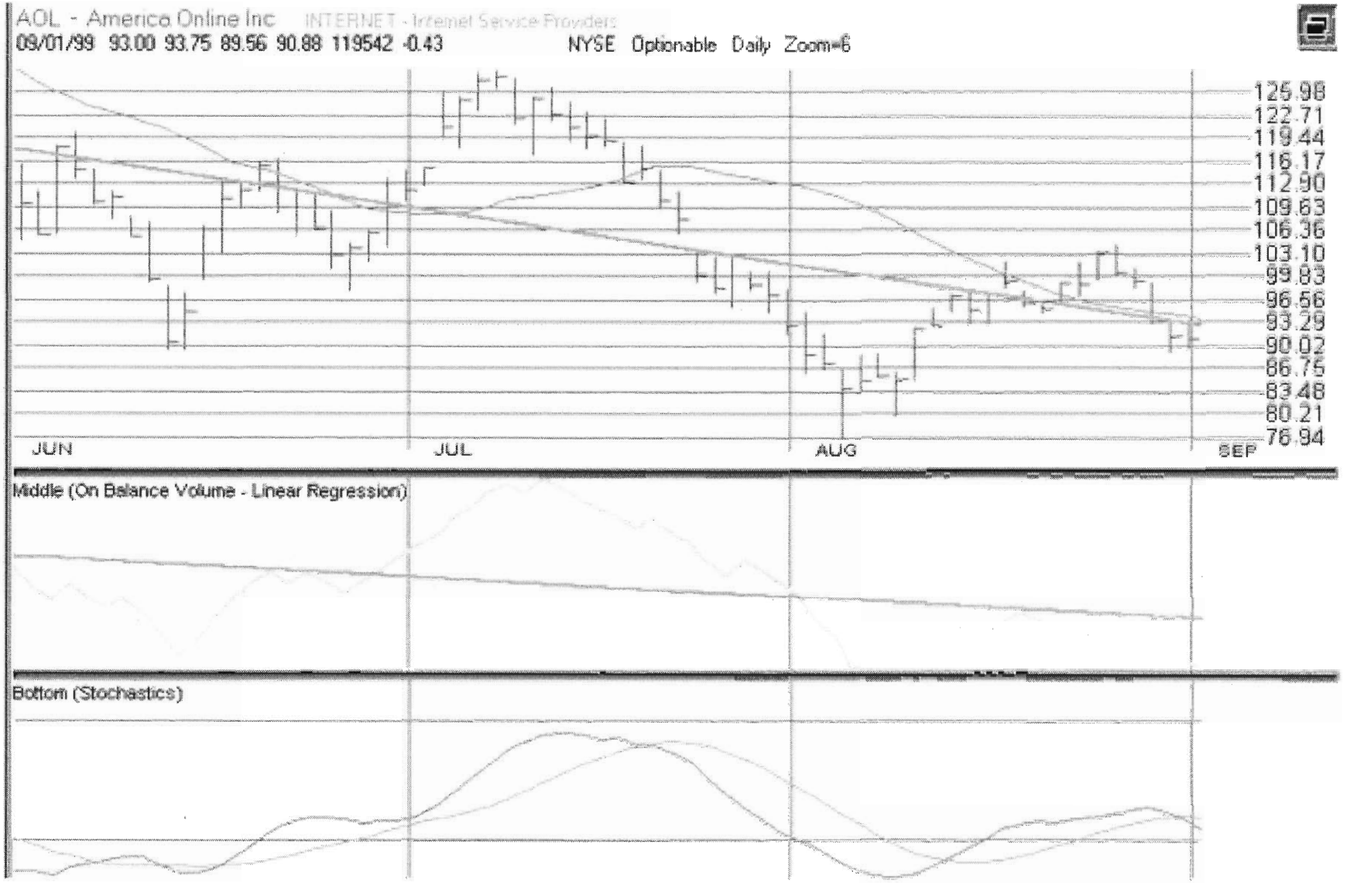
6) Charles Schwab, Inc.

7) E*Trade

8) Inter-Tel

9) Nokia

10) Disney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INTERNET - Internet Service Providers
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119.44
116.17
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103.10
99.83
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93.29
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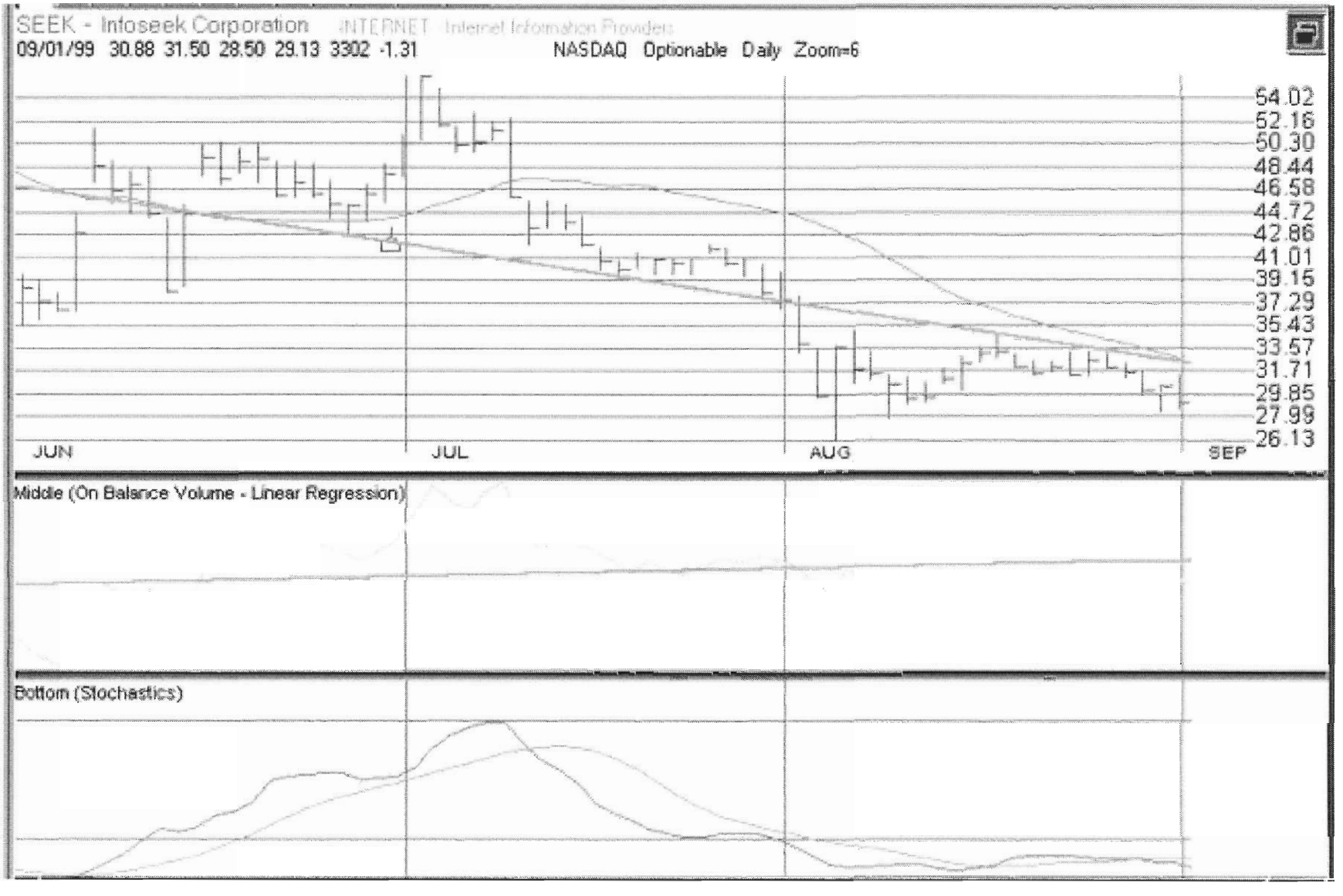
AUG
SEP
Middle (On Balance Volume - Linear Regression)
Bottom (Stochastics)


SEEK - Infoseek Corporation INTERNET Internet Information Providers
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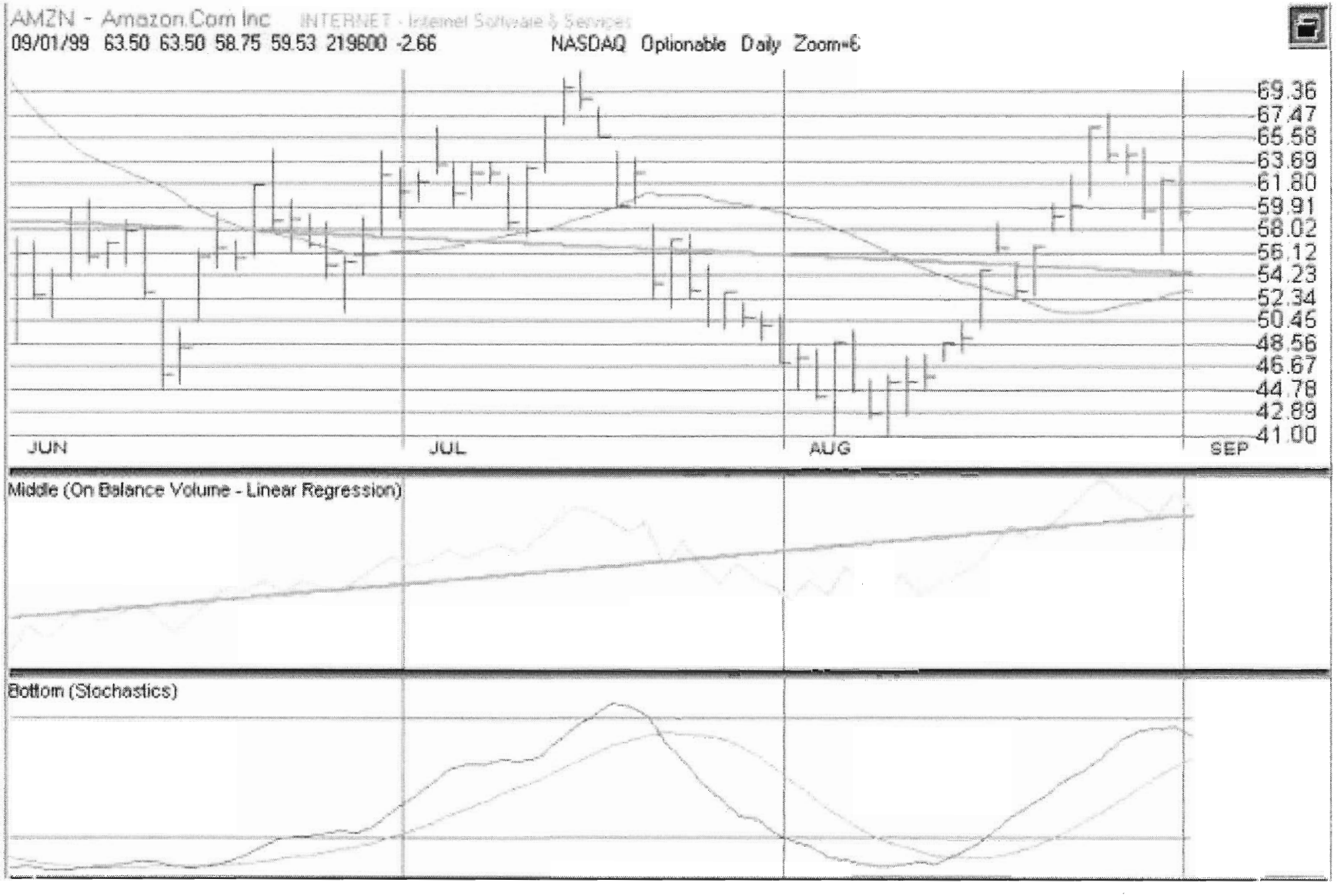
AUG
SEP
Middle (On Balance Volume - Linear Regression)
Bottom (Stochastics)


AMZN - Amazon.Com Inc INTERNET - Internet Software & Services
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50.45
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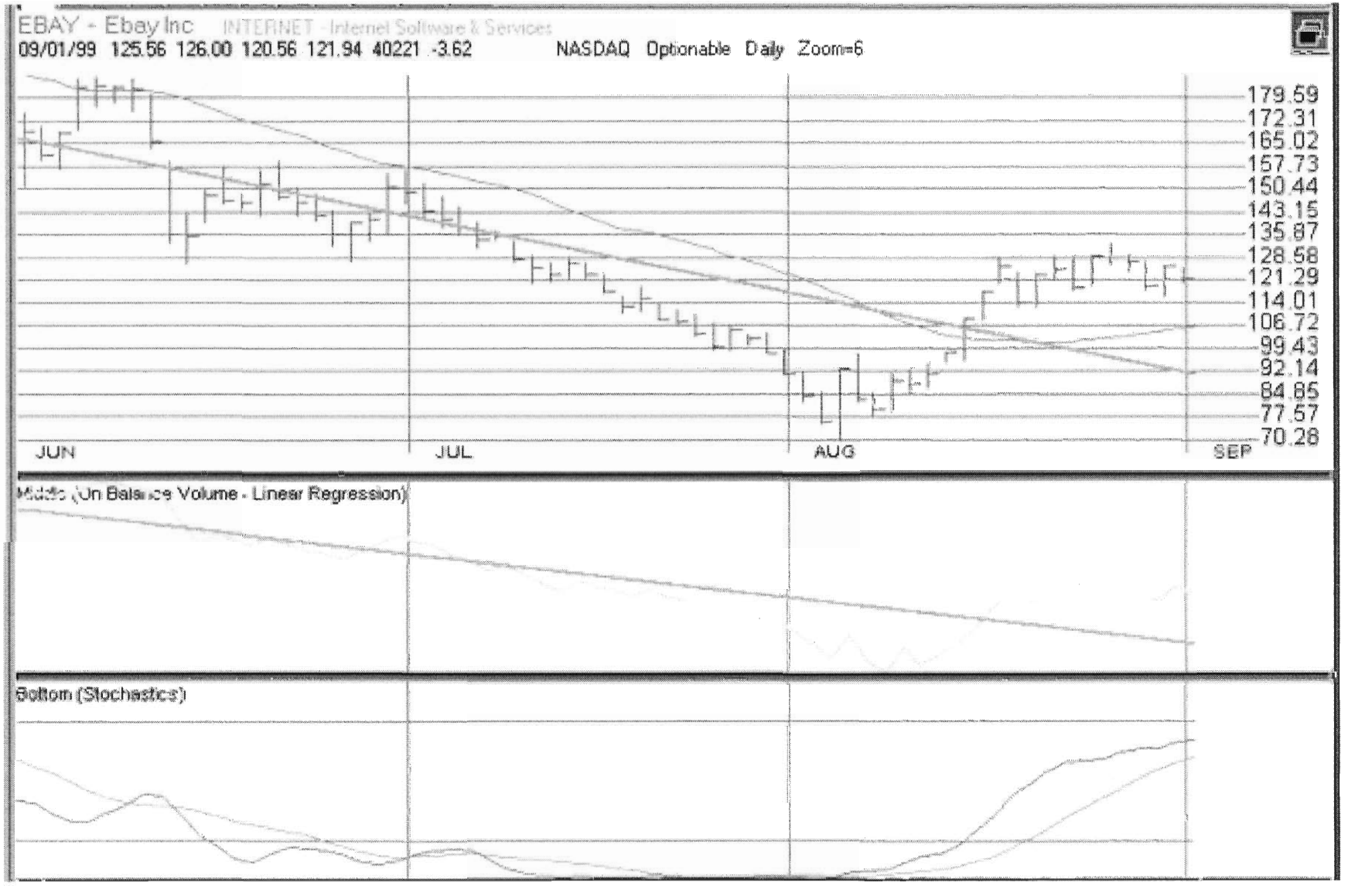
JUL
AUG
SEP
Middle (On Balance Volume - Linear Regression)
Bottom (Stochastics)


EBAY - Ebay Inc INTERNET - Internet Software & Services
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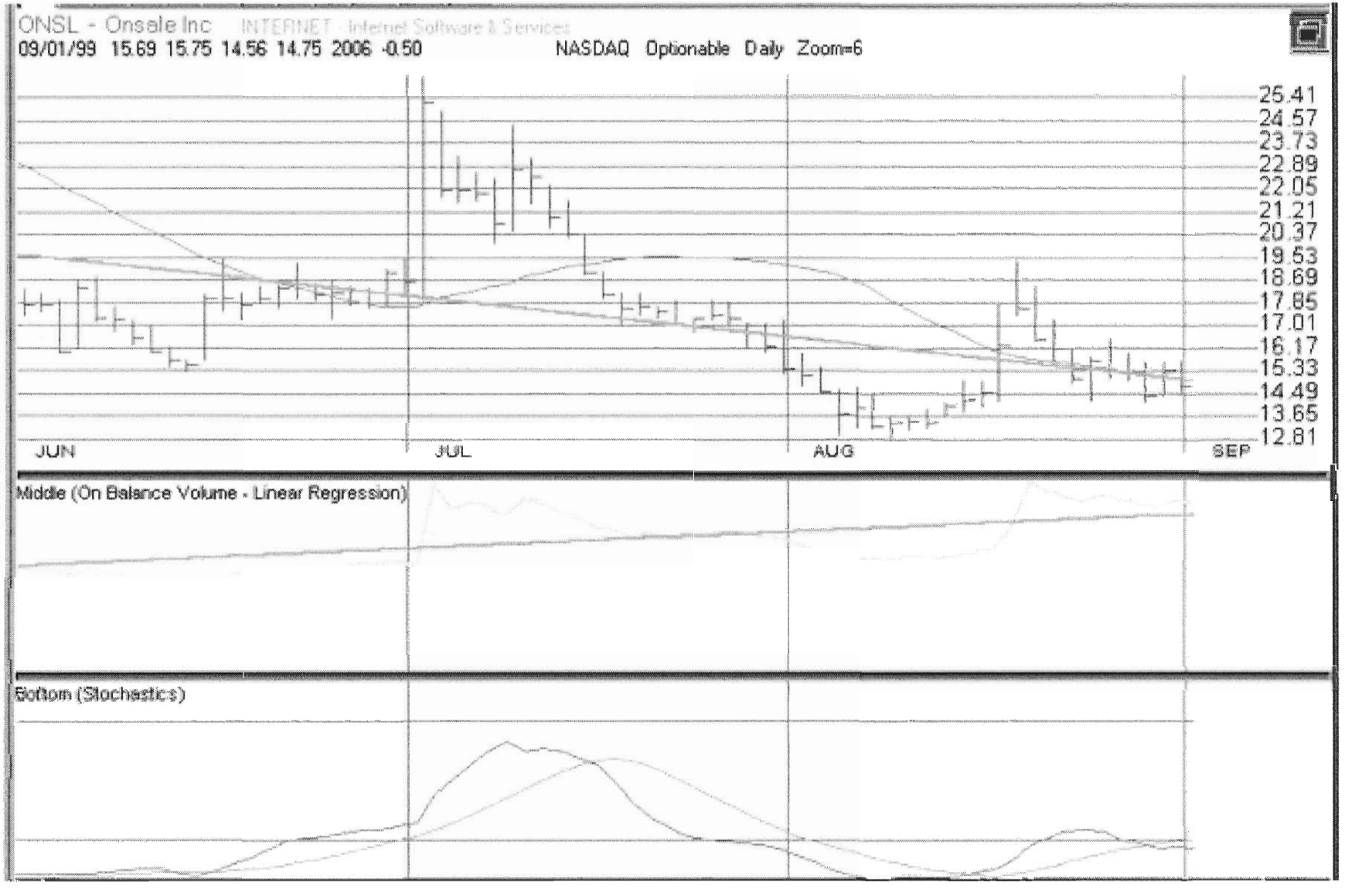
Middle (On Balance Volume - Linear Regression)
Bottom (Stochastics)


ONSL - Onsale Inc INTERNET - Internet Software & Services
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22.05
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SEP
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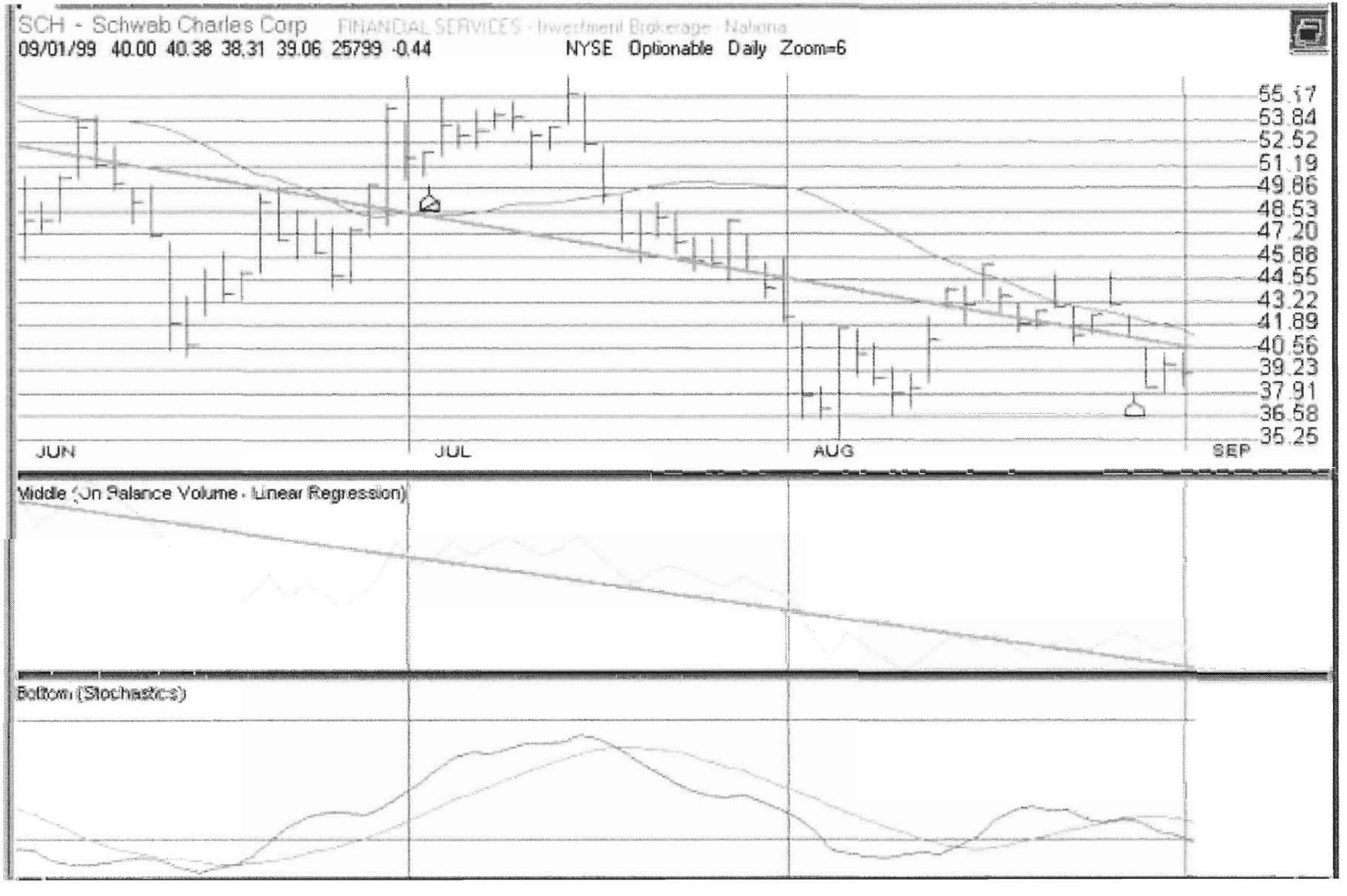
Bottom (Stochastics)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09/01/99 40.00 40.38 38.31 39.06 25799 -0.44
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48.53
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45.88
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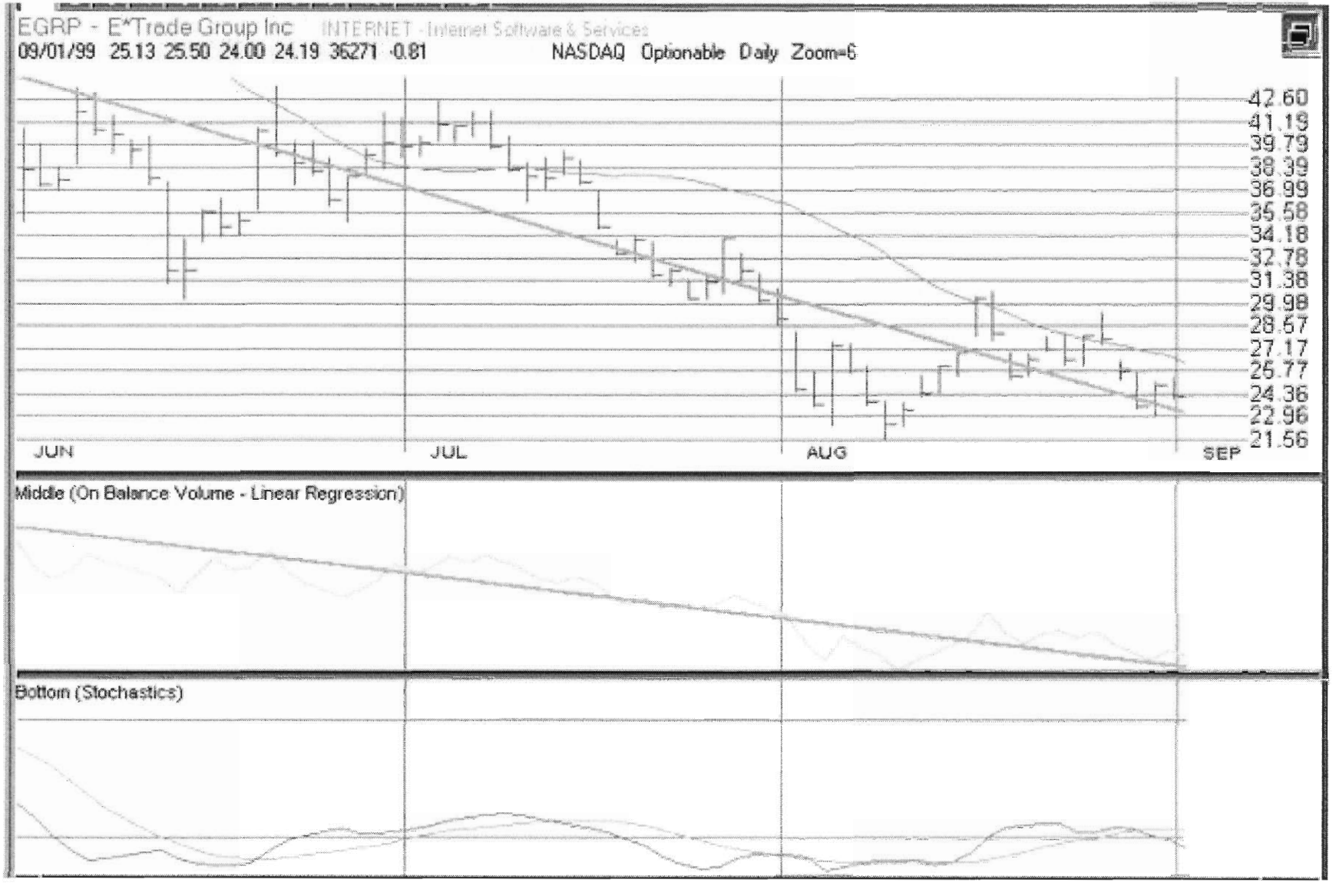
JUL
AUG
SEP
Middle (On Balance Volume - Linear Regression)
Bottom (Stochastics)


EGRP - E*Trade Group Inc
INTERNET - Internet Software & Services
09/01/99 25.13 25.50 24.00 24.19 36271 -0.81
NASDAQ Optionable Daily Zoom=6
42.60
41.19
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SEP
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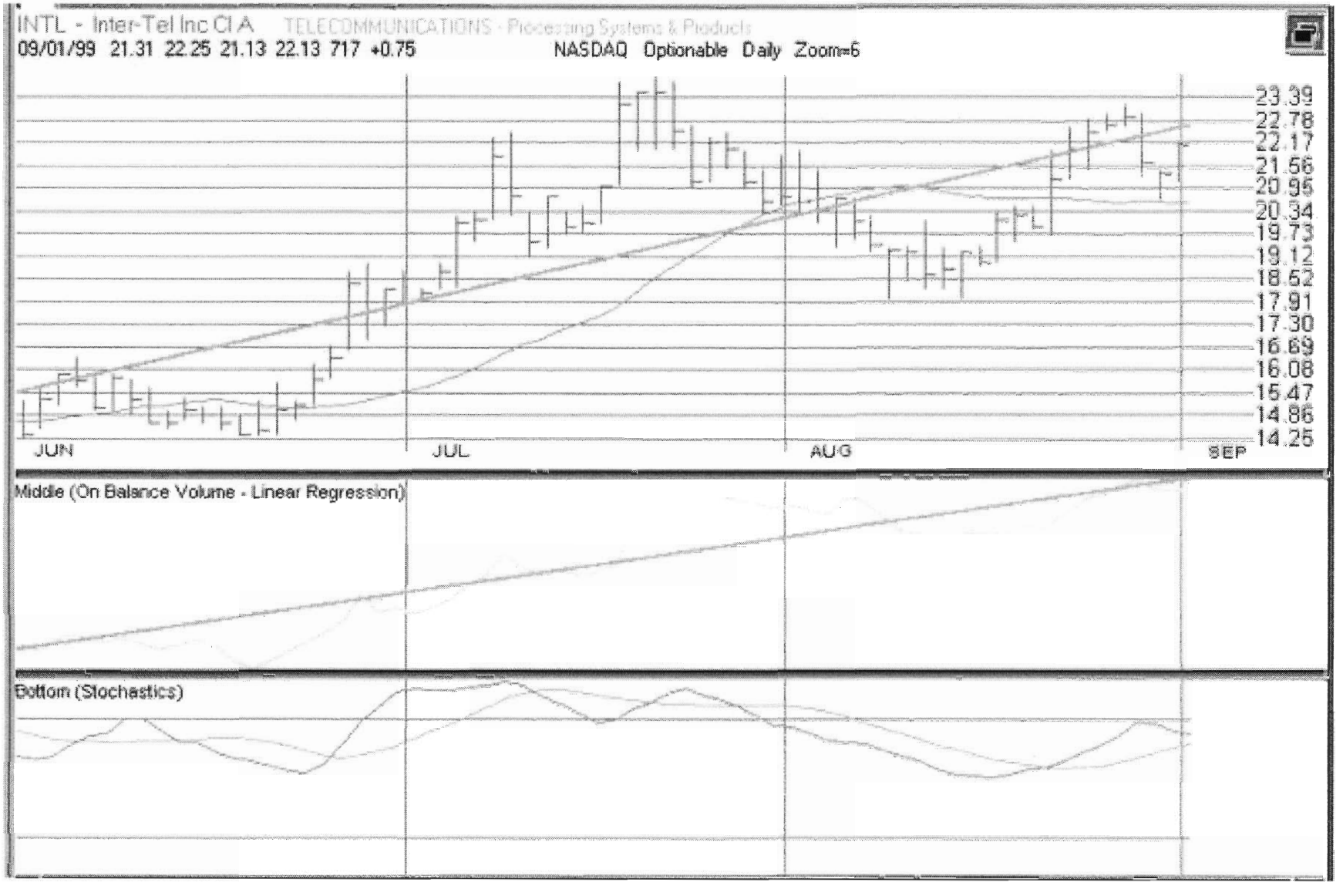
Bottom (Stochastics)


INTL - Inter-Tel Inc Cl A TELECOMMUNICATIONS - Processing Systems & Products
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22.78
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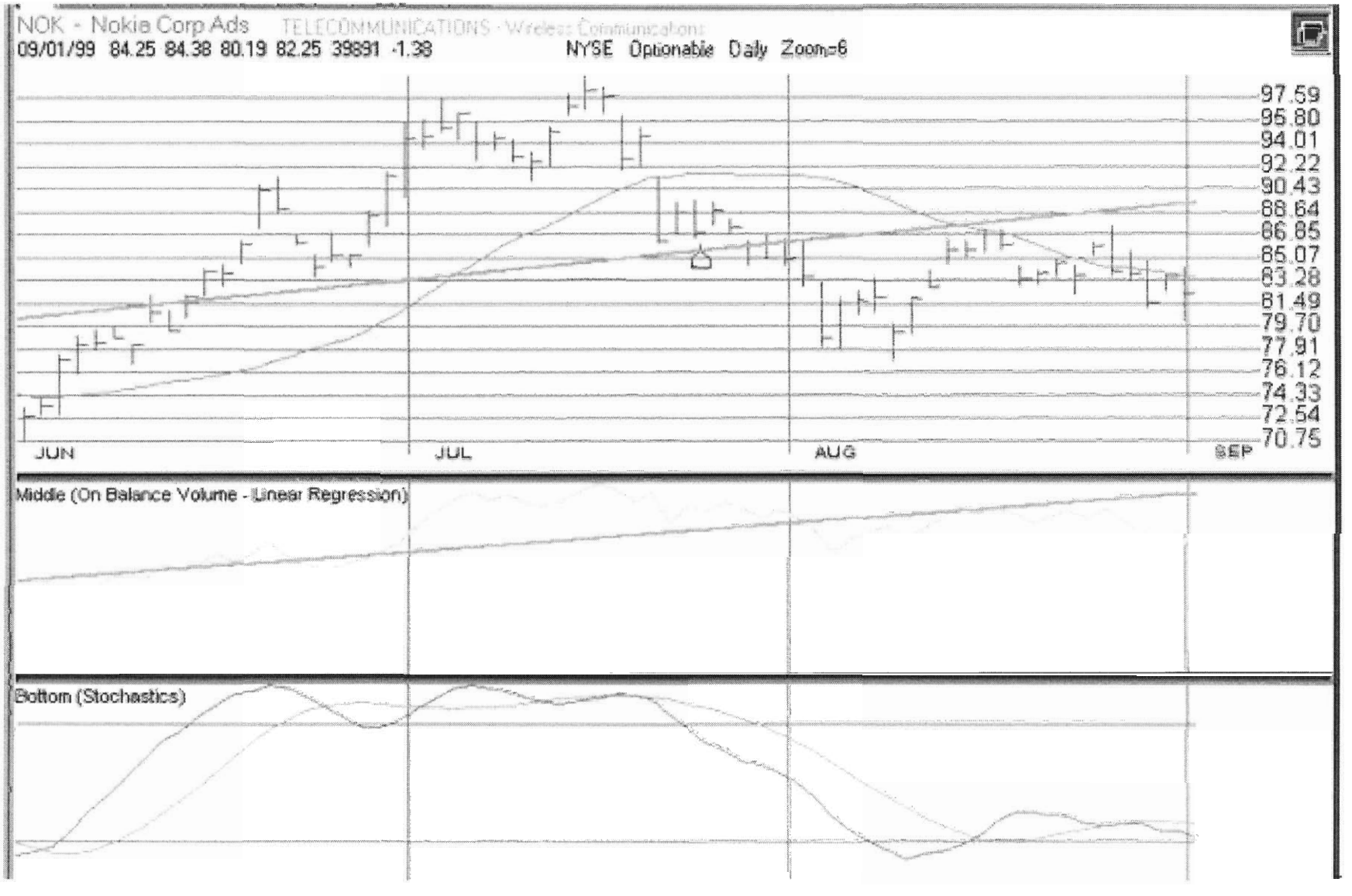
SEP
Middle (On Balance Volume - Linear Regression)
Bottom (Stochastics)


NOK - Nokia Corp Ads TELECOMMUNICATIONS - Wireless Communications
09/01/99 84.25 84.38 80.19 82.25 39891 -1.38 NYSE Optionable Daily Zoom=6
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95.80
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92.22
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83.28
81.49
79.70
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72.54
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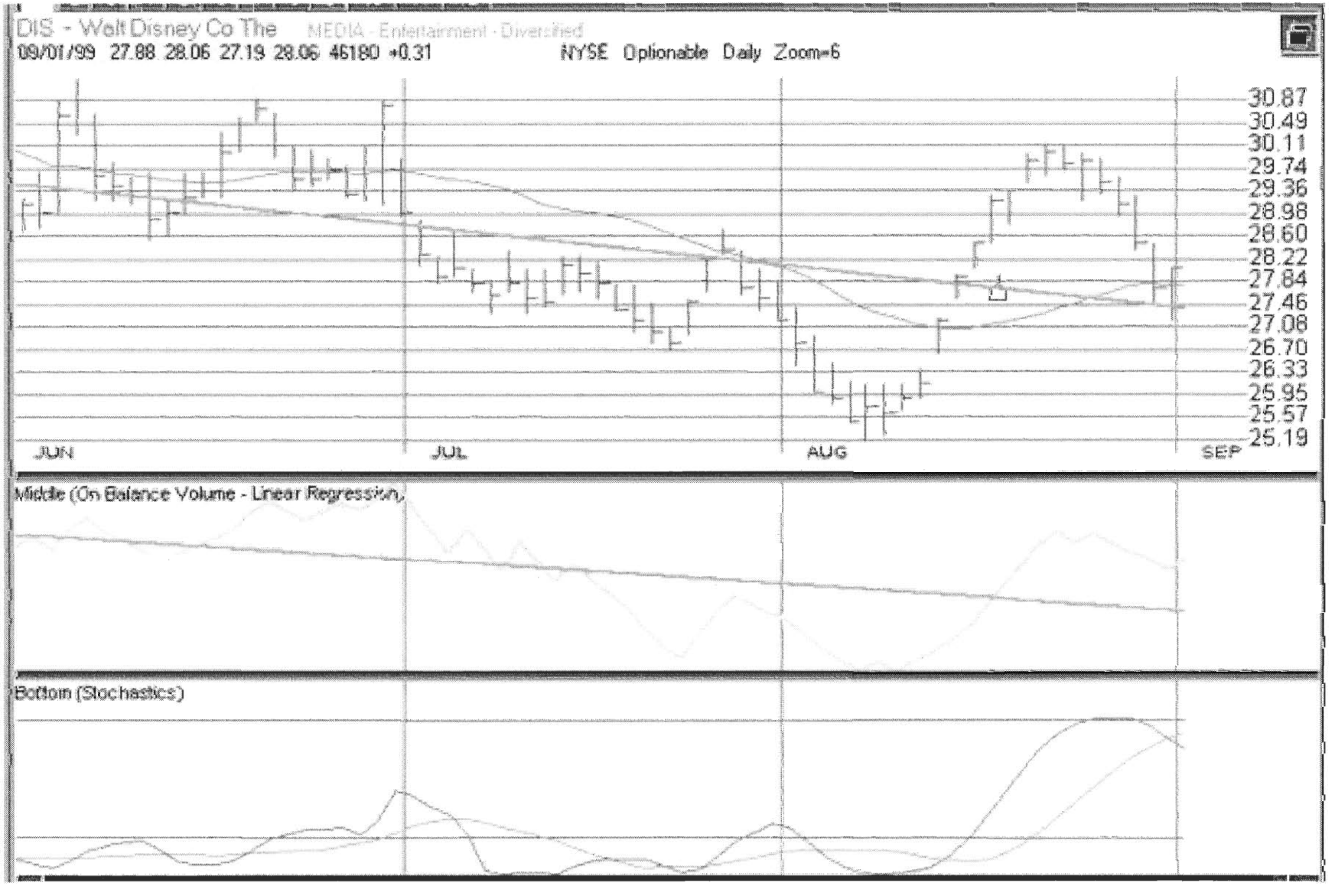
JUN
JUL
AUG
SEP
Middle (On Balance Volume - Linear Regression)
Bottom (Stochastics)


DIS - Walt Disney Co The MEDIA - Entertainment - Diversified
09/01/99 27.88 28.06 27.19 28.06 46180 +0.31
NYSE Optionable Daily Zoom=6
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30.11
29.74
29.36
28.98
28.60
28.22
27.84
27.46
27.08
26.70
26.33
25.95
25.57
25.19
JUN
JUL
AUG
SEP
Middle (On Balance Volume - Linear Regression)
Bottom (Stochastics)

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http://www.etrade.com/cgi-bin/gx.cgi/Applogic+About?GXHC_VCODE=W&gxml=hpb_discover_c_t.html

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http://www.etrade.com/cgi-bin/gx.cgi/AppLogic+About?gxml=hpc_disc_story_c.html&lvl=about

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