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Financial Information:

The Internet and its Effects

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Abstract:

The abundance of online advertisements for stock brokers, mutual funds and currency trading suggests that web-based trading in the financial markets has been widely embraced by the general public. Stock trading once had high entry barriers, including startup capital, a good understanding of the market, and access to special information. This paper explores how the Web has reduced entry barriers and in the process has transformed personal investing and related services. Issues of information quality, timeliness, aggregation and analysis as related to web-based trading are considered.

Keywords:

stock market, trading, financial information, internet, service system

Introduction

Visit most any ad-supported website these days and you'll get served ads for some kind of a stock broker, a high-interest savings account, or a "free practice" FOREX (foreign currency exchange) simulator. It's almost as if web trading has become as commonplace as buying a car, a cell phone or a computer. Does everyone really trade stocks now? There used to be a time when stock trading - or should I say *investing* - required a decent startup capital, a good understanding of the market and quite a bit of stamina. Have people changed so quickly or has the web, perhaps, transformed the way we see investing?

Regardless of the change in paradigm, even half-sensible investing begins with collection of information on the state of the market and on individual stocks. The quality of the investment often depends on how timely this information is and how it is processed and analyzed. While stock analysis is a topic all its own, in this paper I would like to examine where the information for this analysis comes from. Specifically, I compare the pre-existing system of use in the U.S. prior to the mass proliferation of the Internet with the information sources available to us today and the way they influence investing decisions.

The Web as an Enabling Technology

It is hard to deny that today's web is by far the richest source of information. It may not always be accurate information, it may not necessarily be useful information, but if you're looking for info on even the most obscure subject, chances are you'll find it somewhere on the web well before finding it offline. Although the Web has not yet achieved a high penetration rate in some parts of the world, it has become very widespread in the West. And for the purposes of our discussion, that is sufficient.

Since this paper is about the effect of the web in spreading financial information, we should first consider how the web is affecting trading and investing in general. To that end, let's consider what is needed to trade common stocks (as the most well known financial instrument) in the stock market.

Clearly, we need the ability to buy and sell such stocks. For this we have stock brokers, either ones with brick & mortar offices (full service brokerages¹) - who will not only be happy to take your order, but also give you some advice, all for a premium fee - or the emerged breed of so-called discount brokerages², who typically operate a web-platform that the investors use to submit trade orders. While the fees are lower (generally ranging between \$0 and \$20 per trade), the amount of service at discount brokerages is lower as well. Some of the more expensive services offer analyst reports to the subscribers as part of the package, but most of the lower-priced ones don't even go that far.

¹ For example, Merrill Lynch, Morgan Stanley, Edward Jones, etc.
2007 Brokerage rankings available at <http://www.smartmoney.com/brokers/index.cfm?story=2004-full-table>

² Such as TD Ameritrade, E-Trade, Scottrade, SogoInvest, Zecco, etc.

At the risk of sounding obvious, you also need money, but not as much as some may think. Many online brokerages require only \$500-\$1000 to open an account, and a select few have no account minima at all (though the commissions are higher). For those not willing to risk their hard earned capital, there exist a number of free online trading simulators. In these, the users start out with a sum of virtual money that they can use to buy stocks of real companies at real world prices (quotes delayed 15-20 minutes). The goals can range from new traders learning the process, competing against friends, or trying out a new trading strategy. An interesting new development in this field is *UpDown.com*, launched in 2007, that seeks to use the highest performing community-generated portfolios as a basis for running a real investment fund and distributing a portion of the (real money) profits among the best performing virtual players.

Such simulators play an important role in attracting new investors to real trading by boosting their confidence level after a few successful virtual trades. An important distinction between real and virtual trading is that unless highly disciplined, people tend to take on a lot more risk when not dealing with real money (action-based video games may exhibit parallel phenomena). As a consequence, when the trades are successful, the virtual profits are higher, giving an illusion that making money in the market is easy.

Combined, the above factors effectively reduced the barriers to entry for new investors. Usually, when this happens in the business world, the incumbents (in this case, experienced traders or institutional investors) would feel the competition pressure of newcomers (i.e. the new crop of retail investors). This may be partially true for cash flows into mutual funds, where the now independent investors used to put their money. However, on the whole Wall Street received a fresh infusion of capital, which can be considered a good thing.

The Need for Information

Even before shares of common stock can be bought, we need to know which stock we want to purchase. For this we need some selection criteria to pick one stock over another and that's where financial information comes onto the scene.

Whether you use fundamental analysis, technical analysis, a combination of the two, or just word-of-mouth recommendations in your stock picking, you need access to all the relevant information. And with market volatility such as it is today, you don't want to base your decisions on last week's data. Markets move fast, so you need the most accurate, up-to-date information possible. But what kind of information are we discussing here?

For technical analysts the price patterns are important. So naturally, the stock quotes are necessary. However, the patterns are typically made up of open, close, session high, and session low prices (candlestick charts). This information is usually analyzed after the markets' close, thus there can be a bit of latency in the information delivery system. For day-traders, on the other hand, streaming real-time quotes (including volume data) are of the utmost importance, which is where the web-trading platforms become an enabling technology. Before the Web, you would have to work on Wall Street to receive this kind of info. Today, however, even your grandma should be able give you the latest stock quote in only a few clicks.

Then there is the other kind of information, mostly pertaining to the fundamentals of the company, like industry strength, company's competitive position, product demand, financial statements and so on. While all these are important, there is no real sense of urgency associated with such data, and it could be found without much trouble in the pre-web days. Instead, let's consider the news, such as key economic reports, outlook statements by officials, rate cuts, etc. All of these have the potential to send markets up and down within minutes, so timely news delivery is crucial, as individual stocks get tagged along on the ride. But what about company-specific news that can move the share price substantially? This could be accomplished by Merger and Acquisition (M&A) news, as well as Earnings Reports/Releases (ER). Both of these announcements are typically made when markets are closed and lead to significant action in the company's stock price. Once the news gets out that Company A is to be acquired by Company B, the price of Company A can jump up significantly, often 10% or more, while it's not uncommon for shares of Company B to slide. For a recent example, see the price history for Yahoo! Inc. (NASDAQ: YHOO) and Microsoft Corp. (NASDAQ: MSFT) in Figure1. On February 1, 2008 Microsoft offered to buy Yahoo! for \$44.6 billion, resulting in a 56% rise in Yahoo's stock price, while Microsoft's stock dropped.

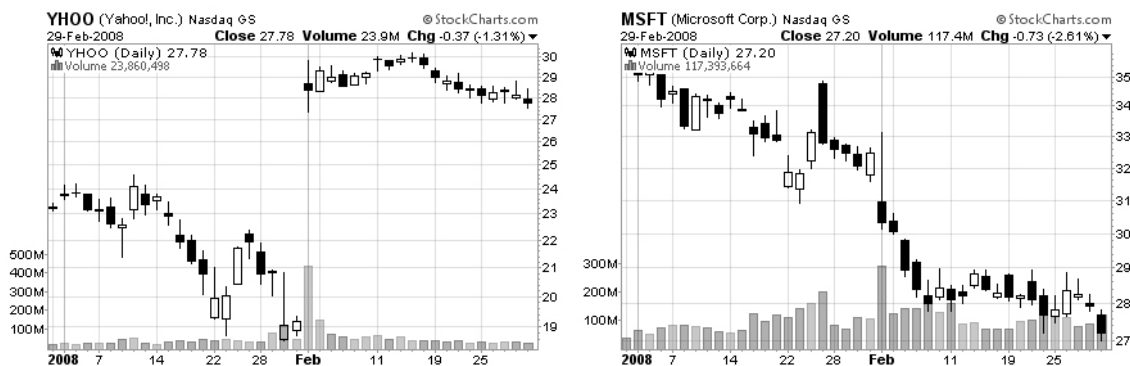


Figure 1. Yahoo! Inc. and Microsoft Corp. price histories before and after a buyout offer by Microsoft

Likewise, quarterly earnings reports may become moments of truth for investors. While there is much less regularity in stock price action compared to M&A announcements, if a certain company surpasses its own earnings forecasts and analysts' estimates, its stock price can gap up considerably. The reverse is often true as well: should the company under deliver, the stock price will often drop a number of percentage points. Consequently, these two types of events present attractive opportunities to turn a quick profit. If an investor can learn about an M&A deal ahead of time, he/she can purchase the stock before it appreciates in value and sell it after the deal is made public and the market reacts by raising the share price (higher demand). The earnings reports can also be played in a similar manner, but carry a lot more risk. Following an ER, the price can go either way, sometimes not subject to common sense. Quite a bit of assumptions get factored into the stock price prior to ER, so if one of the assumptions fails, even by a small margin, the results can be devastating.



Figure 2. Crocs, Inc. share price around Q3 earnings announcement.

A relatively recent dramatic example of this is illustrated by Crocs, Inc. (NASDAQ: CROX), the maker of famous plastic shoes. When the company announced its Q3 earnings on October 31, 2007 with earnings per share of \$0.66 (estimated at \$0.63) and total revenue of \$256.27 million (estimated at \$260.21 million³), the floodgates seemed to open. Next day it closed at \$47.74 per share down from \$74.75 on the day of ER. Over the next several trading sessions the price dropped to \$35.39 before rebounding somewhat (Figure 2⁴).

Why did that happen? Sure, the shaky state of the entire market did not help things much, but one of the main reasons things went so dramatically south was everyone expected another blowout quarter, just like the company did in Q1 and Q2 of 2007. EPS values of \$0.70 or more were thrown around on various online discussion forums (partially explains the nice pre-earnings run up). And while the company managed to surpass its own estimates, the growing inventories and a lower future outlook curbed investors' expectations of continuing out-of-this-world growth rates. The resulting sell-off and short selling that followed took advantage of these announcements.

Massive price swings are certainly not exclusive to M&A and ER announcements. The U.S. sub prime mortgage crisis rollercoaster was instrumental in shaking things up for the stocks in the financial sector. Anyone interested in seeing what uncertainty looks like in stock market terms is invited to examine Figure 3, illustrating January-February 2008 price action for Ambac Financial Group Inc. (NYSE: ABK) and MBIA, Inc. (NYSE: MBI), two of the primary municipal bond insurers, whose AAA ratings were under review as the mortgage crisis developed.

³ <http://stocks.us.reuters.com/stocks/estimates.asp?symbol=CROX.O>

⁴ <http://stockcharts.com/h-sc/ui?s=crox>

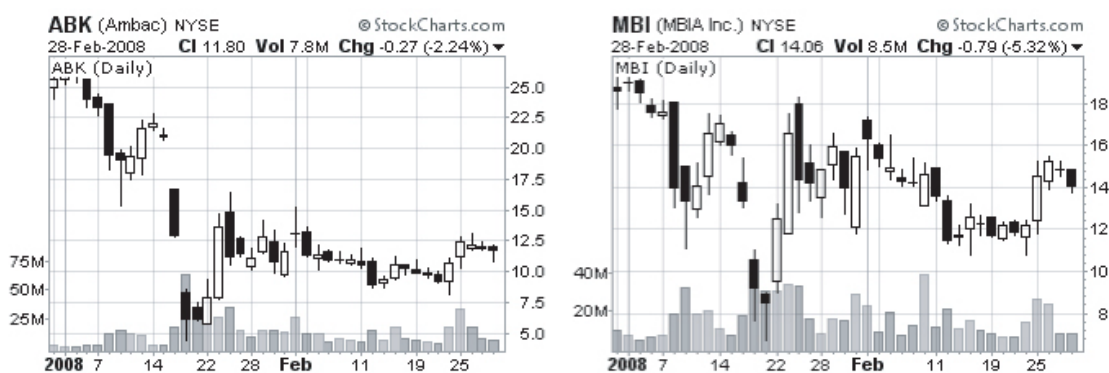


Figure 3. Ambac Financial Group, Inc. (left) and MBIA Inc. (right) price histories for January-February 2008. As the U.S. sub prime mortgage crisis developed, the two bond insurers' AAA ratings went under review, affecting shareholders' outlooks on their respective companies.

Information Distribution

The Old Way

Having illustrated the importance of financial, let's consider how this information gets distributed. First, let's look at the past, the times before the Web was widespread. For an average investor with no friends on the Wall Street, there were only a handful of information sources. There was the Wall Street Journal (WSJ), with its high quality editorial that covered the stock market and other ways to manage money, often delivering "tomorrow's news today," a required reading in business schools across the country. There was also the Investor's Business Daily newspaper - similar to WSJ, but with a narrower focus on stocks and mutual funds. Subscribers could also find financial sections in some of their local newspapers, but those typically didn't go beyond general market overviews. Other possible sources could have been TV news or specialized programs about investing. But if an individual wanted to research a particular company thoroughly, they usually had to visit their full-service broker, who had a way to obtain a collection of news, financial statements and the like on companies other than the blue chips. Obviously, this required a service account with the broker, which wasn't cheap. As a result, the investments had to be chosen carefully and were usually held for a relatively long term (few months to several years) to avoid the heavy trade commissions. Consequently, not only was this a cumbersome way to invest one's money, but it also reduced the upside potential by making it difficult to trade shorter-term price fluctuations. Due to all the complications, many people simply ended up putting their money into a mutual or index fund, such as the well known Vanguard 500 Index Fund which tracks the performance of S&P 500. This provided the investors with a decent return rate of ~10%-12% annually over the years, which was considered pretty good. At least it was in-step with the market.

The information sources and flows mentioned above are graphically summarized in Figure 4. Note that only the stock broker provided a two-way information flow. The other information sources were decidedly one-way, push-type content providers. But to be fair, prior to the mass proliferation of computers only telephone/telegraph and postal mail allowed a two-way communication.



Figure 4. Financial information flow before mass proliferation of the web.

The New Way

The web has helped change all this. Today, you can check the state of the market when you're having your morning coffee by browsing Yahoo! or Google Finance. There, you will not only find the recent quotes for the main stock indexes and individual stocks (delayed), but also relevant news articles and video commentary to fill you up on the day's news. This becomes particularly handy if you live on the West Coast and don't like waking up at half past six every morning! Several specialized sites (such as *theStreet.com*, *IBD.com*, *MarketWatch.com*) also offer updated editorial opinions on what is happening in the markets throughout the day.

For corporate financial statements, the Securities and Exchange Commission⁵ offers free online access to filings of each publicly traded company. This can be of tremendous value for the investors that like to dig deep into the company's financials. Incidentally, this is also quite helpful for academic purposes as the basis of company/industry discussions, illustrating cost structure, profit margins, etc.

For technical analysts, sites such as *StockCharts.com* offer invaluable (yet free) tools to track the stock's price along with a multitude of indicators used for technical analysis, such as moving averages, strength indicators, money flows, etc.

When you feel the need to socialize or reassure yourself in your investment choices, you can visit the various investment-themed message boards, such as Yahoo! and *InvestorVillage.com*. These places have dedicated boards for many stock tickers, allowing individual investors to discuss trading strategies and the like. Unfortunately, as with most public discussion boards, these sometimes get overtaken by nonsense posters, reducing the signal-to-noise ratio, if you will. Still, members on web forums like these can often provide helpful investing advice, discuss the strengths and weaknesses of a company or play devil's advocate, both of which should generally improve individual stock picking.

⁵ www.sec.gov

Another source of information can be blogs where one or several bloggers provide their take on the market. While the validity of the analysis can be questionable, this is still an often used information avenue.

In addition to all of the above, there is a multitude of online articles that explain the way market works and the way stocks should be picked. For anyone starting out, these are very helpful - no need to borrow books from the library!

It appears that the information that has been tightly guarded and valuable in the past has now become free for all to consume. The responsibility for this largely lies in the way that the Web has enabled revenue generation through online advertisements. Information owners and holders are now willing to give away this information in exchange for web traffic and (hopefully) ad clicks. The prospects of web advertising are so lucrative that *Zecco.com* offers free stock trades (up to 10 per month, \$4.50 thereafter) while running advertisements (sometimes for competing brokers!) on their web pages. This trend was supported by the New York Times making all their recent articles available to the public online at no cost, and the WSJ is also moving most of its content to the gratis category. It should be noted that the utility of such print media is on the decline, since they can no longer deliver the content fast enough. Their content production times are typically much longer than those of blogs or discussion boards, while not always being more informative. Besides, with Google and Yahoo! aggregating news from several sources on their own pages, the value of WSJ as a one-stop destination for financial news is rapidly going down. This isn't unique to the financial sector, of course. Other media and information sources are being cannibalized in a similar manner. Naturally, there are still private services and newsletters on the web that promise to supply you with winning stock picks for a monthly fee. Nevertheless, the overall trend in this space is towards the free-for-all content.

A graphic illustration of the information flow in the modern web-enabled era is shown in Figure 5. In contrast to Figure 4, the investor now gets literally bombarded with information left and right. The type of information is also much more diverse, and so is its quality. The quality here is defined by the amount of speculative opinion present (lower is better), consistency, production quality, as well as how dedicated the information source is to providing the financial information. For example, SEC filings are assumed to have the highest quality since this is, in theory, the most accurate information about the company as coming from the company itself. Next in line are the charting services. These only plot the available market data and its derivatives, so it is a direct reflection of the state of things in the market. Finance portals also belong to that category. Newspapers and other print media are placed ahead of TV sources since the former are usually more dedicated to financial analysis and therefore assumed to have a higher competence at that. Next are the various blogs and other personal websites, whose content may even be better than that of newspapers and TV, but they lose out on the production quality and consistency. Because anyone can set up a blog and write whatever they please, there is less filtering of information. Finally, the last in terms of information quality are the discussion boards. By virtue of complete anonymity, the credibility issue of blogs is amplified. Anyone can post anything they please (as discussed later), therefore such information should be looked at with a healthy degree of skepticism. You will note, however, that the discussion forums have a two-way arrow associated with them. This is meant to represent a two-way information flow: from the

message board to the investor (read) and from the investor to the message board (post). The latter is optional, but not uncommon.

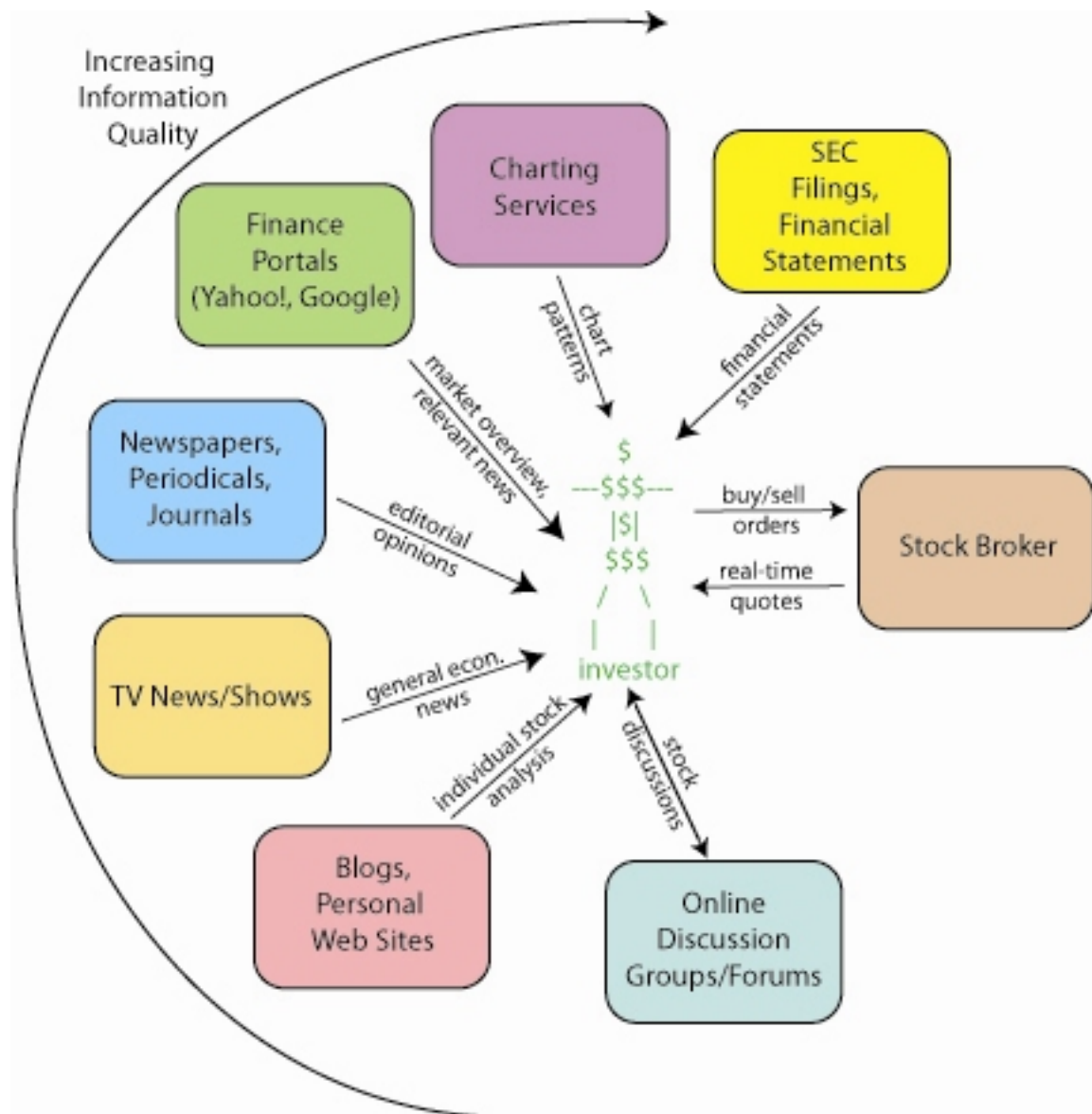


Figure 5. Information flow with the web as enabling technology.

The Effects of Information

Having looked at the available information sources, we still need to ask how, if at all, this wealth of information is benefiting the retail investor. Certainly, there are a lot more choices for the investors to pick from - a good thing, right? There are choices in strategies, choices in stocks, choices of brokerages, choices in mutual funds and electronically traded funds (ETF), choices of market and stock indicators to watch,

choices of newsletters to subscribe to, choices of message boards to read, choices in industry sectors to look at...so many choices to make! For a seasoned investor who has developed a set of preferences this isn't a big deal. But for the investors who are just starting out, lured by the supposed ease of investing that has come about, this can be quite a handful of decisions to make. Think of this like Adobe Photoshop (new way) vs. Microsoft Paint (old way). The former puts plenty of tools at your disposal, but you need to know how to use them, while the latter is a bare-bones solution that gets some of the job done, but in a very awkward way. Neither is perfect, and ideally we want a "system" that is powerful, yet easy to use; something like Google's Picasa or the new Picnik (Flickr's online image editor), both of which are free. Unfortunately, neither currently has a counterpart in the trading world. There are sellers of various "trading tools" that magically indicate which stock is a buy and which is a sell. But such tools cost a premium and, more importantly, operate much like black boxes. And when it comes to personal money management, people want to know what they are spending their money on.

We also need to consider what happens when one of the trusted sources of information actually misinforms. A recent example of this happened when the Whole Foods Market Inc. CEO was found to be anonymously posting on the Yahoo! Finance message boards talking "up his company while predicting a bleak future for Wild Oats Markets Inc. OATS.O, the rival his firm is trying to acquire."⁶ Even more interesting is the video⁷ of Jim Cramer, host of the popular "Mad Money" show on CNBC, where he actually admitted to market manipulation (through false market activity and media) by hedge funds as a common practice on Wall Street. With this in mind, does the Web actually level the playing field for the aspiring retail investors? It does by putting most of the analytical tools they may need within reach. And yet it does not, by providing the Wall Street powerful with yet another way to move the markets. Conundrum?

While I only discussed the effects on regular stock trading, thanks to the Web, people now have many more ways to park their money with a decent return on investment. There are online savings accounts by the likes of ING Direct and E-Trade that offer 3-5% APY (annual percentage yield). These rates generally match or exceed the inflation rate, so at least the capital in these accounts does not depreciate much, while at the same time carrying no investment risk thanks to the FDIC insurance (up to \$100,000). These banks also offer Certificate of Deposit (CD) accounts with slightly higher return rates, but the money is locked up for around 6 months. Thanks to the web, federal bond purchases are now also simplified. While the bonds currently do not yield an appreciably higher return than the aforementioned bank accounts, for those who want to, *TreasuryDirect.gov* offers a convenient way to purchase short- medium- and long-term US government bonds. Also, in the past decade or so, thanks to the availability of information, mutual funds and ETFs (electronically traded funds) have become a lot more popular as investment vehicles. By providing a certain level of asset diversification, these offer a lower investment risk, compared to stocks, which people are taking advantage of.

⁶ <http://www.reuters.com/articlePrint?articleId=USN1725360820070717>

⁷ <http://link.brightcove.com/services/link/bcpid1078966384/bctid1163950434>

At the same time, there are other, more risky investment vehicles such as options, margin accounts and FOREX (currency) trading that have been made much more accessible through web platforms. FOREX and margin accounts are particularly attractive for the brokers, since the traders usually need to borrow funds from the brokerages (for added leverage), and the brokers are able to charge interest rates on this debt. Therefore, the interested parties are keen on promoting these “exciting” trading opportunities, and unfortunately, some beginning investors do fall for the trap without having sufficient experience to trade these instruments.

Future Developments

As a concluding remark, I would like to speculate on where things are heading in the future. The web (2.0) is full of new technologies, some of which can hypothetically be applied to financial information. Formats such as RSS or Atom can be used to provide newsfeeds from major news sources without the users having to be on the website. User ranking or marking of information via sites like *digg.com* or *del.icio.us* can be utilized to ensure high quality content is available for all to see. Perhaps, a better use of video technologies is also in order. While this seems like an interesting way to go forward, such shifts have not yet taken place on a large scale. Possibly, there is an adoption or ideology gap between the web users that embrace the latest technologies and the trading/investing public, which is also likely to belong to an older age group.

We can also consider the concept of social networks. So far, attempts at this (e.g. *TradeKing.com*) have not proven to be very successful. But if the investing features get integrated into the more popular social sites like MySpace or Facebook that people visit daily, the concept may take off with the younger public. For example, the market data and news headlines could be made to appear (on an opt-in basis) on the users’ “home” screen or news feed within Facebook. This can also extend to other topics, such as politics and sports. Essentially, the more information the users can be exposed to on a single site, the more convenient it will be. And with convenience come loyalty, eyeballs and ad clicks.

Lastly, many things on the web are migrating towards mobile platforms. Financial information should be no exception. Indeed, Apple offers stock quotes as part of iPhone’s native software. As mobile web browsers come closer to their personal computer counterparts, users will be able to consume most of their information on the cell phones as well. Combined with the ability to send alerts via SMS, cell phones may actually make trading less time consuming. For example, instead of sitting in front of the computer screen (or two) and waiting for the stock price to hit a certain level, the user can ask his/her broker to send an SMS once the price reaches the desired level. At this point, if the investor did not have an automatic order fill in, he/she can log back on to the trading platform and perform the desired operations. Additionally, checking up on the markets mid-day or executing trades on a cell phone in a public place can convey a certain image (tech- and market-savvy, appetite for risk, has “disposable” income) about the individual doing this and is, at least in part, a fashion statement.

It is hard work predicting the future. It gets even harder when you have tens of new, competing technologies trying to lay a claim to this future. However, over the past century the stock market has become so deeply embedded in the American adult culture

that it is logical to assume this integration will continue. On the whole, I expect the procedural issues to become less pronounced, as the process of trading is made more convenient to the end user, while the emphasis on intellectual abilities of the trader is going to be higher than ever.