Twin Drivers and Irrational Exuberance: Markets, the Internet and Mobility

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By no means does every upswing in business excess lead inevitably to mania and panic. But the pattern occurs sufficiently frequently and with sufficient uniformity to merit renewed study. What happens, basically, is that some event changes the economic outlook. New opportunities for profits are seized, and overdone, in ways so closely resembling irrationality as to constitute a mania. Once the excessive character of the upswing is realized, the financial system experiences a sort of “distress,” in the course of which the rush to reverse the expansion process may become so precipitous as to resemble panic. In the manic phase, people of wealth or credit switch out of money or borrow to buy real or illiquid financial assets. In panic, the reverse movement takes place, from real or financial assets to money, or repayment of debt, with a crash in the prices of commodities, houses, buildings, land, stocks, bonds – in short, in whatever has been the subject of the mania.

Charles P. Kindleberger, Manias, Panics, and Crashes, 4th Ed.

As Kindleberger (1978, pp. 2-3) argues in his history of financial crises, markets generally work, but occasionally they break down. A case in point is the collapse of the Internet and wireless stocks during 2000-2001. This was followed by a high-profile public debate on the underlying forces of the crash, as well as criminal investigations. In April 2003, the ten largest U.S. investment banks and two well-known stock analysts were completing a $1.4 billion settlement. Allegedly, these firms had lured millions of investors to buy billions of dollars worth of shares in companies they knew were troubled and ultimately either collapsed or sharply declined (see Labaton 2003, Morgenson 2003). After the great bull market of the 1980s and 1990s, many economic and financial theorists have increasingly questioned the traditional notion that individuals act rationally and consider all available information in the decision-making process. Researchers have uncovered abundant evidence that this is frequently not the case. In this essay, two approaches – one in strategy and innovation, another in corporate finance – frame the basic issues.

In strategic management, there is an extensive literature on firm and industry evolution that has sought to combine industry and company analysis with dynamic study of organizational capabilities (e.g., Chandler 1962, 1977, 1990), innovation (Utterback 1994), and globalization (Bartlett and Ghoshal 1988). Similarly, a behavioral approach has sought to connect the theory of the firm to empirical observations of what happens in the firms (Cyert and March 1963). It has also facilitated research on the internationalization process of many “peripheral multinationals,” which focus on small- and medium-size MNCs originating from small- and medium-scale countries (Luostarinen 1980). This approach has also been deployed to explore the evolution of industry value chains, including mobile vendors, contractors, operators, resellers, as well as the new IT players in platforms, chips, software, content and aggregation, location-specific services, and retail (Steinbock 2002a). Finally, behavioral finance at-

Abstract

“Twin Drivers and Irrational Exuberance” seeks to describe and analyze the forces accounting for the rise and collapse of the Internet and mobility stocks. In the late 1990s, these “twin drivers” (mobility, the Internet) were said to surpass the limitations of time and place. By 2001, great expectations were followed by the extraordinary decline of the stock market and the technology sector. To provide a dynamic view of these forces, this discussion piece will review the historical valuation peaks, including the 20th century tech boom, radio boom, and the post World War II boom. Concurrently, the peaks are reviewed from the standpoint of information and communication technology (ICT), particularly wireless stocks (from the pre-cellular era to analog, digital, and multimedia cellular). The essay focuses on the most recent peak, the millennium technology boom, which has been punctuated by extraordinary growth phases (PCs, the Internet, mobility). The frameworks employed rely on strategy and innovation, as well as behavioral finance, particularly the notion of trading information and noise, which accompanied the emergence of the twin drivers. Finally, the essay will review the lessons (that should have been) learned, including the increasing specialization and globalization of the wireless industry value chain.

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tempts to better understand and explain how emotions and cognitive errors influence investors and the decision-making process. Indeed, many researchers believe that the study of psychology and other social sciences can shed considerable light on the efficiency of financial markets, while explaining many stock market anomalies, market bubbles, and crashes.3

This essay seeks to describe and analyze the forces accounting for the collapse of the Internet and mobility stocks. In the late 1990s, these “twin drivers” (mobility, the Internet) were said to transcend the limitations of time and place. By 2001, the reality was less poetic. To better understand the forces that transformed the twin drivers into a double whammy, this essay will review the historical valuation peaks, including the 20th century tech boom, radio boom, and the post World War II boom. Concurrently, these peaks will be examined from the standpoint of information and communication technology (ICT), particularly wireless stocks (from the pre-cellular era to analog, digital, multimedia and broadband cellular). Thereafter, the review shall focus on the most recent peak—the millennium tech boom—which has been punctuated by extraordinary growth phases in PCs, the Internet, and mobility. Instead of the efficient market hypothesis, these periods are reviewed in terms of trading information and noise, which accompanied the notion of the twin drivers and in which news media tend to have a powerful amplifier role. Finally, the focus shall be on the lessons (that should have been) learned. In particular, the changing characteristics of the wireless hypergrowth are reviewed in terms of specialization and globalization.

Valuations and Wireless Stocks

On December 3, 1996, Robert J. Shiller, a highly-regarded economist of volatile markets, and John Campbell, his colleague, presented their testimony before the board of governors of the Federal Reserve. The two offered impressive evidence suggesting that the price level was more than merely the sum of the available economic information. With empirical market evidence and insights relying on the emerging field of behavioral finance, Shiller testified that the current stock market displayed the classic features of a speculative bubble (Shiller 2000, p. xii):

... a situation in which temporarily high prices are sustained largely by investors’ enthusiasm rather than by consistent estimation of real value. Under these conditions, even though the market could possibly maintain or even substantially increase its price level, the outlook for the stock market into the next ten or twenty years is likely to be rather poor—and perhaps even dangerous.

Only two days later, Alan Greenspan (1996), chairman of the Federal Reserve Board in Washington, D.C., used the term irrational exuberance to illustrate the behavior of stock market investors.

But how do we know when irrational exuberance has unduly escalated asset values, which then become subject to unexpected and prolonged contractions as they have in Japan over the past decade?

World markets declined abruptly. In the United States, the Dow Jones Industrial Average (DJIA) was 2.3% down, close to the beginning of trading. In Japan, the Nikkei index fell 3.2%. Germany’s DAX and London’s FT-SE 100 Index were down 4%. In Hong Kong, the Hang Seng fell 2.9%. Instead of a short-term reaction to expectations that the Fed would tighten its monetary policy, the decline seemed to reflect a widespread concern that the markets had been bid up to excessively high and unsustainable levels. The writing was on the wall, but the party was not over. Even as a devastating financial crisis swept through Asian markets, the boom in the United States, Western Europe and Japan would accelerate another three years. Only seven months after his suggestion that markets were behaving irrationally, even Greenspan himself took an optimistic “new era” view on the economy and the stock market.3

By the mid-1990s, the emergence of the Internet boosted valuations. The Web was the “next big thing.” Common wisdom romanticized Silicon Valley, which was depicted as the engine of new capitalism. Europeans had lost the game: Americans had triumphed. At the end of these hypergrowth years, the mobilization of the Internet was expected to be the “next big thing.” Now the common wisdom romanticized the Old Country, which was suddenly depicted as a high-tech Mecca. American players had lost the game: Europeans had triumphed. Even the prestigious Wall Street Journal joined the bandwagon in 1999: “The Continent has long maintained a lead in wireless technology largely because it has only one digital standard. So manufacturers can introduce new phone models and have a ready potential market of 300 million Europeans. The U.S., by contrast, has a hodge-podge of incompatible digital standards” (Naik 1999).

Reflecting a wide industry consensus, Nokia’s CEO and chairman Jorma Ollila (1999, pp 6-7) argued that the wireless leaders were about to “bring the benefits of the convergence of Internet and mobility to the markets”. A year later, Ollila and Nokia’s President Pekka Ala-Pietilä (2000 pp. 6-7) said the vendor was “using the twin drivers of the Internet and mobility to break through the limits of time and place.” It was this context–booming economy, accelerating globalization, volatile but expanding technology sector, and the “field of dreams” valuations of the impending 3G era–that illustrates the significance that the contemporaries attached to the twin drivers of the Internet and mobility. With the advent of the millennium, the Internet meant hypergrowth, not slowdown. Mobility meant upturn, not
downturn. Only a year later – with the bust of the stock market, the slowdown of the technology sector, the eclipse of the telecommunications boom, and the inflated 3G license auctions in Europe – the competitive environment looked very different.

Valuation Peaks

The price-earnings ratio provides a measure of how expensive the market is relative to an objective measure of the ability of corporations to earn profits. Exploring this ratio from 1881 to 2000, Shiller has demonstrated that there have been four periods of high price relative to earnings. In most cases, the technology businesses (or, in the broader sense, the information and communication technology, ICT), in some cases the wireless stocks in particular, have significantly contributed to the peak directly or indirectly (Exhibit 1).

1. The 20th Century Tech Boom: Wireless Telegraphy
2. The Radio Boom: Radio Stocks
3. The Post-War Boom: Pre-Cellular Industrial Services
4. The Millennium Tech Boom: Internet and the Mobility

In each case, the gradually accelerating boom has resulted in the ensuing bust. Each peak has been characterized by the Kindlebergerian scenario of new ventual panic and reversal. The first two boom phases can be understood as responses to the Second Industrial Revolution of the late 19th century (transportation, telegraph, telecommunications). The third one represents the peak of the post-World War II growth era. The most recent boom may be seen as the peak of the Third Industrial Revolution of the late 20th century (at the broadest level, the ICT segments, i.e., electronics, microprocessors, PCs, software, the Internet, mobile Internet).

Through successive waves of wireless innovation, sustaining developments have boosted incumbent leaders. In the process, disruptive innovation has allowed challengers and new entrants to redefine competitive rules, from the primitive pre-cellular technologies to analog (1G), digital (2G), and multimedia cellular (3G), which will eventually result in broadband platforms (4G). With each wave of innovation, a new technology has been coupled with new and different markets. In the past two decades, the cellular platforms have

Exhibit 1: Valuation Peaks (1871-2000)

also contributed to rapid globalization. Historically, wireless markets have evolved as complementary layers, not as substitutes. With cellular platforms, the thrust has shifted from military and emergency services to industrial services and business markets, to consumer markets — and, ultimately, to globalizing mass consumer markets.

The 20th Century Tech Boom

In the United States, the railroad, telegraph, and telecommunications industries played key roles in the technology revolution of the late 19th century (Chandler 1977). Through its evolution, the wireless has served a critical role in the military and information-intensive businesses, including telegraph lines (1840s), mobile battle conditions (U.S. Civil War) and the rise of financial markets (Wall Street, electric ticker services, the Dow Jones News Service via telegraph) (Steinbock 2000b). After the 1880s, the first peak took place in June 1901, when the P/E ratio reached a high of 25.2. It was motivated by a turn-of-the-century optimism, and talk about a prosperous and high-tech future. The Pan-American Exposition in Buffalo, New York, focused on advanced technology. This peak was also associated with the wireless developments. In 1895, Guglielmo Marconi had transmitted wireless signals across a distance of more than a mile, which many historians consider the birth of radio. Six years later, he made the first transatlantic radio transmission (Steinbock 2002a, Chapters 2-3).

Contemporary observers reported substantial speculative fervor (Noyes 1909, pp. 300-301). Prestigious business journalists and news editors touted the growth stocks and industry giants of the era, from U.S. Steel to Andrew Carnegie. According to an editorial in the New York Daily Tribune (1901, p. v), “a new era has come, the era of ‘community of interest,’ whereby it is hoped to avoid ruinous price cutting and to avert the destruction which has in the past, when business depression occurred, overtaken so many of the competing concerns in every branch of the industry.” Moreover, the concentration seemed to make stocks that had been considered risky safe and respectable. As one observer argued, “The ownership of stocks has changed hands. The public speculators do not now own them. They are owned by people who are capable of protecting them under any circumstances, such as the Standard Oil, Morgan, Kuhn Loeb, Gould and Harriman Interests” (Housman 1901).

Elimination of competition was identified with monopoly profits, which boosted the shares. ‘Bigness’ was perceived synonymous with sustainable growth. The potential for antitrust law, which would end the “new era” was ignored. The bull market boosted investor expectations, which pumped adrenaline into the growth engines of the era, but also resulted in a speculative bubble and a drastic slide of stock valuations between 1907 and 1920. In this decline, the wireless played a central role. In a slate of articles published in the series, “Fools and Their Money,” Frank Fayant (1907) exposed the other side of what he termed the “Wireless Telegraph Bubble.”

Millions of dollars of wireless stock manufactured in the past eight years is today worth no more than the paper on which it is printed. Over capitalization, mismanagement, and fraud have wasted millions of money.

In effect, this boom-and-bust cycle has been typical to many technology-driven bubbles. In most if not all cases, the development and maturing of the technology has resulted in new financial realities, the harvest of startups, the collapse of stocks, and investor panic (compare Nairn 2002).

The Radio Boom

The second peak followed in September 1929, the high point of the market in the 1920s, and the second-highest P/E ratio of all time. After the spectacular bull market, the ratio peaked at 32.6. This era of overblown optimism and public obsession with the stock market has been studied by a wide variety of authors and literatures, from financial economists to cultural historians. As John Kenneth Galbraith notes in his classic Short History of Financial Euphoria (1990, p. 70):

In the larger history of economics and finance, no year stands out as does 1929... That is partly because the speculative debacle that then occurred was of special magnitude, even grandeur, and more because it ushered in for the United States and the industrial world as a whole the most extreme and enduring crisis that capitalism had ever experienced.

The 1920s was an era of optimism when “the rich man’s chauffeur drove with his ears laid back to catch the news of an impending move in Bethlehem Steel” (Allen 1929, p. 315). In effect, it was a time of rapid economic growth and widespread diffusion of the technological innovations that formerly had been available primarily to the wealthy. The technologies that enabled the birth of the automobile came about decades before. However, the “democratization” of the innovation, and its subsequent transmission, from the “one size fits all” Ford T Model to General Motors’s first segmentation strategy, came about only with the 1920s. In this case, too, there was a close link with the nascent wireless business. As a result of motorization and Prohibition, Detroit’s police department became a pioneer of the ground wireless (AM communications), in the 1920s. These early activities boosted the rise of the nascent industry players. Kathy Brown (1992) has described the close connection between the birth of Motorola, the historical wireless giant, and the radio stock boom:

Although his new radio enterprise was at the mercy of a market driven by cutthroat competition, Paul Galvin [the founder of Motorola] felt that he had found the right niche for himself and his small band of em-
employees. After all, radio stock was the rising star of the exchanges. In 1926 alone, national radio sales had reached the half-billion dollar mark. The future looked bright for anyone with the know-how and drive to keep pace with the public’s apparently insatiable appetite for radios.

Galvin challenged his employees to “put music on wheels,” or to design a simple auto radio that could be installed in most contemporary models at an affordable price. This new frontier of mobility and music was captured simultaneously with rapid urbanization, electrification, and the rise of the news media that communicated the changes to nationwide audiences. The mutually reinforcing elements of the feeding frenzy emerged, expanded, grew intertwined, and seemed to multiply ad infinitum. Even cool minds were swept by the new zeitgeist. “We are only now beginning to realize, perhaps,” pondered John Moody (1928, p. 260), head of Moody’s Investors Service, the rating agency, “that this modern, mechanistic civilization in which we live is now in the process of perfecting itself.” Shiller (2000, Chapter 5) and Galbraith (1990, Chapter 6) provide these examples and a slate of others. They illustrate structural, cultural, and psychological factors in the contemporary efforts to rationalize exuberance, which have reinforced and been reinforced by successive waves of excessive valuations. Both authors and a long list of historians have made reference to the role of the leading economists. Take, for instance, Irving Fisher (1930), the highly influential Yale economist, who, in 1929, gained enduring notoriety for his widely reported conclusion that “stock prices have reached what looks like a permanently high plateau.”

After the collapse, the decline in real value was steep and long-lasting. Paul Galvin’s Motorola survived the Crash through diversification, by focusing on radios and participating in the entertainment boom of the Great Depression. Meanwhile, the wireless moved to a new era. In 1933, Edwin M. Armstrong, a brilliant electrical engineer and inventor, introduced a wide-band frequency modulation (FM) system that promised great advances in performance capabilities. As the U.S. defense forces opted for the FM, significant improvements were made in size, cost, performance, and reliability. During World War II, the wireless provided a powerful military advantage. In the aftermath of the war, this advantage was translated to commercial strategic advantages. Only few years later, the Bell Labs researchers developed the cellular concept.

The Post-War Boom

The third instance of extraordinary growth occurred in January 1966, when the P/E ratio boomed to 24.1. This peak was associated with a dramatic bull market, a five-year price surge, and the Kennedy-Johnson era. The conglomerate “Go-Go Sixties” boosted the valuations excessively. Again, researchers have made reference to heterogeneous research literatures, particularly popular news media (including Wall Street Journal, Business Week, Fortune, Time, Newsweek, U.S. News and World Report), which illustrate the escalation of “new era thinking” between the 1950s and 1960s (Shiller 2000, Chapter 5). These growth years were also characterized by the electronics revolution that evolved in U.S. computers and telecommunications – two vast sectors that would shape every leading mobile and IT player in the wireless business for decades to come. Many contemporaries saw the worldwide march of U.S. business as overwhelming. In 1968 Jean-Jacques Servan-Schreiber’s (1968, p.3) bestseller Le Défi Américain was prompted by the post-War American preeminence in technology, marketing, and management capabilities:

“Fifteen years from now it is quite possible that the world’s third greatest industrial power, just after the United States and Russia, will not be Europe, but American industry in Europe.”

“More we don’t have to buy dollars, or oil, or steel, or even with modern machines,” Servan-Schreiber (ibid, pp. xiii, 142) argued provocatively. “No area of industry can ever be independent so long as we rely on others for future.”

Despite the discovery of the cellular concept as early as 1948, the wireless business did not take off in large scale with the introduction of the first mobile services (MTS services in 1946, IMTS services in 1964), but suffered from substantial regulatory barriers in the United States, which led to the “land-mobile crisis” of 1968.4 During the 1983 transition to the 1G era, the United States continued to dominate wireless communications. Through the analog phase, a single standard (AMPS) reigned in the world’s most lucrative country market. However, the United States no longer enjoyed monopoly leadership in technology, development, or commercialization.

The Millennium Tech Boom: The Story of the Twin Drivers

After World War II, the United States was the critical country market for most industries worldwide. From the 1910s to the 1980s, America was also the core cluster and lead market in the wireless industry. As economies in other parts of the world completed their postwar reconstruction efforts, the U.S. lost its leadership (Steinbock 2002a, Chapters 2-7). In the wireless, for instance, analog systems continued to thrive until the mid-1990s, but success bred complacency. With the triumph of the GSM standard in the 1990s, industry leadership migrated to Western Europe, service innovation shifted to Japan, and volume growth to China.

At the onset of the 3G transition, the expansion of the technology sector, the promise of extraordinary valuations, and the growing overall financial stakes prompted the great dream of the “twin
drivers,” which contributed to the millennium tech boom. As Jeremy Siegel (2002, pp. 148-149) put it in Stocks for the Long Run:

The communications revolution captured everyone’s imagination. The number of mobile phones exploded, and their price fell to the point where many people abandoned their traditional landline connections... Although the prices of Internet stocks seemed nonsensical, many of the leading brokerage firms and investment houses sought to justify these valuations by almost metaphysical reasoning. However, the more serious money was being funneled into the profitable technology firms that set the stage for the Internet revolution... as the pure dot-com companies faded, investors rushed to those companies that facilitated the Internet – networking and storage companies, software manufacturers, and firms pioneering wireless communications.

Take, for instance, Qualcomm, which leaped into the public eye in 1999, when its stock outgrew all other major issues on the Nasdaq and NYSE, having soared 2,621 percent. In reality, Qualcomm, an R&D maverick, had struggled for decades to make CDMA a commercial success. Similarly Nokia, a Finnish equipment manufacturer, had spent years to make GSM the triumphant standard of the digital cellular era. The record market cap of 2000 was the direct result of investments that the vendor had initiated some 13 years before. In effect, Nokia’s major capital expenditures originated from the NMT era of the 1980s, Nordic cooperation in the 1960s, and digital R&D in the 1950s. In both cases, then, fundamental strategic strengths contributed to extraordinary financial performance. At the turn of the millennium, a disconnect prevailed between the fundamentals and valuations of most wireless leaders, just as it had plagued the Internet leaders a few years before. This was not the first time – nor is it likely to remain the last time – that valuations reflect less market knowledge and more the investor sentiments of the era (compare Steinbock 2002b).

From PCs and the Internet to Mobility

Until 1983, the Dow Jones Industrial Average (DJIA) had lingered below 1,000, but it began to soar with the junk-bond market and the nation’s third M&A wave. Cellular stocks and, more broadly, computers and telecommunications served as drivers through the wave. Toward the end of the 1980s, the DJIA was close to 3,000. Following the 1992 presidential election, the market began a steady march upward. In early 1994, the DJIA stood at about 3,600, and a year later, the IPO of Netscape ignited the Internet revolution, first in the United States and then in Europe and Asia. By 1999 – the peak of the Internet valuations – the DJIA soared to more than 11,000. During the five “Internet years,” the DJIA more than tripled as stock market prices increased over 200%. The fourth and most recent historical price peak took place in January 2000. At 44.3, the P/E ratio was far higher than it had been during the other spikes. Again, it was injected by turn-of-the-century optimism, associated with talk about limitless growth and a high-tech driven “new economy.” Through the second half of the 1990s, Internet valuations, followed by wireless stocks, reinforced the boom. By early 2000, the DJIA passed 11,700. Concurrently, basic economic indicators did not come even close to tripling. What made this particular peak extraordinary was the behavior of price, not earnings (compare Exhibit 1). The dramatic increase in prices since 1982 was not matched in real earnings growth. Whereas the latter demonstrated a slow, steady growth path over a century, the magnitude of the price increase was without historical precedent (see Shiller 2000, Chapter 1).

As wireless growth was only beginning to take off, it was the rise of the microprocessors, PCs, and software, as well as deregulation, cable revolution, and the breakup of AT&T that boosted the fortunes of the ICT segments and the stock valuations. Between 1980 and 1994, during the PC revolution, more than 580 technology companies went public and created more than $240 billion in net market capitalization. By January 1999 – in just half a decade – the Internet grew from a $34 billion dollar industry by market value measures to one worth $257 billion (Morgan Stanley Research 2003). By January 2000, it accounted for 32% of the Standard & Poor’s 500, up from 8% in 1989. Since 1980, new technology companies have created significant shareholder value. The acquired market value of the 1,501 technology IPOs of the previous 20 years amounted to some $4.2 trillion.

Between 1980 and 1999, the combined market value of almost 25 key tech segments was more than $4.200 billion. Of this total, the four leading segments – software, Internet, data networking, and telecom equipment – accounted for almost 69%. Even though the pure Internet IPOs evolved only in 1995, they generated almost $940 million in market value (Exhibit 2). Through this “digital tornado,” the winners have won big, and the losers have lost big. At firm level, the technology sector was very top-heavy and U.S. centered. Only 5% of the tech IPOs created 77% of the $3.8 trillion total. Between 1980 and 1999, the eight best-performing technology IPOs, based on market value creation, were Microsoft, Cisco, Lucent Technologies, Oracle, Sun Microsystems, America Online, EMC, and Dell Computer. These players accounted for 61% of the top 50 total market value during this time. All of them would play a role in the “mobilization” of the Internet. Relying on the Internet vision, some competed against the mobile giants (Microsoft, Intel, AOL), some were mobile leaders’ strategic partners (Cisco, Sun), and others were direct rivals (Lucent).

It took decades for the wireless to participate in the growth sectors. But when the wireless mass markets finally
joined in, they entered an era of hypergrowth. Amidst the transition to the 2G era in 1992 (in effect, until the mid-90s), the United States was still the most lucrative country market and had the largest worldwide penetration. With digitalization, rapid growth migrated first to Nordic countries, then to Western Europe. As the EC made GSM mandatory in Europe, regional wireless leaders – the Nordic vendors as well as a new generation of aggressive operators that were eager to challenge national PTTs – seized the new digital standard to extend their domestic advantages on a global basis.

The Twin Drivers

The dreams of limitless market growth climaxed in the stock markets and with the valuations. “Shares of Finnish telecommunications equipment maker Nokia have already rocketed up more than 130% this year,” noted Business Week in August 1998. “If the cell-phone business is your investment of choice, you may have staked out a good spot: Nokia and Ericsson are both great companies at the forefront of a growing market. If you can’t decide between the two... Buy ‘em both” (Stone 1998). A year later in October, Fortune seconded:

The quirky tale of Helsinki’s Nokia is destined to become as familiar as the cell phone itself: A small Finnish conglomerate sustaining huge losses reinvents itself as a telecom company and in a few years dominates the world market for mobile phones. Its stock goes bananas, up almost 2,000% in five years, and Nokia becomes Europe’s best example of how technological know-how coupled with business and marketing savvy can give the Old World an edge over the arrivistes in the New. It’s a great story, and one that will probably continue for a few more years (Guyon 1999).
By spring 2000, the vendor’s market value soared by 2,300 percent. It was then that the Nokians began to promote the idea of the “twin drivers”, as Ollila and Nokia’s President Pekka Alapietiä (Nokia’s Annual Report, 2000 pp. 6-7) noted that the company was determined to play the leading role in the emerging mobile era:

We are at the beginning of something very significant. Not just for our company. Not just for our industry. But for everyone. And for all aspects of our lives. We are using the twin drivers of the Internet and mobility to break through the limits of time and place. These are very powerful forces... This is what we mean by the Mobile Information Society... We know that there are no limits to what can be achieved with will, vision and determination. And we have all three in abundance.

Concurrently, Nokia’s ownership shifted drastically. In 1991, Finnish shareholders owned 90 percent of the company. After the U.S. listing, this proportion declined to 40 percent. By the end of the decade, some 350,000 U.S. investors owned 55 percent of Nokia, whereas Finnish ownership had declined to just 13 percent. By July 2000, observers grew more reflective. “Nokia makes its second-quarter number, and the stock drops faster than boxer Francois Botha. What’s going on?” asked the Wall Street Journal. “Investors laid into Nokia because this was the first time the golden child of Europe warned about disappointing expectations after quarters upon quarters of beautiful performance. There are some larger issues at work here. Investors are worried about growth in the European cellular market” (Eisinger 2000). In December, Nokia’s CEO predicted rosy handset sales for 2001 and declared that “in the mobile world, the best is yet to come.” But on Tuesday June 12, 2001, Nokia issued a profit warning for the second quarter. “The bigger they are, the harder they fall,” commented the Wall Street Journal. “As bad as the news is for Nokia, it could actually be worse for other mobile-related companies” (Eisinger 2001). After half a decade of rising expectations, the mobile valuations were hit hard.

The valuation rollercoaster in Finland, the world’s most advanced cluster and lead market in digital cellular, exemplifies these abrupt turns. Before the meltdown of mobile valuations in 2001, Nokia’s market capitalization had soared to $260 billion; that of Sonera, which many contemporaries saw as the “world’s most technologically-astute operator,” reached $50 billion. For all practical purposes, these two companies were the flagship firms of Finland’s Wireless Valley. In August 2002, Nokia’s market cap was $54 billion and Sonera’s was $4 billion. If these two companies made the core of the Finnish mobile cluster, more than 81% of its market value ($252 billion!) had dissipated within a year or two (Steinbock 2002c). In the process, Nokia’s stock price declined from more than $60 to a low of $13. At the turn of 2003, it was $15.93, while the market cap amounted to $74 billion. In terms of strategic positioning, the Finnish cluster was dependent on a relatively narrow segment of the ICT sector (a result of Nokia’s highly focused strategy), just as it had become dependent on a single company (because of the powerful role of Nokia in the country’s ICT cluster).5 The belt-tightening began, the promise of the twin drivers was suppressed, the talk about “no limits” was over. Although Nokia fared better than most of its rivals, business was no longer about bold dreams, but about demanding realities and execution (compare Ollila and Alapietiä 2001).

Before the bust of wireless valuations, 3G technology was viewed as the pot of gold at the end of the rainbow. With the 3G era, wireless data usage was expected to explode, which would mean more revenue, cash flow, and value to each player in the chain. But the boom was followed by the bust (Benche and Ritter 2003):

A large number of such companies went public in 1999 and 2000, and stock prices soared. In the second half of 2000, though, the bubble burst. The NASDAQ declined as investors felt the tech boom, and the economy, slowing down. Public companies that needed to come back to the market were faced with the choice of selling equity at depressed levels, and diluting the equity of current shareholders, or running the risk of bankruptcy.

Reviewing the fate of industry leaders that defined the wireless Internet space at the peak of the boom, analysts found that many of these companies had already declared bankruptcy and liquidated their assets. Those that were still “alive” had seen valuations fall from 78% to 98% in just a year and a half. At the same time, investors learned that both the costs and the timelines of 3G technology were expected to exceed initial expectations.

The valuation zigzag cannot be characterized as “rational”. In classic essays on how individuals actually behave and make decisions in uncertainty (“prospect theory”), Kahneman and Tversky (1979, 1982) have shown that people tend to overweight recent information and underweigh long-term tendencies. Testing the hypothesis with stocks, De Bondt and Thaler (1986) found that extreme losers outperformed the market, while extreme winners underperformed the market.7 With IPOs, investors tend to be periodically overoptimistic about the future of new and young firms, a bias that firms and financial intermediaries exploit (Ritter 1991; compare Loughran and Ritter, 2002). Similarly, the rise and decline of dotcoms in the United States and mobcoms in Europe illustrates the initial overoptimism and the subsequent overpessimism (compare Swaminathan and Lee 2000; Scheinkman and Xion, 2002).8

In the wireless business, there were also microeconomic indicators whose mere presence challenged the validity of inflated valuations. At the end of the 2G
era, industry competition was market-driven rather than technology-driven. As original demand faded, replacement demand dictated the new competitive pressures. In this environment, one of the worst possible mistakes was to focus on next-generation technology, without appropriate development of value-added services (think of the failure of the early WAP in Western Europe). Because the market was now driven by customers and replacement demand, new and attractive value propositions were more critical than new technology per se (Steinbock 2003b). Along with macroeconomic caution, these microeconomic indicators were ignored and neglected amidst the valuation boom—despite the market success of NTT DoCoMo in Japan (see Funk 2001). Unlike the Euro-Nordic vendors and operators, the Japanese operator focused on next-generation services, while the role of the technology was largely supportive.

Trading Information and Noise

In a classic paper, Fischer Black (1986) argued that “rational traders” make decisions on the basis of news (facts, forecasts, etc.), whereas “noise traders” make decisions based on anything else. People may also trade on noise as if it were information. It is noise that makes financial markets possible, but also imperfect. Noise trading incorporates noise into the prices: “The price of a stock reflects both the information that information traders trade on and the noise that noise traders trade on.” In this model, noise is contrasted with information, even if everyday observations might challenge the very distinction.

The history of speculative bubbles is paved with the arrival of newspapers. Newspapers regularly reported on the first bubble of any consequence, i.e., the Dutch tulip mania of the 1630s. Moreover, the postwar multiplication of news media outlets (FM radio stations, cable and satellite TV, independent broadcast channels, syndicated programming, and most recently the explosion of websites) seems to parallel increasing volume shifts and volatility in the leading stock markets (Steinbock 1995, 2000b). Finally, in the 1990s, the news media—newspapers, magazines, and broadcast media, and their new outlets on the Internet—portrayed themselves as detached observers of market events, when in fact they themselves have been an integral part of these events. Of course, it would be naive to expect news stories to have a simple, predictable effect on the market. But it would be even more naive to downplay the role the news media play in setting the stage for market moves and in instigating the moves themselves (compare Shiller 2000, Chapter 4; Barber and Odean 2001). In effect, these developments have shaped the ability and skills of the companies to “manage” earnings expectations (compare Abarbanell and Lehavy 2000).

What made this diffusion all the more complicated with the mobility revolution is the fact that the mobile leaders were European companies. They were less familiar to American news media, which had the greatest influence on Wall Street because of proximity. In addition, many of these leaders, though often relatively old corporations, expanded initially in peripheral locations (particularly Northern Europe) that were less known to U.S. observers. Take the story of Nokia. Founded during the early industrialization of Finland, this equipment manufacturer—a company that initially had focused on forestry, then diversified into rubber, cable, and electricity—grew along with the national ambitions of a small country that had been ruled for centuries by its neighboring Sweden and Russia.

Almost 140 years old, it had endured Russian oppression, a Bolshevik revolution, an independence struggle, a civil war, a worldwide depression, two world wars, reparations, cyclical recessions, the collapse of Soviet trade, and the premature deaths of its key executives. Until recently, it was less known for cell phones than its rubber boots, winter tires, and toilet paper. Nokia’s global success in the wireless is very recent in terms of its history, but it did not happen “out of the blue” (see Steinbock 2001, 2002a, Chapter 10). Yet, that is precisely the way the company was first portrayed in the United States. Moreover, this depiction included cultural misunderstandings, which prompted hilarious chuckles in Finland but evolved into conventional wisdom in the major financial markets.

“When the legend becomes fact, print the legend,” says a character in John Ford’s The Man Who Shot Liberty Valance (1962). In the late 1990s, the wireless industry leaders became such legends. Even though financial markets operate globally, Wall Street remains the worldwide center of these markets. Consequently, individual and institutional investors pay close attention to the news media that most reflect and affect the Financial District. Nokia, for instance, had been founded in 1860s. In the 1970s and 1980s, it became well-known in Northern Europe. By the late 1990s, it was the most valuable company in Europe; and by the late 1990s, it was the most valuable company in Europe. The first major stories of Nokia, however, evolved only in August 1998, when Business Week published a flattering cover story on Nokia. This was the first in a slate of major features on the Finnish corporate giant in the world’s leading business and financial news media. It framed the expectations of the subsequent stories. The feature opened with a parallel of the Finnish sauna and Nokia’s strategy (Baker et al. 1998):

Behind his gentlemanly demeanor, Jorma Ollila, CEO of Nokia Corp., is a man of extremes. As his wife, Liisa Annikki, tells it, her husband fires up the Finnish sauna a good 15 degrees warmer than she likes it, all the way to 212°F—not hot enough to boil a pot of tea. It was a week after Easter when the Ollilas...
drove north from Helsinki for their first trip this year to the family’s lakeside cabin. Ice was still floating on Lake Pukala, and the kids challenged their father to dive in. Emerging from the sauna, Ollila paused, then plunged naked into the icy lake. Ollila, a 47-year-old former banker, lives by the plunge. He believes people get comfy and complacent and that it takes a dive into the unknown, or a push, to tap into their strongest instincts—those that guide survival. Six years ago, as an untested CEO, he bet the 133-year-old Finnish conglomerate on cellular phones, challenging rivals Motorola Inc and L.M. Ericsson. In the struggle that ensued, Ollila’s Finns outdid themselves. Fast and focused, with a canny eye for design, Nokia wrested market share from entrenched competitors and emerged as the most profitable player in the industry.

The metaphor of an existential gambler made a great intro, but was not exactly to the point. The story would be quite dramatic if it were not for the fact that such sauna habits are quite typical to the Finnish lifestyle. Every summer, hundreds of thousands of Finns cannot wait to leave the cities and escape to their country cottages and saunas. Moreover, many journalists projected on the Nokia management the rigid and CEO-driven structures of U.S. multinationals. Certainly, Ollila has shaped the strategy of the Finnish vendor since the early 1990s, but so has its group executive board. With little concrete knowledge of Finnish conditions or the small country’s history, and without more intimate understanding of Ollila’s personal biography, writers filled empty gaps with anecdotal curiosities and exotic projections. (The diffusion of the NTT DoCoMo story in Wall Street is not that different.) Thus was born a new myth of Nokia. The underdog that came from the cold. The arctic hero that invaded the world markets. The stereotype had little to do with facts but fit a tourist’s perspective.

Inadvertently, the Business Week story may have set a pattern to most Nokia profiles thereafter, from Forbes to Wired and Newsweek.

Lessons (That Should Have Been) Learned

Relying on two behavioral approaches— one in strategy and innovation, another in corporate finance—the present essay has explored the central characteristics of the great bull market of the 1980s and 1990s, from the broad standpoint of the ICT segments and the specific perspective of the wireless stocks.

A strategic view of the fundamentals, coupled with the approach of behavioral finance, may shed considerable light on the presumed efficiency of financial markets, particularly the millennium tech boom and the accompanying wireless boom, as well as the subsequent crashes, decline and stagnation.

In Shiller’s terms: Could the precipitating forces of the millennium tech bubble re-surface?

Déjà Vu of Precipitating Forces?

First, the Internet arrived in the U.S. businesses and consumer households during the second half of the 1990s, at a time of solid earnings growth. Spectacular U.S. corporate earnings growth in 1994 (up 36% in real terms as measured by the S&P Composite real earnings, followed by real earnings) growth of 8% in 1995 and 10% in 1996. Despite the temporal coincidence, the growth derived from the 1990-1991 recession, coupled with a weak dollar, strong demand for U.S. capital and technology exports, and cost-cutting by U.S. companies. Historically, such a convergence of forces was highly unique; in the future, a comparable recurrence is highly unlikely in general and no longer possible with the Internet and the wireless stocks, as the two industries have already penetrated and saturated the advanced markets (Steinbock 2003c). Second, the precipitating factors also included the collapse of Soviet Union and the subsequent U.S. triumphalism and relative decline of economic rivals. The eclipse of the Cold War was a historical milestone, and a one-time event.

Moreover, the new post-9/11 security policies, instability and uncertainty, coupled with perceptions of U.S. unilateralism have not only reduced U.S. economic triumphalism, but also contributed to an escalating twin deficit (compare Steinbock 2003c, 2003d).

Third, in the United States, the boom years were also boosted by the “Republican revolution.” In 1994, the Republican Congress and capital gains tax cuts boosted public confidence in the stock market. By 2003, the Bush administration was compelled to compromise its tax cuts, due to persistent opposition. At the same time, the Democrats did their utmost to make the “jobless recovery” and healthcare the priority issues of the 2004 presidential campaign (Meyerson 2003). Fourth: what about the demographic precipitating forces? Some have argued that the Baby Boom would boost the stock market. As Shiller (2000, pp. 25-28) has noted, these views neglect to consider when the Baby Boom should affect the stock market, just as they neglect such factors as the emergence of new capitalist economies worldwide and their stock demand.

Fifth: from the Reagan era to Clinton’s globalization years, cultural changes favored business success or the appearance thereof. After September 11, however, public surveys and opinion polls, as well as news media have paid attention to new cultural heroes and values. Since the late 1990s, sales of management books, for instance, have fallen at least 30 per cent, whereas the few titles achieving blockbuster status in 2003 make a point of eschewing big ideas (London 2003). Sixth, the cultural determinants were coupled with a rapid and extensive media expansion in business news, from CNN to CNNfn, CNBC, Bloomberg Television and other outlets. A result of the deregulation, the cable revolution shaped the subsequent segmentation of marketing and media campaigns (Steinbock 1995). While the new channels boosted the stock boom, the outlets have now been launched.
just as they have matured and consolidated. Consequently, further growth will be far more difficult. Seventh, there were the glowing, optimistic forecasts by the analysts. But much has changed in the past few years. The high-profile analysts of the past – particularly the gurus of the Internet and telecommunications – have become the high-profile misfits of the present. Some have been prosecuted; the investment banking industry is rapidly reorganizing as government investigations continue. “Suddenly corporate ethics officers are on the frontlines of the war against corporate America’s moral decline,” reported Fortune (Wheat 2002). Only time will tell, whether these changes and reforms are adequate and sustainable.

Eight, many precipitating factors involved finance and economics. In the past, changes in the nature of employee pension plans encouraged individual and institutional investors to rely on stocks as investments. But even as investors learned the value of long-term thinking, many ignored the basics of diversification. The painful market experiences of the recent past are likely to motivate investors to spread their allocations more evenly over available options (stocks, bonds), while fundamental doctrines have resurfaced, particularly that of diversification. Among the precipitating forces, the growth of mutual funds has certainly driven the market. In 1982, in the early bull market, there were only 340 equity mutual funds in the United States. By the late 1990s, the number had grown more than tenfold, and there were more equity mutual funds than stocks listed on the New York Stock Exchange. However, the proliferation of this investment vehicle has not only increased public attention on the market, but also encouraged speculative price movements in stock market aggregates. Ninth: through the 1980s and 1990s, the expansion of the volume of trade – vis-à-vis discount brokers, day traders, and 24 hour trading – contributed to the booming market, just as the propensity for greater risk taking may have been intensified by the dramatic rise of gambling opportunities. Tenth: low inflation is often perceived as a sign of economic prosperity, social justice, and good government, but the risks of deflation can threaten all of these positive achievements, particularly in a globalizing era.

In the coming years, a convergence of the precipitating forces is neither probable nor, with some determinants, possible. But in time, there will be a new “next big thing” to capture the imagination of the investor community. Twin drivers, though discredited, will remain a part of it.

Specialization and Globalization: Changing Industry Value Chain

By the 3G transition, wireless markets were driven by the shift from geographically constrained strategies to worldwide business strategies. Industry leadership has shifted to players that are best positioned to shape or dominate the industry value system, or the “business ecosystem.” The idea that market expansion goes hand in hand with vertical specialization is not new to economic thought. It originates from Adam Smith’s famous theorem that the division of labor is limited by the extent of the market, as well as Marshall’s ideas of external economies, difficulties of sustained industry leadership, and partial monopolies (compare Stigler 1951). Today, strategies guide industry developments, which industry leaders have expanded and leveraged worldwide (Exhibit 3).

Vendors and operators are no longer the sole agents of change. The bargaining power of new players in the value system – contractors, platform coalitions, software and chip players, content aggregators, and service houses–is on the rise. In the past, vendors and operators competed through gradual globalization; today, many players are forced to globalize in order to compete. As a result, risks have increased, along with opportunities. During the past half a decade, the fluctuating fortunes of the mobile leaders have been reflected in the highs/lows of the segment leaders’ stocks (contractors, infrastructure, handsets, operators), and in those of the new IT entrants (chips, operating systems/software) (Exhibit 4).

Contractors. Among contractors, the stock of Flextronics International fell 93.9%, but rebounded relatively quickly to 19.4% of its high of $44.91 (8/9/2000).

Infrastructure. Among infrastructure players, the fall of Ericsson was extraordinarily dramatic. At worst, it lost 98.7% of its value, while recovery has been slow and painful. Despite dramatic cost-cutting measures, it has risen to just 2.5% of its high of $263.13 (9/3/2000).

Handsets. Even the king of the handset makers Nokia, lost 88.2% of its peak value, but rebounded more rapidly than its direct rivals and most other mobile leaders to 25.6% of its high of $62.40 (23/6/2000).

Operators. Among operators, Vodafone has been the sovereign global leader. It lost 81.21% of its value, but rose relatively fast to 30.8% of its peak of $64.38 (9/3/2000). With the U.S.-based IT leaders, the losses were not quite as devastating because the valuations never reached as high.

Chips. Among chip players, Intel lost 82.9% of its value, but has rebounded to 24.6% of its high of $75.81 (1/9/2000).

Software and Operating Systems. Among software and operating systems players, Microsoft lost 66.44% of its value but has rebounded to 42.0% of its high of $59.97 (30/12/1999).

During the speculative bubble, the stock prices of the mobile and IT leaders have been far too volatile to be explained by fluctuations in economic factors, such as dividends or earnings. At times, much of the extra volatility
can be explained by fads and fashions that may have a great impact on investor decisions (Shiller 1981). In this regard, the influence of social psychology, particularly imitation and emulation, has long been recognized, from Mackay’s classic writings (1856) to Galbraith’s irreverent analyses (1993) and Shiller’s studies of information cascades (1995).

Specialization and Globalization: Portfolio Diversification

In the aftermath of World War II, U.S. stocks accounted for nearly 90% of the world’s equity capitalization. Today, the U.S. market makes up barely half of the world’s stock values. Until recently, the large U.S. investment community considered foreign markets too remote and risky. With deepening globalization, superior long-term returns on stocks are no longer unique to the United States. In theory, foreign investing ensures diversification by reducing total portfolio risk. Consequently, the amount invested in each country depends not just on the investor assessment of the risk and expected return in each country, but also on the correlation of returns between countries. With deepening globalization, this correlation increased to record levels at the end of the 1990s.

As individual and institutional investors have accelerated their quest for a rapid-growth El Dorado, increasing familiarity with foreign markets has gone hand in hand with rising risks. The crash of the emerging markets in 1997-1998, the long bear market in Japan, the fall of the European market – all of these developments have contributed to increasing caution, even prior to the terror premium of September 11, 2001. Unsurprisingly, perhaps, the multiple effect of these contributing factors has underscored the significance of country risk as an important driver of markets. As The Financial Times noted in April 2003 (Hargreaves 2003; Goetzmann et al., 2001, Dimson et al. 2001).

In the 20 years to the beginning of the bear market in March 2000, national stock markets moved in near-harmony. In the 1990s, the prices of individual company stocks also became increasingly correlated, more likely to move in line with their sectoral peers than their domestic markets. At the time, this trend appeared inevitable, part of the seemingly unstoppable globalisation of the world economy. Today, however, the process is going into reverse. With the bear market entering its fourth year and geopolitical tensions on the increase, stock performance is diverging widely within sectors.

In 1998, Geoffrey A. Moore and his colleagues laid out a “winning” investment strategy for high-tech stocks. It advocated restricting investments to a handful of companies that enjoy extraordinary competitive advantage, which the authors called “gorillas,” i.e., companies that appear to dominate their sectors. The logic emulated the historical record of winning high-tech stocks, particularly since the 1980s. In the aftermath of the market decline and technology stagnation, the authors
quickly “revised their groundbreaking guide to take into account the astonishing performance... of Internet-related stocks.” In 2001, Alfred Rappaport, an expert in issues of shareholder value, and Michael J. Mauboussin, chief U.S. investment strategist at Credit Suisse First Boston, published Expectations Investing, a fashionable read in Wall Street, and one that advocated comparable investment strategies for “reading stock prices for better returns.” What kind of gorillas and expectations investing might the investment communities find in the wireless universe?

### Exhibit 4: Mobile Communications: From Boom to Bust; Sample of Segment Leaders (April 1998 - April 2003)

#### Contractors
- **Flextronics International**
  - Latest: 3 Apr 03
  - High: 8 Sep 00
  - Low: 4 Sep 98
  - Price $/%: 8.70 44.91 2.75

#### Infrastructure
- **Telefonaktiebolaget Ericsson**
  - Latest: 11 Apr 03
  - High: 9 Mar 00
  - Low: 4 Oct 02
  - Price $/%: 6.70 263.13 3.40

#### Handsets
- **Nokia Corporation**
  - Latest: 25 Apr 03
  - High: 23 Jun 00
  - Low: 9 Oct 98
  - Price $/%: 16.00 62.50 7.38

#### Chips
- **Intel Corporation**
  - Latest: 17 Apr 03
  - High: 1 Sep 00
  - Low: 11 Oct 02
  - Price $/%: 18.66 75.81 12.95

#### Software
- **Microsoft Corporation**
  - Latest: 25 Apr 03
  - High: 30 Dec 99
  - Low: 21 Dec 00
  - Price $/%: 25.21 59.97 20.13

#### Operators
- **Vodafone Group PLC**
  - Latest: 17 Apr 03
  - High: 9 Mar 00
  - Low: 5 Jul 02
  - Price $/%: 19.85 64.38 12.10
The Next “Next Big Thing”

In the past, the transition of platforms in wireless communications had been largely an intra-industry affair. With the convergence of mobility and the Internet, the opposition between European-based wireless leaders and U.S.-based IT leaders was magnified by differences in evolution. In wireless communications, the industry had advanced from the pre-cellular era to analog and digital cellular and was amidst the transition to multimedia cellular. In the IT world, the industry had evolved from mainframes, minicomputers, and personal computers to Internet-enabled systems, which were amidst mobilization. Wireless leaders were transitioning from voice to data; IT leaders from data to voice. Since the end of the 1990s, the most recent layer of the wireless value chain (enablers, services) has been the terrain of two conflicting visions of convergence – one has been promoted by the mobile leaders, another by the IT leaders, i.e., the “Wintel” giants (Microsoft and Intel) and America Online. The mobile vision has a roadmap from voice communications to data communications. These European industry leaders argue that the mobile business is inherently different from the IT business. This vision stresses vertical coordination in which the dominant players provide end-to-end solutions. The IT vision has been advocated by the U.S. based IT leaders. Their vision has a roadmap from data to voice. These leaders say that the mobile business is not inherently different from the IT business; rather, it is morphing into the IT business. From their standpoint, the mobile business is just another PC industry. The IT leaders cultivate a vision, which emphasizes horizontalization rather than vertical coordination (Exhibit 5). Until the mid-1980s, AT&T was U.S. mobile communications. Today, the industry value chain has both specialized and globalized. In particular, the power of the two central players over the value system – (primarily European) vendors and operators – is steadily eroding as a result of increasing specialization, industry outsourcing of manufacturing capabilities to highly cost-efficient (primarily Asian) players, and the entry of (primarily United States-based) IT leaders. From the pre-cellular era to the present, the impact of globalization drivers has gradually moved from the upstream activities toward the downstream activities; this influence has been relentless.

With the migration of strategic activities, it is almost inevitable that the financial valuations, in the coming years, will again over-assess those activities (downstream value) and players (segment leaders) that possess the greatest opportunities to make the future. By the same token, these valuations are likely to underestimate the risks inherent in these efforts, as well as the investments required for industry leadership. Among European mobile leaders, the likely gorilla candidates comprise vendors such as Nokia and operators such as Vodafone, as well as their followers and imitators. Among U.S. IT leaders,
the likely candidates include software giants such as Microsoft and chip leaders like Intel. In addition to these incumbent players, the new candidates are bound to include the successors of U.S. dotcoms and Euro-mobcoms, i.e., new globalizers that are poorly known. The first signs are already present. “American investors have shaken off their funk over the dotcom bust to chase a small group of Chinese Internet-portal stocks to dizzying levels,” reported Financial Times in June 2003. Sina Sohu and NetEase were the biggest beneficiaries of the return to “Internet mania” on the Nasdaq stock market. Typically, wireless services accounted for half of NetEase’s first quarter revenues, whereas other new gorillas made their money in online gaming. Due to China’s low Internet penetration (less than 5 per cent), the market bulls considered the Chinese portals under-rather than over-valued (Waters and Dickie 2003, Dickie 2003).

During the past century, there have been four major valuation peaks, including the accompanying periods of excessive investments and panic reversals. In the wireless business, each phase has given rise to winners and losers. Industry leaders that have managed to weather the speculative bubbles have emphasized long-term strategies, patient resource allocation policies, and fundamentals instead of financials. These winners include Marconi’s international wireless empire during the 20th century tech boom, Paul Galvin’s Motorola in the aftermath of World War II, I.M Ericsson’s digital R&D and the independent operators in the postwar boom, as well as Nokia and Qualcomm at the peak of the millennium tech boom.

Growth, decline, and stagnation have occurred between these extraordinary price spikes. In terms of generations of investors, the incremental periods have been relatively slow and long, while the speculative bubbles have been fast and brief. The absence of historical memory can be attributed to these circumstances, which appear to render investor communities vulnerable to speculative bubbles and to the accompanying growth and focus strategies, which ignore investment fundamentals (diversification across sectors and geographies). The decline of historical memory, especially in fast-paced technology investing, softens the critical capabilities of industry practitioners and financial analysts. Unfortunately, current circumstances provide few incentives for fundamental strategies and long-term thinking.

Endnotes

1 Examples of irrational behavior and repeated errors in judgement have been documented in a multitude of academic studies. In Against The Gods, for instance, Peter L. Bernstein (1996) argues that the evidence “reveals repeated patterns of irrationality, inconsistency, and incompetence in the ways human beings arrive at decisions and choices when faced with uncertainty.”

2 These researchers include Daniel Kahneman (Princeton), Meir Statman (Santa Clara), Richard Thaler (University of Chicago), Robert J. Shiller (Yale), and Amos Tversky, who passed away in 1996 and is often cited as the forefather of the field. There are also money managers (e.g., LSV Asset Management, Fulle & Thaler Asset Management, David Dreman and Ken Fisher) that invest based on behavioral finance theories.

3 Prior to his 10th anniversary as chairman of the Fed, noted Business Week a few months later, “Alan Greenspan finds himself in the unlikeliest of positions: The staunch conservative who once personified industrial-era economic thinking has turned into the avant-garde advocate of the New Economy” (Foust 1998). The use of the term “new economy” had started in the early 1990s, as Business Week and other U.S. publications seized it to describe a technology-driven, fast-growing, low-inflation economy. The current use of the term “new economy” dates back to the early 1980s, when it referred to an economy driven by services rather than manufacturing (Mandel 2000). Thus, a well-known 1981 book was entitled Services: The New Economy. And the New Economy Fund, a mutual fund started in 1983, only invested in services-sector companies. Prior to the 1990s, the concern was that the service driven new economy would be marked by slow growth, rising prices, and the creation of armies of low-wage jobs. Most of these conceptualizations can be understood as reformulations of Daniel Bell’s (1973) thesis on the predominance of services in a post-industrial society.

4 Reasons for these delays included regulatory delays (FCC’s failures) and mistakes (lack of international roaming, wrong pricing policies), antitrust actions (the breakup of AT&T and the ensuing fragmentation of Bell Labs), in-fighting (broadcast vs. wireless lobby), spectrum scarcity (the role of the military), complacency and short-term industry foresight (slow migration to digital, slow entry into foreign markets). Togeth er – coupled with the breakup of AT&T and the fragmentation of the classic Bell Laboratories, as well as the escalating decentralization of corporate R&D – all these measures hindered wireless innovation at a time, when it accelerated in Euro-Nordic countries and Japan (see Steinbock 2002, Chapter 4).

5 Of this subtotal, the four leading segments – Internet portals, Internet infrastructure services, Internet business-to-business software, and Internet infrastructure – accounted for almost 67%. At the same time, financial stakes have accelerated dramatically. In the early 1980s, the tech IPO proceeds had been around $300 to $600 million; by 1999, they had soared to almost $28 billion. Concurrently, the total amount raised in the tech sector increased from some $1.5 billion to some $45 billion.

6 While neither dependence necessarily implies the other, it was this combination that made the Finnish situation unusual and, in adverse circumstances, vulnerable (Steinbock 2003b, Chapter 4).

7 Even after controlling for risk and size, losing firms earn excess returns, particularly in the smaller declines (Chopra et al. 1992).

8 On models that seek to incorporate the representa tive heuristic as a source of overconfidence, see Barberis et al. (1997) and Daniel et al. (1998). On models that aspire to include success as a source of overconfidence, see Gervais and Odean (2001).

9 Dividing a portfolio across several different sectors should ensure lower risk than investing in just a single sector. A lower correlation translates to higher diversification gains, just as a higher correlation means a lower diversification gains. The degree of asynchronous movements of returns between sectors is measured by the correlation coefficient.

10 As companies internationalize, it has become less important which country serves as their headquarters. Similarly, the ever-faster flow of information across the world has boosted correlations between returns. There is also a very high correlation of the returns of technology, media, and telecom stocks (TMT) between countries. For an excellent introduction to these risks and opportunities of global investing, see Siegel (2002, Chapter 10).
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