

COPY RIGHT



ELSEVIER
SSRN

2020 IJEMR. Personal use of this material is permitted. Permission from IJEMR must be obtained for all other uses, in any current or future media, including reprinting/republishing this material for advertising or promotional purposes, creating new collective works, for resale or redistribution to servers or lists, or reuse of any copyrighted component of this work in other works. No Reprint should be done to this paper, all copy right is authenticated to Paper Authors

IJEMR Transactions, online available on 16th Jul 2020. Link

[:http://www.ijiemr.org/downloads.php?vol=Volume-09&issue=Issue 07](http://www.ijiemr.org/downloads.php?vol=Volume-09&issue=Issue 07)

10.48047/IJEMR/V09/ISSUE 07/41

Title **THE DOT-COM BUBBLE**

Volume 09, ISSUE 07, Pages: 331-343

Paper Authors **Hriday Gandhi , Anuradha Jha**



USE THIS BARCODE TO ACCESS YOUR ONLINE PAPER

To Secure Your Paper As Per **UGC Guidelines** We Are Providing A Electronic Bar Code

THE DOT-COM BUBBLE

Hriday Gandhi¹ & Anuradha Jha²

¹ Student of BALLB Course at University School Of Law & Legal Studies

² Faculty at Guru Gobind Singh Indraprastha University

Abstract

The Dot-com Bubble or the Tech Bubble was a speculative bubble in the shares of early internet companies called “Dot-coms.” The stock market bubble was caused by excessive speculation in Internet-related companies in the late 1990s, a period of massive growth in the use and adoption of the Internet. Sadly, though, for many of these companies, the realities of basic traditional accounting still stood firm. The dot-com Super Bowl was the high-water mark for this first wave of web-based companies, most of which wouldn’t exist within just a few years. By the end of the stock market downturn of 2002, stocks had lost \$5 trillion in market capitalisation since the peak. At its trough on October 9, 2002, the NASDAQ-100 had dropped to 1,114, down 78% from its peak. And thus, the dot-com bubble burst leading to some Companies surviving and consolidating such as Google, Amazon, et cetera and a bright future ahead of them next to the ashes of the other dot-com companies.

Introduction

The origin of the name “dot-com” lies in the suffix that is added to a website on the internet when accessing it from a web browser. For example, to access Wikipedia we would have to type in its complete address on our browser, that is, www.en.wikipedia.com. This would lead us to the desired website.

It really is as simple as that, all that information - all those websites available to a person right from his home, accessible at anytime he or she wishes. No one could argue against the potential of this technology. And this is the basis of the Dot-Com Bubble. Most investors saw the potential that these companies had and thus led to massive increases in the prices of the shares.

Let us go back to the 1990s, at this time

personal computers were becoming increasingly common for both business and personal use. Now that computers were finally becoming reasonably priced and relatively user-friendly, they were no longer relegated to being the domain of geeky hobbyists.

Personal computers had become genuinely useful business tools that granted their users a significant boost in productivity. Business applications were invented to help users with a variety of tasks from accounting to tax preparation to word processing. Computers also began to compete with television as a form of entertainment as PC video games entered the marketplace. The operating system company Microsoft prospered enormously as almost every computer system sold had their software installed on it.

Soon the American computer industry decided to focus primarily upon computer software development instead of designing and manufacturing computer hardware. The reason for this focus was because computer software was a product with very high profit margins, unlike computer hardware. Software companies generated profits by selling licensed software, which costs very little to reproduce. Computer hardware, however, was rapidly becoming a commodity product or a product that is virtually indistinguishable from the product of any other competitor, which forces companies that are manufacturing such products to strongly compete on price. Asian companies, with their low manufacturing costs, produced virtually all computer hardware components by the 1990s. Software, however, was protected as intellectual property with patents, which created a strong barrier to entry – a benefit that is highly sought after in business.

This was the backdrop of the beginnings of the Bubble. It becomes imperative now to discuss in economic terms as to what a bubble actually is.

It would seem that a natural starting place for any discussion on bubbles is to set out what is actually meant by the word "bubble." Unfortunately, even this definitional step is problematic. Peter Garber, in his book *Famous First Bubbles*, argues that a bubble is "a fuzzy word filled with import but lacking any solid operational definition."¹ He suggests that a

bubble is best viewed as "a price movement that is inexplicable based on

fundamentals." Under this view, bubbles could be positive or negative. Alternatively, he notes that Palgrave's *Dictionary of Political Economy*², states that a bubble is "any unsound undertaking accompanied by a high degree of speculation."³ Of course, one challenge with this definition is that one can only know something is unsound *ex post*, suggesting that a bubble can only be determined after it has occurred.

Charles Kindleberger, in his book *Manias, Crashes, and Panics* (1996), proposes that "a bubble is an upward price movement over an extended range that then implodes."⁴ A related notion was explored by James Van Home in his AFA Presidential Address "Of Financial Innovation and Excesses" (1985). He argued that "a balloon might be a better metaphor for certain financial promotions. It is blown up, to be sure, but not to the extent that it pops. The eventual deflation is less abrupt."⁵ I suspect that those uncomfortable with the word bubble will not find much solace in the balloon concept either. Perhaps, a less controversial approach is to adopt Brunnermeier's (2007) description that "bubbles are typically associated with dramatic asset price increases, followed by a collapse."⁶

But what could cause bubbles? Interestingly, there is a long history of potential explanations to this question. Adam Smith (1776) argued that that it was due to "overtrading." While this term appears a bit vague today, it apparently was better understood in earlier periods. Lord Overstone, writing in the 1860s, explained asset price behaviour as arising

from a cycle, beginning with quiescence, and then moving on to improvement, confidence, prosperity, excitement, overtrading, convulsion, pressure, and stagnation, before returning finally to

¹ Garber (2000), Famous First Bubble

² Palgrave, R. (Ed.). (2015). *Dictionary of Political Economy* (Cambridge Library Collection - British and Irish History, 19th Century). Cambridge: Cambridge University Press. doi:10.1017/CBO9781316106617

³ *ibid*

⁴ Kindleberger, (1996), *Manias, Crashes, and Panics*

⁵ See Van Home (1985), p.628

⁶ Brunnermeier (2007), p. 2

quiescence.⁷ While this detailed cyclical approach seems promising, it does leave unanswered the question of what starts all of this in the first place? Kindleberger (1996) suggests that it is "displacement," which he defines as "some sudden advance many times unexpected."⁸ Wicksell argued instead, that it was due to interest rates being too low. A related explanation was put forth by N. W. Posthumus (1929), who attributed it to the entrance of nonprofessional buyers fuelled by credit.⁹

The following are the Theories of bubbles:

1. Rational Traders, Rational Markets

1.1. Neo-classical economics generally views market behaviour as the aggregation of individual behaviour. In an important paper, Tirole (1982) demonstrated that if traders have completely rational expectations and the same information sets,

then bubbles would not occur. This general equilibrium result on the nonexistence of bubbles essentially arises because any transaction in a bubble that would make the seller better off would make the buyer worse off, and so, given that they have the same information sets, no trade would actually occur. Brunnermeier (2007) demonstrates how a similar nonexistence result can arise in a finite horizon partial equilibrium model in which rational traders are unconstrained in their ability to sell (or short-sell) the

1.2. Rational bubbles can occur in infinite horizon models although the conditions needed to support them are fairly stringent and generally require that the asset price bubble not emerge over time, but instead predate the trading of the asset. Similarly, if there is asymmetric information, then bubbles can arise even in finite economies. A more recent literature has exploited an inability to arbitrage to support the existence of rational bubbles.

2. Rational Traders, Irrational Markets

2.1. An alternative view in history is that bubbles can emerge if traders are rational, but markets are irrational. Kindleberger (1996), for example, has a subchapter entitled "Rationality of the Individual, Irrationality of the Markets." What drives this market

irrationality for Kindleberger is the fallacy of composition. Each trader believes that he can sell at a higher price, and if he can, in fact, do so, then it is rational for him to

⁷ Kindleberger (1996), p.83

⁸ *ibid*

⁹ Cited in Garber (2000)

buy. But, Kindleberger argues that not everyone in the market can do so, so it is irrational for the market as a whole.

2.2. A variant on this irrationality of the market theme underlies Keynes' (1935) famed beauty contest analogy. Keynes argued that individuals do not pick stocks based on what they think the firm is worth, but rather on what they think other people will think it is worth (the beauty contest).¹⁰ So in this setting, each individual is acting rationally but the market overall is not. This behaviour is captured in the famous dictum generally attributed to Keynes that "Markets can stay irrational longer than you can stay solvent."

3. Irrational Traders, Irrational Markets

3.1. Perhaps not surprisingly, another approach to explain bubbles supplements irrational markets with irrational traders. The notion that somehow markets are swept up in "manias," and that this can cause bubbles is a recurrent theme

in Kindleberger (1996). But echoes of this sentiment can be found much earlier. Issac Newton, for example, who in addition to his many well-known accomplishments was also a disappointed investor in the South Sea Bubble, opined that "I can calculate the motions of heavenly bodies, but not the madness of people."¹¹ Indeed, VanHorne (1985) expresses a

similar sentiment 200 years later when he writes "A bubble implies irrational behaviour ... A speculative fever eventually grips them."¹²

3.2. James Surowiecki (2004), in his book *The Wisdom of Crowds*, draws attention to Charles MacKay's (1841) *Extraordinary Popular Delusions and the Madness of Crowds*. MacKay had a dim view of the intelligence of individual traders, and an even dimmer view of the collective intelligence of the market, commenting, "Men, it is well said, think in herds. It will be seen that they go mad in herds, while they only recover their sense slowly, and one by one."¹³ Clearly, MacKay might feel right at home reading some of today's behavioural research. But he is not alone in expressing these sentiments. Bernard Baruch, the famous Wall Street investor of the early 1900's, took an even dimmer view of the rationality of the market, opining: "Anyone taken as an individual is tolerably

sensible and reasonable - as a member of a crowd, he at once becomes a blockhead."¹⁴

¹⁰ See Keynes, *The General Theory of Employment, Interest and Money*, p. 156.

¹¹ Cited in Malkiel (1985), *Random Walk Down Wall Street*, p. 37.

¹² See Van Home (1985), p. 627-28.

¹³ See Surowiecki (2004), *The Wisdom of Crowds*, p. xv.

¹⁴ *ibid*

4. Irrational Traders, Rational Markets

4.1. Finally, we can expand the taxonomy to consider irrational traders and rational markets. Here, Garber's (2000) analysis of the "Tulip Bubble" may come into play. Often cited as a quintessential example of a bubble, the tulip bubble arose in Holland in the years 1634-1637. During this period, tulip bulb prices rose dramatically, with prized specimens allegedly selling for the equivalent of more than \$30,000. Starting in 1637, however, prices collapsed, ending the first of the great bubble episodes.

4.2. Garber (2000) argues, however, that it is not clear there was a bubble at all. His thesis is that new species of tulips are always prized, with their prices often increasing dramatically and then falling rapidly thereafter. Data problems in ascertaining actual

tulip prices are nontrivial at this time, but there appeared to be no economic distress following the end of the craze as might have been expected in a bubble. Moreover, the role of the bubonic plague decimating Europe at that time may have played a role. He concludes that this "was no more than a meaningless winter drinking game, played by a plague-ridden population that made use of a vibrant tulip market." He further argues that: "The wonderful tales from the tulip-mania are catnip irresistible to those with a taste for crying bubble, even when the stories are obviously untrue. So perfect are they for didactic use that financial moralisers will always find a ready market for them in a world filled with investors ever fearful of a financial Armageddon."¹⁵

4.3. Whether there was or was not a tulip bubble is beyond my scope here, but the contention that the market may not have been out of line even though traders were pursuing potentially irrational strategies is interesting. Certainly, the historian Thomas Carlyle did not believe this, noting, "I do not believe in the collective wisdom of individual ignorance."¹⁶ But a modern view more sympathetic to the market is

exposed by Ross (2005), who has argued that modern finance never said, nor required, that

individual investors be rational. What matters is that there are a few sharks, or arbitrageurs, who wait for opportunities and then pounce. This makes markets behave "rationally" even if individual participants may be irrational. To the extent that this occurs, then we are back to the "no bubbles" outcome even with irrational traders.

¹⁵ See Garber (2000), p. 83

¹⁶ *supra* Note 13

Humble Beginnings

By 1994, the internet first became available to the general public. A primitive form of the internet called ARPANet had been around since 1969 and was created by government agencies as an efficient way to exchange scientific and military information to computers in different locations. During the mid-1990s, the internet had evolved as a way for people to communicate via email, use chat rooms and browse websites.

Almost immediately, businesses saw the internet as a significant profit opportunity. America Online (AOL) made the internet available to the general public on a large scale. The Yahoo! search engine and internet portal was started in 1994 as a directory of websites. The retailer Amazon.com became the first online book retailer in 1994. eBay was started in 1995 as an online auction site. As the internet became increasingly commercialised, many online businesses and their founders grew fantastically

wealthy. Technology stocks continued to soar and created a very strong incentive for more technology companies to become publicly traded. Many early tech company shareholders, including employees, became millionaires overnight when their companies IPO'd. Tech companies continued to pay their employees in stock options, which profited greatly as long as stocks maintained their strong upward trajectory. By the late 1990s, even some tech company secretaries had option portfolios valued in the millions, while several companies offered BMWs as a sign-on bonus for new employees! This was clearly an example of irrational exuberance.

But the major incident to which the beginning to the bubble can be attributed is the 1993 release of Mosaic and subsequent web browsers gave computer users access to the World Wide Web, greatly popularising use of the Internet.¹⁷ Internet use increased as a result of the reduction of the "digital divide" and advances in connectivity, uses of the Internet, and computer education. Between 1990 and 1997, the percentage of households in the United States owning computers increased from 15% to 35% as computer ownership progressed from a luxury to a necessity.¹⁸ This marked the shift to the Information Age, an economy based on information technology, and many new companies were founded.

At the same time, a decline in interest rates increased the availability of

capital.¹⁹ The

Taxpayer Relief Act of 1997, which lowered the top marginal capital gains tax in the United

¹⁷ Kline, Greg. "Mosaic started Web rush, Internet boom". *The News-Gazette*. April 20, 2003

¹⁸ "Issues in labor Statistics" (PDF). U.S. Department of Labor. 1999.

¹⁹ Weinberger, Matt. "If you're too young to remember the insanity of the dot-com bubble, check out these pictures". *Business Insider*. February 3, 2016

States, also made people more willing to make more speculative investments.²⁰ Alan

Greenspan, then-Chair of the Federal Reserve, allegedly fuelled investments in the stock market by putting a positive spin on stock valuations.²¹ The Telecommunications Act of 1996 was expected to result in many new technologies from which many people wanted to profit.²²

Mosaic was soon overthrown from its crown by Navigator, a newer browser with significantly better interface in 1995, by the company Netscape Communication and this is when the gold rush began. Despite, losing money to running costs, the owners of the Company decided to celebrate and take the Company public. Normally, investors look at a Company's portfolio and decide on the basis of its profit-making ability and other factors; but in this case as discussed in the previous part, the investors chose to ignore that as almost

everybody who had to access internet back then used Navigator, and the number was only predicted to rise.

On the first day of trading, the stock price of Netscape Communications doubles in value with demand pushing market capitalisation to ~\$2.7 billion. Thus, becoming a huge success and achieving a feat in minutes, for which other Companies took years. Their success inspired other entrepreneurs to market their ideas and start companies. The beginnings of Mark Cuban, Elon Musk and other famous entrepreneurs of today owe their wealth to the dot-com bubble. And thus, the floodgates were open.

²⁰ "Here's Why The Dot Com Bubble Began And Why It Popped". *Business Insider*. December 15, 2010.

²¹ Teeter, Preston; Sandberg, Jorgen (2017). "Cracking the enigma of asset bubbles with narratives". *Strategic Organization*. 15 (1): 91–99. doi:10.1177/1476127016629880

²² Litan, Robert E. "The Telecommunications Crash: What To Do Now?". *Brookings Institution*. December 1, 2002

Hallelujah! Its Raining Money

The booming economy and stock market of the late 1990s inspired some economists to speculate that we were in a “New Economy” in which inflation was virtually nonexistent and where recessions were a relic of the past. According to this logic, the “Old Economy” represented traditional brick-and-mortar businesses, which included sectors such as natural resources and retail stores. Some analysts even believed that corporate earnings and other financial data were not relevant for analysing and investing in technology and internet-related stocks.

From 1996 to 2000, the NASDAQ stock index exploded from 600 to 5,000 points. “Dot-com” companies run by people who were barely out of college were going public and raising hundreds of millions of dollars of capital. Many of these companies lacked clear business plans and even more had no earnings whatsoever to speak of. For example, Pets.com, which had intended to become an online pet products retailer, was losing money before it went public and raised billions of dollars. Numerous dot-com companies wasted millions of dollars on frivolous parties to celebrate their IPOs. There are even stories of dot-com employees who walked around their offices barefoot and played foosball and video games during the work day. At the peak of the dot-com bubble in 1999, it was said that a new millionaire was created every 60 seconds in Silicon Valley.

Further, in 1999, shares of Qualcomm

rose in value by 2,619%, 12 other large-cap stocks each rose over 1,000% value, and seven additional large-cap stocks each rose over 900% in value. Even though the Nasdaq Composite rose 85.6% and the S&P 500 Index rose 19.5% in 1999, more stocks fell in value than rose in value as investors sold stocks in slower growing companies to invest in Internet stocks.²³

An unprecedented amount of personal investing occurred during the boom and stories of people quitting their jobs to engage in full-time day trading were common.²⁴ The news media took advantage of the public's desire to invest in the stock market; an article in *The Wall Street Journal* suggested that investors “re-think” the “quaint idea” of profits, and CNBC reported on the stock market with the same level of suspense as many networks provided to the broadcasting of sports events.²⁵

²³ Norris, Floyd. “The Year In The Markets; 1999: Extraordinary Winners And More Losers”. *The New York Times*. January 3, 2000

²⁴ Kadlec, Daniel. “Day Trading: It's a Brutal World”. *Time*. August 9, 1999

²⁵ Teeter, Preston; Sandberg, Jorgen (2017). “Cracking the enigma of asset bubbles with narratives”. *Strategic Organization*. 15 (1): 91–99. doi:10.1177/1476127016629880.

At the height of the boom, it was possible for a promising dot-com company to become a public company via an IPO and raise a substantial amount of money even if it had never made a profit—or, in some cases, realised any material revenue. People who received employee stock options became instant paper millionaires when their companies executed IPOs; however, most employees were barred from selling shares immediately due to lock-up periods.²⁶

Most dot-com companies incurred net operating losses as they spent heavily on advertising and promotions to harness network effects to build market share or mind share as fast as possible, using the mottos "get big fast" and "get large or get lost". These companies offered their services or products for free or at a discount with the expectation that they could build enough brand awareness to charge profitable rates for their services in the future.²⁷

The "growth over profits" mentality and the aura of "new economy" invincibility led some companies to engage in lavish spending on elaborate business facilities and luxury vacations for employees. Upon the launch of a new product or website, a company would organise an expensive event called a dot-com party.²⁸

²⁶ Smith, Andrew (2012). *Totally Wired: On the Trail of the Great Dotcom Swindle*. Bloomsbury Books. ISBN 978-1-84737-449-3.

²⁷ Berlin, Leslie. "Lessons of Survival, From the Dot-Com Attic". *The New York Times*. November 21, 2008

²⁸ Cave, Damien. "Dot-com party madness". *Salon*.

April 25, 2000

The Peak & The End of a Century

On January 31, 1999, a total of two Dot-Com companies had purchased ad spots for Super Bowl XXXIII.²⁹ Around the turn of the millennium, spending on technology was volatile as companies prepared for the Year 2000 problem. There were concerns that computer systems would have trouble changing their clock and calendar systems from 1999 to 2000 which might trigger wider social or economic problems, but thanks to large-scale efforts to correct the bug before the year 2000, there was virtually no impact or disruption.

On January 30, 2000, almost 20 percent [12 ads] of the 61 ads for Super Bowl XXXIV were purchased by dot-com's (however this estimate ranges from 12-19 companies depending on the source and the context in which the term "dot-com" company implies). At that time, the cost for a 30-second commercial has been quoted anywhere from \$1.9m - \$2.2m, and adjusting for inflation that equates to a cost per ad spot of \$2,901,073 - \$3,359,137 in 2020.³⁰

In February 2000, with the Year 2000 problem no longer a worry, Alan Greenspan announced plans to aggressively raise interest rates, which led to significant stock market volatility as analysts disagreed as to whether or not technology companies would be affected by higher borrowing costs.

On March 10, 2000, the NASDAQ Composite stock market index peaked at 5,048.62.³¹ On March 13, 2000, news that Japan had once again entered a recession triggered a global sell off that disproportionately affected technology stocks.³²

On March 15, 2000, Yahoo! and eBay ended merger talks and the Nasdaq fell 2.6% but the S&P 500 Index rose 2.4% as investors shifted from strong performing technology stocks to poor performing established stocks.³³

²⁹ Beer, Jeff (2020-01-20). "20 years ago, the dot-coms took over the Super Bowl". Fast Company. Retrieved 2020-03-02.

³⁰ Pender, Kathleen (2000-09-13). "Dot-Com Super Bowl Advertisers Fumble / But Down Under, LifeMinders.com may win at Olympics". SFGate. Retrieved 2020-03-02.

³¹ Long, Tony (March 10, 2010). "March 10, 2000: Pop Goes the Nasdaq!". Wired.

³² "Nasdaq tumbles on Japan". *CNN*. March 13, 2000.

³³ "Dow wows Wall Street". *CNN*. March 15, 2000

On March 20, 2000, Barron's featured a cover article titled "Burning Up; Warning: Internet companies are running out of cash—fast", which predicted the imminent bankruptcy of many Internet companies.³⁴ This led many people to rethink their investments.

On April 3, 2000, judge Thomas Penfield Jackson issued his conclusions of law in the case of *United States v. Microsoft Corp.* (2001) and ruled that Microsoft was guilty of monopolisation and tying in violation of the Sherman Antitrust Act. This led to a one-day 15% decline in the value of shares in Microsoft and a 350-point, or 8%, drop in the value of the Nasdaq. Many people saw the legal actions as bad for technology in general.³⁵

On Friday, April 14, 2000, the Nasdaq Composite index fell 9%, ending a week in which it fell 25%. Investors were forced to sell stocks ahead of Tax Day, the due date to pay taxes on gains realised in the previous year. By June 2000, dot-com companies were forced to rethink their advertising campaigns. On November 9, 2000, Pets.com, a much-hyped company that had backing from Amazon.com, went out of business only nine months after completing its IPO.³⁶ By that time, most Internet stocks had declined in value by 75% from their highs, wiping out \$1.755 trillion in value.³⁷

³⁴ Willoughby, Jack. "Burning Up; Warning: Internet companies are running out of cash—fast". *Barron's*. March 10, 2010.

³⁵ 253 F.3d 34

³⁶ "Pets.com at its tail end". *CNN*. November 7, 2000.

³⁷ Kleinbard, David. "The \$1.7 trillion dot.com lesson". *CNN*. November 9, 2000

Reality Check & Recession

In January 2001, just three dot-com companies bought advertising spots during Super Bowl XXXV: E-Trade, operator of an electronic trading platform, and two employment websites:

Monster.com and Yahoo! HotJobs.³⁸ The September 11 attacks accelerated the stock-market drop later that year.

Investor confidence was further eroded by several accounting scandals and the resulting bankruptcies, including the Enron scandal in October 2001, the WorldCom scandal in June 2002,³⁹ and the Adelphia Communications Corporation scandal in July 2002.

By the end of the stock market downturn of 2002, stocks had lost \$5 trillion in market capitalisation since the peak.⁴⁰ At its trough on October 9, 2002, the NASDAQ-100 had dropped to 1,114, down 78% from its peak. Many online shopping companies, such as Pets.com,

Webvan, and Boo.com, as well as communication companies, such as Worldcom, NorthPoint Communications and Global Crossing, failed and shut down.⁴¹ Others, such as Cisco, whose stock declined by 86%, and Qualcomm, lost a large portion of their market capitalization but survived, and some companies, such as eBay and Amazon.com, lost value but recovered quickly. Needless to say, the New Economy theory was proven wrong and traditional economic principles still hold.

After venture capital was no longer available, the operational mentality of executives and investors completely changed. A dot-com company's lifespan was measured by its burn rate, the rate at which it spent its existing capital. Many dot-com companies ran out of capital and went through liquidation.

³⁸ Elliott, Stuart. "In Super Commercial Bowl XXXV, the not-coms are beating the dot-coms". *The New York Times*. January 8, 2001

³⁹ Beltran, Luisa. "WorldCom files largest bankruptcy ever". *CNN*. July 22, 2002

⁴⁰ Gaither, Chris; Chmielewski, Dawn C. "Fears of Dot-Com Crash, Version 2.0". *Los Angeles Times*. July 16, 2006

⁴¹ Kumar, Rajesh. *Valuation: Theories and Concepts*. Elsevier. December 5, 2015

Conclusion

As growth in the technology sector stabilised, companies consolidated; some, such as Amazon.com, eBay, and Google gained market share and came to dominate their respective fields. The most valuable companies are now in the technology sector.

In a 2015 book, venture capitalist Fred Wilson, who funded many dot-com companies and lost 90% of his net worth when the bubble burst, said about the dot-com bubble:⁴²

A friend of mine has a great line. He says "Nothing important has ever been built without irrational exuberance". Meaning that you need some of this mania to cause investors to open up their pocketbooks and finance the building of the railroads or the automobile or aerospace industry or whatever. And in this case, much of the capital invested was lost, but also much of it was invested in a very high throughput backbone for the Internet, and lots of software that works, and databases and server structure. All that stuff has allowed what we have today, which has changed all our lives... that's what all this speculative mania built.

⁴² Donnelly, Jacob. "Here's what the future of bitcoin looks like—and it's bright". *VentureBeat*. (February 14, 2016)

References

1. Garber, P. M. *Famous First Bubbles*. Cambridge, MA: MIT Publishing. (2000)
2. Surowiecki, J. *The Wisdom of Crowds: Why the Many are Smarter than the Few and How Collective Wisdom Shapes Business, Economies, Societies, and Nations*. New York: Random House. (2000)
3. Blanchard, O. J., and M. W. Watson. *Bubbles, Rational Expectations, and Financial Markets*, in P. Wachtel (ed.), *Crisis in the Economic and Financial Structure*. Lexington, MA: Lexington (1982)
4. Heston, S. L., M. Lowenstein, and G. A. Willard. Options and Bubbles. *Review of Financial Studies* 20:359-90. (2007)
5. Malkiel, B. G. *A Random Walk Down Wall Street*, 4th ed. New York: Norton (1985)
6. Kindleberger, C. P. *Manias, Panics and Crashes: A History of Financial Crises*, 3rd ed. New York: John Wiley & Sons (1996)
7. Tirole, J. 1982. On the Possibility of Speculation under Rational Expectations. *Econometrica* 50:1163-82.
8. Kline, Greg (April 20, 2003). "Mosaic started Web rush, Internet boom". The News- Gazette.
9. Weinberger, Matt . "If you're too young to remember the insanity of the dot-com bubble, check out these pictures". *Business Insider*. February 3, 2016
10. "Here's Why The Dot Com Bubble Began And Why It Popped". *Business Insider*. (December 15, 2010)
11. Teeter, Preston; Sandberg, Jorgen (2017). "Cracking the enigma of asset bubbles with narratives". *Strategic Organization*. 15 (1): 91–99. doi:10.1177/1476127016629880
12. Litan, Robert E. "The Telecommunications Crash: What To Do Now?". *Brookings Institution*. December 1, 2002.
13. Norris, Floyd. "The Year In The Markets; 1999: Extraordinary Winners and More Losers". *The New York Times*. January 3, 2000
14. Kadlec, Daniel. "Day Trading: It's a Brutal World". *Time*. August 9, 1999
15. Teeter, Preston; Sandberg, Jorgen (2017). "Cracking the enigma of asset bubbles with narratives". *Strategic Organization*. 15 (1): 91–99. doi:10.1177/1476127016629880.
16. Kumar, Rajesh. *Valuation: Theories and Concepts*. Elsevier. December 5, 2015.
17. Willoughby, Jack. "Burning Up; Warning: Internet companies are running out of cash— fast". *Barron's*. March 10, 2010.