

Cambridge University Press

978-0-521-11148-5 - Investing in Dynamic Markets: Venture Capital in the Digital Age

Henry Kressel and Thomas V. Lento

Index

[More information](#)

# Index

- Alcatel 134, 157  
 alternative energy technologies  
   hot market 243–245  
   investment wave (2000s) 30–37  
 Amazon.com 27, 164  
 American Research and Development Corporation 43  
 angel investors 5, 21, 44–45  
 AOL 159  
 Apollo Computer 24  
 Apple 13, 84  
 Applied Materials 135  
 AsiaInfo 162–163, 177  
 AT&T 98–100  
 automobiles investment bubble (1920s) 19  
 Avaya 47
- Ban, Vladimir 108  
 Baruch, Bernard 19  
 BEA Systems 162, 177  
 Berkshire Hathaway 45  
 biofuels investment 32–33  
 board of directors 52–53  
 BP 243  
 Braun, Jeff 200, 202  
 bubbles  
   2008–2009 crash 19  
   automobiles (1920s) 19  
   characteristics of bubble markets 17–18  
   definition of a bubble 9  
   development from investment waves 16  
   dot-com bubble 9, 15–16, 18–19, 25–28, 160  
   Dutch tulip mania (seventeenth century) 17  
   herd investing 15–18  
   history of 17  
   inflationary investing 16–18  
   Internet (1990s) 9, 15–16, 18–19, 25–28, 160  
   Mississippi Company bubble (1719–1720) 17  
   psychology of 17  
   radio (1920s) 19  
   railway mania in Britain (1840s) 19  
   South Sea Company bubble (1711–1720) 17  
   telecommunications (1990s) 25, 28–30  
   winners and losers 18–19  
 Buffett, Warren 19, 45  
 business success, managing change and innovation 6–8  
 buy-out firms 46, 47
- Canon 70  
 CEO, qualities and skills required 8  
 change, management of 6–8  
 charlatans, operations in hot markets 21, 36–37  
 Chartered Semiconductor Production Company 136  
 chips *see* semiconductor industry  
 Churchill, Winston 8  
 Cisco Systems 13, 28–29, 134, 156, 226  
 Cobalt Group 163, 178  
 Compaq 90  
 CompuServe 159  
 consolidation in industry sectors 90–93  
   big companies get bigger 91–92  
   drivers 92  
   effects on venture capital profitability 225–227  
   gaining entry to consolidating markets 156–157  
   impacts of industry consolidation 196–198  
   retail software market 202–203  
   software industry 93  
 Covad Communications 113–118, 124–125, 163, 178  
 credit card processing *see* Nova Corporation

Cambridge University Press

978-0-521-11148-5 - Investing in Dynamic Markets: Venture Capital in the Digital Age

Henry Kressel and Thomas V. Lento

Index

[More information](#)

## 258 INDEX

- Dice (formerly EarthWeb) 28  
*see also* EarthWeb
- Digital Equipment Corporation (DEC) 23, 90
- Digital Subscriber Line (DSL) technology 113–118
- dot-com bubble and crash 9, 15–16, 18–19, 25–28, 160  
 impact on the NASDAQ index 18–19
- Drexel Burnham 47
- due diligence, investor risk assessment 93–95
- Dutch tulip mania (seventeenth century) 17
- e-mail service, availability to the general public 159
- early-stage technology *see* Internet investment (1990s)
- EarthWeb (later Dice) 28, 165–173, 178, 181, 182–183  
 advertising-supported Web portal (1997) 169–170  
 becomes Dice (2000) 172–173, 178, 182–183  
 consulting and Web hosting (1995–1996) 166–169  
 initial public offering (IPO) (1998) 170–171  
 new business model (2001–2008) 173  
 search for profitability (1999) 171–172
- eBay 13, 27, 28
- economic growth, role of innovation 1–3
- Edison, Thomas 5
- Elavon Merchant Services 199
- Electronic Arts 203–204
- entrepreneurs  
 attraction of venture capital backing 53–54  
 gauging entrepreneurial integrity 37–40
- entrepreneurship  
 in the US 54–57  
 influence of society and culture 54–57
- Epitax 107–110, 122–123, 124–126
- FACT 205
- fiber optic digital communications 101–104
- financing high-risk businesses  
 angel investors 44–45  
 buy-out firms 46, 47  
 firms that use VC and LBO models 49–50
- growth of the venture capital industry 43
- industrial holding companies 45–46
- leveraged buy-out (LBO) 47, 49–50
- private equity firms 46, 47
- role of professional venture capital 41–43
- seed investors 44–45
- sources of finance 41–43
- venture capital firms (VCs) 46
- venture capital investment strategies 48–49
- Freescall 47
- Friedman, Thomas 1, 3, 12
- Fujitsu 134
- Ganek, Jeffrey 120
- GE 243
- general partners 5
- global outlook of venture capital firms (VCs) 54–57
- globalization of technology companies 87–90  
 global from the beginning 89–90  
 operating across geographies 88–89
- GlobalSpec 28, 174–176, 178, 182
- Google 13, 27, 179, 181–182, 240
- Gore, Al 30
- green technology *see* alternative energy technologies
- Greylock Partners 43
- “growth equity” investments 49
- Grzedzinski, Edward 194
- herd investing 15–18 *see also* bubbles
- Hewlett-Packard (HP) 24, 25, 92
- Hidary, Jack 166–169
- Hidary, Murray 166–169
- hot markets  
 alternative energy technologies 30–37, 243–245  
 charlatans and fake entrepreneurs 21, 36–37  
 herd investing 15–18  
 irresponsible claims 36–40  
 race to invest in 15–18  
*see also* bubbles; investment waves
- Huawei Technologies 157
- IBM 22, 24, 25, 92, 227
- IGS 111–113, 123–124
- industrial holding companies 45–46
- inflationary investing *see* bubbles

Cambridge University Press

978-0-521-11148-5 - Investing in Dynamic Markets: Venture Capital in the Digital Age

Henry Kressel and Thomas V. Lento

Index

[More information](#)

- innovation
  - creation of economic growth 1–3
  - risk associated with investment 2–3
  - see also* technological innovations
- Intel 13, 66, 85, 130, 240
- intellectual property (IP) protection 70–75
  - business value of patents 71
  - litigation hazards 71–74
  - non-patentable innovations 74–75
  - patent lawsuits 71–74
  - “patent trolls” 72
  - patents 71–75
  - patents vs. innovations 71
- Internet
  - development of telecommunications technologies 102–104
  - opening up to the general public 158–159
- Internet access, DSL technology 113–118
- Internet development, synergy between
  - new technologies 66–67
- Internet investment (1990s)
  - advertising-supported sites 165–173, 178–182
  - angel investors 45
  - AsiaInfo 162–163, 177
  - BEA Systems 162, 177
  - building stable revenues 182–183
  - Cobalt Group 163, 178
  - connectivity services 160, 163
  - Covad Communications 163, 178
  - criteria for selection 164–165
  - dot-com bubble and crash 9, 15–16, 18–19, 25–28, 160
  - EarthWeb (later DICE) 165–173, 178, 181, 182–183
  - finding the right business model 177–178
  - future potential of the Internet 183–185
  - GlobalSpec 174–176, 178, 182
  - infrastructure products and services 160, 162–163
  - interconnections service providers 161, 163
  - investment wave and bubble 9, 15–16, 18–19, 25–28, 160
  - lessons learned 176–183
  - online information publishers 161, 163–164, 165–173, 174–176
  - online sales 161, 164
  - only a few big winners 176–177
  - opening up of the Internet service 158–159
  - OpenVision/VERITAS 162, 177, 187
  - potential investments 159–164
  - retailers 161, 164
  - SkillSoft 163, 178
  - speed of spread of the Internet 183–185
  - TradeCard 163, 178
  - typical business proposals 160–161
  - VERITAS 162, 177
  - why ad-supported sites struggle 178–182
- investment cycles 16
- investment waves 14–16
  - alternative energy sources (2000s) 30–37
  - biofuels 32–33
  - charlatans and fake entrepreneurs 21
  - dangers of herd investing 15–18
  - gauging entrepreneurial integrity 37–40
  - Internet (1990s) 9, 15–16, 18–19, 25–28, 160
  - opportunities in evolving technology 20–22
  - personal computers (PCs) (1980s) 22–25
  - solar energy technology 33–37
  - telecommunications (1990s) 25, 28–30
  - timing of investments 14–15
  - turning into a bubble 16
  - workstations (1980s) 22–25
- investor risk assessment
  - cautionary tales 67–70
  - compressed product lifecycles 83–86
  - due diligence 93–95
  - faster product development 83–86
  - innovation development time 63–66
  - planning for price drops 81–83
  - process technologies 79–81
  - protecting intellectual property 70–75
  - semiconductor integrated circuits 78–79
  - software development 75
  - synergy between technologies 66–67
  - technology risks 63–70, 75–81
  - uncertain time to market 63–66
- iPhone 241
- iPod® 70, 81–82, 241
- Janeway, William H. 2–3
- Janszen, Eric 9
- Knowling, Robert 116
- Kodak 20

Cambridge University Press

978-0-521-11148-5 - Investing in Dynamic Markets: Venture Capital in the Digital Age

Henry Kressel and Thomas V. Lento

Index

[More information](#)

## 260 INDEX

- Laser Diode Laboratories 66  
 LCI International 100  
 Level One Communications 78–79,  
     143–148, 152–155, 226  
 leveraged buy-out (LBO) 47, 49–50  
 LG 90  
 Licom 105–107, 122, 123–124  
 light-emitting diodes (LEDs), development  
     time 64–65  
 limited partners 5  
 liquid crystal displays (LCDs), development  
     time 64  
 Loews Corporation 45  
 Lucent Technologies 28–29, 66, 100,  
     157, 227  
  
 Mackay, Charles 17, 19  
 McMinn, Charles 116  
 mainframe computers 22–23  
 management team, qualities and skills  
     required 6–8  
 managing change and innovation 6–8  
 Maxis (PC games) 77, 199–204, 211, 213  
     background 200  
     consolidation of the retail software  
         market 202–203  
     escalating development costs 202–203  
     investing in “serious fun” 200–201  
     marketing challenges 202–203  
     merger with Electronic Arts 203–204  
     need for hit games 202–203  
     Warburg Pincus investment  
         200–201, 203  
 MediaTek 134  
 Melland, Scott 173  
 Microsoft 41, 45, 226  
 minicomputers 23  
 Mississippi Company bubble (1719–1720) 17  
 Moore’s Law 130–132, 137–139  
 Morgan, J.P. 5  
 Motorola 90, 155, 240  
 MSN 179  
  
 NASDAQ stock index, impact of the  
     dot-com bubble 18–19  
 Neiman Marcus 47, 164  
 Ness Technologies 188  
 NeuStar 13, 118–121, 124–126  
 Nikon 70  
 Nokia 84, 90, 157  
 Nortel 28–29, 227  
  
 Nova Corporation 74–75, 188–199, 211,  
     212, 213  
     acquisition by U.S. Bancorp 199  
     cost to process credit card  
         transactions 192  
     faster credit card transactions 192  
     how credit card processing works  
         189–192  
     impacts of a consolidating  
         industry 196–198  
     moving to number three in the  
         industry 198–199  
     need to acquire new customers quickly  
         193–196  
     partnership with Warburg Pincus  
         188–189  
     reaching the next level 196–198  
     risk of implementing new technology  
         193–196  
  
 Olsen, Greg 108  
 OpenVision/VERITAS 162, 177, 187  
 optical communications, development  
     time 64  
 Oracle Corporation 13, 25, 226  
 Ortel Corporation 66  
  
 partnerships in venture capital  
     investments 5  
 “patent trolls” 72  
 patents *see* intellectual property (IP)  
     protection  
 Pepper, Robert 143–146  
 personal computers (PCs) investment wave  
     (1980s) 22–25  
 Pets.com 164  
 Philips (now NXP) 134  
 price drops in technology markets,  
     planning for 81–83  
 private equity firms 46, 47  
 process technologies, risk assessment  
     79–81  
 Prodigy 159  
 product development  
     importance of software 85–86  
     speed of 83–86  
 product lifecycles, compression 83–86  
 psychology of bubble markets 17  
  
 radio investment bubble (1920s) 19  
 railway mania in Britain (1840s) 19

Cambridge University Press

978-0-521-11148-5 - Investing in Dynamic Markets: Venture Capital in the Digital Age

Henry Kressel and Thomas V. Lento

Index

[More information](#)

- risk
  - investment in technological innovations 2–3
  - and profitability 13–14
  - and reward 2–3
- risk assessment, venture capital
  - investment 8–11 *see also* investor risk assessment
- RMI Corporation 89–90
  
- Sack, Edgar 149–150
- Salesforce.com 214
- Samsung Electronics 84, 90, 134
- Samuelson, R. J. 18
- SanDisk 152
- Sears 164
- seed investors 44–45
- semiconductor industry
  - advances in the industry 129–139
  - chip contract manufacturers 136–137
  - CMOS process 136–137
  - cycles and growth 132–134
  - demand for higher value and lower price 137–139
  - development of transistor technology 127–128
  - evolution of integrated circuit (IC) production techniques 135–137
  - evolution of integrated circuits (ICs) 127–128
  - expansion of the US industry 134–135
  - “fabless” semiconductor companies 136–137
  - foundry companies 136–137
  - global competition 134–135
  - investment potential 128
  - market shift to Asia 134–135
  - Moore’s Law 130–132, 137–139
  - more processing at lower cost 130–132
  - software support 134–135
  - third-party suppliers of chips 85–86
- semiconductor industry investment
  - approach to entrenched competition 155–156
  - control of production facilities 152–153
  - criteria for investing in chip companies 139–140
  - gaining entry to consolidating markets 156–157
  - increasing functionality on a chip 153–154
  - investment potential 128
  - lessons learned 152–157
  - Level One Communications 143–148, 152–155
  - pricing and product timing 154–155
  - Waferscale Integration Inc. (WSI) 141–143, 152–153, 154, 155–156
  - Zilog 148–152, 153–154, 155
- semiconductor industry products 129–130
  - application-specific standard product (ASSP) chips 130
  - custom-designed chips 130
  - EEPROMs 141
  - flash memory-based chips 141
  - individual transistor applications 129
  - memory chips 129
  - microprocessors 129
  - programmable logic devices 130
  - systems-on-chip (SoC) devices 130
- semiconductor integrated circuits, investor risk assessment 78–79
- semiconductor lasers 66
- Siemens (now Infineon) 134
- Silicon Graphics 24
- Silicon Optix 85
- SkillSoft 163, 178
- Skype 28
- Smith, Adam 2
- software, importance in product development 85–86
- software as a service (SaaS) distribution model 214
- software companies, industry consolidation 93
- software development, risk assessment 75
- software industry, development of 186
- software investments
  - acquisitions strategy 211–212
  - future potential of software 214–215
  - importance of marketing strategy 212
  - investment potential 186–187
  - lessons learned 210
  - management of acquisitions 211–212
  - perceived financial stability of vendors 210–211
  - pitfalls of going public 212–213
  - reputation of vendors 210–211
  - scale matters 213–214
  - selling mission-critical software 210–211
  - software as a service (SaaS) distribution model 214

Cambridge University Press

978-0-521-11148-5 - Investing in Dynamic Markets: Venture Capital in the Digital Age

Henry Kressel and Thomas V. Lento

Index

[More information](#)

## 262 INDEX

- software investments (*cont.*)
  - venture capital investment 186–187
  - Warburg Pincus investments 187–188
- software products and services
  - credit card processing for small merchants 188–199, 211, 212, 213
  - Maxis 199–204, 211, 213
  - Nova Corporation 188–199, 211, 212, 213
  - PC games as a business 199–204, 211, 213
  - SynQuest 204–211, 212–213
- solar energy technology investment 33–37
- Sony 84
- Sony Ericsson 90
- South Sea Company bubble (1711–1720) 17
- Spivak, Nova 166–169
- ST Microelectronics 134
- stock options, employees of startup companies 53–54
- Sun Microsystems 24, 25
- synergy between technologies 66–67
- SynQuest 77, 204–211, 212–213
  - background 204–205
  - comprehensive approach 205–208
  - high costs 208–210
  - initial public offering (IPO) 208–210
  - innovative concepts 205–208
  - questionable viability as a vendor 208–210
  - weak financial position 208–210
- Taiwan Semiconductor Manufacturing Company (TSMC) 136
- Target 164
- teamwork, in venture capital
  - investment 10
- technological innovations
  - assessing technology risks 63–70
  - cautionary tales 67–70
  - creation of economic growth 1–3
  - importance of synergy 66–67
  - light-emitting diodes (LEDs) 64–65
  - liquid crystal displays (LCDs) 64
  - non-patentable 74–75
  - optical communications 64
  - protecting intellectual property 70–75
  - risk associated with investment 2–3
  - semiconductor lasers 66
  - transistors 64–77
  - uncertain time to market 63–66
- technology companies
  - due diligence in risk assessment 93–95
  - globalization 87–90
  - industry consolidation 90–93
- technology evolution
  - generation of investment waves 20–22
  - opportunities for new companies 20–22
- technology markets
  - compressed product lifecycles 83–86
  - faster product development 83–86
  - planning for price drops 81–83
- technology-specific risks 75–81
  - process technologies 79–81
  - semiconductor integrated circuits 78–79
  - software development 75
- Telcordia Technologies 100
- telecommunications
  - advances in technology 96, 101–104
  - deregulation of the industry 98–101
  - dominance of AT&T 98–100
  - fiber optic digital communications 101–104
  - opportunities for entrepreneurs 102–104
  - transformation of the market 98–99
- telecommunications investment wave and bubble (1990s) 25, 28–30
- telecommunications product startups 104–110
  - categories of business ideas 104–105
  - Epitaxx 107–110, 122–123, 124–126
  - Licom 105–107, 122, 123–124
  - selection criteria 104
- telecommunications services startups 110–121
  - Covad Communications 113–118, 124–125
  - IGS 111–113, 123–124
  - NeuStar 118–121, 124–126
  - potential areas of interest 110–111
- telecommunications startup investments
  - competitive threat of low barriers to entry 124–125
  - defensible niche markets 122–123
  - gaining access to large customers 123–124
  - lessons learned 121–126
  - maintaining early-mover advantage 124–125
  - opportunities from new industry standards 122
  - planned exit or reinvention 125–126

Cambridge University Press

978-0-521-11148-5 - Investing in Dynamic Markets: Venture Capital in the Digital Age  
Henry Kressel and Thomas V. Lento

Index

[More information](#)

- planning for the future of a business 125–126
  - timely access to growth capital 125
- Texas Instruments 85, 240
- Toshiba 134
- TradeCard 163, 178
- transformed markets *see* semiconductor industry telecommunications
- transistors, development time 64–77
- Transitron Corporation 65–66
- Trescom International 100
- Trino, Joseph 204, 205
  
- U.S. Bancorp 199
- United Microelectronics Corporation (UMC) 136
  
- venture capital
  - need for 4
  - role in financing high-risk businesses 41–43
- venture capital-backed companies, economic impact 13
- venture capital firms (VCs)
  - active involvement in portfolio companies 50–52
  - building value in portfolio companies 50–52
  - comparison with holding companies 45–46
  - contribution to growth and prosperity 12–13
  - economic impact 12–13
  - entrepreneurship in the US 54–57
  - financing high-risk businesses 46
  - future prospects 245–249
  - global outlook 54–57
  - “group think” and herd investing 15–18 *see also* bubbles
  - incentives for entrepreneurs 53–54
  - investment strategies 48–49
  - management of investments 50–52
  - managing risk 2–3
  - oversight and control of portfolio companies 52–53
  - possible favorable conditions in future 246–249
  - quality of the deal flow 52
  - reliance on entrepreneurs 54–57
  - risk and profitability 13–14
  - stock options for employees of startup companies 53–54
  - US origins 54–57
  - working through a board of directors 52–53
- venture capital fund profitability 231–241
  - changing investment horizon 238–239
  - factors affecting return on investment 234–238
  - opportunities for innovation 239–241
  - performance to justify risk 231–233
  - timing of entry and exit 234–238
  - vulnerability of industry leaders 239–241
- venture capital funds
  - average holding period 14–15
  - “harvest” period 14–15
  - limited lifespan 14–15
  - return on investment 14–15
- venture capital investment
  - gauging entrepreneurial integrity 37–40
  - goal of 40
  - growth of the industry 43
  - importance of timing 14–15
  - return on investment 40
  - risk assessment 8–11
  - valuing a company for investment 58–61
  - where capital is invested 57–58
- venture capital investment model 5
  - emergence of 4–5
  - future prospects 245–249
  - long-term viability 216–218
  - partnerships 5
- venture capital investment profitability
  - deregulation of telecommunications 219, 220–221
  - downturn in profitability of funds 216–217
  - economic environment 219–220
  - effects of market consolidation 225–227
  - emergence of new industry leaders 225–227
  - favorable financial markets 219, 227–231
  - growth of global markets 219, 222
  - influential factors in the past 218–225
  - initial public offerings (IPOs) 219, 227–231
  - markets created by technological innovations 219, 222–225
  - public market valuations 219, 227–231
  - reduction in capital available for investment 216

Cambridge University Press

978-0-521-11148-5 - Investing in Dynamic Markets: Venture Capital in the Digital Age

Henry Kressel and Thomas V. Lento

Index

[More information](#)

## 264 INDEX

- venture capital investment risk
  - see* investor risk assessment
- VERITAS 162, 177
- VMware, selling mission-critical software 241–243
- Waferscale Integration Inc. (WSI) 141–143, 152–153, 154, 155–156
- Wang 90
- Warburg Pincus
  - global strategy 57
  - “growth equity” investments 49
  - headquarters 57
  - history of 4, 43
  - importance of teamwork 10
  - investment strategies 4, 43, 49
  - partnership relationships 50
  - view of the workstation investment wave 24–25
- waves *see* investment waves
- wind power technology
  - investment 34
- workstations investment wave (1980s) 22–25
- Wright, Will *see* Maxis
- Yahoo! 27, 179
- Zilog 148–152, 153–154, 155
- ZTE 157