# THE ECONOMIC IMPACT OF THE VENTURECAPH NDUSTRY ON U.S. ECONO

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VENTURE IN

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#### About DRI-WEFA

DRI-WEFA is one of the world's leading economic and information consulting firms. Staffed with more than 500 economists and analysts, DRI-WEFA collects and analyzes data from around the globe, monitors developments in over 152 countries, provides objective, highly regarded, detailed analyses of economics, financial and industry activity and provides clients with custom solutions for their information needs. Founded as Wharton Econometric Forecasting Associates (WEFA) in 1963 by Lawrence Klein, the 1980 Nobel Laureate, WEFA merged with Chase Econometrics in 1987. WEFA merged with Data Resources Incorporated (DRI) in May of 2001. Among their more than 3,000 clients, DRI-WEFA enjoys a worldwide reputation for the highest standards, analytical power and industry insights. For more information about DRI-WEFA, please visit www.dri-wefa.com.

#### EXECUTIVE SUMMARY

This report provides an overview of the findings in the DRI-WEFA study, *Measuring the Importance of Venture Capital and Its Benefits to the U.S. Economy*, commissioned by the National Venture Capital Association (NVCA). The venture capital industry has quietly, but continually, played a paramount role in nourishing the U.S. economy both in good times and bad by bringing concepts and business models to life.

## Boosts America's Economic Strength and Creates Jobs

Venture capital backed companies contributed nearly \$1.1 trillion to the U.S. gross domestic product (GDP) and employed 12.5 million people, corresponding to 11% of U.S. GDP and employment in 2000.

#### Outperforms Other Companies

Venture capital backed companies generate more sales, pay more taxes, generate more exports, and invest more in research and development (R&D) than other public companies, when adjusting for size.

#### Lubricates the Wheels of Innovation

Venture capital funding is linked to technological innovation, allowing such diverse companies as Amazon.com, Federal Express, FMC Corporation, and Home Depot to thrive.

#### Sustains Technological Progress

Venture capital investments in all industries surged from \$3.2 billion in 1990 to \$103 billion in 2000.

#### Contributes to State Economies

Venture capital disbursements are concentrated in California, Massachusetts, New York, Texas, and Colorado. The DRI-WEFA study shows a strong correlation between venture capital activity and high gross state product per capita, high wages, productivity growth, and patents granted.

#### Drives Demand for Skilled Workforce

Venture capital requires a knowledge-intensive, educated, skilled workforce that can readily shift from declining industries to those in emerging ones.



#### WHAT IS VENTURE CAPITAL?

#### VENTURE BACKED COMPANIES BOOST AMERICA'S ECONOMIC STRENGTH

#### MILESTONES IN VENTURE CAPITAL

Spanish Monarchy provides Christopher Columbus with risk capital
Wealthy individuals back startups with their own money
Wealthy families such as the Mellons, Phipps, Rockefellers, and Whitneys invest in young ventures
Family venture capital funds established, e.g., Venrock - Rockefeller, J.H. Whitney - Whitney, and Bessemer Ventures - Phipps
American Research and Development Corporation (ARD) is established as the first publicly traded, closed-end investment company



- for "venture capital operating companies" 1993 Section 1202 was added to the Internal
- Revenue Code to encourage investment in small businesses
- 1995 Private Securities Litigation Reform Act is passed

Venture capital addresses the funding needs of entrepreneurial companies that do not generally have the size, assets, and operating histories necessary to obtain capital from more traditional sources, such as public markets and banks.

Far from being simply passive financiers, venture capitalists foster growth in companies through their hands-on involvement in the management, strategic marketing, and planning of their portfolio companies. Venture capitalists invest alongside management and employees through equity financing and the practice of using stock option plans to motivate all workers. They are entrepreneurs first and financiers second.

As equity owners and board members, venture capitalists succeed when the portfolio company succeeds. Many successful venture capitalists will readily point out that many of their most successful companies ended up with a business or product model that was quite different from the original business plan. This morphing of a business from a fledgling startup to a successful company is the key role of the venture capitalist.

Venture capital firms generally are private partnerships or closely held corporations funded by private and public pension funds, endowment funds, foundations, corporations, wealthy individuals, foreign investors, and the venture capitalists themselves.

When an investment is made, a percentage ownership in the company is given to the venture fund in exchange for the capital that is provided. The expectation is that at least some of the investments will prove to be extremely profitable even if others eventually fail. Typical exits for successful investments include sale to public markets through an initial public offering (IPO) or acquisition of a larger company.

#### Venture Capital's Business Cycle

Venture capital is a cyclical business, subject not only to internal dynamics, but to the influence of external economic sources and to fluctuations in the financial markets. Total venture deals rose sharply after 1995, peaked in 2000, and then returned to sustainable levels in 2001. Even with the decline in 2001, the total number of deals that year were 395% higher than the 1991 total, an average annualized growth rate of 17% per year.

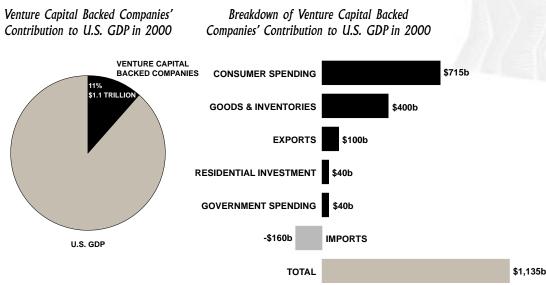
#### The Venture Capital Sector Has Grown To Become a Major Force in the U.S. Economy

Venture capital funded companies are an integral part of the American economy. The dollars and cents contribution of the venture capital industry goes well beyond the objective economic contribution. It continually reinforces America's entrepreneurial spirit. And in so doing, the venture capital industry becomes a catalyst for change. Venture capitalists, many of whom are former successful entrepreneurs themselves, shepherd new business men and women to reach their full potential.

Venture capital funded companies contributed nearly \$1.1 trillion to the gross domestic product in 2000. This corresponds to 11% of the nation's GDP. On the product side, consumer spending accounted for \$715 billion (63%) of the higher GDP generated by the venture capital industry. Venture capital activity boosted business spending on investment goods and activities by nearly \$400 billion, exports by \$100 billion, and government spending by \$40 billion. Added to this total is another \$40 billion in residential investment spending. Higher domestic spending increased imports by \$160 billion. On the income side, nearly 60% of this total contribution, or \$650 billion, comes in the form of labor income. Before tax, corporate profits account for another 14% of the total contribution, and net business interest

payments for 9%.

#### VENTURE CAPITAL BACKED COMPANIES CONTRIBUTED 11% TO U.S. GDP



#### Venture Capital Under Management 1980 - 2001

Ve	Number of enture Capital Firms	Venture Capital Under Management
1980	87	\$3.0 billion
1985	281	\$17.6 billion
1990	375	\$32.0 billion
1995	397	\$40.2 billion
2000	693	\$209.8 billion
2001e	703	\$242.8 billion

e - estimate Source: Venture Economics & NVCA



#### VENTURE CAPITAL BACKED COMPANIES OUTPERFORM OTHER COMPANIES

The average contribution of venture capital backed companies is substantially smaller than that of the average public company because venture capitalists deliberately focus on small companies with high growth potential.

When adjusting for size, however, venture backed companies generate more sales, pay more taxes, export more goods and services, and invest more in research and development.

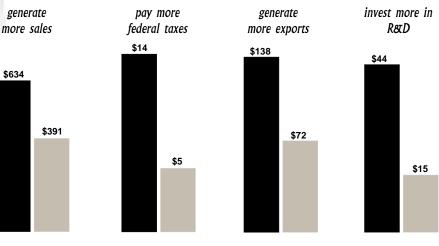
Venture capital financed companies have made a sizable contribution to the U.S. economy over the last 20 years. The total direct contribution to the economy was calculated by the DRI-WEFA study. It found that venture capital financed companies produced and sold goods and services worth roughly \$1.1 trillion in 2000. These companies paid some \$58.8 billion in federal taxes and \$7.8 billion in state and local taxes, and generated \$13.8 billion in net income in 2000.

For venture backed companies involved in exporting, export sales are vitally important to their survival. Exports totaled \$21.7 billion, with more than 70% of these sales concentrated in three industries – industrial machinery, electronics and other electric equipment, and business services.

Venture backed companies spent some \$157.3 billion on research and development in 2000. These companies often capitalize on the bridging of the gap between basic science and the development/commercialization of life changing discoveries.

#### VENTURE CAPITAL BACKED COMPANIES CONTRIBUTE MORE TO THE U.S. ECONOMY THAN AVERAGE PUBLIC COMPANIES

For every \$1,000 in assets between 1980 and 2000, venture capital backed companies:



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#### VENTURE CAPITAL COMPANIES' ECONOMIC CONTRIBUTIONS

2000

Sales	\$1.1 trillion
Federal Taxes	\$58.8 billion
State & Local Taxes	\$7.8 billion
Net Income	\$13.8 billion
Exports	\$21.7 billion
R&D Expenditures	\$157.3 billion

## VENTURE CAPITAL BACKED COMPANIES CREATE JOBS

#### Venture Capital Financed Companies Account for Millions of Jobs

Venture capital backed companies account for millions of jobs for the American economy. The impact of the venture capital industry on employment in 2000 reached far beyond the 12.5 million people venture capital funded companies themselves employed in the United States. The production activities within the venture capital funded companies required the goods and services of supporting businesses that generated additional U.S. jobs. DRI-WEFA determined that the jobs multiplier was around 2.2, which means that 27 million jobs were driven directly or indirectly by venture backed companies. This is a staggering percentage of total U.S. employment.

The venture capital job creating engine is not limited to one segment of the economy. It permeates the entire American economy. The DRI-WEFA study shows that 3.4 million of venture capital backed jobs are in the manufacturing sector. Retail trade, business services, and construction each have more than one million direct jobs as a result of venture capital backed companies.

#### VENTURE CAPITAL BACKED U.S. JOBS TOTAL 27.5 MILLION IN 2000

#### IOB CREATION PERMEATES ALL SEGMENTS OF AMERICAN ECONOMY

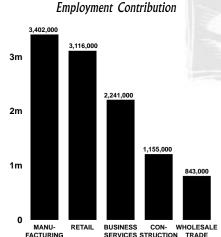
Direct & Indirect Employment of Venture Capital Backed Companies

12.5 MILLION

DIRECT JOBS

15.0 MILLION

NDIRECT JOBS



VENTURE CAPITAL BACKED COMPANY

Top Industries by Venture Capital Firms'



### VENTURE CAPITALISTS' MONEY AND EXPERTISE LUBRICATE THE WHEELS OF INNOVATION

MILESTONE IPOS OF VENTURE CAPITAL BACKED COMPANIES 1971 Intel **1977** Federal Express 1980 Apple, Genetech 1986 Microsoft, Sun Microsystems 1995 Netscape 1998 eBay



Venture capital lubricates the wheels of innovation by deliberately taking on projects that are far too risky for more traditional financiers. Venture capital funding is a high-risk investment activity. The industry's mandate is to invest in small innovative companies, headed by newly structured management teams, using unproven and rapidly changing technologies with a payoff period of typically 5 to 7 years. Simply put, venture capital is a high risk, high return business - you can't have one without the other.

The goal of the venture capital process is to identify the most promising activities among its portfolio of investments and to help an innovating company to the point where it can stand on its own as an independent organization. Even in the best of circumstances, many of these investments will fail.

#### Venture Capital Creates Whole Industry Clusters

The DRI-WEFA study shows that venture capital was an important catalyst in creating whole industry clusters, such as medical and health, home improvement, and computer security.

#### Medical/Health Industry Cluster

It can take up to \$100 million and 7 to 12 years to develop a new drug or medical device. Venture capital is one of the few sources of patient capital that such companies can turn to. Consequently, venture capital has played an integral role in improving the quality of life for millions of people, as well as in saving lives.

#### Home Improvement Industry Cluster

The largest and most successful home improvement retailer, Home Depot, was originally a venture capital funded company. The success of Home Depot and the many other mega-retailers that have followed highlights some of the less recognized attributes of venture funding, such as better business planning, intelligent merchandising, customer friendly sales techniques, and managerial discipline.

#### Computer Security Cluster

Corporate and personal security has become increasingly important in the world today. Venture backed companies have led the way in providing important new services and products, such as virus protection, firewalls, virtual private networks, remote management technologies, and e-mail filtering. Venture capital has played a major role and continues to help companies and individuals protect sensitive data and increase productivity.

## VENTURE BACKED COMPANIES SPUR INNOVATION ACROSS ALL INDUSTRIES

While many people tend to think that venture capitalists invest only in "high-tech" industries, the types of companies that benefit from venture capital span the entire economy. Innovative ideas and technological progress come in many shapes and sizes.

There are three yardsticks against which to measure innovation: patents; imitating companies; and product lines.

The number of patents a company has earned is a key measurement of the amount of commercially viable, economically valuable innovations it has made. Companies that have developed a unique product or process that gives them a competitive advantage in the marketplace will seek to patent this. Not all innovations lend themselves to patenting, but if an innovation is valuable, other companies will employ it. Therefore, the second measurement of innovation is the number of companies that are imitators of another company's innovative service or process. The number of direct competitors can serve as a proxy for the number of imitating companies. The number of product lines is an indicator of how technology can

be leveraged to satisfy diverse customer needs.

The following table summarizes the "innovativeness" of some venture backed companies from a variety of industries. Obviously, the success of these companies is not due entirely to venture capital funding. However, access to capital is a critical factor in the ability of many companies to exist and grow. Venture capital thus has played a key role in allowing these companies to contribute their innovations to the economy.

#### FY 2000

VENTURE BACKED COMPANY	INDUSTRY	EMPLOYMENT	SALES	PATENTS	COMPETITORS	PRODUCTS
Airgas Inc.*	Business Services	7,600	\$1.6b	16	8	4
Amazon.com Inc.	Internet	9,000	\$2.8b	18	11	11
Boise Cascade Corporation	Forestry	25,300	\$7.8b	78	3	3
Costco Wholesale Corporation	Consumer Related	86,000	\$34.8b		22	_
Dell Computer Corporation*	Computers	40,000	\$31.8b	26	9	5
Federal Express*	Transportation	88,000	\$19.6b	14	15	5
Fischer Scientific International	Biotechnology	7,400	\$2.6b	96	13	3
FMC Corporation	Industrial Manufacturing	14,800	\$3.9b	2,174	11	11
Mellon Financial Corporation	Financial Services	25,300	\$2.8b	2	9	6
WorldCom	Communications क्ष Media	59,000	\$22.8b	35	11	3



### VENTURE CAPITAL FLOWS TO 48 STATES

#### VENTURE CAPITAL BACKED COMPANIES SUSTAIN TECHNOLOGICAL PROGRESS

Technological innovation has long been recognized as being critical to increasing economic growth and productivity within a country. Innovations allow companies and organizations to be more efficient, to cut their costs, increase profits, and allow the diversion of resources into other profitable areas. Technological innovation has been a driving force in sustaining the United States' highest standard of living in the world.

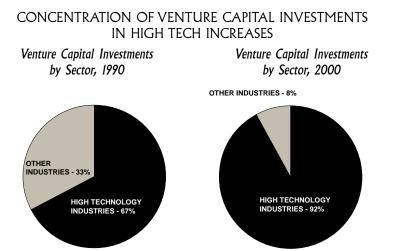
Venture capital plays a key role in helping entrepreneurs bear the financial risk of commercializing their innovations. Companies need to bring the ideas to market. Often the key generators of innovation are smaller companies that cannot typically take the risk by themselves. Other financial options, such as bank loans or angels, are not always viable. Venture capital can fill the gap.

Innovation is one of the most difficult processes to measure. Anything that improves upon an existing process or product in a useful way is an innovation. However, by examining the amounts of venture capital invested in those industries typically considered to be high-tech, it is possible to estimate a minimum level of contribution to technological innovation.

High-tech disbursements in technology industries jumped from \$2.2 billion in 1990 to \$95 billion in 2000 (out of \$103 billion total).

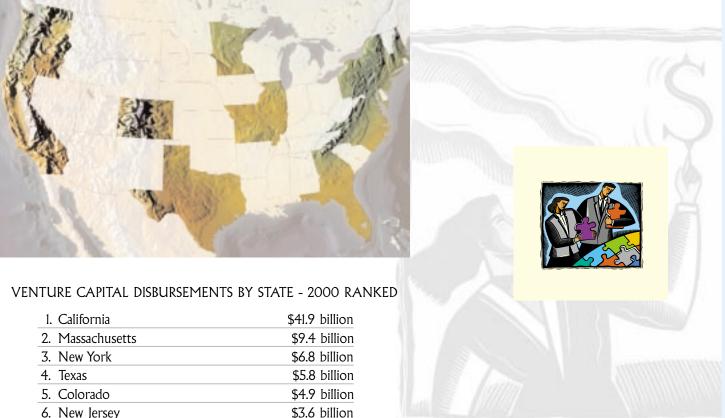
The share of venture capital by industry rose substantially in three industry segments. Venture capital investments in online specific companies were nonexistent in 1990, but jumped to \$48 billion in 2000, making it the leading segment for venture capital financing. Total disbursements in the communications segment increased from \$394 million in 1990 to \$18 billion in 2000. Computer software and services disbursements rose from \$588 million to \$14 billion between 1990 and 2000.

Even traditional, long-established industries can become targets for venture capital funded innovations. Business models such as Staples and Home Depot, both of which were venture capital supported, have revolutionized their retail sectors. Federal Express, another venture capital recipient, encouraged a shift in transportation and communications with far-reaching efficiencies across the whole economy.



More than half of the nation's venture capital disbursements are concentrated in California, Massachusetts, New York, Texas, and Colorado. However, venture capital disbursements are also widely distributed, flowing to 48 states and the District of Columbia.

#### TOP 20 STATES BY VENTURE CAPITAL DISBURSEMENTS



1. California	\$41.9 billion
2. Massachusetts	\$9.4 billion
3. New York	\$6.8 billion
4. Texas	\$5.8 billion
5. Colorado	\$4.9 billion
6. New Jersey	\$3.6 billion
7. Virginia	\$2.9 billion
8. Washington	\$2.8 billion
9. Georgia	\$2.5 billion
10. Maryland	\$2.4 billion
11. Illinois	\$2.3 billion
12. Florida	\$2.2 billion
13. Pennsylvania	\$2.1 billion
14. North Carolina	\$1.8 billion
15. Connecticut	\$1.8 billion
16. Washington, DC	\$1.2 billion
17. Minnesota	\$1.1 billion
18. Oregon	\$1.1 billion
19. Missouri	\$760 million
20. New Hampshire	\$696 million



#### VENTURE CAPITAL BACKED COMPANIES ARE MAJOR CONTRIBUTORS TO STATE ECONOMIES

The DRI-WEFA study clearly shows a strong correlation between venture capital activity and gross state product (GSP). Of the top 20 states in venture capital disbursements per capita, we show that 16 states are ranked among the top states by GSP per capita.

There is a strong correlation between venture capital activity and average annual wages. Eighty percent of the top 20 states by venture capital disbursements per capita are also among the top states by average annual total wages.

The DRI-WEFA study shows a positive relationship between annual average productivity growth and venture capital disbursements per employee. Also, a positive relationship exists between venture capital disbursements per capita and patents granted per capita.

#### TOP STATES BY BOTH VENTURE CAPITAL DISBURSEMENTS PER CAPITA AND GROSS STATE PRODUCT PER CAPITA



TOP STATES BY GROSS STATE PRODUCT PER CAPITA, 2000 (top states by venture capital per capita in blue)

1.	Washington, DC	\$113,192
2.	Alaska	\$51,397
3.	Connecticut	\$49,677
4.	Delaware	\$48,935
5.	New York	\$45,147
6.	Massachusetts	\$45,133
7.	New Jersey	\$43,571
8.	Wyoming	\$42,729
9.	Nevada	\$40 <b>,</b> 851
10.	Colorado	\$39,937

## VENTURE CAPITAL IS AN INDISPENSABLE ALLY OF JOB CHURN

Every day, jobs are created, changed, and eliminated through businesses' openings, closings, expansions, contractions, and relocations. A market economy continually reinvents itself through a process known as creative destruction. It is this churning of business enterprises and their workforces in a free enterprise economy that spurs growth and creates wealth.

Entrepreneurs start companies. Some will meet the test of the marketplace and flourish, but most will not. Over time, even the most successful companies will find themselves being eclipsed by rivals that can offer businesses and consumers newer and better products.

#### Case Studies

Venture capital created and led industries typically involve innovation, which by its nature creates marketplaces with many entrants and fewer enduring winners.

## The Computer Equipment Industry

The need to stay competitive is the driving force behind the U.S. computer equipment industry's continued trend toward consolidation. To stay ahead of their rivals, companies in many high-tech sectors are continuously seeking cash infusions and cutting-edge product innovations. To meet these competitive challenges, they are turning more and more to mergers and acquisitions as a viable means for growth and development. The end result is fewer companies in a rapidly expanding industry.

Between 1989 and 1997, the number of computer equipment companies in the United States fell, while the value of shipments actually grew. Competition forced marginal companies to innovate, merge, or close up shop. Despite the falling number of companies, the computer equipment industry was not in a state of decline. On the contrary, shipments grew by 6% annually. Moreover, the quality of computer equipment improved dramatically over this time period. Consumers were the big winners in this process, as the price of computing power fell precipitously. Consumers could buy more for less.

## The Personal Computer Manufacturing Industry

While hundreds of firms participated in the personal computer industry in the mid-1980s, there are only four dominant players today. Dell, Hewlett-Packard, Apple, and Gateway essentially represent the market for personal computer manufacturing. These companies are producing more powerful personal computers at a lower and lower cost than manufacturers in the past, and the result has been lower personal computer prices and greatly enhanced personal computer capabilities.



Joseph Schumpeter coined the term *creative destruction*. By this, he meant that market economies are continuously renewing themselves. They must find new ways of doing things, newer products, and novel engineering and architectural insights that induce the continuous obsolescence and retirement of factories and equipment and a reshuffling of workers to new and different activities.



#### VENTURE CAPITAL BACKED COMPANIES DRIVE HEAVY DEMAND FOR SKILLED WORKFORCE

## METHODOLOGY FOR THE DRI-WEFA STUDY

Venture capital nurtures the most dynamic segments of the U.S. economy. Entire industries are emerging from discoveries in genetics, lasers, fiber optics, high-tech ceramics, hard plastics, photonics, and micromachines. As the pace of technological innovation quickens, the churn of jobs is likely to become even faster. Consequently, education and skills loom large for venture capital funded companies. The venture industry, through NVCA, has made education reform a key long-term priority.

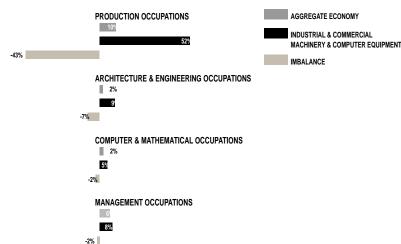
Dynamic growth requires a knowledge-intensive, educated, skilled workforce that readily can shift from jobs in declining industries to those in emerging ones. There is a skills mismatch between employees released from declining sectors and those needed in fast growing sectors. Simply put, engineers and computer programmers are needed, but workers with considerably fewer skills are available.

One of two things could be done to deal with any such excess demand. The best solution is to help people move from low demand occupations to newer, high demand occupations. In many cases, this would require extensive retraining and a considerable amount of time. It is not easy to switch from food preparation to computer programming. An alternative would be to recruit individuals with experience in the bottleneck occupations. H-IB visa programs would help ease the labor shortage, allowing the particular sector to grow, while the education retraining process continues.

The DRI-WEFA study shows the relative importance of a given occupation across industries. If a sector begins to grow faster than the overall economy, a job imbalance results. For example, there are several critical occupations within the industrial and commercial equipment sector that demand far more workers than the national average. The resulting imbalance creates an employment bottleneck as this industry grows.

In an era of international competition, a society must rise to the challenge and adequately educate its workforce or risk losing the most desirable jobs.

#### INDUSTRIAL AND COMMERCIAL MACHINERY AND EQUIPMENT SECTOR OCCUPATIONAL IMBALANCES



DRI-WEFA constructed two databases consisting of 16,278 venture capital financed companies to estimate the annual contribution of the venture capital industry to the U.S. standard of living over the last 30 years. These two databases were used by DRI-WEFA to establish the average characteristics of venture capital companies. The contributions of venture backed companies are based on estimated average annual values for sales, taxes, net income, employment, export sales, and R&D expenditures.

This study would have been impossible without the groundbreaking work of Venture Economics, a division of Thomson Financial and research partner of the National Venture Capital Association, to build and maintain the VentureXpert<sup>™</sup> database of venture capital backed companies. They were able to do this in large part due to the excellent support of venture capital and private equity firms in providing data on investee companies over the last 32 years.

#### National Venture Capital Association

NVCA represents over 450 venture capital and private equity firms. NVCA's mission is to foster the understanding of the importance of venture capital to the vitality of the U.S. and global economies, to stimulate the flow of equity capital to emerging growth companies by representing the public policy interests of the venture capital and private equity communities at all levels of government, to maintain high professional standards, to facilitate networking opportunities, and to provide research data and professional development for its members.

#### NATIONAL VENTURE CAPITAL ASSOCIATION

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