NATIONAL COMMISSION ON ENTREPRENEURSHIP
WHITE PAPER

EMBRACING INNOVATION:
ENTREPRENEURSHIP AND AMERICAN ECONOMIC GROWTH

America's booming entrepreneurial sector is responsible for much of today's economic prosperity. Entrepreneurs take advantage of new wealth-creating opportunities that arise daily from constant change. This phenomenon – creating opportunity from change -- has been part of the American culture since the 19th century Industrial Revolution. Today, an entrepreneurial renaissance is transforming American business and society. And its very success creates new challenges and opportunities for American policymakers.

This white paper describes the role of entrepreneurs in sparking and expanding our current economic boom. If one were to pick a word that summarizes what entrepreneurs do, "innovation" would fit the bill. Entrepreneurs' embrace of innovation has concrete benefits for our national bottom line:

- ✓ Entrepreneurs use innovations to improve our quality of life.
- ✓ Entrepreneurs create new jobs.
- ✓ Entrepreneurs improve our position in global economic competition.
- ✓ Entrepreneurs create economic growth and new wealth for reinvestment in our country.

As we note below, the spillover benefits of these activities are profound. Because of their embrace of innovation, entrepreneurs help lift all parts of the American economy.

WHAT DO ENTREPRENEURS DO?

Above all, entrepreneurs see opportunity in ever-accelerating global change. The communications sector provides a perfect example of the dizzying pace of change. Radio took 38 years to reach 50 million listeners; it will take the Internet just five years to reach 50 million users. Or take change in financial services industry.[1] The Charles Schwab Corporation took 20 years to accumulate its first $100 million in assets; it accumulated its second $100 million in only seven months.[2]

The changes leading to new opportunities for entrepreneurs include the shrinking globe, the technology explosion, the mixing of cultures, demographic changes, and the building of new and powerful communications networks. As Peter Drucker has noted,

> Entrepreneurs see change as the norm and as healthy. Usually they do not bring about the change themselves. But – and this defines entrepreneur and entrepreneurship -- the entrepreneur always searches for change, responds to it, and exploits it as an opportunity.[3]

Entrepreneurs then discover or create an innovation to exploit the opportunity. That's exactly what Steve Jobs did when he envisioned personal computing. As the story goes, Jobs toured a Xerox research facility in 1979 and saw a computer with an experimental graphical user interface (GUI).[4] Xerox did not see a large market for this technology. But Jobs was quick to see the potential for GUI and sold the revolutionary Apple Macintosh in the 1980s. Today, most of world's 360 million PC users operate with a user-friendly interface descended from Jobs' original innovation.

Innovations are not limited to new technologies. They can include new price strategies (Charles Schwab and other discount brokers), or risk management in dining out (McDonalds and other "chain" food franchisers), or new distribution channels (Federal Express overnight delivery or book-selling on the Internet), or mass distribution of products from other cultures (a Starbucks grande cappuccino).

Entrepreneurs next build and grow companies to bring their innovation to market. The words "entrepreneur" and "inventor" do not mean the same thing. Entrepreneurs put together all the resources needed – the capital, the management, the people, and the business strategy – to transform the invention into a product, process, or service innovation that finds a market and affects the economy. In other words, they build whole companies upon their innovations.

Because their innovations are born of big ideas about how to build on global, technological, or societal change, they intend to grow their businesses into very big companies. Henry Ford and his Model T became the international automobile manufacturer; Sam Walton and Wal-Mart became America's number one employer; Thomas Watson and his adding machines became IBM.

Finally, entrepreneurs take significant, calculated, personal risk in building their companies. Typically, they put at risk their financial security,[5] their professional reputations, and sometimes their personal relationships to pursue their visions. The chances of failure are high, and it takes an extraordinary culture and climate to encourage entrepreneurs to take these risks. Silicon Valley provides one example of such a culture and climate –one "that encourages people to strike out on their own. Failure is not welcome, but is tolerated. In fact, venture capitalists seem more willing to invest in someone who already has failed than in a first-time entrepreneur."[6]

WHAT DO ENTREPRENEURS DO -- FOR US?

The benefits to us, as Americans, of entrepreneurs' risk-filled but successful efforts to see change and find opportunities in it, to discover innovations to exploit those opportunities, and then to build and grow companies upon those innovations, are enormous. They fall into four categories:

- ✓ Entrepreneurs use innovations to improve our quality of life.
- ✓ Entrepreneurs create new jobs.
- ✓ Entrepreneurs improve our position in global economic competition.
- ✓ Entrepreneurs create economic growth and new wealth for reinvestment in our country.

First, entrepreneurs use innovations to improve the quality of life. They create new technologies, new products, and new services that multiply our choices and enrich our lives – by making life easier, making us more productive at work, entertaining us in new ways, improving our health, helping us communicate better with one another, and in countless other ways.

Small entrepreneurs lead the way in developing ideas; they are responsible for more than half of all innovations -- 67 percent of inventions[7] and 95 percent of radical innovations since World War II.[8]

A partial list of innovations brought to market by small firms, compiled by the Small Business Administration, provides stark evidence of the impact of entrepreneurs on our quality of life:

MAJOR INNOVATIONS BY U.S. SMALL FIRMS IN THE 20TH CENTURY	
Acoustical suspension speakers	**Geodesic dome**
Aerosol can	**Gyrocompass**
Air conditioning	**Heart valve**
Airplane	**Heat sensor**
Artificial skin	**Helicopter**
Assembly line	**High capacity computer**
Automatic fabric cutting	**Hydraulic brake**
Bakelite	**Piezo electrical devices**
Biosynthetic insulin	**Prefabricated housing**
Continuous casting	**Pressure sensitive cellophane**
Cotton picker	**Rotary oil drilling bit**
Fluid flow meter	**Safety razor**
Frozen foods	**Soft contact lens**
Fosin fire airinguisher	**Six-axis robot arm**
	Spectographic grid

In addition to bringing particular inventions to market, entrepreneurs have created whole new industries that are integral parts of our daily lives. New industries that did not exist a generation ago include personal computing, voice mail, cellular phones, fast oil changes, Internet shopping, convenience foods, superstores, and digital entertainment, to name a few.[9]

Entrepreneurs often bring us new products and services when larger companies lack the vision or interest to bring innovations to market. Think of Steve Jobs, the GUI, and the personal computer story mentioned above. The business minicomputer market in the 1960s and the computer workstation market in the 1980s offer other examples. Many of these technologies were first pioneered by IBM, which had the patents, the scientists, and the R&D needed to hold these markets. Yet, the minicomputer market was created by entrepreneurs at Digital Equipment Corporation, and the computer workstation market was built by another entrepreneurial company, Sun Microsystems.[10] Was IBM fearful of "cannibalizing" its sales to mainframe computer market? Despite IBM's clear technology lead, it took entrepreneurs to bring these new products to the customers who could use and would want them.

A recent National Academy of Engineering report summarized the critical role played by high technology entrepreneurs:

> The principal economic function of small entrepreneurial high-tech companies is to probe, explore, and sometimes develop the frontiers of the U.S. economy – products, services, technologies, markets – in search of unrecognized or otherwise ignored opportunities for economic growth and development.[11]

Second, entrepreneurs create new jobs. New fast growth companies are but a small subset of the U.S. economy, comprising just 350,000 firms out of a total of 6,000,000 current U.S. businesses with employees. Yet, these fast growing companies created about two-thirds of new jobs between 1993 and

1996.[12] In other words, a majority of net new jobs are created by a small subset of entrepreneurial firms that comprise only 5-15 percent of all U.S. businesses.

Despite this success, the creation of our vaunted "New Economy" has not been painless for many individuals who lose their jobs and have to move to a new location or learn new skills. While the total number of jobs has increased, many have had to make painful changes. Economists expect some regular level of job loss. About 10 percent of U.S. jobs disappear annually due to business closures and contractions. As a result, about 13 million new jobs (at current rates) must be created every year in order to maintain a healthy job market.[13]

*****[PULL QUOTE*****: Entrepreneurs create new jobs. Since 1980, the United States has added 34 million new jobs despite the fact that *Fortune* 500 companies lost more than 5 million jobs.]

The rapid development of the entrepreneurial economy has helped soften the pain of disappearing jobs by creating the new jobs to replace those that are lost. Since 1980, the United States has added 34 million new jobs despite the fact that *Fortune* 500 companies lost more than 5 million jobs.[14]

Consider some specific examples of how jobs in traditional large businesses are lost and replaced by new jobs in entrepreneurial companies. In telecommunications, AT&T lost 207,000 jobs between the mid-1980s and mid-1990s, but new telecommunications companies like MCI, Sprint, and Lucent created more than 202,000 new jobs. Similarly, Sears and K-mart lost 196,000 jobs, while the entrepreneurial company Wal-Mart gained 624,000. While 248,000 telephone operators have lost their jobs since 1970, there are 500,000 new jobs in Web page design.[15]

When entrepreneurs create even more jobs than are eliminated, they cut unemployment rates, move people from welfare to work, and help drive up wages.

Third, entrepreneurs improve our position in global economic competition. Finding opportunity in change, entrepreneurs have pushed U.S. companies into dominating positions in critical global industries such as biotechnology, pharmaceuticals and the Internet. For example, the U.S. biotechnology industry is about five times larger than all the biotechnology industries throughout Europe combined,[16] and U.S. companies are expected to account for 80 percent of the world's top-selling pharmaceutical products by 2002.[17] Similarly, the United States leads the world in Internet-related industries with 60 percent of all Internet host computers, and half of the world's Internet users.[18]

The most successful economies will be those where established industries rapidly adjust to changes in the global environment. By their very nature, entrepreneurs see ways to make our economy more adaptable. They don't do business "the way it's always been done" but rather make changes and introduce intense levels of competition into even established industrial sectors.

Upstart entrepreneurs have time and again threatened the stability of industries such as steel, retailing, and financial services, and entrepreneurs have even challenged seemingly unassailable firms such as IBM and AT&T. For example, in response to serious challenges from entrepreneurs in the telecommunications industry, AT&T split off its research laboratories and hardware manufacturing into a totally new company.[19] As the new company quickly took off and became more profitable than AT&T, AT&T reinvented itself, resumed its corporate success, and was poised to become an international – and not just a U.S. – telecommunications power.

Entrepreneurs have helped shape American companies into formidable international competitors because they have formed new companies and industries to take advantage of global change. These new companies and industries are reflected in the *Fortune* 500 list of the largest U.S. companies. In 1960, it took twenty years to replace 35 percent of the companies on the list of Fortune 500 companies, i.e., there were fewer than 10 new faces on the *Fortune* 500 list each year. Now, 35 percent are replaced in three or four years, placing roughly 50 new companies on the list each year.[20] Viewed another way, eight of America's 25 biggest firms in 1998 did not exist or were very small in 1960.

In contrast, all of Europe's largest firms in 1998 were large corporations in 1960.[21] "High unemployment is Western Europe's most pressing problem politically, but its real economic problem is something quite different. … Behind Europe's real problem is a lack of change agents – entrepreneurs."[22]

Finally, as many entrepreneurs build their companies on new technologies and communications systems, they feel as comfortable selling their products and services "down under" as they do "down the street." Small firms are becoming America's most successful exporters, showing the fast growth rates in terms of export value and the number of exporting companies.

Small businesses with fewer than 500 employees make up nearly 97 percent of all U.S. exporting firms, and their importance is growing. Between 1987 and 1997, the number of these small company exporters tripled, and between 1992 and 1997, the value of small company export dollars also tripled, to $171.9 billion. Companies with fewer than 20 employees have been the most successful exporters – they are the fastest growing both in numbers of exporters and in numbers of export dollars.[23]

Finally, entrepreneurs create economic growth and new wealth for reinvestment in our country. The U.S. is among the most "entrepreneurial" nations because Americans believe they have opportunities to start businesses and live in a culture that respects entrepreneurship as an occupation.[24] Each year Americans start 600,000 – 800,000 businesses with employees[25] and about two million Americans start their own self-employment ventures. These business starts are the foundation of an entrepreneurial economy.

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A high rate of new business starts is only beneficial because it contributes to the bottom line: economic growth. For years, this connection was not well understood by economists. However, a new series of studies, the Global Entrepreneurship Monitor (GEM), has finally made the connection explicit. The GEM researchers found that fully one third (1/3) of the differential in national economic growth rates is due to the impact of entrepreneurial activity.[26]

The economic growth generated by entrepreneurial companies is the core engine of a "virtuous cycle." Successful entrepreneurs, through their breakthrough technologies and rapidly growing businesses, create new wealth that can generate even greater economic growth. For successful entrepreneurs also reinvest some of their wealth in other, new entrepreneurial ventures. They invest with friends or family members (informal investments), through local investment networks ("angel" investments), and through organized venture capital firms.

American venture capital receives a great deal of publicity, but most new investments are generated by entrepreneurs and other individuals who are informal or "angel" investors. Each year, only about 1,000 out of 600,000-800,000 start-up businesses use formal venture capital (usually for investments in excess of $1 million). The vast majority of start-up firms rely on informal investors who invest $1,000 to $50,000. And, in areas with lots of successful entrepreneurs, "angel" investors are increasingly investing $50,000 to $1,000,000 in new ventures.[27] Our huge number of informal and "angel" investors indicates both the breadth of the United States' fundamental incorporation of entrepreneurial values and their willingness to reinvest dollars, often reaped from entrepreneurial ventures, in more new businesses.

Successful entrepreneurial companies often "reinvest" the new wealth they create in distributions to their employees through stock option and other employee stock ownership plans.[28] For example, Cisco Systems employees 19,000 people, 7,000 of whom are millionaires.[29]

Of course, the tax revenues on this new wealth created by entrepreneurs allows local, state, and the federal governments to make investments in a better social and economic infrastructure like better education, transportation, research and development, and health care. Finally, the new wealth from entrepreneurs can fuel new philanthropic ventures that supplement public sector reinvestment in our social and economic infrastructure. The boom in philanthropy, highlighted by headline stories such as Ted Turner's $1 billion gift to the United Nations, and the emergence of new foundations like the Kauffman Foundation, the Gates Foundation, and the Packard Foundation, has been triggered in part by the boom in entrepreneurship. Abraham Maslow, about 50 years ago, stated it this way, "Good managers, and good enterprises and good products and good communities and good states are all conditions of one another."[30]

THE CHALLENGE AHEAD

Entrepreneurial businesses and small and large corporations play complementary roles in today's complex economy. History shows us a common pattern. Small, start up entrepreneurial firms serve as incubators for new ideas. Most of these experiments fail, but a large number also succeed. The "winners" in this competition often attract outside interest and large companies with greater resources, then give a boost to the most promising innovations through investment or acquisition. For example, the Internet company Hotmail was started by an independent entrepreneur, funded by venture capitalists, and then acquired by Microsoft for $400 million. Another recent example is Merrill Lynch's investment in Archipelago, an on-line stock-trading network that has applied to become an electronic stock exchange.[31]

As we embark upon a new century, the importance of entrepreneurs and their companies will grow. As MIT's Lester Thurow puts it:

> In the century ahead the economic game will be played on three levels [at the national, company, and individual levels]. … Companies will play the game based on the skills they employ, the capital investments they make, their technical prowess, and their ability to globally source and sell new products. New start-ups that rapidly grow to become big multinationals will be an important part of success. These new, rapidly growing start-ups won't appear without entrepreneurs. Social regulations and attitudes will have to permit industrial flexibility if entrepreneurs and new companies are to emerge.[32]

As the nation sorts out its priorities for the new century, fostering entrepreneurship must be a cornerstone of our economic policy. If we fail in this regard, the costs could be enormous.

First, if policymakers do not understand the importance of entrepreneurship to the economy and the policy infrastructure under which it thrives, we could easily cripple the powerful engine that is now driving American economic growth.

> History teaches us that it is only too easy to stamp out entrepreneurship. It is a latent human characteristic that despite its creative and destructive powers is extremely fragile. In most times and most places, entrepreneurs do not exist. The same economic possibilities exist, but they are not seen, the energy to bring them to market is lacking, or the risks they involve are seen as too great to be accepted.[33]

Despite the clear evidence of the power of entrepreneurship in the economy, it is difficult for policymakers to embrace this view when their economic advisors do not validate its importance. As Peter Drucker has noted, classical economics "cannot handle the entrepreneur but consigns him to the shadowy realm of 'external forces,' together with climate and the weather, government and politics, pestilence and war…."[34] Only very recently have mainstream economists begun to acknowledge the central role that entrepreneurs play in the American economy.

But policymakers need to go further than simply appreciating the role of entrepreneurs in economic growth. They must understand those key policy factors that help entrepreneurs thrive, on the one hand, or that could "stamp them out," on the other. For example, what are the key factors in the regulation of capital markets, the financial incentives for entrepreneurs, the protection of intellectual property, the support of knowledge workers, or the regulation of access to technology developments that determine the level of entrepreneurial activity in the country? Without an understanding of these and other components of the infrastructure that supports entrepreneurship, policymakers could stumble badly and cripple entrepreneurial contributions to economic growth.

Second, there is an as-yet-untapped opportunity to spread entrepreneurship throughout the country. Silicon Valley, Route 128 near Boston, Denver-Boulder, Austin, Northern Virginia, and the Research Triangle in North Carolina are known pockets of entrepreneurial strength. But what of: the other regions of the country? the inner cities? the rural areas of the country? the demographic groups that have yet to fully participate in the entrepreneurial boom described above?

In many ways, entrepreneurship remains a bi-coastal phenomenon, with the most extensive activity in California and the Northeast and more limited new investments in others parts of the country. A glance at patterns of US venture capital investment reflects this analysis. In 1999, California received slightly more than 43 percent of all new venture capital investment---a whopping $20.8 billion. Of this total, nearly $17 billion was invested in Northern California. The Northeast, ranked No. 2, received $9.6 billion, almost half of California's total. The Southwest received $2.9 billion, less than one-third of the Northeast's total. And although we only have statistics on the amount and location of formal venture capital investments, it is likely that "angel" investment patterns only amplify this result, as many angel investors are successful entrepreneurs who tend to invest in local businesses.

If entrepreneurial companies are the source for new jobs and reinvestment in communities, failure to foster entrepreneurship in under-performing sectors is simply an unacceptable policy choice.

And finally, it is the height of naivete to believe that our international competitors do not have the will or ability to challenge our entrepreneurial strength – at least in some key industrial sectors. Despite their cultural and institutional differences,[35] European and Asian powers are determined to foster entrepreneurial activity in their own countries, within their own cultures, to appropriate for themselves the economic benefits that the United States now derives from worldwide entrepreneurial leadership.

Starting with the Organization for Economic Cooperation and Development report *Fostering Entrepreneurship in Europe: The UNICE Benchmarking Report 1999*, all of the major European countries and several Asian nations (including Japan) have announced initiatives to promote entrepreneurship.[36] Certainly, the cultural and institutional impediments to the success of these initiatives are greater in many of these countries than in the United States.[37] But if these initiatives are successful to a significant degree, and these nations combine their newfound entrepreneurial strength with their already established assets in education, manufacturing, and the leverage of the European Union, they could challenge U.S. leadership in certain key industrial sectors in the future. Just as American entrepreneurship for the moment has produced U.S. dominance of the internet-based "e-commerce" industry, it is not inconceivable that one or more of these countries could achieve an entrepreneurial breakthrough that would allow them, and not us, to dominate any number of future, high-growth industrial sectors.

Only if American policymakers seek to expand entrepreneurship throughout the country and to maintain and enhance the policy infrastructure to increase the level of successful entrepreneurship will the U.S. take such a lead that we will be, in the end, "uncatchable."

In so doing, we will ensure that ever-accelerating global change remains America's ally – and never becomes our enemy. We will continue to bring the benefits of entrepreneurship – more jobs, a better quality of life, success in global markets, and reinvestment of new wealth -- home to America.

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ENDNOTES

[1] John Doerr of Kleiner Perkins Caulfield & Byers in a speech on July 10, 1999, San Francisco, California.

[2] David Pottrack, President of Charles Schwab & Co. in a speech on July 10, 1999, San Francisco, California.

[3] Drucker, Peter F. *Innovation & Entrepreneurship*. New York. Harper Business. 1995, p. 28.

[4] "Poor Little Liza," *Invention & Technology,* Summer, 1999.

[5] The CEOs of the *INC. 500* Fastest Growing Companies put approximately 43% of all their personal assets at risk at the start-up of their companies. *INC.*, October 19, 1999, p. 22.

[6] *Harnessing Science and Technology for America's Future*, National Research Council, 1999, p. 23.

[7] *Global Entrepreneurship Monitor: National Entrepreneurship Assessment – United States of America.* Kansas City, MO. Kauffman Center for Entrepreneurial Leadership. July, 1999, p. 4.

[8] Timmons, Jeffrey A. *America's Entrepreneurial Revolution: The demise of Brontosaurus Capitalism.* Babson College, F.W. Olin Graduate School of Business. 1998, p. 11.

[9] Timmons, p. 9.

[10] "The IBM Failure," *Upside Today,* February 28, 1993.

[11] National Academy of Engineering, *Risk & Innovation: The Role and Importance of Small High-Tech Companies in the U.S. Economy,* p. 39.

[12] Atkinson, Robert D. and Court, Randolph H. *The New Economy Index: Understanding America's Economic Transformation.* Progressive Policy Institute. November, 1998, p. 13. Fast growth companies are defined as firms with sales growth of at least 20 percent each year for four straight years.

[13] "Gross Job Flows," Steven Davis and John Haltiwanger in *Handbook of Labor Economics,* 1998.

[14] Timmons, p. 9.

[15] See Cox, Michael and Alm, Richard. *Myths of Rich & Poor.* 1999.

[16] "Biotechnology Spotlight," *OECD Observer,* March, 1999.

[17] "Pharmaceutical Groups Search for a Quick Fix," *Financial Times,* September 13, 1999.

[18] See Network Wizards and MIDs at *www.ngi.org/trends/.*

[19] Thurow, Lester. *Building Wealth.* New York. Harper Collins. Pp. 5-6.

[20] Timmons, p. 11.

[21] Thurow, p. 93.

[22] Thurow, p. 90.

[23] Exporter Data Base, U.S. Department of Commerce, Office of Trade and Economic Analysis, Trade Development/International Trade Agency, November, 1999.

[24] *Global Entrepreneurship Monitor: 1999 Executive Report.* Kansas City, MO. Kauffman Center for Entrepreneurial Leadership. June, 1999, p. 32.

[25] *Global Entrepreneurship Monitor: National Entrepreneurship Assessment – United States of America,* p. 2.

[26] *Global Entrepreneurship Monitor: 1999 Executive Report,* p. 39.

[27] *Global Entrepreneurship Monitor: National Entrepreneurship Assessment – United States of America,* p. 19.

[28] *The Economist,* August 7, 1999. And almost forty percent of The *INC. 500* Fastest Growing Companies offer all fulltime employees stock options. *INC.*, October 19, 1999, p. 26.

[29] Sandy Robertson, formerly of Robertson Coleman Stephens, attributed to John Chambers, CEO of Cisco Systems, in a speech on July 10, 1999, in San Francisco, California.

[30] Petzinger, Thomas, Jr. *The New Pioneers.* New York. Simon & Schuster. 1999. P. 240.

[31] Joint Economic Committee Staff Report, *Entrepreneurial Dynamism and the Success of U.S. High-Tech*, October, 1999, p. 18.

[32] Thurow, p. 97.

[33] Thurow, p. 84.

[34] Drucker, p. 26.

[35] See generally *Global Entrepreneurship Monitor: 1999 Executive Report.*

[36] See, for example, the call to arms in *Fostering Entrepreneurship in Europe: The UNICE Benchmarking Report 1999*, Union of Industrial and Employers' Confederations of Europe, Brussels, Belgium.

[37] See generally *Global Entrepreneurship Monitor: 1999 Executive Report.*