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**Engines of the Economy: Creative Business Owners and Increased Productivity**

Thank you for inviting me to speak. I'm delighted to be here. I'm here today as part of the Chicago Fed's efforts to communicate directly with businesses, communities, and citizens in the Midwest. NAWBO aims, as part of its mission, to transform public policy and influence opinion makers. The Fed always welcomes opportunities to increase our interaction with business leaders. Karen Lennon [Chicago NAWBO president] tells us that this group is not overly shy and we can count on you to provide us with honest opinions and feedback. I think she felt she was giving me a fair warning before the speech. Actually, honest feedback is exactly what we're looking for. We've already had a chance to work with NAWBO through the Chicago Fed's Advisory Council on Agriculture, Labor, and Small Business. That advisory group has included a number of NAWBO members from the Midwest over the years. Karen Lennon is currently serving on the Council. We look forward to continuing to work with you in the future.

As President and CEO of the Chicago Fed, I wear many hats. That's because the Federal Reserve has many different roles. We supervise and regulate banks. We provide financial services to banks and the U.S. government. And we set monetary policy. But we do have one over-riding mission: to ensure a healthy, growing economy.

As I'm sure you are aware, the Federal Open Market Committee, or FOMC, is the Fed's key policymaking group. The Presidents of all 12 Federal Reserve Banks take part in FOMC meetings, bringing an understanding of conditions in every industry and geographic corner of the U.S. economy to the deliberations. As a member of the FOMC, an important part of my job is to keep a watchful eye on economic conditions, with the help of many people living and working in the Midwest such as our board of directors and our advisory councils.

Recently, of course, economic conditions changed quickly and dramatically. That change was all the more dramatic because of the economic successes of the past decade. We've been fortunate to live in a time of unrivaled prosperity. We've achieved some remarkable economic milestones — the longest expansion in our history; the lowest unemployment rate in 31 years; and a slow, but generally steady, deceleration in inflation. That last achievement is very important. Far from seeing a conflict between low inflation and strong growth, I believe the environment of greater price stability has been an important factor that has made strong growth possible. Perhaps our most remarkable achievement, however, has been the significant acceleration in productivity growth that took hold around mid-decade. This is my main topic for today: Productivity growth and its key role as the engine of the 1990s expansion. But before turning to that important subject, let me make a few comments about some more recent economic developments.

Looking back, we see 2000 as a year of transition. March is known for coming in like a lion and going out like a lamb. That's also the economic tale of 2000—strong beginning; weak at the end. As 2000 began, there were few signs of slower growth on the horizon. During the first quarter, consumer spending increased at the fastest pace in 17 years and more autos and light trucks were sold than ever before. Some slowing from the rapid growth of the first quarter was to be expected. Back in 1999, the economy was expanding at an unsustainable rate and inflationary pressures were starting to build, which is why the Fed increased its target for the federal funds rate six times between June 1999 and May 2000. The Fed's expectation was that the economy would return to a more sustainable pace of growth as the year progressed. But as we moved through the second half, the economy downshifted more sharply and quickly than anticipated. The current slowness is certainly a response to tighter monetary policy. But only in part. There are other factors at work. Energy prices increased. We experienced adverse weather conditions. There was less stimulus from the so-called "wealth effect." And it seems likely that some consumer demand, particularly for big-ticket items, had already been satisfied during earlier periods of rapid consumption growth.

With sales slowing, inventories started to mount, and the manufacturing sector softened noticeably in the second half. By the fourth quarter, industrial production declined. At the same time, employment growth began to slow. Nevertheless, there were some bright spots. Falling mortgage rates bolstered the housing sector. Productivity growth continued to be strong. Inflationary pressures, outside the energy area, subsided. And the unemployment rate held near 4 percent, although it increased slightly to 4.2 percent during January.

As I'm sure you know, the FOMC reduced the target for the federal funds rate twice in January, each time by half of a percentage point. These actions reduced the fed funds rate target from 6½ percent to 5½ percent. The FOMC noted in its January 31 statement that weakness in the economy, combined with contained inflationary pressures, "called for a rapid and forceful response of monetary policy."

We have entered yet another stretch of uncharted waters in our economic history. The outlook for this year is very uncertain. But our expectation at the Chicago Fed for 2001 is that we will see a reversal of last year's performance, with a slow first half followed by a stronger second half. Clearly, demand has weakened faster than most businesses anticipated, and inventories relative to sales climbed above desired levels in many sectors. It appears that the cutbacks in production in response to high inventories may have been accelerated by new technologies that make sales information available more quickly than in the past. The good news is that this same technology should help increase the speed of the economy's rebound as inventories return to more desirable levels. And, as the FOMC statement noted, longer-term gains in productivity "exhibit few signs of abating and these gains, along with lower interest rates, should support growth of

the economy over time.” What is encouraging is that faster productivity growth, which played a key role in our success during the last half of the 1990s, appears to owe little of its surge during the past few years to cyclical influences. That is, fundamental changes have improved the underlying productivity growth rate, giving us reason to believe that productivity growth will continue at relatively high levels even with slower economic growth. For the rest of my talk, I’d like to focus on productivity because it will play an important role in determining the health of the economy in the years to come.

So who plays the key role in increasing productivity growth? All of you. We at the Federal Reserve cannot directly increase America’s productivity. Rather, it’s your creativity and skills—your investment and management decisions—that determine our productivity. Thus, in a very real sense, the economic future is more in your hands than mine, or the hands of anyone at the Fed for that matter, including Alan Greenspan — but don’t tell him I said that.

So what is productivity? Generally speaking, productivity refers to the real output produced per hour worked. For example, in the mid-1980s, it took nearly 8 man-hours to produce a ton of steel. Now it’s less than 4. That’s an increase in productivity of nearly 5 percent at an annual rate.

And why should you care about productivity? Because it has a direct effect on your real income — your ability to purchase goods and services. As workers become more productive, managers can afford to pay their staff more. Thus, as productivity growth goes up, so does the growth in real wages. In fact, over time real wages grow at about the same rate as productivity. So, increases in the rate of productivity are important because they drive the improvements in our standard of living.

Growth in productivity has varied over time. From 1948 until 1973, labor productivity growth averaged a solid 3 percent per year. During that period, real wages rose at about the same rate. But beginning around 1973, productivity growth dropped off dramatically. From 1973 until 1995, average annual productivity growth was only 1.4 percent, less than half the previous rate. Parents who had seen their real wages rise quickly witnessed far slower gains for their children.

Then around 1995 the productivity trend seemed to reverse itself again. From 1995 to 2000, average productivity growth returned to about 3 percent per year. And, just as in the 1950s and ‘60s, our real wages have grown at higher rates as well.

But the productivity story doesn’t stop there. Productivity’s effect on our real wages is similar to its effect on our national economy — our real Gross Domestic Product, or GDP. When we have higher rates of productivity growth, we have higher rates of GDP growth. For that reason, monetary policymakers are keenly interested in productivity growth. Not only does it affect our real wages, it affects the growth of our national economy.

So the key issue for both you and me is whether the most recent surge in productivity growth is a short-term anomaly or a longer-term phenomenon. Though the answer is far from clear, closely examining productivity’s components can give us some guidance.

Productivity growth is composed of three basic factors: capital deepening, labor quality improvement, and what economists like to call multifactor productivity. Let me briefly discuss the first two, so we can focus on the third.

Let's start with capital deepening. This means giving workers more tools or better quality tools by investing in more capital per worker. Obviously, capital deepening can have a big impact on worker productivity. A worker sitting on top of a Caterpillar tractor can move a lot more dirt than one armed only with a shovel.

In recent years, we've seen investment spending growth in the double digits. Growth in spending on high-tech capital equipment and software was especially high, averaging 20 percent per year or more. Spending in this area accounts for about three-quarters of the record increase in overall investment spending. As a result, we've transformed the way we work. Back in 1984, only about 25 percent of Americans used a PC at work. I suspect only a small number of people in the audience haven't used a computer at least once in the past week.

Computers not only make us more productive, they also increase our flexibility to work on the road. By using a laptop or a Palm Pilot you can work anywhere — not merely when you are chained to your desk. For example, you could increase your productivity right now by checking your e-mails while listening to this speech — not that I'm encouraging you to do that.

Since 1995, the rate of capital deepening has increased, contributing to our higher productivity growth. In the early 1990s, official statistics suggest that capital deepening was responsible for about 0.5 percentage point of the 1.5 percent productivity growth we were experiencing. But from 1995 to 1998, the last year we have capital deepening data, that contribution increased to about 0.8 percentage point. Our analysis indicates that the trend towards capital deepening has continued in the last two years. The true contribution now could be easily above 1 percentage point. If so, the pace of capital deepening has more than doubled since the early 1990s, although it has slowed in the past few months.

The second factor contributing to the growth of labor productivity is improvement in worker skill levels, which includes education and experience. Clearly, education levels have improved over time. Sixty percent of those just starting their careers today have some post-high school education. For those near retirement, that figure is only around 40 percent. This pattern is age-old, each new generation of workers has more education than the last; as the average level of education increases, each new generation becomes more productive.

However, while important, the contribution of worker skill improvements to productivity growth has held steady at about 0.3 percentage point since the early 1990s. Thus this factor does not explain any of the increase in productivity growth since 1995. Changes in education and experience levels take place too slowly to account for the dramatic change we've seen in recent years.

The third and last factor is what economists call multifactor productivity growth, which, typical of many economic terms, does little to illuminate the subject it describes. It means gains that ultimately stem from innovation: innovation in technology, innovation in management processes, and what economists call creative destruction, the process by which firms that innovate replace those that don't. In the long run, the pace of innovation is the most important determinant of an economy's growth prospects.

Why is innovation so important? In a nutshell, innovation not only raises productivity directly, it also leads to the process of capital deepening. That's because firms are more likely to invest when the expected returns are high. And innovation is what brings about those high returns. So innovation drives current productivity improvement and sets the stage for future improvements by fostering capital deepening.

Consider first the extraordinary technological advances we've seen in recent years. This innovation is conceptually distinct from capital deepening. It refers to the invention of new high-tech products, rather than simply firms' purchase of these products. Technological innovation by engineers, computer programmers, and others has been extremely rapid over the course of this expansion.

Only nine years ago, I served as Deputy United States Trade Representative; we had extensive negotiations to encourage the Japanese government to open their market to U.S. supercomputers. Those room-sized monsters cost millions of dollars because of their advanced processors. Now, equivalent computing power can be found on a network of high-end desktop computers. What a thought: countless hours negotiating over products, the equivalent of which can now be found on a shelf at Best Buy! It was technological innovation that allowed computer prices to fall so very rapidly, and which has facilitated their rapid spread throughout our offices, as part of the capital deepening process.

But high-tech wizards aren't the only innovators in our economy. Many innovations come in the way we do things, rather than what we use to do them. That's one aspect of productivity growth that tends to be overlooked but I think is very important. Managers are constantly finding better ways to enhance their firm's performance such as reducing inventory, improving logistics, and finding better ways to organize production and reduce inefficiency.

And management innovation means more than just manufacturing processes: people processes have been revamped during this expansion as well. Firms today truly see workers as human resources, and are creating work environments that foster problem solving. Some of the more inspired developments in human resources that have taken hold during this expansion include: work teams, flexible job assignments, and cross-training. Research suggests that these new practices can make a significant difference in productivity and product quality. That's why managers at all levels make such a difference in productivity and the success of individual companies over the long haul.

This brings me to the process of "creative destruction." An important part of productivity growth comes from firms that are innovative replacing those that are less so. Innovators rise to the top, while the less innovative are pushed out of the market. The resulting resource allocation leads to productivity improvements for the whole economy. So although some firms disappear, the process of creative destruction helps increase overall productivity in the long run.

Collectively, the direct gains in productivity due to innovation — the multifactor productivity gains — have been the biggest factor in the better performance of productivity since 1995. According to data from the Bureau of Labor Statistics, between 1990 and 1995, multifactor productivity growth averaged only 0.6 percent. For the period 1995 to 1998, it jumped to 1.3 percent, a dramatic improvement that has likely continued over the last two years. This jump in the pace of innovation explains the majority of the increase in labor productivity growth relative to earlier in the 1990s, with the rest attributable to more rapid capital deepening. Improvements in labor quality held about steady.

These considerations leave me feeling cautiously optimistic about the future pace of productivity growth and the implications for our economy. It's difficult to say precisely how fast productivity can grow in the current environment. We'd all love to have another ten years of data on which to base our judgements. But despite the inevitable uncertainty, our current best estimate at the Chicago Fed is that the pace of productivity growth during the next couple of years will be similar to what we had in the 1950s and 1960s. As I said, productivity growth averaged about 3 percent per year during that period. But it's important to

emphasize that this was an overall average and actual productivity growth varied from quarter to quarter and year to year. Indeed, with the economy slowing from the frenetic pace of 1999 and early 2000, productivity growth likely will be somewhat slower. Even so, we can expect productivity growth to be higher than in the early 1990s.

When discussing the economy, it's always important to remember that there's more to achieving long-term prosperity than changing interest rates. Increased productivity is essential to maintaining real economic growth. Your role in innovation and productivity will continue to drive this economy. As business owners you work each day to improve the productivity at your companies. Your efforts have been the lifeblood of this record expansion. Our economic future depends on your efforts to help your employees become more skilled and better educated, and to embrace the benefits of innovation. I hope that you walk away from this talk today with a renewed sense of the value of embracing change in the interest of improving your firms. In my experience, your ability to innovate as managers is a key element to maintaining continued strong productivity growth. You will continue to determine the health of the economy in the years to come, and I applaud you for your efforts.