Greater Dallas Chamber Women's Business Conference

by Cathy E. Minehan, President & Chief Executive Officer
September 25, 2003

Looking back over the last decade or so, I am struck by the fact that this has been a remarkable if not unique period in U.S. economic history. After a boom in the late 1990s, we saw just about the shortest and most shallow recession ever. Now, the recovery we are experiencing is unique as well – slowly accelerating over the past 2 years and with declining, rather than growing, employment levels. And price pressures continue to be muted. We have experienced a variety of unprecedented shocks – the tragedy of 9/11, corporate governance and accounting scandals, a war and an aftermath of serious geopolitical uncertainties. Yet through all of this, the economy demonstrated remarkable resiliency. In my view, each of the salient economic features since the mid-1990s reflects yet another aspect of the economy – the remarkable rate of U.S. productivity growth over this period. Just to refresh your memories, U.S. productivity grew at a 3 percent pace from 1996 on--better than the pace of any other G-7 country.

What do we know about the post-1995 acceleration in productivity growth? We know that it was accompanied by a sharp acceleration in innovation and investment in information technology, that, at its heart, was possible because of several long-standing aspects of the U.S. economy. Just to mention a few--this country benefits from a legal environment that protects intellectual property rights. Venture capital financing for high technology enterprises is normally plentiful. Government research funding is sizable. This country's system of public and private universities consistently produces top-notch research and researchers. And our markets normally provide ample financing for maturing industries. But all these advantages and others did not prevent the United States from experiencing a period of slow productivity growth between 1972 and 1995, slow both based on our own past history and compared to other developed countries. Indeed, during the l980s, productivity growth in Europe was one and a half percentage points faster than in the U.S.

Changes in productivity growth are one of the most enduring puzzles of the U.S. economy. An understanding of the underlying determinants of productivity, however, remains crucial. As economist and now columnist Paul Krugman has noted, “Productivity isn’t everything, but in the long run it’s almost everything.”

This morning I would like to focus my comments on several aspects of productivity growth. First, what is it and why do we care? How have this country's patterns of productivity growth changed over time? And, finally, what is the likely evolution of productivity and its impact on current economic prospects.

What is productivity? Simply put, productivity refers to the amount of output an economy produces per unit of input. Just to use an example from Reserve Bank operations, how many pieces of cash can one currency sorter count in an hour? Measuring productivity would then appear to be a straightforward issue of dividing output by input; in this case roughly 67,000 notes per hour using our latest high-tech sorters.

Yet even this simple and fundamental concept of productivity poses serious measurement problems. Hours worked – a seemingly straightforward concept – are not always easy to measure. Even if hours are reported accurately, it is difficult to control for effort – how hard are people actually working? Measuring output poses even greater challenges, particularly when the unit of output is hard to define. In our example, it's easy--one dollar bills. But what if it were legal briefs or pieces of economic research? Here the problem is not only definition but the measurement of quality. Not all legal briefs or research work have the same complexity or value. What is the unit of output for computers? What is the unit of output for banking and other financial services? Statistical agencies are keenly aware of these issues and work hard to tackle them in the best possible way.

Still, some products defy measurement. Many advances in biotechnology are excluded from our productivity measures. Biotech innovations can prolong life or improve its quality, yet because a new remedy's outcome cannot be measurably distinguished from that of an old, this impact is missed. The same can be said of impressive past innovations as well. Electricity for one. Electricity provided unprecedented gains in living standards – for example by lengthening the day or improving its quality with air conditioning – yet capturing its full implications went well beyond our measurement ability.

Why do we care about productivity and about its accurate measurement? We care because rising standards of living are almost solely a function of productivity growth. In theory, we can raise current standards of living in three different ways: (1) by increasing labor productivity – that is, output produced per hour of work; (2) by employing a larger proportion of the population; and (3) by consuming more at the expense of savings and investment.

It seems obvious that this last strategy is not a sustainable means of increasing a country's standard of living. We can consume more for a while by saving and investing less and, for a time, our lives might be better. But this will hurt our ability to produce--and thus consume--in the future. It will also impact the well being of future generations. By the same token, if a large part of the population is unemployed, employing more people can help boost living standards. Social change can bring new groups into the workforce, and this, too, helps improve living standards. The large influx of women into the labor force in the 1970s, which helped to almost double the female labor participation rate, is an example. But over the long-term, there are obvious limits to this strategy as well. This leaves the productivity channel as our most viable means for improving standards of living.

That takes us to an even more basic question. What do changes in the standard of living actually mean? We can get a glimpse of that by comparing living standards in the years since the 1800s with those available to us now. In 1800, three out of four U.S. workers were farmers; there was no indoor plumbing or electricity, let alone telephones or cars. As recently as 1950, only 50 percent of homes in the United States had central heating. Now 94 percent do. Now only 2 percent of U.S. workers produce food for domestic consumption--and exports as well--and we all enjoy indoor plumbing, electric lighting, telecommunications and transportation. All of this has made life easier and increased leisure time. Importantly, Americans now enjoy better education, health care, and, of course, a longer life span. Rising standards of living are vital and they are the result of improved productivity.

Because productivity growth is so important, much effort has been devoted to determining how it happens. But this, too, poses difficulties. Some argue that in one way or another most productivity growth can be linked to improvements in either the quantity or the quality of investments in the means of production. That means investments or improvements in either labor or capital make the difference. In our dollar bill example, when bill counting was done manually, the Boston Reserve Bank increased its productivity by hiring workers with great finger dexterity--mostly women, I should note, and many of them veterans of a local candy factory that specialized in hand-dipped chocolate covered cherries. But productivity really improved when manual counting machines were replaced by high speed electronic machines that not only count the currency but also destroy it and do a number of accounting chores.

Obviously, moving from the old manual process required an upgrade to labor as well, with mental dexterity replacing manual. Fortunately, we at the Bank were able to meet this need by retraining existing staff--a strategy that applies more generally when considering how productivity grows.

But not all productivity growth is the simple result of changes in either labor or capital. Even after one has carefully accounted for both of these sources of productivity growth, a portion of the change remains unexplained. Economists refer to this unexplained efficiency change as "multi-factor" productivity.

The idea is that, in addition to the increased output that may accrue directly from better labor or more capital, there may be potential gains that result from improvements in the way that these factors function together. In many ways, to me this is the most interesting aspect of productivity growth. Included here are the efficiencies that come from process reorganization and sheer management skill--in fact all those qualities that separate high performing companies and industries from others. Added to this are spillover effects that arise when firms that produce similar products benefit from being in close proximity to one another, like in Silicon Valley or along Route 128 in Massachusetts.

We in Boston have been studying the interplay of investments in new capital and technologies, of new and improved labor skills, and of knowledge and entrepreneurship in shaping productivity trends in the economic history of our District--New England. Standards of living in New England, as in the rest of America, have risen over time and they have followed a pattern that is both similar to the rest of the country and distinctive--as is true I would suspect of the patterns of economic growth here in Texas. New England shifted from a predominantly farming economy to textile manufacturing in the first half of the 19th century. This involved adapting large-scale textile manufacturing processes developed in England; developing new ways to use private capital; employing a fair measure of Yankee ingenuity, and using the ample supply of young farm women who were moving from a rural to an urban environment with the promise of better wages. Today, the New England economy has evolved again into a multi-faceted, service-based economy, with firm roots in finance and a large high technology component, particularly high technology in the biological sciences.

New high-tech businesses in the region trace their roots to a distinctive intertwining of academic research, private funding, government contracts and entrepreneurship. Government-funded research contracts and the presence of a vibrant private investment industry made big science big business at New England's educational institutions. Out of this nexus visionary entrepreneurs emerged to translate innovations developed for the defense industry into commercial products. Thus, over two centuries, New England shifted from farming and mercantile trading to high finance, high tech and bio tech, becoming in the process one of the nation's most highly educated regions and one with a high income level. Clearly, multi-faceted productivity growth led to rising standards of living.

Looking at this from another perspective, what happens when productivity growth falters? Productivity improvements do not necessarily come smoothly over time, and fluctuations in productivity can have a significant impact on a society more generally. As New England evolved from farming to manufacturing, other areas of the country began to supply New England with lower cost food. Farmers' daughters found work in the mills, but what about the farmers themselves? The transition cannot have been an easy one for the farmers or for the larger society.

In this respect, the post-World War II U.S. experience with productivity growth is particularly interesting. After growing rapidly in the 25 years following World War II, productivity growth stalled in the early 1970s. Measured output per hour worked had grown on average at a 2.8 percent annual pace from 1947 to 1973. In contrast, it averaged a growth rate of only 1.3 percent per year from 1973 to 1995. It seems likely that this slowdown and the sense of diminished prospects that it entailed fed into the acceleration of inflation in the '70s. It may also have contributed to the uncertainty and collective angst that many believe characterized those years.

A number of explanations were provided for the slowdown, including high energy prices, high and volatile inflation, declining research and development investment, and deteriorating labor skills at least compared to other industrialized nations. These explanations became increasingly inadequate, however, as energy prices fell back to pre-1973 levels, inflation declined, and research and investments in new high tech equipment grew. The puzzlement at this slowdown was captured in a 1987 comment by Nobel Prize winning economist Robert Solow who noted that computers were "everywhere except in the productivity statistics." Despite the introduction of increasingly powerful computers productivity was then growing at only about 1% per year, a pace even slower than the '70s.

Then, in the mid-1990s, productivity rebounded sharply to a growth rate close to that of the pre-1973 period. From a long era of diminished expectations, the U.S. economy catapulted back to the future in a sense. It regained the productivity impulse lost in the 70s. By most estimates, standards of living now can be expected to double in about half the time it would have taken at the pace of the late '70s and '80s. That is truly remarkable.

The causes of the productivity slowdown of the 1973-1995 period remain less than fully explained. In contrast, there appears to be more agreement on the causes of the recent rebound. In part, it seems to be the result of the wave of technological innovation and investment in computer and communications equipment in the '90s. During the latter half of that decade, real investment in equipment and software grew at an annual pace of 20 percent, while investments in computers and peripherals surged at a 45 percent annual pace. As the boom of the '90s progressed, and as companies made the investments in technology necessary for the Y2K transition, capital was acquired both to upgrade operations and to replace hard to find and increasingly expensive labor. Competition from new external sources of cheaper labor led to the outsourcing of lower productivity jobs and increasingly challenged U.S. companies to boost their productivity to remain competitive.

During this period many questioned whether the rapid rates of productivity growth reflected true structural change in the economy's ability to grow, or simply a response to the cyclical pressures of an economic boom. How enduring would this change be? As the '90s ended, the answer to that question became clearer. The boom faded during the first years of the century and the growth in investment in equipment and software came to a halt. But surprisingly, productivity growth did not--from 2001 on it has averaged an annual pace of 4 percent. And what we're seeing now goes beyond simple capital deepening. It reflects, I think, growth in the multi-factor productivity I spoke of earlier--the type of productivity that is the result of a more thorough integration of the investments of the '90s into offices and shop floors as well as the focused efforts of managers in businesses of all types.

In part, the fact that we are benefiting now from better integration of the investments of the '90s reflects a well-known aspect of technological change. Learning how to use new technologies efficiently takes time. It is said, for example, that electricity took about 50 years to truly impact our way of life, but once it did the effect was enormous. In this view, the Internet and all of the related technology of the '90s may have only recently begun to be used in ways that fully exploit their potential.

Adding to this learning process was the effect of the continuing domestic and global competitive challenge. During the recession, businesses met this challenge by focusing laser-like attention on cost control and process reengineering. And now that demand is growing again, that competitive instinct remains. Existing technology, integrated even better into the working environment, has become the platform for continuing cost control, profit improvement and productivity growth. This surge of productivity augurs well for the long-run--hardly anyone now debates whether or not this economy has actually seen a structural change in its ability to grow.

In the short run, however, this new ability of the economy to grow leaves us with a store of unused resources. Reflecting this, inflationary pressures are low. And, we also are witnessing the most jobless recovery on record. In the 21 months since the recession ended, employment has declined by about 1,140,000 jobs. Compare this with the so-called "normal" post-war recovery when about 3 million jobs would have been added by this time. Even the relatively jobless 1990-91 recovery had job growth of more than 175 thousand per month by this time in the cycle.

Some of this stretch of joblessness undoubtedly relates to the unique uncertainties of this long, slow recovery. In the face of a series of corporate governance scandals and uncertain equity markets, corporations adopted low-risk strategies. Geopolitical uncertainties, in particular the Iraq War, added to their concerns about the sustainability of demand. Even with interest rates at record lows, many executives reported they were hunkered down, unwilling to take the risk of new endeavors. And many looked even harder at the outsourcing trend that swelled in the boom of the '90s. In this environment, slowly growing demand was met by using existing resources more wisely, and, ultimately, drawing down inventories to record low levels in relationship to sales. Productivity boomed, but growth only recently began to pick up.

This brings us to the final question I raised at the beginning of my talk. What is the relationship between productivity growth and the U.S. economy looking forward? Clearly, productivity remains strong. But, its rate of growth has outstripped that of GDP, creating additional slack and causing already low rates of inflation to decline further. Now, as economic growth appears to be accelerating, a key question is whether that acceleration will be sufficient to begin the job creation process.

As I look at the national economy, prospects for the next couple of quarters seem assured. Monetary policy remains accommodative and fiscal policy in the form of tax cuts and credits is stimulative as well. Consumer spending into September, particularly on autos and housing, seems to be on pace for a 4 percent or better finish. Business spending should accelerate as well, partly because of increased demand, partly because inventories will need some bolstering, and partly because financial market conditions have improved. Defense and other federal government outlays are still growing. Beyond our shores, other developed countries are beginning to recover as well.

Is this the beginning of sustained growth for 2004? Will demand continue to be strong enough for businesses to regain the confidence to begin hiring anew? Without follow-through from significant job growth and the income generation it begets, the current upsurge in consumer spending could be jeopardized.

My sense is that there are reasons to suspect that the dynamics of the next two quarters will help sustain this recovery.

Profit margins have been bolstered by cost-cutting. More confident financial markets are providing funding as it is needed. With their cost bases under control, firms are in position to improve margins as demand increases. Increased profits, in turn, should provide businesses with the necessary confidence to increase hours and hiring. Even now, with overall employment down, increases in temporary staff hiring may be a harbinger of near-term employment growth.

The hiring process should stimulate additional aggregate demand as well. Continued productivity growth and the degree of slack in the economy should keep inflation in check. It should also work to increase wages and household wealth, auguring well for continued consumer spending. If the U.S. economy expands as expected over the last half of this year, it could be a powerful engine for the rest of the world. With all that in train, and assuming no major surprises on the corporate governance or geopolitical front, we may finally be poised to see some job growth in 2004.

In sum, the U.S. economy has witnessed a major surge in productivity growth over most of the last ten years. In the boom times of the 1990s, this growth kept U.S. businesses competitive, increased the economy's ability to expand without constraining resources, raised incomes and put downward pressure on inflation. Through the recession and this long, slow recovery, productivity has continued to grow.

That's great news for the long run, but the short run, with all of its uncertainties, has been difficult for many. In an environment of excess capacity and low inflation, monetary policy is primed to support improved growth and fiscal policy is stimulative as well. There are downside risks to be sure, but I think data now suggest that the robust growth that most forecasters envision for this quarter and next will occur, and that the dynamics that result should help to sustain the economy through next year. A few months ago, I would have said that such an outlook of continued growth existed only in forecasts. Now, it is good to know that we have some of that improved forecast already under our belts. Thank you.

Related Links