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COMPOUND INTEREST

Remarks of

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For this Savings Conference, I decided to look into the future. I am always amazed, impressed--and sometimes, horrified--by the impact on our society of current events and trends that are hurtling forward at a compound rate.

"Compound interest," a Rothschild once said, "is the eighth wonder of the world."

For the thrift world, compound interest has always been a wonder. It is based on compound interest that commercial banks and other savings institutions have been able to attract time and savings accounts currently valued at almost \$400 billion. The lure of compound interest has provided a special incentive in attracting new savings which have multiplied so spectacularly since World War II.

Compounding, of course, extends beyond the thrift world. This evening I would like to outline some of the wonders--and problems--which lie ahead precisely because growth at compound rates permeates many areas of our economy. I shall speculate briefly about what the process of compounding may have in store for several particular areas--national output, population, savings demands, and our urban environment--by the year 1985.

A wise man once said that, "The fact that no one knows anything about the future makes a business forecaster more confident." Actually, however, nothing could be further from the truth. We do know some things about the future with reasonable confidence. These have important implications for savings. The size of our adult population in 1985, for example, has already been largely determined by past events--namely, births.

Barring unforeseen natural disasters, major wars, or radical changes in death rates or immigration laws, the number of persons in the United States aged 17 to 64 will expand by 27 per cent during the next 17 years, according to projections of the Bureau of the Census. By then, the heart of our potential labor force--and the core of our actual savers--will be approximately 31 million persons larger than it is now. This 31-million increase in the 17-to-64-year-old population group will be nearly twice the amount of growth recorded between 1951 and 1968.

In addition to knowing quite well the potential size of our labor force, we also have a fairly clear picture of potential output. Improvements in productivity have stayed within rather narrow limits in periods of full employment. When we add productivity changes to a growing labor force, we can be fairly certain of a growth rate of close to 4 per cent a year for the economy's real output. It has been well above this for the past five or six years.

Here is where the miracle of compounding comes in. Four per cent doesn't sound very large. But it means that by 1985 our economy will be producing almost twice as many real goods and services as it is now. The total gross national product will grow in today's dollars to nearly 1.7 trillion, or seventeen hundred billion, dollars. The increase in output in these 17 years will be greater than the total growth since the first settlement in the United States over 400 years ago. It will be more than double the total growth experienced since 1951--a period we now look back on as a most prosperous era. The sheer amount of possible growth is staggering.

Since we are talking today about the future of financial institutions, it is worth projecting these amounts into actual dollars. In the past 17 years, our price indexes have risen by about 2 per cent a year--reflecting new products, new wants, more services, and, perhaps, some inflation. If this rate of price change were to continue, the actual GNP in 1985 would be about two and one-third trillion, or two thousand three hundred and eighty-five billion, dollars.

The figure becomes even larger if we project the considerably faster increase in prices of 3 per cent experienced during the past three years when inflation was sharper. By the process of compounding, this would bring us by 1985 to a level of output in current dollars which would be nearly three and one-half times the present volume.

I might also note what is sometimes missed in the current debate over whether or not we ought to welcome a recession (or more properly, depression) because of the belief or fear that a constant rise in income makes people too optimistic and, therefore, too demanding in their price and wage decisions.

In the years 1953 Q-1 to 1961 Q-1, we had three recessions; the average growth rate in real GNP, i.e., physical output, was not quite 2 per cent. In the next eight years, 1961 Q-1 to 1968 Q-4, we had no recessions and the real growth rate was 5.3 per cent. What is not as obvious is the effect on our present level of output as a result of what sounds like fairly minor differences in rates, i.e., between 2 per cent and 5.3 per cent.

If our real growth in the past eight years had simply followed the previous rate of 2 per cent, our current dollar real output (in 1968 Q-4 dollars) would be \$698 billion instead of approximately \$886 billion. In other words, the amount of real goods and services available to us in the U.S. would be 21 per cent less than it is now. The difference in current dollars not corrected for price changes is, of course, much greater. What would our problems be if we were all one-fifth poorer in real terms? Compounding is amazing.

Accelerated growth of the labor force and other adults through 1985 will obviously present a much broader market for commercial banks and savings institutions to tap than was available between 1951 and 1968. But even during the less productive period of the past 17 years, the total number of savings accounts at commercial banks and savings institutions increased more than 70 million. Thus, just to keep up with population and similar developments which already lie beyond the scope of normal control measures, will require the thrift industry virtually to redouble its efforts by 1985.

As we move in turn from changes in a potential labor force already born, to change in productivity, and then to changes in prices, our crystal ball gets murkier. This is still truer when we deal with single shares in the total. Here problems of tastes, of competitive factors, of laws and institutions are all at work. If we were to project a future path that would continue to show the same relative growth in savings accounts for the next 17 years as for the past 17, we would get into astronomical and probably impossible ranges. We would be neglecting the well-recognized fact that growth paths tend to converge.

As a result, a far more conservative projection would be to assume simply that savings institutions and commercial banks would maintain their current relationships to the national economy. Even assuming this sharp deceleration in relative growth compared to past trends, total savings deposits at savings institutions and commercial banks in 1985 would range from .8 to 1.2 trillion dollars, depending on price and similar factors.

In this way we are, however, neglecting one of the most challenging questions of the moment which will determine the eventual equilibrium between monetary savings in your institutions and that held in equities or other forms. Another way of putting the question would be to ask what sort of relationships do we expect between long-term interest rates and current yields on equities.

I think because of its complexity this is a good topic to avoid. It depends on a variety of future decisions such as: How will governments finance their capital needs? What risks will individuals take with respect to liquidity, prosperity, and price changes? What structural changes will occur in our institutions? While I think we can analyze these problems in a better manner than appears daily in the press, they are extremely complex.

"Honesty," a politician once said, "is no substitute for experience." But I would be less than honest today if I failed to point out some problems--in addition to some opportunities--that experience suggests

lie ahead. First, while we face a period of accelerated expansion in adult population, households, and housing, nearly all this growth will be concentrated within our cities and suburbs. Second, while we face a time of unprecedented expansion in our production of goods and services, here, too, most growth will occur within urban areas.

What will happen to all this additional income and savings? One thing we can hope for is that some major part of it can be spent on improving the quality and amenities of urban living. We will need to take steps to improve the variety of creative opportunities and the environment in which we live. For as one critic reminds us, ". . . the danger of an affluent society is that people can be better off without being better." Sheer growth in numbers will not be enough. Here, too, the thrift industry can make an important contribution. It is a basic source of the funds we will need to improve our urban infrastructure and housing. Otherwise, our full potentials for growth--as a nation and as individuals--will be wasted.

The combination of technological growth, rising standards of living, and increasing urbanization threatens to pose an unprecedented burden on the quality of our living environment. To paraphrase a recent government report on the subject, "One person's trash basket will become another man's living space," to an increasing degree.

We can all see around us what pollution has already done to our skies, our streets, and our rivers. I must say that I had a shocking experience of this type last year. At Thanksgiving, I visited my daughter--a freshman at a California college. That day it rained. When the clouds lifted, there was a glorious view of the mountains which come to within 8 or 10 miles of the school. My daughter saw them and gasped in awe and admiration at their beauty. It turned out that this was the first time in 10 weeks that she had seen them. From the day she arrived 10 weeks earlier, they had been obscured by smog.

I remember only 17 years ago when such a glorious view could be enjoyed every day. Seventeen years from now, will we have lost more of our natural heritage, or will we gain some back?

Unless drastic measures are taken, problems of disposing of the solid, liquid, and gaseous wastes of an ever higher producing, higher consuming, more urbanized, future society may well multiply at a compound rate. These problems of waste disposal will be accentuated by the fact that while our production of waste seems certain to accelerate, the capacity of our air, soil, and waters to absorb such waste will remain essentially constant. Here is a matter of compounding urgency in which the thrift industry has a direct stake. For undue pollution can impair not only the quality of city environments, but also the value of individual houses, apartments, and other real estate that serve as loan collateral.

Let me cite two more dramatic examples of what has been happening to the pollution of our environment as a result generally of growing industrialization throughout the world. One comes from the introduction of leaded gasoline as automobile fuel. Based on ice excavations in Greenland, scientists have recently discovered that from 1750 until about 1940, the lead content of air trapped in successive layers of ice rose from about 10 millionths of a gram per ton of ice to about 70. The increase during this 190-year period, then, was on the order of 60 millionths of a gram per ton. From 1940 to 1950, however, the lead content of the air trapped in Greenland's ice rose to 200 millionths of a gram per ton, or by 130. Within only 10 years, in other words, the amount of this poisonous lead substance found in the air in Greenland increased by twice as much as it did in all of the preceding 190 years. This is compounding with a vengeance and one in which we are only entering on the more rapid rising part of the curve.

I was recently told a horror tale of what may happen as our growing wealth and urbanization create an environment for compounding of deplorable events. Imagine that an environment is created in the Great Lakes that enables amoebas to procreate and double every 20 minutes. To those of you who have tried to swim or fish in these Lakes recently, this story may not sound too apocryphal.

It has been estimated that at this rate, in 500 years the entire Great Lakes would be filled solid. If this were true, when would the Lakes be only half full? Clearly, only 20 minutes before they became solid. Furthermore, it has been estimated that only 24 hours before this time, anyone dipping a glass of water out of the Lakes and looking through it would not even notice any pollution.

That is the power of compounding. It would take 499 years, 11 months, and 29 days moving along a hardly noticeable curve. Suddenly, the worsening environment would become disastrous. Where do we stand on a compound growth curve with respect to the environment around us?

Clearly, meetings such as this are extremely valuable to allow us to break away from our day-to-day routine and take a longer forward look. We can see some of the future implications of compound interest for the thrift industry--unprecedented growth in output, adult population, and housing; unprecedented needs for education and pollution control; and unprecedented opportunities to assemble savings and disburse loans. The magnitude of these phenomena seems, at first glance, almost impossible to grasp. Take the case of the future pool of real savings generated out of current economic activity and potentially available for deposit at thrift institutions. Assuming that our nation's physical output grows during the next 17 years by the same annual rate experienced over the

past 17 years, by 1985 the size of this real savings pool would itself be 85 per cent larger than it is today; in money terms, over two and one-half times as large.

It will, of course, take imaginative efforts by individual bankers to tap fully these vast accumulations of future savings and to allocate them most efficiently. Those concerned with savings and thrift will have to look forward to grappling with new and tougher problems as well as with some old standbys like inflation. As a nation, we will all be concerned about making the most of our limited resources while sustaining a high quality of economic growth.

The wonder of compounding has already created part of the irrevocable fabric of the future over which we can have no control. But substantial parts of that fabric have yet to be woven to whatever designs we may designate. To quote a famous French diplomat,

"Remember this also,
And be well persuaded of its truth,
The future is not in the hands of Fate,
But is held by mankind."

