A GOLDEN AGE OF GROWTH

Why the U.S. Can Grow Faster Without Inflation

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Abstract

The U.S. economy is enjoying unprecedented prosperity. The long running combination of full employment, rapid growth and low inflation is confounding followers who use traditional models of economic growth. They cannot explain why the U.S. continues to do so well. This article shows why a structural shift has occurred. Computers, competition and renewed entrepreneurial spirit have caused the shift. The result is a more elastic GDP supply curve. This more elastic supply curve means the U.S. economy can continue to grow at close to 4% per year, with full employment, and not generate higher inflation. However, one of the ingredients of this new economy is more volatility as linkages among companies and countries increase. Nevertheless, the payoff to recognizing the new conditions, are higher incomes, better schools and a balanced budget. Failure to incorporate the new supply curve in our planning means robbing families of income, and corporations of higher profits.

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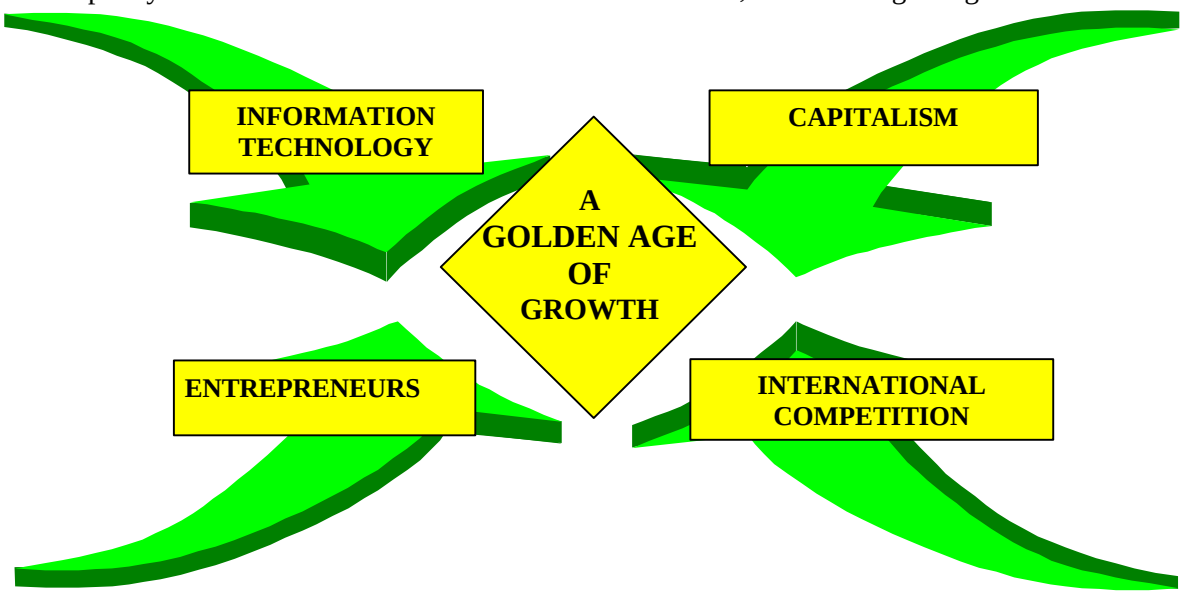
I. INTRODUCTION

We are in the midst of strong economic growth and low inflation; and have been for many years. Why isn't inflation accelerating? Are we lucky or is something new happening. This article shows that while we are indeed lucky, the real answer is that we are in a new environment. This new Golden Age of Capitalism will result in many years of low employment, low inflation and rising profits.

A personal example might help show how this new environment works. Lori is a single mother with two young children. She works out of her home as a bookkeeper. She uses a fast Pentium computer with a cable modem. During the past three years she has enhanced her bookkeeping skills by learning Quickbooks, Excel and Internet surfing. Her bill rate is now $30/hr and clients are coming to her. As a side source of income, she does market research using the Internet. With her cable modem she surfs at T1 speeds (about the same throughput as most company networks). She charges $45/hr for this service. In the past year she has analyzed Argentina for an international cement company and compared computer training fees by training company.

By the way, Lori never finished college. But because she is a quick learner, she has been able to acquire these new skills through the Internet and a mentor. Lori's future looks bright in this new age. What counts now is the ability to learn and access to technology. Can everyone win? No, everyone will not win, but most workers and companies will enjoy the best decade of their lives.

The policy fallout from this new environment is lower taxes, lower average long-term bond rates



and rapid stock price growth. Our obsession with the old growth-inflation trade off, is getting in the way of maximizing the benefits of this new golden age. What follows is an explanation of why we are in a new environment and how we can benefit from this new environment.

THE BROAD ECONOMIC TRENDS FOR THE NEXT TEN YEARS

It may seem as though arguments about maximum potential economic growth are far removed from our everyday experience. But as with most new themes they are subtle, indirect and very powerful. Today you can get a long term fixed rate mortgage for under 7%. The reason the rate isn't 9.5% is directly due to the new forces shaping the U.S. economy. Families who have just bought a house, with a $150,000 mortgage, are saving over $260 per month. That is equivalent to a 6% increase in wages for an average family. No wonder the consumer confidence index is so high—times are better.

The charts that follow give a good picture of where the U.S. economy has been and where we are now. The conclusion is that the U.S. economy is doing well, very well. But these standard charts do not tell very much about why things are so good now. It comes down to two things: 1) higher productivity prodded by international competitors and computers; and 2) the beginning of the golden age of capitalism.

Why We Are In A New Environment

- **Computers**
- **Competitors**
- **Capitalism**

These forces have led to small increases in government spending, a reduction in regulations, a belief that the private market does better most of the time, and finally the entrepreneurial drive to go for it. The result is messy, but sustainable growth in the economy with less inflation. **In growth models the term would be: 'a more elastic supply curve'. That is, the U.S. economy is able to expand faster than historical measures would suggest**.

The Elastic Supply Curve

In dynamic terms the new environment reacts quickly to any price changes. That is, if a car manufacturer raises prices two reactions occur: 1) buyers start to look at other brands, and 2) competitors run lower price promotions to grab market share. The net effect is that the original car manufacturer has to settle for lower market share, lower profits or back down and lower prices. The next table compares the 'old' with the 'new' dynamics.

Example of How The New Economy Works

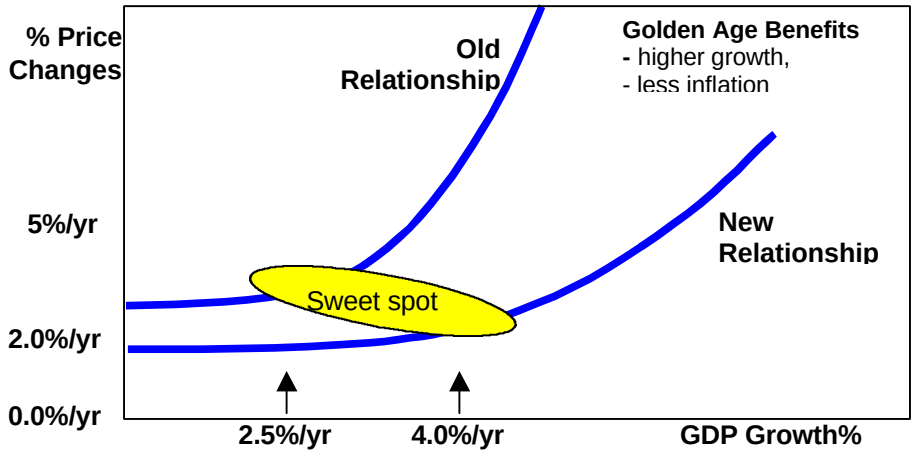
EVENT	OLD DYNAMICS	NEW DYNAMICS
Demand for memory chips increases in U.S.	1. Increase local factory hours. 2. Hire more workers. 3. Raise prices. 4. Expand local capacity. 5. Competitor opens new factory. 6. Memory prices drop.	1. Increase local factory hours. 2. Foreign factories ship more. 3. Raise prices. 4. More supply hits market. 5. Better chip enters market. 6. Memory prices drop.
Time for Complete Cycle	**3 – 5 Years**	**3 – 6 Months**

The combination of faster supply response along with faster innovation results in short price spikes for the majority of products. With the price spike short and isolated, the inflation rate for

the U.S. economy, which is made up of the sum of thousands of prices, is almost unaffected. The 'elastic supply curve' eliminates inflation before it has a chance of spreading throughout the general economy. As long as the Federal Reserve keeps a tight grip on the money supply, inflation will not accelerate.

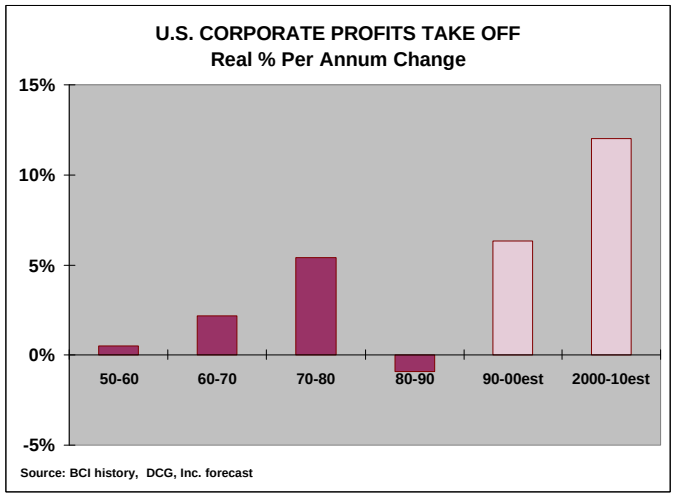
This new trade off looks likes the old Philips Curve (an old economic rule of thumb), and in many ways it is. However, there is an important difference. The Phillips curve suggested we could get higher GDP growth for somewhat higher inflation. The policy tool was to accelerate the money supply and increase government spending. The actual result was just higher inflation and lower productivity. The current trade off is due to lower government spending, lower money supply growth and higher productivity-just the opposite. These changes lead to a permanently higher rate of GDP growth, without accelerating inflation.

THE DE-COUPLING of GDP Growth and Inflation



A Golden Age of Growth?

By a golden age of growth we do not mean that all problems go away.[1] We do not mean that crime disappears along with smog. What we mean is that recessions are fewer, less severe and that the peaks and troughs in the economy are mitigated.



The business implications are continued increases in corporate profits, with a few sharp setbacks every few years for individual sectors. For a single company it means a constant change in competitors and a 'pothole' every

[1] We are not being the naïve optimist Pangloss was in Voltaire' Candide, just optimistic.

now and then. Every company will get (temporarily) knocked down. Over time the stock market is a good indicator of the health of an economy. One or two years of rapid gains is not important, but five to ten years of growth is important. Historically the stock market has returned close to 10% per year (after inflation). For the next ten years that average should easily beat 15% (1996-2006).

Most of the profit growth will come from the information related companies, but the benefits will spread to everyone. The budget will be balanced without pain, people will be valued again as 'a business asset', and international trade will continue to be a mixed blessing (mixed due to constant disruptions in local industries from new foreign competitors—the price of progress).

Measuring How Fast The Economy Can Grow

Potential GDP Growth

Measuring how fast the economy can grow without generating more inflation is a recent exercise. In the 1950s theoretical models of growth became a hot topic (see Solow)[2]. Right on the heels of the theoretical models came attempts to actually measure the potential (see Dennison, Terleckyj)[3]. A simplified view is shown next. The table lists inputs and the % Change in these inputs. Output is determined by how inputs are utilized. When all inputs are utilized fully (as is assumed in long run growth models), output can only grow as fast as the inputs. Since one of the inputs is technology, output can grow faster or slower, depending on how fast technology grows.

INPUT LEVELS	%CHANGE/Yr
LABOR	2% Labor Force Growth
CAPITAL EQUIPMENT	5% Investment
TECHNOLOGY	2% Productivity
=TOTAL OUTPUT	**=Max. GDP%/Yr**

The (updated) theory now says economic growth might depend heavily on technology (see Conlisk, Arthur), and the measurement models say technology is a major ingredient for sustaining growth. While the exact contributions of labor, investment and technology are still being debated, what is not being debated anymore is the central role of technology. This seems obvious now, but even today many economic textbooks relegate the role of technology to back room status.

But how do we measure how fast the economy can grow? The basic method is to look at the inputs to production and measure their growth, then add it all up to measure how fast the

[2] R.M. Solow "A Contribution to the Theory of Economic Growth." Quarterly Journal of Economics 70 (February 1956).
[3] Edward F. Dennison Accounting for United States Economic Growth, 1929 to 1969. Wash., D.C.: the Brookings Institution, 1974.
Nestor Terleckyj. "Sources of Productivity Change." Ph.D. dissertation, Columbia Univ., 1959.

economy can grow. For instance, if the labor force is growing at 5% per year and labor is 50% of the input to production (with machines being the other 50%), then labor is contributing 2.5% to the growth of output (.5 x 5%). This technique is also applied to machines and technology. Total sustainable economic growth is the weighted sum of these inputs.

The current debate about how fast the economy can grow without igniting more inflation is a direct consequence of these measurements. Popular opinion holds that GDP can grow somewhere around 2.5% per year without generating more inflation. The implicit conclusion is that the GDP supply curve is inelastic beyond that point. That is, the inputs (labor, investment, and technology) are growing at a combined rate of 2.5% per year. Trying to push the economy any faster than that is foolish and will only generate higher prices, not more output.

Our view is that the U.S. supply curve is much more elastic than most believe--because we've entered into a new environment. Technology is no longer a back room phenomenon, it is central to every sector of society. One result is a much more elastic supply curve. This means we can grow faster without worrying about rapid inflation. ***It is very likely that the U.S. economy can grow at 4+% per year for the next ten years, without inflation exceeding 3% per year.***

This rate of growth is far higher than the standard view because it relies heavily on the benefits of rapid productivity growth. The three way forces of rapid productivity, more international competition and a strong entrepreneurial drive, are combining to make this a new era. To show how this new economy works, the next section compares the old, with the new way to measure potential economic growth.

Measuring Potential Economic Growth

Potential economic growth is that rate of growth that keeps the economy at full employment, without generating higher rates of inflation. At the maximum growth rate all new labor and all new investment in equipment and factories, is fully utilized.

Our task is to measure what this rate is, first by using the standard methodology and, then using a newer methodology. First the standard method.

The basic inputs to the production of goods and services are: labor, capital and technology. Within these broad categories are entrepreneurial drive, risk taking, quality changes and luck.

Almost every product comes from the combination of people, machines and technology. For instance, the movie industry is a service industry. In order to produce a movie many things are required, such as: actors, directors, editors and cameras, computers, office buildings and maybe a sound stage. The end product, a movie, may generate hundreds of millions of dollars with a few months. In potential growth models terms, a movie is produced from labor, capital and technology. To produce more output requires more input. For the economy as a whole the inputs are labor force growth, investment in new plant and equipment and the results of R&D.

Labor

The growth of the U.S. labor force is slowing. In the 1960s the rate of growth was close to 3% per year. Now it is close to 1.2% per year. If nothing else changed, that would mean the U.S. economy must slow down. It does not mean a lower standard of living; just that fewer new workers are entering the labor pool, so the economy can grow slower and still put everyone to work that wants to work.

If we add up all the payrolls in every company in the U.S. and compare it to sales, we find that labor is about 40% of sales. Thus labor's contribution to total input is about 40%.

Capital

Capital investment in new plant and equipment such as computers, medical devices, office buildings and 'fab' factories (computer chip fabrication plants) is the second major source of input to the production function.

In the 1960s the annual growth of this segment was about 4% per year. In the 1970s it dropped to 2%, and more recently it has climbed back to 5%. More investment means the U.S. economy can grow faster because it has more machines to work with.

The cost of capital is its depreciation and interest costs (measured as an opportunity cost). The cost of machines and buildings in the overall U.S. economy is about 30% of sales.

Productivity

The last major ingredient in standard growth accounting methodologies is technology or productivity. Technology gains in equipment and techniques allow us to get more output for the same amount of labor and capital input. An example of a productivity booster is connecting workers together in local area networks (LANs) that permit instantaneous exchanging of files and documents. Not only does this speed up the flow of information but it also allows remotely separated workers to collaborate. With powerful software, computers and networks, the same number of workers can produce many more times the output as twenty years ago. More and more the traditional way of measuring employee productivity, i.e. the number of hours they work, is being replaced by what they produce, i.e. output. It is ironic that the post industrial information economy is going back to measuring output in much the same way as a hundred years ago (when workers were paid by the number of items they produced).

Just how fast is productivity growing? Current estimates show productivity growing at about 1.5% per year (down from 2.5% in the 1960s). Many are beginning to doubt these estimates as being too low. Their indirect evidence is that inflation is so low, that the real increase in productivity must be more in the range of 2.5% per year. Our view is that the current estimate of productivity is too low and that 2% - 3% per year is much more realistic.

The share of productivity is a residual. The three major segments must add up to 100%, and with labor at 40% and capital at 30%, it leaves 30% for productivity.

Adding it up

We are now ready to add up the components. The table combines the growth rates of the input factor with its share weight. Adding up the three segments yields our estimate of total potential U.S. economic growth.

Potential U.S. Economic Growth (Old View)

Input Item	Weight in Production	Growth Rate	Contribution to Total Growth
LABOR	.40	1.2%	.5
CAPITAL INVESTMENT	.30	4.0%	1.2
PRODUCTIVITY	.30	1.5%	.5
TOT. POTENTIAL GROWTH	**1.00**		**2.2%**

Equation: 2.2 = (.4 x 1.2) + (.3 x 4) + (.3 x 1.5)

In this example, which is very close to the model the Federal reserve has been using, the maximum sustainable growth rate for U.S. GDP is 2.2% per year. If growth is faster than 2.2%, then inflation will start to accelerate and interest rates will have to be raised to stop inflation. Now you can see why these potential growth measures are so important. The only trouble is that the current model is wrong. The maximum sustainable growth rate is far higher than 2.2% for the reasons already discussed. What is the correct rate of potential growth? An alternative way to look at growth follows.

Potential GDP Growth-An Alternative Measure

The older way of looking at potential growth works up to a point. However, it hides rather than illuminating the real drivers of growth. While it is true that labor, investment and productivity can still be used to measure potential growth, there are now better ways to measure growth in a modern post-industrial society.

It is clear by now that the Internet, Microsoft, innovation and communication networks are driving this economy. Focusing on these inputs gives a clearer picture of maximum potential U.S. growth.

The New View of Economic Growth

INPUT ITEM	Characteristics / Examples
INFORMATION	▪ **Databases (data mining)** ▪ **Networks** ▪ **Open Standards**
KNOWLEDGE	▪ **Education** ▪ **R&D** ▪ **Systems Theory**
ENERGY	▪ **Inexpensive Electricity** ▪ **Privatization**
LOW BARRIERS	▪ **Trade** ▪ **Information**
COMPLEXITY	▪ **Resources** ▪ **Management** ▪ **Systems**

How fast are these inputs growing and what is their percentage contribution? While it will require many more years to accurately determine the growth rates and weights, what follows is a first rough draft that gives us a glimpse of just how fast the new economy can grow.

Adding it up

It is becoming clear that the traditional view of the U.S. economy is out of kilter. The traditional view cannot explain why the U.S. economy is doing so well, for so long. The new view clears this anomaly by changing our focus from an old industrial measure of potential growth, to one based on an information economy. The next table uses the new view to measure maximum U.S. GDP growth. While these estimates are still preliminary, and will be debated for years, the debate will now be centered on the new economy, not a tired industrial view.

Potential U.S. Economic Growth (New View)

Input Item	Weight	Growth %	Contribution to Total Growth
INFORMATION	.20	20%	4%
KNOWLEDGE	.40	10%	4%
ENERGY	.10	5%	.5%
LOW BARRIERS	.10	5%	.5%
COMPLEXITY	.20	-20%	-4%
TOT. POTENTIAL GROWTH	**1.00**		**5%**

Equation: 5.0 = (.2 x 20) + (.4 x 10) + (.1 x 5)+(.1 X 5)+(.2 X –20)

Complexity enters as a negative because it is a drag on growth. As life gets more complex, it takes extra effort to keep it all working (this is analogous to network theory).

This alternative way of measuring economic growth potential suggests that the reason we do not have accelerating inflation is because we are growing so far under our potential.

How does this new growth view support a more elastic supply curve?

The old way of looking at growth depended to a great extent on birth rates and savings rates. More babies eventually led to more workers and more output. More savings led to more potential investment capital. More investment in equipment, led to more output.

But this view puts too heavy a constraint on growth. If labor force growth slowed, it meant a slowdown in the economy. Today labor isn't measured so much for how many bodies there are, but rather what do they know. One office worker today isn't the same as one office worker of twenty years ago. If the workload increased for the office workers twenty years ago, they needed to add more. Today the output potential of one office worker can be augmented by a huge amount. Increasing output now depends more on the return on investment in the new equipment/software/training, rather than waiting for the birth rate to increase.

THE BENEFITS TO GROWING FASTER

Growing faster with low inflation bestows enormous benefits to society. Almost everyone benefits—some more than others do, but capitalizing on this new economy helps everyone. Keeping the screws on too tight helps no one and diminishes the benefits. Growing at just 1% faster, say 4% instead of 3%, yields about $70 billion in more income per year. Higher personal & corporate income can mean many things, such as: more money for schools, for teacher salaries, for corporate R&D, for higher dividends, for higher wages, and less unemployment.

BENEFITS OF FASTER GROWTH

Faster profit growth - due to higher utilization & sales
Faster income growth - due to more jobs & productivity
Better health - due to using part of surplus for medical research
More leisure - due to workers cutting back on overtime voluntarily

WHY THE NEW WORLD ORDER IS HERE FOR A LONG TIME

We are entering a *Pax Romana*[4], where capitalism rules and technological change carries us ever upward. Some of the reasons this new U.S. era will last a long time are shown below.

- U.S. Military Superiority
- Capital Investment is Mainly from Private Sources (multinational companies)
- Information Flows Freely Across Borders
- Capitalism Works Better in Technological Era
- Better Monetary Buffers to Absorb Financial Crashes

For the U.S. economy it means better times ahead. Not boom times, but better times due to smoother, upward GDP and export growth. It is very likely that the standard of living will increase faster in the next ten years than at any time in history.

IT'S ALL CHAOS FROM NOW ON

The new economy is messy, unruly, and bumpy. But at least it isn't boring. While it is not as predictable as the old economy, it isn't random either. To survive and prosper, new analytical tools such as data mining, and new views, such as complexity theory, are needed. The Boy Scout manual says to 'be prepared'. That's as good advice as any.

[4] *Pax Romana* was a two hundred-year period of peace and prosperity during the Roman Empire.