

Some Unpleasant Growth Arithmetic?

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October 8, 1998

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SOME UNPLEASANT GROWTH ARITHMETIC?

This presentation's focus is on the question of how fast America can expect to grow as we approach the new millennium. What I'm going to tell you—looking at all the factors that contribute to GDP growth—is that we should expect slower growth for the foreseeable future. In a June 10, 1998 speech, Chairman Greenspan said that he remains “concerned that GDP growth will run into constraints,” and Greenspan's economists at the Board have lowered the estimate of long-term sustainable GDP growth to 2¾ percent. Some people take this as bad news, comparing it to roughly 3½ percent growth over the history of the nation. I'm going to explain how perhaps—indeed, probably—this is not bad news but a stage of economic progress when sheer production alone doesn't yield the gain in living standards for Americans that it once did.

There's no doubt that America has gotten wealthier ... and wealthier as our nation has matured. Today, the average American produces and consumes 22½ times as much as did our forefathers (and mothers). Measured in dollars of today's purchasing power, GDP per person in 1776 was roughly \$1,392, whereas now it is nearly \$31,500. Starting in 1776 with a population roughly the size of the DFW metroplex (3.9 million), the U.S. produced \$5½ billion in GDP. Today's U.S. economy produces nearly \$8½ trillion in GDP. To get to today's level, the Great American Growth Machine grew at an average pace of over 3.4 percent per year since the nation's inception.

Figure 1

Real GDP: 1776 and 1998		
	1776	1998
GDP	\$ 5½ BN	\$ 8,435 BN
GDP per capita	\$ 1,392	\$31,495

Yet there's more to life than consumption of goods and services. In principal, the concept of living standards is much broader than GDP, though GDP growth may have been the main stuff of which progress was made in America's poorer days. With over 22 times as much GDP per person, there's good reason to expect that our interests may have moved beyond growing GDP. And, GDP growth has slowed.

Figure 2

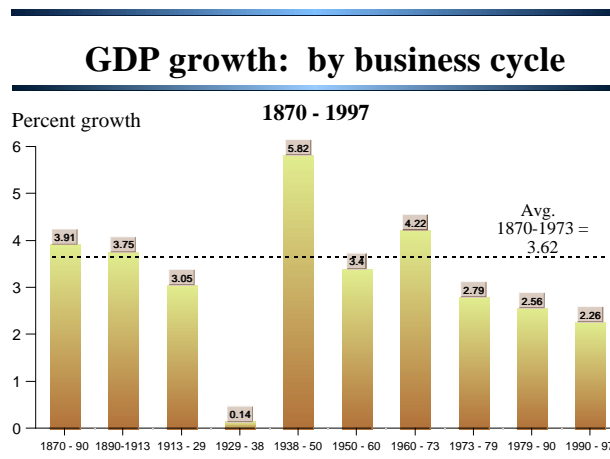
GDP ≠ Living Standards

GDP Growth ≠ Progress

We'll revisit the issue of progress later, but perspective is important “up front” to correctly understand *why* the Fed cares about GDP growth anyway. The reason is this: The goal of an economy is to make maximum sustainable progress, which the Fed helps do by providing a stable economic environment—in particular, stable prices. We need to know *potential* GDP growth so we can judge whether *current* GDP growth is so fast as to likely cause inflation and thereby disrupt the environment that nurtures progress. In short, GDP growth is a guideline, not a goal, for the conduct of monetary policy.

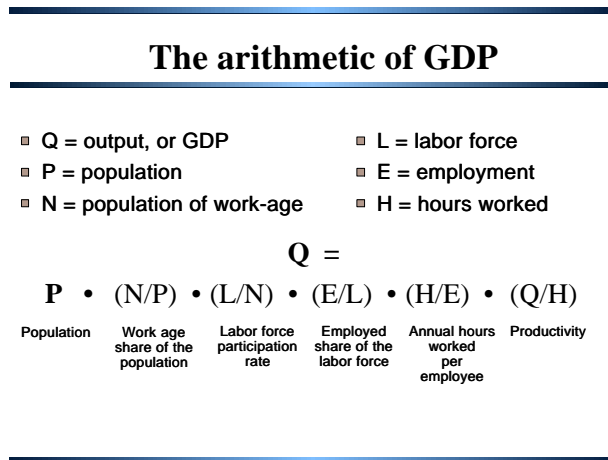
OK, now let's look briefly at history and then get to the arithmetic of growth. Figure 3 shows average GDP growth from peak-to-peak in each of the ten business cycles since 1870. As the figure shows, GDP growth averaged just over 3.6 percent during the 103 years from 1870 to 1973. With the exception only of the Great Depression, GDP growth in each major business cycle prior to 1973 exceeded that thereafter. Since 1973—i.e., over the past three cycles—the average rate of GDP growth has steadily slipped, and it's running at about 2¼ percent in the most recent cycle.

Figure 3



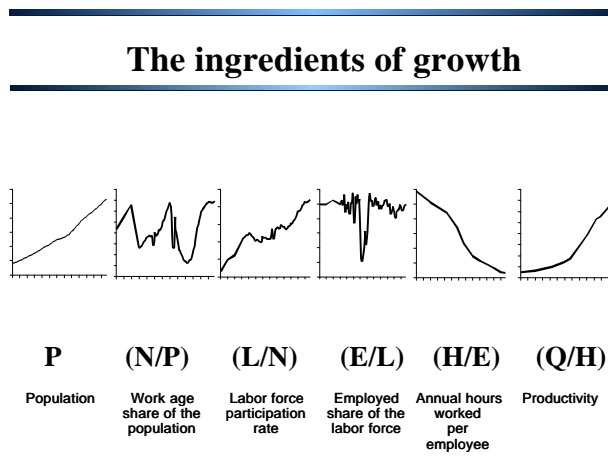
The arithmetic of what causes growth may look complicated but it's actually straightforward and quite intuitive. Basically, a higher GDP requires more aggregate hours worked by the population or more productivity with *each* hour worked. The five ways to have more aggregate hours worked are: a larger population, a greater share of the population that's of work age, a larger fraction of the work-age population that's in the labor force, a larger share of the labor force that's employed (i.e., a lower unemployment rate), and more hours worked per person during the year (i.e., a longer workweek, and fewer vacations, holidays, and other absenteeism). The wellspring of *true* growth—i.e., more per hour of effort—is, of course, productivity.

Figure 4



Each one of these variables is conceptually a different “animal” and behaves somewhat independently from the others according to its own “animal spirits.” A quick comparison of each of these parts shows little similarity in their patterns of behavior. The population has been continually rising, the work-age share of the population has varied widely over the past 130 years, the labor force participation rate has climbed but did level off along the way and may be doing so again, the employed share of the labor force has stayed generally between 90 and 95 percent but fell drastically in the Great Depression, annual hours worked have been on a steady decline since as far back as we can see, and productivity has been faithfully rising.

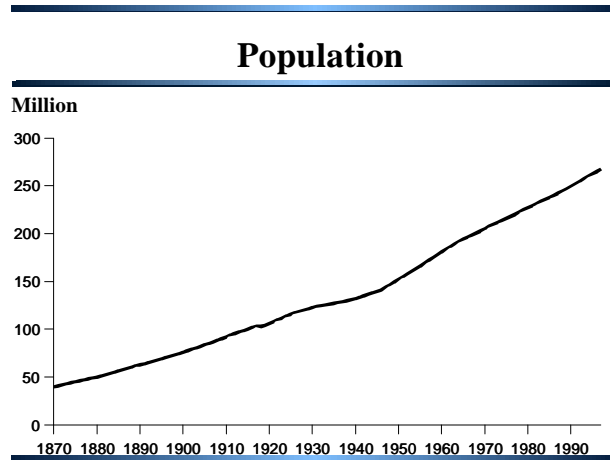
Figure 5



Let's look a little more in detail at how each one of these ingredients of growth has fared so we can get an idea of what's normal and what to expect in the future.

First, the nation's population grew at an average annual rate of 1.6 percent over the 1870-1973 period, but has subsequently slowed. It may look like a steady upward drift here, but broken down by business cycle, we can see that population growth has varied from as much as 2.3 percent annually just after the Civil War (due to a post-Civil War baby boom and heightened immigration) to as little as 0.7 percent annually in the throes of the Great Depression.

Figure 6



More recently, you can see the 50s' baby boom, but that has clearly trailed off and population growth has slowed to just 1 percent annually. Absent another baby boom or more liberal immigration laws, 1 percent population growth is about all we can reasonably expect for the foreseeable future, and that's in accord with mid-line Census forecasts.

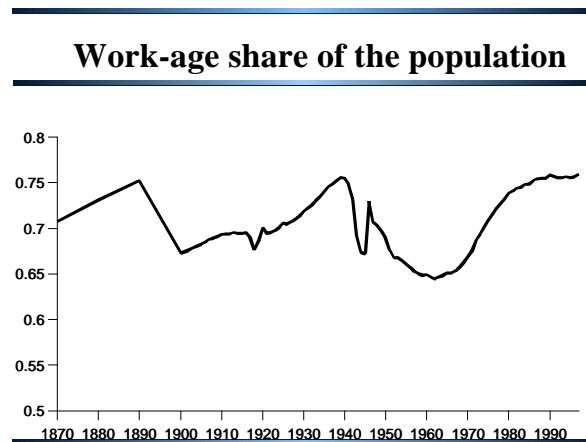
Figure 7

GDP growth and its contributors

Year	1870 -90	1890 -1913	1913 -29	1929 -38	1938 -50	1950 -60	1960 -73	Avg. 1870- 1973	1973 -79	1979 -90	1990 -97	Est. 2000+
Population	2.3	1.9	1.4	0.7	1.3	1.7	1.2	1.6	1.0	1.0	1.0	1.0
Work age share of the population	0.3	-0.3	0.2	0.6	-0.7	-0.6	0.5	0.0	0.9	0.3	0.0	0.0
Labor force participation rate	0.5	0.5	-0.1	-0.2	0.5	0.0	0.2	0.3	0.8	0.4	0.1	0.1
Employed share of labor force	0.1	0.0	0.1	-2.0	1.3	0.0	0.1	0.0	-0.2	0.0	0.1	0.0
Hours worked per year	-0.3	-0.3	-0.7	-1.4	-0.8	-0.4	-0.3	-0.5	-0.4	-0.4	-0.1	-0.2
Productivity	1.1	2.0	2.1	2.4	4.3	2.7	2.6	2.3	0.7	1.3	1.2	1.5-2.0
GDP	3.9	3.7	3.1	0.1	5.8	3.4	4.2	3.6	2.8	2.6	2.3	2.4-2.9
GDP per capita	1.6	1.9	1.6	-0.6	4.5	1.7	3.0	2.0	1.8	1.6	1.3	1.4-1.9

Turning next to the work-age share of the population, we see wide variation across the years. A confluence of immigration, baby booms, war, and a pushing-forward of the age at which people begin work has resulted in as much as an 11 percentage point variation in the share of the population that's of work age—from a low of 65 percent of the population in 1966 to 76 percent today. As America made economic progress over its history, people have been able to start work later in life (children could go to school). We redefined “work age” in 1900 from those 10 and over to those 14 and over and raised it again—to 16 and over—in 1947, resulting both times in a big drop in the measured work-age population. The post-WWII baby boom, though, appears to have had the biggest effect on the work-age share of the population, as is evident from Figure 8.

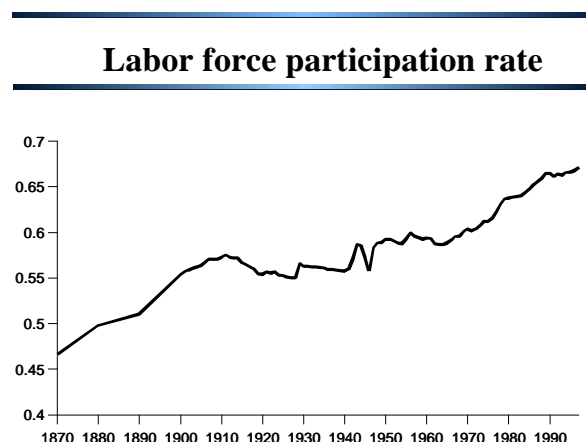
Figure 8



Looking again at Figure 7, you can see the baby boom “pass through” the phases of economic expansion by first lowering the work-age share of the population, then adding a half-a-point to growth in the 1960-73 era and adding almost as much as 1 point to growth during the 1973-79 period as boomers fully matured (at least in terms of age). On average, this factor adds nothing to growth, and it can’t be counted on to add anything over the coming years, especially with the boomers working now, and unless we can redirect immigration laws to allow more workers into the country.

The labor force participation rate has been on a long-term trend upward for the past century with a protracted pause after WWI, through the roaring twenties, and during the Great Depression. It jumped during WWII as women entered the labor force to help produce armaments, then leveled off after the war as men came home to jobs and many women moved outside the labor force to become stay-at-home moms.

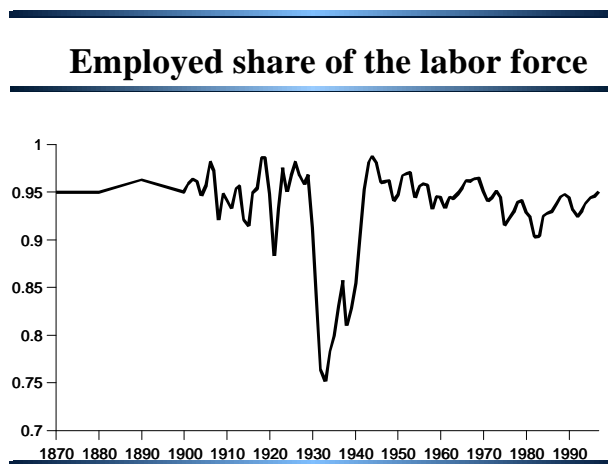
Figure 9



Primarily driven by the re-emergence of women into the labor force during the 1970s and 1980s, a rising labor force participation rate added 0.8 percent to GDP growth in the 1973-79 expansion, and 0.4 percent in the 1979-90 expansion, but only 0.1 percent in the current expansion (Figure 7). More recently, the upward trend in the female labor force participation rate has begun to level off, and that for men has even begun to decline a little, so it's unreasonable to expect much further GDP growth coming from this factor. A tenth of a point is almost generous.

Next, there's the U factor—unemployment. The unemployment rate generally stays between 5 and 10 percent (except for rates of 16 to 25 percent during the Great Depression) so we can't get much out of this variable by way of long-term growth. As Figure 10 shows, owing probably to the growth of regulations, unemployment compensation, more-and-more generous welfare programs, and other market impediments, the employed share of the labor force went on an extended decline from the 1950s into the 1980s, eventually winding up in 1982 at 10 percent—some 7 percentage points above its 1953 level of just 3 percent.

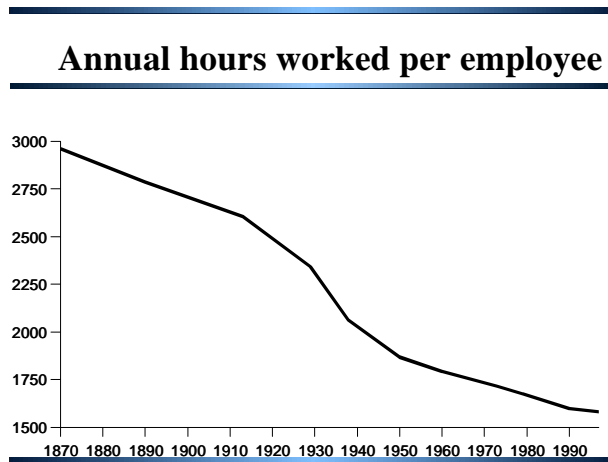
Figure 10



During the current expansion, though—owing probably to the reversal of many of those policy mistakes and to a stronger economy—a falling unemployment rate has added about a tenth of a point to growth annually (Figure 7). This isn't much, but it's more that we can expect in the future, even if we manage to work the unemployment rate down a little further. Expect no contribution to growth here.

One of the economy's most predictable trends is the decline in hours we work annually. Falling from an average workweek of 76½ hours in 1830 down to 60 hours a week by 1890, to 40 hours in the 1950s, and to 34½ hours today, the workweek has steadily declined. We've added Saturdays off, more vacations, more holidays, and other absenteeism, and (believe it or not) we work less during the average workday than did our ancestors.

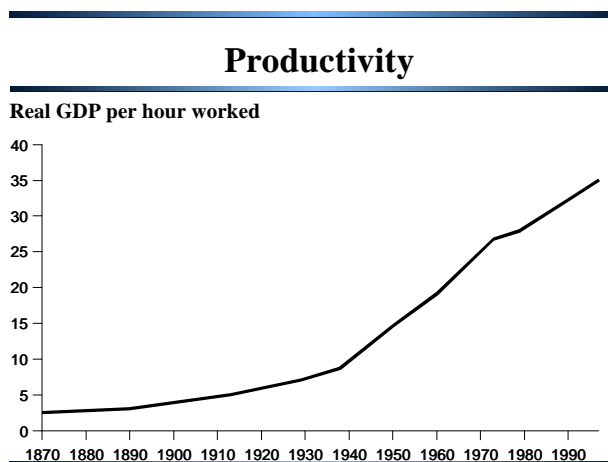
Figure 11



This trend will almost certainly continue, because leisure is a normal good—something we want more of (just like more goods) as our wealth continues upward. But I do expect a slowing of this trend over the coming decades because, just as we have already paid ourselves in terms of more consumption, we have also already paid ourselves handsomely in terms of more leisure time, and it would be normal to move on to other things that matter to us in our quest for higher living standards. Indeed, we already observe a slowing of the reduction in hours worked over the past three business cycles (Figure 7), to where now no further significant reduction will probably be taken.

Finally, there's productivity, the only real source of sustainable true economic growth. Fueled by innovation and a larger-and-larger capital stock (both physical and intellectual), productivity has risen faithfully throughout the history of the nation. It's virtually an American birthright, yet productivity growth has been sub par since 1973, at least according to measurement methodologies used to gauge it. From an average annual rate of 2.3 percent over the 1870-1973 period, productivity growth slowed a full percentage point and more over the past three business cycles (Figure 7), contributing to a marked slowing not only in GDP growth but in growth per capita. The board of Governors has recently raised its estimates of productivity growth to $1\frac{3}{4}$ percent annually, to reflect revisions in the way that price indexes are measured. I have a range for productivity growth here of 1.5 to 2.0 percent.

Figure 12



So, adding it all up, Figure 7 shows that GDP growth slowed from over 3½ percent historically to the 2-2½ percent range since 1973, with growth in GDP per capita slowing from 2 percent annually to under 1½ percent in the current expansion. Adding up what we can expect from all sources in the future, GDP growth is likely to slow to the 2.4-2.9 percent range, or 1.4 to 1.9 percent netting out population growth. Though more *is* probably possible, I reiterate it probably won't happen as America continues to move on to other ways we take our progress.

Even so, there are ways we could stimulate GDP growth (or at least GDP)—ways that would be in line with advancing overall living standards. These are accomplished mainly by reducing work disincentives, barriers to innovation and capital formation, and impediments to trade or labor flows. For example, we could relax immigration laws, particularly for workers. While we wouldn't want an immigration policy that plucked foreign workers out of their families, America was built on the backs of hard-working immigrants. Shifting immigration policy back toward a pro-worker (as opposed to pro-family) philosophy and allowing more overall in-migration would raise the share of the population that's of work age and raise the labor force participation rate, leading to not only more GDP but more per capita.

Figure 13

Policies for growth			
Variable	What's needed	Desirable policy goal?	Do what?
NP	Greater share of the population that's of work age.	Yes, in one way - through immigration.	1. Relax immigration laws.
L/N	Higher labor force participation rate.	Yes, if voluntary & barriers are removed.	1. Relax immigration laws. 2. Eliminate earnings limits on retirees. 3. Move to a consumption tax. 4. Lower income (or consumption) tax rates. 5. Allow deductibility of job training, retraining.
E/L	Lower unemployment rate.	Yes	5. Allow deductibility of job retraining expenses. 6. Reduce/reform welfare. 7. Reduce/reform unemployment compensation.
H/E	Longer work-week, fewer vacations & holidays.	Probably not, except through reducing barriers to work.	3. Move to a consumption tax. 4. Lower taxes.

Policies for growth			
Variable	What's needed	Desirable policy goal?	Do what?
QH	Higher productivity.	Yes	5. Allow deductibility of job retraining expenses. 8. Lower capital gains tax. 9. Eliminate tax on interest earnings (cons. tax). 10. Allow deductibility of education expenses. 11. Keep inflation down (enhances depreciation allowances). 12. Privatize education, better curriculum, 13. Reduce trade barriers.

Eliminating the earnings penalties for social security recipients would bring more retirees back into the labor force. I'm not sure that the ideas behind such penalties were ever good ones (one idea being to help young folks find a job), but their time has long-since passed. Today's young and old older workers hardly compete in terms of job skills, and with the unemployment rate approaching lower limits we simply can't afford to exclude qualified willing workers. Roughly one-fifth of the work-age population today is retired, as compared to only one-twelfth in 1900 (owing, of course, to longer life expectancies and earlier retirements). Yet, even with the earnings limits relaxed, it wouldn't be reasonable to expect that many of today's retirees would work a lot more, as there's a long-term trend toward taking a part of our progress in earlier, longer, and more full retirements (less work). I estimate that eliminating the earnings penalties would add at most 1-2 percent to aggregate hours worked. Again GDP per capita would rise.

Moving to a consumption tax and, particularly, lowering tax rates would boost growth. Essentially, income taxes are a subsidy to leisure and home production (i.e., to staying at home and providing as much of your consumption as possible). Society's wealth, however, is built on specialization and exchange. Reducing income taxes, and to some degree moving to a consumption tax, would reduce work disincentives, resulting in a higher labor force participation rate and a (voluntarily) longer workweek. The consumption tax policy's cousins—lowering the capital gains tax and eliminating the tax on interest earnings—would directly boost productivity by encouraging more savings and thus a larger capital stock.

We could also allow deductibility of job retraining expenses. Under current law, employees can deduct the cost (within limits) of training or education required to maintain their current jobs but *not* those expenses incurred to train for new ones. A vibrant capitalist economy, however, thrives on being able to recycle labor from old uses to newer, more productive ones. So current law in this area is blatantly anti-growth. Similarly, it is blatantly anti-growth in its treatment of education expenses. While we allow firms to depreciate and deduct the expenses of purchasing a piece of physical equipment or machinery, we haven't allowed deductions for building human capital—e.g., the tuition and fees required to become an engineer. These laws are today being relaxed, yet only modestly; thus, we still cling to iron-age tax policies in an information-age world.

Other pro-growth policies include reforming welfare toward a more work-fare philosophy, reducing the outright entitlement portion, plus reforming unemployment compensation to reduce workers' incentives to go (and stay) unemployed. The Fed's policy goal of stable prices is also pro-growth in many ways, not the least of which is that it aids economic development and planning by enhancing the predictability of projects costs, and it helps firms more fully deduct the real costs of depreciated equipment. Finally, reducing trade barriers internationally would help aid growth by creating larger markets and greater capital flows. We have made a lot of progress in lowering trade barriers in recent years, and the economy's strong performance has, in part, reflected it. Yet more can be done.

But I don't want to leave you with the impression that because GDP growth has slowed something is very wrong in America. It's really not, I don't think. Instead, I see a very natural and positive trend gaining momentum. And that's the trend away from deriving our pleasure solely from mass consumption and toward deriving it more and more from other interests, too.

Man doesn't live by GDP alone. And, even in a culture like America's—one seemingly unsatiated with consumption—there are all around us signs that people increasingly care about other aspects of life, too. Our list of needs and wants goes way beyond GDP to include leisure time, better working conditions, safer living (including fewer accidents, less crime, and peace), more variety in our daily diet, more customization to our own personal tastes in the goods and services we consume, etc. There are clearly even concerns for a healthier planet. As America gets wealthier, these are all things we can increasingly afford, and they will likely be the ways in which we increasingly take our progress.

Figure 14

Progress

1. Greater consumption
 2. More leisure time
 3. Better working conditions
 4. Safer living
 - fewer accidents
 - less crime
 - peace
 5. More variety, customization
 6. Healthier planet
 - less pollution
 - restored ozone layer, reduced greenhouse gasses
 - protect endangered species, rain forests
 - safe from meteor strikes
-

If I had to put my finger on this list and tell you where I think America is today, I'd say we've mostly accomplished the first three of these goals (greater consumption, more leisure time, and better working conditions), we've made much progress toward accomplishing the fourth (safer living) and our current preoccupation is with mass customization. But that's the subject of a different report.