Research Department
Federal Reserve
Bank of
San Francisco

May 12, 1978

FRBSF Weekly Letter

Sun Day and Earth Day

With the dawning of Sun Day last week, people began to think cosmic thoughts about the future of Planet Earth—that tiny hunk of rock and metal circling one of the 250 billion stars that make up our galaxy in a universe of billions of galaxies. There was an atmosphere of sober optimism about this event—a feeling that we might somehow surmount our problems in the 21st century—which contrasted to the pessimistic atmosphere surrounding Sun Day's predecessor, Earth Day, just eight years ago.

In the early 1970's, the dominant intellectual belief seemed to be that events were getting out of control. That belief was expressed most forcefully in the 1972 "Club of Rome" publication, *The Limits to Growth*. According to this argument, the goals and institutions of our present world society stimulate population growth and production growth at rates that cannot be sustained. Moreover, a point of no return could be reached around the turn of the century, after which time the world would suffer a catastrophic decline in numbers and wealth, no matter what remedial steps were taken.

The Club of Rome thesis came under heavy attack, however, because of its disregard of basic economic principles—notably in Carl Kaysen's *Foreign Affairs* article entitled, "The Computer that Printed Out W*O*L*F*." In Kaysen's view, other things besides population and production may grow exponentially over time—specifically, productivity—so that the relevant question becomes the relative growth of these different variables. Again, he noted that when the rest of the world matches U.S. consumption levels, presumably it will also be producing at the same level of productivity, and thus will be providing as much of an increment to worldwide supplies as to worldwide demand.

Basically, the *Limits to Growth* thesis failed to consider the adjustment mechanism familiar to all economists—the price mechanism. It ignored the fact that when things become scarcer, prices change so as to dampen demand and stimulate supply through new technologies and new substitutes. In the real world, when resources begin to disappear and when supply bottlenecks begin to hamper growth rates, specific prices will rise and lead to necessary adjustments.

ZPG—yes!

Consequently, it seems difficult to believe that further growth is impossible. At the same time, many experts believe that further growth, although possible, is fraught with horrendous consequences. They would thus argue that we should move over time to adopt a policy of zero growth for national and world economies. To analyze that argument, however, we should recognize the importance of the distinction between zero *population* growth (ZPG) and zero *economic* growth (ZEG).

Consider the population problem. Ten thousand years ago, the world probably supported about 10 million inhabitants. By 1850 there were one billion;

(continued on page 2)

Research Department
Federal Reserve
Bank of
San Francisco

by 1950, two and a half billion; and by the end of this century, perhaps six to seven billion people. Whereas the population once may have increased about 2 percent every thousand years, now it increases roughly 2 percent every single year. By the year 2000, if the world's people simply tried to eat at slightly better dietary standards, they would require a several-fold increase in the 1950 output of farms and fisheries. In fact, they will aspire to more, emulating the affluence and consumption levels of the developed nations—which means ever-larger requirements in the form of resource use and waste disposal.

The population problem compounds our other problems, so that a strong case can be made for limiting the growth of the world's people. In fact, the mothers and fathers of America already seem to have accepted a ZPG solution, since the U.S. fertility rate has already fallen below the figure—2.1 children per family—necessary to stabilize the nation's population in the 21st century. And since the U.S. serves as a universal role model, the rest of the world may eventually follow suit. There are signs of this already in a recent decline in world fertility statistics, so that demographers are now talking of 5½ to 6 billion people at the turn of the century instead of the 7 billion projected in earlier estimates. Yet despite this indication of success in curbing fertility, the size of the population already born almost guarantees that the world labor force will grow by half—by 800 million—between now and the end of the century.

ZEG—no!

Those 800 million extra job-seekers will have to be kept in mind when we consider the feasibility of moving toward zero economic growth. Lester Thurow, writing in a 1976 study for the Congressional Joint Economic Committee, argued that a ZEG policy could lead to rather bleak employment and other consequences. He ignored the extreme case where the structure of the economy is actually frozen, but instead concentrated on the more likely condition where continued efficiencies occur within a fixed total of production. In effect, he simply assumed a continued series of economic recessions.

In the U.S., zero growth would imply an increase of 3½ to 4 percentage points in the unemployment rate every year in the 1980's, assuming fairly normal increases in productivity and labor-force size. As unemployment continued to rise, the standards of employability would also rise, and this would lead to consequences such as a widening of the income distribution. For example, black-family incomes would fall about 6½ percent annually in relation to white-family incomes.

For women, there would be little hope of closing the 32-percentage-point gap between the male and female labor-force participation rates—unless, of course, more men showed a desire to be liberated from the world of paid work. For older workers, there would be little hope of finding new jobs after recession layoffs. And for younger workers, there would be few new openings, but rather lengthy waits for older workers to retire or die.

Under a ZEG policy, people would not devote their energies to enlarging the economic pie, but would instead spend all their time arguing over the division of the pie. We would be faced with a zero-sum game, with a definite loser for every single winner.

The current North-South dialogue over international development policies illustrates the shakiness of the ZEG approach. What different nations want depends a great deal on their relative positions. Today's LDCs are not underdeveloped in relation to their past or even to our past living standards; rather, they are underdeveloped in relation to the standards existing in today's developed world. In fact, some of today's LDCs come close to the zero-growth norm—and they are bitterly unhappy over that fact. In other words, the demand for rising real standards of living is practically universal, except perhaps for a few already at the top of the heap.

Productivity—yes!

If rising living standards are so important, how can they best be obtained? Through rising productivity, as John Kendrick outlines in his contribution to the 1976 series of Joint Economic Committee studies. In the U.S., productivity growth has accounted for over one-half of the increase in real GNP since World War I. The rest has been due to increases in inputs—labor, capital and natural resources. But as Kendrick notes, population growth has kept pace with these productive inputs, so that our entire increase in output per capita—that is, higher living standards—could be attributed to increases in productivity.

There have been times of lagging productivity, as in the late 1960's, but Kendrick sees no hard evidence of any long-run deceleration in efficiency. Total factor productivity has increased at a 2.2-percent average annual rate since World War I, and he argues that it will increase at least at that pace into the 1980's. But several factors are crucial to further growth, notably including investment in research and development. "The importance of R&D cannot be overemphasized, since invention and development to the commercial stage of new products and processes tends to raise the expected rate of return on tangible capital outlays and thus stimulates the new investments that embody new technology."

Given the crucial nature of the role played by R&D in boosting productivity and living standards, we would be wise to stimulate further activity of that type. The Federal government could help by expanding the coverage of the investment-tax credit to include R&D spending, or perhaps by giving greater credit for outlays by producers' goods manufacturers—or more broadly, by reducing effective tax rates to encourage all types of investment spending. Again, the government could help by more consistent—less stop and go—funding of R&D activities, especially since it supports three-fourths of all basic academic research. In any event, planners should remember that R&D is essential for unlocking the secrets of the sun, so that life on earth will become more productive and more livable.

William Burke

FRB SF Weekly Letter

Research Department
Federal Reserve
Bank of
San Francisco

Alaska • Arizona • California • Hawaii
Idaho • Nevada • Oregon • Utah • Washington

BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT

(Dollar amounts in millions)

Selected Assets and Liabilities Large Commercial Banks	Amount Outstanding 4/26/78	Change from 4/19/78	Change from year ago Dollar	Change from year ago Percent
Loans (gross, adjusted) and investments*	109,887	− 27	+ 14,471	+ 15.17
Loans (gross, adjusted) − total	87,369	− 40	+ 14,339	+ 19.63
Security loans	1,897	− 286	+ 330	+ 21.06
Commercial and industrial	26,994	+ 122	+ 3,245	+ 13.66
Real estate	29,233	− 73	+ 6,290	+ 27.42
Consumer instalment	15,486	+ 121	+ 2,917	+ 23.21
U.S. Treasury securities	8,022	+ 24	− 1,043	− 11.51
Other securities	14,496	− 11	+ 1,175	+ 8.82
Deposits (less cash items) − total*	106,609	− 819	+ 10,792	+ 11.26
Demand deposits (adjusted)	29,662	− 1,288	+ 1,889	+ 6.80
U.S. Government deposits	468	− 217	− 371	− 44.22
Time deposits − total*	74,509	+ 518	+ 9,005	+ 13.75
States and political subdivisions	7,093	+ 76	+ 1,440	+ 25.47
Savings deposits	31,479	− 46	− 515	− 1.61
Other time deposits‡	33,265	+ 315	+ 7,447	+ 28.84
Large negotiable CD's	15,011	+ 385	+ 5,853	+ 63.91

Weekly Averages of Daily Figures	Week ended 4/26/78	Week ended 4/19/78	Comparable year-ago period
Member Bank Reserve Position			
Excess Reserves(+)/Deficiency (−)	− 58	+ 70	+ 39
Borrowings	51	11	11
Net free(+)/Net borrowed (−)	− 109	+ 59	+ 28
Federal Funds—Seven Large Banks			
Interbank Federal fund transactions			
Net purchases (+)/Net sales(−)	+ 1,532	+ 2,268	− 1,094
Transactions with U.S. security dealers			
Net loans (+)/Net borrowings (−)	+ 76	+ 126	+ 178

*Includes items not shown separately. ‡Individuals, partnerships and corporations.

Editorial comments may be addressed to the editor (William Burke) or to the author. . . .
Information on this and other publications can be obtained by calling or writing the Public Information Section, Federal Reserve Bank of San Francisco, P.O. Box 7702, San Francisco 94120. Phone (415) 544-2184.