

Peoples' Capitalism:

THE ECONOMICS OF THE

ROBOT

REVOLUTION

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The Frontpiece

is a painting done in acrylics by the author. It is a composite of symbols representing the philosophical origins of the ideas embodied in Peoples' Capitalism.

The first symbol underlying all the others is the Star of David that represents the basic concepts of economic justice and individual human worth set down in the Law of Moses and elaborated throughout the prophetic tradition. Among the Mosaic statutes is an ordinance establishing a Year of Jubilee, a period to be celebrated once every half century by the cancellation of debts, the liberation of slaves, and the return of land rights to the original owners (Lev 25:10-55). The deep concern for human welfare that is expressed in this and other Hebrew laws reaches its climax in the prophecies of Isaiah concerning a time when the Lord's Messiah shall bring justice to the poor and equity to the meek (Is 11:1-9).

Also on the frontpiece is a cross, symbolizing the teachings of Jesus of Nazareth. This son of a simple carpenter saw in himself the fulfillment of the Messianic prophecy: "The Spirit of the Lord has anointed me to bring good news to the poor, to proclaim release to the captives, recovery of sight to the blind, liberty to the oppressed, and to announce the year of recompense of our Lord [A reference to the Year of Jubilee] (Lu 4:18-21). Jesus promised the meek that they should inherit the earth, and admonished his followers to love their enemies and pray for their tormentors (Mt. 5:5, 45), yet he castigated the political, academic, and religious establishment, calling the priests and professors hypocrites and vipers for using the power inherent in their positions of honor and trust to cheat the simple and steal from the helpless (Mt 23:14-23).

The frontpiece also contains the five-pointed Star of Revolution. This star represents the body of ideas that has arisen from the three great Western revolutions: the American, the French, and the Industrial. This is the ideology that inspired men to overthrow the Divine Right of Kings, to declare the political equality of all human beings, and to perceive the inseparable relationship between personal liberty and the secure ownership of income-producing property.

Lastly, there is the four-pointed star, a symbol chosen to represent an ideology for the coming Second Industrial Revolution — the Robot

Revolution — the revolution in industrial production that will eventually result from the invention of the computer. The four points of this star correspond to the four fundamental axioms of Peoples' Capitalism, and to its four practical operational elements: technological innovation, rational investment, adequate savings, and equitable distribution of wealth and income. [**At the time of the first edition, the author was unaware that the four-pointed star was also the symbol of the North Atlantic Treaty Organization (NATO).**]

The entire painting conveys a sense of hope and reverence appropriate to the profound nature of the events that are now taking place. We are living in a historical moment of creation. Within the past three decades there have emerged the fundamental building blocks of what can only be termed a new life form, based not on the carbon atom and the double helix of DNA, but on the semiconductor crystal and the mathematics of symbolic logic and numerical computation. There is now evolving a new kind of self-regulating, even self-reproducing, organism that will have the power to end physical poverty and make every human being economically secure and self-sufficient.

Peoples' Capitalism is a political program that attempts to anticipate the scope of the coming robot revolution and to subject its enormous productive power to the influence of the ancient Judeo-Christian precepts. Peoples' Capitalism is a message of hope, a plan of escape from the present worldwide economic dilemma, and a program for a new world order in which material prosperity will be commonplace and the full potential of human knowledge will be directed toward the fulfillment of mankind's most majestic imaginations.

Notable quotes from the book:

“The central concept of Jeffersonian Democracy was that ownership of the means of production should be widely distributed among the electorate. Peoples' Capitalism is a means by which the Jeffersonian ideal could be achieved in a *post*-industrial society.”

“Peoples' Capitalism would place a comfortable income floor under

everyone, but more important, it would impose no ceiling on anyone. It would distribute dividends from high technology robot factories on an equal per capita basis, and the rest of the economy would be fair game for competition.”

Basic axioms of Peoples' Capitalism

1. 1. All else being equal, it is better to be wealthy than poor.
2. 2. The individual is the best judge of what constitutes his (or her) own betterment.
3. 3. Human benefit is the ultimate measure of goodness for any social or economic system.

Theorems to be proved

The existing economic system is far from optimum in its production and distribution of what people need and want.

America is not a capitalist society – it is an employee society. We are a nation of wage earners, and in a very real sense, “wage-slaves”.

The labor theory of value and the work ethic may now constitute the most important impediment to technological advances that could eliminate both poverty and pollution, not only in the United States, but throughout the entire world.

Questions to be addressed

- • If robots eventually do most of the economically productive work, how will people receive an income?
- • Who will own these machines?
- • Who will control the powerful economic and political forces they will represent?

Preface

Epilogue to Scarcity

These are revolutionary times. Changes as profound as those resulting from the invention of agriculture or the domestication of wild animals are rushing us toward a new world. The human race is now poised on the brink of a new industrial revolution that will at least equal, if not far exceed, the first industrial revolution in its impact on mankind. The first industrial revolution was based on the substitution of mechanical energy for muscle power. The next industrial revolution will be based on the substitution of electronic computers for the human brain in the control of machines and industrial processes.

From the beginning of human existence, mankind has lived under the ancient biblical curse: "By the sweat of thy face shalt thou eat bread, till thou return unto the ground." Before the invention of the steam engine, virtually all economic wealth was created by the physical labor of human beings, assisted only by their domestic animals.

The first industrial revolution only partially lifted the ancient curse. Yet, even this partial reprieve had profound consequences. In all the thousands of centuries prior to the first industrial revolution, the human race existed near the threshold of survival, and every major civilization was based on some form of slavery or serfdom. Yet a mere two centuries after the introduction of steam power into the manufacturing process, slavery has become little more than a distant memory for the citizens of every major country. Today, a large percentage of the population of the world lives in a manner that far surpasses the wildest utopian fantasies of former generations.

There is good reason to believe that the next industrial revolution will change the history of the world every bit as profoundly as the first. The application of computers to the control of industrial processes will bring into being a new generation of machines; machines that can not only create wealth unassisted by human beings, but can even reproduce themselves at continuously decreasing costs. The potential long-run effects of this event are twofold: First, it will allow the human race to free itself from the dehumanizing demands of mechanization. The self-regulating capacity of

computer-controlled industries will render it unnecessary for people to structure their lives around daily employment in factories and offices. The first industrial revolution drew people away from the land and concentrated them in urban industrial communities. The robot revolution will free human beings from the pressures and congestion of urbanization and allow them to choose their own lifestyles from a much wider variety of possibilities.

The introduction of the computer into manufacturing has the potential for removing material scarcity from the agenda of critical human problems. The technical feasibility of factories and industries that can operate unattended and reproduce their own essential components implies that manufactured goods may eventually become as inexpensive and unlimited by process complexity as the products of biochemical mechanisms in living organisms. Increased efficiency and flexibility of substitution between materials and processes could render currently projected shortages of fuel and materials largely irrelevant to the 21st century.

Unfortunately, the present economic system is not structured to deal with the implications of a robot revolution. There presently exists no means by which average people can benefit from the unprecedented potentials of the next generation of industrial technology. Quite to the contrary, under the present economic system, the widespread deployment of automatic factories would threaten jobs and undermine the financial security of virtually every American family.

[**Author's update** In the 28 years since the last statement was originally written, this conventional wisdom has not been borne out by experience. Although advances in manufacturing technology have reduced the number of workers in some craft unions, and productivity gains have reduced the percentage of the work force engaged directly in manufacturing processes, there is no evidence that automation has increased unemployment in the overall economy. In fact, the evidence is quite the opposite. The correlation between automation and unemployment is strongly negative. Those areas of the world where automation is most prevalent have the *lowest* overall unemployment, and those areas where automation is least prevalent is where unemployment is the *highest*. Automation is positively correlated with low unemployment and high living standards.

Furthermore, economic theory predicts that rapid productivity growth creates more job opportunities, not less. Jobs are not created by work that needs to be done, but by profitable enterprises that can afford to hire workers. Productivity growth increases profits, reduces costs, and causes markets to expand. This generates demand for labor, and reduces, not increases unemployment.

Nevertheless, the popular myth that automation threatens jobs remains a powerful influence in politics and at least indirectly effects funding decisions regarding government support for automation research. Almost everyone fears that a robot might someday take over their jobs, even though very few people have ever experienced this happening. **]

This book is an attempt to address some of the fundamental problems of income distribution and capital ownership in a society where most of the goods and services either are, or could be, produced by machines rather than people. It questions the adequacy of conventional economics for the present, as well as for the future. It argues that the primary cause of the recent economic crisis is not a lack of resources or insufficient wealth-producing capacity but an unrealistic view of how wealth is created and an outmoded system of incentives that does not make use of what is available to produce what is needed.

This book claims that, if we properly utilized our scientific knowledge and our industrial capacity, we could not only overcome the present economic crisis, but we could go on to eliminate poverty altogether and guarantee personal financial security to every individual. Furthermore, this could be done in a manner compatible with a clean environment and an ecologically balanced world.

The great challenge of the coming industrial revolution will be the development of an economic system wherein prosperity can be achieved without waste, affluence can be made compatible with the limits to growth, and personal freedom can be preserved and enhanced in a world where most wealth is created by automatic machines. This book is an attempt to formulate a plan by which this could be accomplished. The proposals contained in the following chapters might best be described as a formula for PEOPLES' CAPITALISM, or as a blueprint for Jeffersonian Democracy in a modern technological society.

Specifically three new institutions are proposed:

1. A National Mutual Fund (NMF) is suggested to finance capital investment for increasing productivity in socially beneficial industries. The NMF would be a semiprivate profit - making investment corporation that would be authorized by Congress to borrow money from the Federal Reserve System. It would use this money to purchase stock from private industry for the modernization of plants and machinery and the introduction of advanced computer -based automation. Profits from these investments would be paid by the NMF to the general public in the form of dividends. By this means, the average citizen would receive income from the industrial

sector of the economy quite independently of employment in factories and offices. Every adult citizen would become a capitalist in the sense of deriving a substantial percentage of his or her income from dividends paid on invested capital.

2. A Demand Regulation Policy (DRP) would be instituted in parallel with the NMF in order to provide sufficient savings to offset NMF investment spending. This would prevent short-term demand-pull inflation. The DRP would withhold income from consumers by mandatory payroll deductions and convert it into high-interest five-year savings bonds. Deductions would be graduated according to income (low-income persons would have little withheld, high-income more) and would be adjusted monthly according to a formula based on the best available indicators for inflation. The DRP would allow high rates of investment and the accompanying high employment and high production while preventing excess demand from forcing prices upward.

3. A Federal Department of Science and Technology is also suggested to focus modern technology more directly on problems relevant to human needs.

It is argued that, if implemented, these proposals would lead within three decades to:

1. A society where every adult citizen would derive a significant fraction of his or her income from invested capital.
2. A society where industrial ownership and economic power would be distributed widely enough so that every citizen would be financially independent.
3. A society where people would work primarily for pleasure or for supplemental monetary benefits. There would continue to be many incentives for working and many jobs available, but no one would be forced to work out of economic necessity.
4. A society where a diversity of lifestyles would flourish and rewards for achievement would be high.
5. A society in which prices would be stable and prosperity could be maintained without planned obsolescence, make-work, waste, pollution, or continually increasing economic growth.

In short, this book is a plan whereby PEOPLES' CAPITALISM could be achieved in the United States by the turn of the century without any significant changes in our constitutional form of government. In fact, far from altering any of the fundamental principles upon which this country was founded, this plan would revitalize the free-enterprise system. In the process, it would mobilize the full creative resources of our scientific and industrial

capacity in a national effort to solve our most pressing human problems.

A Personal Note

As you read this book, it will quickly become evident that it was not written by a professional economist. My expertise lies in the field of science, not economics. If I am an expert in anything, it is in the theory of cerebellar mechanisms [****more recently, intelligent systems****] and its potential application to robot control. As a scientist, I tend to ask what is possible, not what is customary. I have been trained to ask simple questions and to distrust complicated answers. I wonder why, for example, human need should coexist with unused productive capacity. I fail to grasp why fiscal and monetary restraint are the proper policies when inflation is caused by shortages. I cannot comprehend why so much of our unprecedented human and industrial capacity lies unemployed when the world is teetering on the brink of economic collapse.

These are not the type of questions that expert economists ask. They are the type of questions that occur to an educated layman who sees deep contradictions in the fundamental structure of our civilization. They are questions that are increasingly on the mind of thinking people everywhere today.

Yet in this book, I have attempted to go beyond simply asking questions and have proposed some solutions. I do not claim that my solutions are the only possible ones, or even the best. I do believe they are a step in the right direction. Certainly what is proposed here needs much more study and research before it could be implemented. Many of the basic concepts are incompletely formulated. The proposed new institutions are presented only in outline form, and additional supporting documentation is needed at many points. All of the basic hypotheses need to be tested and verified by mathematical analysis, by econometric modeling, by pilot demonstrations, and finally, by intensive discussion and debate in the court of public opinion.

Hopefully, you, the reader, can contribute to that debate. If this book should manage to stimulate a serious discussion of alternative methods of capital financing and income distribution, I would like to publish an expanded and more comprehensive version of these basic ideas. If you would be interested in contributing your ideas or your time in researching and compiling a follow-on to this book, or if you would simply be interested in taking part in a more extensive discussion of these ideas, please contact me at the address below.

I personally believe that one of the fundamental defects in this society

is that there are so few means by which ideas of this kind can be aired and discussed. Hopefully, future editions of this book will serve as one such vehicle. I don't believe any plan such as is outlined in the pages ahead can succeed in practice unless it incorporates the hopes and aspirations, needs, and desires of all the people involved. I hope this book will become part of a dialogue. I need your suggestions and am open to your ideas.

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I

America: The Affluent Society?

There's a funny thing about this country. Our streets aren't safe, our parks aren't safe, our subways aren't safe, but under our arms we have complete protection.

-Unknown

America is frequently referred to as the affluent society, and by most conventional economic measures we are very wealthy indeed. Never before in history have so many people experienced so much luxury. The average American citizen today has more personal comforts, enjoys a wider variety of experiences, and lives longer and in better health than even kings and popes of centuries past. The masses in America are better fed, clothed, housed, and educated than in any previous generation. The so-called "American Dream" has become reality for a very large percentage of the total population. Americans have more suburban homes, automobiles, TV sets, and automatic dishwashers than any people who have ever lived. America's Gross National Product (GNP) is the largest in history. We produce more, consume more, and throw away more than any nation ever has. Certainly by all the standards of traditional economics, America is wealthy beyond all comparison.

Yet, in spite of this unprecedented wealth, affluence would appear to be a poor descriptor for the economic state of American society. Affluence implies a certain freedom from need, a degree of careless security and social well-being that is certainly not true of contemporary America. Behind a thin facade of wealth bordering on opulence, there exist in this country a number of deep-rooted, persistent, almost cancerous social problems. We have abject poverty, pollution of the environment, and a system of priorities so distorted that the very stability of the existing sociopolitical system is periodically threatened by riots and civil unrest.

Our technological industrial capacity to produce goods and services is truly awe inspiring. We can fling ribbons of concrete from coast to coast; we can build towers of steel and glass; we can spread housing developments over thousands of square miles of what was once wilderness; we can even go to the moon; but we seem incapable of directing and channeling our enormous productive capacity so as to satisfy our most basic human needs. We produce fantastic quantities of almost everything imaginable and are clearly capable of producing much more, but we distribute this output so

poorly that almost twenty percent of our population lives either near or below the poverty line.' Millions of Americans are undernourished and without adequate medical care. Millions more live in dilapidated homes and slum tenements. Our cities are dying from neglect and decay. Public transportation is inadequate or nonexistent. Streets are lined with abandoned buildings inhabited only by dope addicts and alcoholics. Urban neighborhoods are terrorized by muggers and racketeers. Garbage fills streets and alleyways. Babies are attacked by rats.

Such conditions would be distressing even in a poor and backward land. For them to exist in a country with America 's wealth-producing capacity is positively disgraceful. Surely no country with poverty of these dimensions has any right to call itself affluent, regardless of how large a GNP it may boast.

Even in our apparently well-to-do suburbs, there is only the thinnest veneer of affluence. The average American family can barely make house and car payments, pay taxes, and send their children to college. Very few people feel that they have any significant margin of financial security. The lifestyle of the average middle-class family could most accurately be described as affluent poverty. Most families are heavily in debt, not just for major investments such as homes, but for consumer products such as appliances, clothing, and even vacations. The suburbs are no refuge from rising prices and declining services. In many households both the husband and wife are forced to work, in some cases at more than one job, in order to make ends meet. Financial necessity traps many middle Americans in jobs they dislike. This suggests that suburban America, though apparently well to do, is living perilously close to the limits of its financial capacity. There is precious little surplus. There is nothing that can accurately be termed affluence.

The pollution problem is frequently blamed on our high standard of living. But in most cases, pollution could be controlled if we were willing and/or able to bear the cost of preventative measures. Water pollution is a serious problem primarily because we have not allocated sufficient resources to eliminate or prevent it. Raw sewage, farm drainage, and industrial waste are dumped into streams and lakes because that is the cheapest way to dispose of them. Air pollution results because we use only the cheapest kinds of fuel and the least-expensive types of combustion processes. Automobiles and industries spew toxic gasses into the air because we cannot afford cleaner, more-expensive fuels or alternative modes of transportation and manufacturing that do not pollute the environment.

Tertiary water treatment technology exists that can turn sewage into

drinkable water. Pollution free engines using hydrogen based fuels and primary energy sources based on geothermal or solar energy or thermonuclear fusion are all technically possible. The pollution problem is not primarily technical; it is economic. Pollution is not the result of affluence; it is the result of cutting corners on cost. We pollute, not because we are so wealthy, but because we cannot or will not afford the price of a clean environment.

The Inadequacy of Conventional Economics

The paradox of poverty behind a facade of plenty is indicative of fundamental inadequacies in the way we manage our economic system. Surely we could use our enormous industrial and technological resources to better advantage. We possess the agricultural capacity to feed our hungry children many times over. We have a construction industry easily capable of rebuilding our cities. We have the technological and intellectual resources to improve medical care, reduce pollution, and make our communities safe, clean, and livable. Furthermore, even if our present capacities were insufficient, we are standing on the threshold of an age of super-automation where computer-controlled factories and industries will be capable of producing unimaginable quantities of goods and services at unbelievably low prices.

Human society has entered an age where universal affluence is physically and technically possible. Modern industry and technology have the potential capability to eradicate poverty and create a world of genuine affluence. But this potential cannot be realized under the existing economic system for at least three reasons:

First, the existing system has no adequate mechanism for distributing the amount of wealth that our scientific industrial society is capable of producing. If we were to fully exploit the wealth-producing potential of modern technology for the needs of the civilian economy, there would be more than enough material goods for everyone. We either already have—or within a few years could develop—the technological knowledge required to build totally new industries, including automatic factories and service industries capable of flooding the country with material wealth beyond imagination.^{2,3}

The problem is that income to the average family is distributed primarily through wages and salaries. If technologically efficient methods and automatic factories were used to create wealth with little or no human intervention, ordinary people would not receive enough additional income to

purchase what was produced. The income distribution system in America, and indeed in the entire industrialized world, is based on job employment, not on industrial output. If the productivity of our existing industrial system were upgraded to the maximum level that is physically and technically possible, unemployment would become unmanageable.

Conceptually, this is not a new problem; it has presented a dilemma ever since the invention of the Spinning Jenny. But quantitatively, it has achieved new dimensions because of the breathtaking advances in modern technological knowledge. The wealth-producing potential inherent in modern physics, electronics, chemistry, nuclear engineering, semiconductor technology, and computer-based automation are awesome and totally unprecedented. Unfortunately, they cannot be fully exploited for the benefit of all until some means other than wages and salaries is found for distributing the additional wealth they could create to the average citizen.

Second, the existing system has no adequate mechanism for organizing or financing a really serious effort at eliminating the wretched conditions under which a large number of American citizens still live. The elimination of poverty in the foreseeable future in America would require enormous amounts of investment spending for new cities, new transportation facilities, new sources of energy, health care, lower cost housing, prison reform, pollution control, and many other urgent needs. Under the present system, investment capital is not available for problems of this magnitude, nor are the present mechanisms for controlling inflation capable of dealing with the inflationary effects of investment spending on a scale sufficient to adequately attack such a broad range of massive social problems. The currently available peace-time techniques for dealing with inflation are inadequate for controlling prices even under the present relatively stagnant economic conditions. Unless some fundamentally new institutions are established for generating the required capital resources and unless new measures can be devised that will be many times more effective in dealing with the basic causes of inflation, an increase in investment spending large enough to eliminate poverty in this century is impossible.

Third, the existing economic system depends on mass consumption to sustain prosperity. It is extremely doubtful that the planet earth could sustain the enormous drain on natural resources and increased levels of pollution that would result if the entire population were to adopt the wasteful consumption practices of the presently affluent minority. If poverty is to be eliminated, some new system must be devised wherein the emphasis could be placed on conservation rather than consumption so that prosperity could

be maintained in the absence of planned obsolescence, make-work, waste, and depletion of natural resources.

Conventional economics was developed in an age when poverty was inevitable, human labor was indispensable to industrial production, and natural resources seemed inexhaustible. None of these conditions is true any longer. Industrial capacity has grown to the point where poverty could be eradicated; technology is rapidly eroding the economic value of human labor; and the earth has finally been recognized to be a finite body. We are living in a radically different world than existed a mere century ago. We do not face the same problems as previous generations; neither are we limited by the same constraints.

Today mankind possesses the technical know-how to feed the hungry, to cure the sick, to clothe and house the homeless. We know how to reduce pollution, and control population, and we possess the industrial capacity to eliminate material need. But we have not yet developed the social or political mechanisms capable of mobilizing these capabilities or of equitably distributing the potential benefits.

Many people have said, "If we can go to the moon, why can't we solve our problems here on earth." The reason is that we have never organized ourselves for such a purpose. Our economic system is not structured to deal with genuine affluence. Our institutions are not adequate to finance it, and our policies are not directed toward achieving it. If they were, we could do whatever we wanted.

II

The Paradox of Poverty Amidst Plenty

Tragically, utopian dreams went out of style just at the time in history when science and technology had reached a level where the elimination of physical poverty had become a real possibility. Ours is an age of cynicism, if not despair. There is precious little optimism or confidence for the future. Most people today no longer consider a world without material need to be a practical goal.

Unfortunately, the current pessimism seems well founded, especially in regards to the future of the world's poor. The 1974 United Nations World Food Conference produced no information to support optimistic predictions. In fact, the main report of the United Nations World Food and Agriculture Organization said, "It is doubtful whether such a critical food situation has ever been so worldwide."¹

Manifestly, we are not yet close to eliminating poverty by any definition. In fact, due to the rapid population growth in the developing nations, there are probably more poor people in the world today than ever before. If, as has been suggested, the elimination of poverty is technically feasible, then the persistence of poverty on such a massive scale is a phenomenon that requires explanation. How could we have so seriously mismanaged our resources that almost one-half of the world's population suffers from malnutrition, and tens of millions of Americans are officially classified as poor, unless the situation is beyond human remedy?

Many people feel that the cause of poverty is fundamentally rooted in human nature or at least in human society. The conventional wisdom is that the poor are different from other members of society and that this difference is the basic cause of their poverty. In other words, the fault is generally believed to lie with the poor themselves. Most people will admit that, at least to some extent, the poor are victims of their environment. Poor people are often deprived of important advantages. They frequently are excluded from opportunities available to the non-poor, but in the final analysis, most observers—whether laymen or sociologists, from liberal or conservative backgrounds—have ascribed the blame for poverty to the personal deficiencies of the poor themselves.

This basic analysis of the cause for poverty has formed the philosophical foundation of public relief and welfare programs in Western countries since their earliest inception in the sixteenth century.² It certainly has been the guiding principle of the American welfare system from the

New Deal through the Great Society. Books like Galbraith's *THE AFFLUENT SOCIETY* and Harrington's *THE OTHER AMERICA* that provided the rationale for the 1960's war on poverty were carefully reasoned and documented essays on the cultural deprivation of the poor. The poor were pictured as isolated, ignorant, and prevented by their own impotence from breaking out of the vicious circle of poverty. This traditional view of the poor has so completely dominated sociological thinking in America that throughout the entire course of the "war on poverty" the question of income distribution went virtually unnoticed. Occasionally someone raised the possibility that the basic cause of poverty was that poor people had no money, but such suggestions were almost unanimously rejected as hopelessly naive and simplistic. Harrington relates the famous exchange between Hemingway and Fitzgerald where Fitzgerald is reported to have remarked, "The rich are different," to which Hemingway replied, "Yes, they have money." Harrington rejects the Hemingway comment as culturally biased. He goes on to argue throughout his entire book that the poor are different, that "everything about them, from the condition of their teeth to the way they make love is suffused and permeated by the fact of their poverty."³

It is, of course, rather easy to demonstrate that the poor are different and that they lack things besides money. It is often difficult, however, to establish the directionality of the cause-effect relationship between cultural deprivation and lack of income. The traditional view, exemplified by Harrington and Galbraith, is that cultural deprivation is the cause and lack of the income the effect. Logically, however, it is just as reasonable to conclude that lack of income is the cause and cultural deprivation the effect. In other words, it makes just as much sense to argue that the reason the poor are different is because they have no money, as it is to argue that they have no money because they are different.

Assuming that lack of income is the basic cause of poverty would drastically alter the strategy of any future war on poverty. If lack of income is the root cause and cultural deprivation merely a by-product, then the entire social welfare program of the United States over the past forty years has been misdirected! Instead of concentrating on education, job training, and neighborhood development, the emphasis should have been on broadening the basic structure of the nation's income distribution system.

Recent studies of anti-poverty progress during the 1960's seem to suggest that the attempt to relieve poverty by cultural enrichment programs has been spectacularly unsuccessful. For example, Bennet Harrison, an MIT economist has found only minimal benefits from manpower training

programs for blacks. He suggests “instead of concentrating government money on so-called ‘defects’ in the poor people, it would be more profitable to focus first on defects in the labor market.”⁴ Bradley Schiller, a University of Maryland economist, states that “public anti-poverty activity has, for the most part, been a bread-and-circus kind of affair. Anti-poverty education programs such as Head Start, compensatory education, and manpower training have all failed under scrutiny to demonstrate any significant positive results.”⁵ Christopher Jenks and associates at Harvard have shown that there is little if any correlation between differences in school spending and differences in performance of students in the basic skills. Jenks claims that there is little to suggest that cognitive skills have much to do with economic success. He has shown that there is as much economic inequality among persons who score high on standardized tests as in the general population. He speculates that “equalizing everyone’s reading scores would not appreciably reduce the number of economic failures,” and suggests that the only way to deal realistically with poverty is to change the income distribution system so as to narrow the extremes of income inequality.⁶

The entire notion that poverty stems from the cultural deficiencies of the poor themselves has come under serious question as sociological evaluations of Great Society programs have become available. The results, as summed up by Grieden and Kotz, seem to indicate that “Poor people are more or less like the rest of us. The only important difference is that they have less money. The cause of their poverty is not primarily the particular handicaps of the poor people, but the lopsided way in which income is distributed in America.”⁷ Leonard Goodwin of the Brookings Institute cites studies showing that the attitudes of welfare recipients are “remarkably like those of the middle-class suburban housewives and their aspirations for their children’s careers are remarkably high, considering their own low estate.”⁸ Shiller states that 70 percent of poor adults are workers and among families headed by men the figure is 84 percent. Most of the poor families where no one works are elderly or headed by a woman, although almost half of these women work. More than one third of poor families have two or more working members.⁵ Lampman says, “The poor are like other Americans, only more so.”⁹

Evidence from recent studies by Lampman on the changing population of those classified as poor strongly supports the newly emerging notion that poverty is more a matter of income distribution than cultural deprivation. Lampman observed that in just one year, from 1962 to 1963, about one-fourth of the people in poverty got out.¹⁰ However, in that same interval, an almost equal number of people became newly poor. This kind of

mobility suggests that the poor are not trapped at all, or even peculiarly isolated. Many escapees from poverty are alive and well today.¹¹ In fact, one reason why persons from poor backgrounds so often have voiced strong skepticism concerning government programs designed to assist persons “locked” in poverty is that they themselves are poverty escapees. They know it can be done and frequently without government help. This is not to deny that there exist some persons who are genuinely locked into poverty by age or particularly unfortunate circumstances. But certainly not all, or even most, of the poor are trapped. Escape can be made by gaining access to the traditional sources of income. Unfortunately, while some are escaping from poverty, the ranks of the poor are replenished by others moving in the opposite direction. For millions of Americans living just above the poverty line, a plunge into destitution is merely a matter of a few months sickness, an accident, a family breakup, or in some cases simply the loss of a job.

This strongly suggests that poverty has its roots not in cultural deprivation, but in an income distribution system that is not broad enough to include everyone at the same time. The existing system habitually excludes a sizeable percentage of the population and maintains an even larger number of persons only marginally above the poverty line, ready to become poor at the briefest misfortune.¹²

The existing income distribution system might be likened unto a crowded raft afloat in a sea full of struggling swimmers. Once there is no more room on the raft, someone must fall off for every new person who manages to climb aboard. Of course, in such situations there are usually persons of goodwill who give encouragement and assistance to those in the water. Some might even help particularly courageous swimmers to climb aboard. Unfortunately, so long as the raft is too small, such acts of mercy only result in someone else, perhaps on the other side, being crowded off.

During the 1960's, a great deal of self-congratulatory enthusiasm among poverty warriors was generated by an apparent steady decline in the poverty index. Statistics showed that the number of poor people fell from 22 percent of the population in 1960 to only 12 percent in 1970. However, in retrospect this decline appears to be little more than a “statistical slight of hand” attributable almost wholly to inadequate accounting for inflation. During the 60's, the definition of poverty was increased approximately 25 percent, but the consumer price index rose almost 35 percent in the same period. What little real decrease in poverty that did occur during the '60's appears more attributable to declines in unemployment than to specific Great Society anti-poverty measures.¹³ As unemployment fell, less people were excluded from sources of income and therefore, naturally, less people were

poor. Beginning in 1969, even the appearance of a decline in poverty vanished. Unemployment began to rise and along with it poverty.

There are few social problems in America today that are not related in one way or another to poverty, and there are few issues that are as politically divisive. For most of us who have been spared the grief and frustration of poverty, it is emotionally comfortable to believe that the poor have only themselves to blame. But the facts indicate otherwise. The facts indicate that the poor are not very different from the non-poor in their needs, aspirations, or goals. In general, they work just as hard as other Americans, if not harder. The main difference is that they are paid very little, if anything, for what they do.¹²

Poverty is much more closely correlated with the availability of income than with any other social factor. If a person is excluded from a source of income, he or she is almost certain to be poor. This seems an obvious thing to say, but its implications are far-reaching. For unless it can be demonstrated that the poor are personally deficient in some fundamental sense, the only conclusion left is that the income distribution system is itself defective. If that is true, then poverty is merely a symptom of a much broader and more fundamental problem.

III

How We Distribute Wealth

The way in which income is distributed influences the most fundamental relationships within a society and largely determines the very nature of the social structure itself. The income distribution system determines who will be rich and who poor; who powerful and who weak. It influences where people live, where they work, and what they work on. It determines what type of endeavors are considered important and what are not. It embodies a system of economic rewards and punishments that directs and, in large measure, controls the behavior patterns of the society as a whole, as well as individuals and groups within the society. The income distribution system pervades every aspect of daily life so deeply and so thoroughly that its influence is felt in virtually every act that people perform.

Certainly the income distribution system is so basic to the structure of relationships within a society that no effort to significantly improve society is likely to succeed unless it addresses the question of income distribution, and, conversely, no significant change in the income-distribution system is likely to produce anything less than profound changes in the fundamental character of the society at large.

In America, the existing income-distribution system is almost universally accepted without question, even among political liberals, in much the same way as people accept the rising of the sun or the force of gravity. To even question the fundamental premises of the American income-distribution system seems downright heretical, somewhat akin to questioning the wisdom of the Constitution or the existence of God.

Even among social reformers, little attention has been paid to the fundamental question of income distribution. As was pointed out in the previous chapter, the whole tradition of action programs in this country, including the New Deal and all its subsequent variations, has been based on the philosophy of helping the unfortunate to make it within the existing system. Seldom (except perhaps for the income tax and social security) has any fundamental change ever been made in the income-distribution system itself.

One reason why income distribution in America has seldom been a target of social reform is that it is impersonal and impartial. Western political thought tends to equate impartiality with indefectibility. If everyone has an equal chance, a system is usually regarded as ideal even though it be full of absurdities and incongruities. It may punish some individuals with

inordinate harshness and reward others beyond reason, but it will not be questioned so long as it is impartial. The income distribution system establishes those activities that are rewarded and those that are punished. Individuals are then left to fight it out among themselves as to who fills which positions.

Society has established various filtering mechanisms for determining just where each person shall fit in the system.¹ The first (though by no means only) filter is accident of birth. This selection mechanism is certainly the most ancient, and, although in recent times it has diminished somewhat in importance, it still is one of the most critical factors in determining what a human being's position will be on the income ladder. Other filtering mechanisms are schools, examinations, fraternities, unions, and corporate hiring and promotion policies. Those who are more aggressive, more intelligent, or simply luckier get the better positions. The competitive nature of these filtering processes gives the final result an air of equity, particularly if the competition itself is not grossly unfair. Most social and political reforms over the past century have centered on increasing the fairness of the competition and the equality of opportunity. Unfortunately, the emphasis on fairness and equality has largely obscured the fact that the income-distribution system itself is grossly distorted, inefficient, and often counterproductive.

In the United States, as in virtually every industrially advanced country in the world, the overwhelming percentage of income is distributed through earnings paid to labor. Wages and salaries account for about three-fourths of all personal income.² Even more important, four out of every five American families depend on compensation for labor or welfare for over 80 percent of their total income.³ These statistics clearly indicate how completely the present income-distribution system is dominated by wages and salaries. The consequences and implications of this fact are far-reaching indeed. There are a number of reasons to believe that the overwhelming dependence on wages and salaries is a major cause of waste, make-work, pollution, unemployment, poverty, discrimination against minorities and women, decline in personal services, and disincentives to efficient methods of production.

Pressures for Full Employment

One of the inevitable effects of distributing income almost exclusively through wages is that it generates overwhelming pressures for full employment. For all practical purposes, the only respectable way for a

person of average means to obtain income in a modern industrial or post-industrial society is to hold a job. If one has no job, then, except for unemployment compensation or welfare, one has no income. If one loses a job, all income stops or at least is sharply reduced to whatever is currently obtainable through unemployment compensation. This generates enormous incentives to get and hold a job—any job—and the pressures of these incentives are transmitted through the political process into governmental and private policies designed to create or preserve jobs at any cost.⁴

The results are that make-work projects of every type and description are created, some of which are not only useless, but positively harmful. For example, one of the principle arguments advanced by proponents of the Anti-Ballistic Missile System was the need to keep the missile industry employed. A major factor in the government's decision to grant the Lockheed Corporation a loan was that wide-spread unemployment would result from the bankruptcy of such a large corporation. Most of the support for the Super-Sonic Transport revolved around the need to create jobs in the depressed aircraft industry. The principle arguments of lobbyists for the B-1 bomber revolve around the number of jobs to be created in the Congressional districts where this plane is to be built.⁵ Political pressure to maintain employment is one of the primary reasons for the perpetuation of the so-called military-industrial complex. It is virtually inevitable that Congressmen and Senators will oppose any attempt by the Defense Department to close obsolete military installations or to terminate major military contracts in their districts simply because such actions throw large numbers of people out of work.

Even in strictly civilian industries, pressures for the creation and maintenance of jobs often override considerations of convenience and health. For example, proposals to place more emphasis on mass transit and less on the automobile are widely opposed by those whose income is derived from the automobile, trucking, or highway construction industries. Restrictions on cigarette advertising are typically opposed by politicians whose constituents depend on the tobacco industry for employment.

For years we have espoused the philosophy that growth means jobs, and we have written tax laws and zoning ordinances to encourage and foster growth. The urban sprawl that scars so much of our landscape is a direct result of policies designed to generate growth so as to create jobs.

Throughout the entire economic system, policies of government and private industry alike are designed to ensure that employment remains high and layoffs are unnecessary whenever possible. Marketing and advertising programs are promulgated to create demand for absurd or trivial products.

Goods are deliberately designed to quickly become obsolete, either through normal wear or changes in style. As a result, America has become a throwaway culture; as Vance Packard puts it, a society of “Waste Makers.”⁶ Our industry is heavily biased toward disposable products that cannot be repaired or reused. At least part of this bias can be directly traced to efforts to maintain production and, hence, employment at a high level.

Pressures for maintaining and creating jobs are also clearly evident in union policies and in labor negotiating demands. Featherbedding and restrictive work rules serve no other purpose than to preserve obsolete or unnecessary jobs. Seniority rules and restrictive apprenticeship admission requirements are primarily intended to insulate and protect existing job holders from competition and possible replacement by equal or better qualified job candidates clamoring to gain access to the limited supply of employment positions.

Even at the executive level, pressures for job employment are strong. Much of the memo writing, paper shuffling, and red tape that goes on both in private industry and in government serves no other purpose than to provide work for otherwise unnecessary managers and bureaucrats. It is impossible to estimate just how much of what people get paid for every week in factories and offices across this land is really necessary work and how much might just as well not be done. One gets the feeling, however, that more than a little of what goes on during the average American work day is either make-work in and of itself or activity made necessary by make-work somewhere else in the system. The overwhelming importance of jobs, brought about by the fact that virtually the only way to get income is to have a job, has created a system that is enormously wasteful both in terms of natural resources and human creativity.

Pressures for Unemployment

Paradoxically, the distribution of wealth primarily through wages and salaries, while generating tremendous political pressures for full employment, has at the same time created conditions that virtually guarantee serious unemployment. The increasing ratio of capital to labor in modern industry has brought continuously rising output per man-hour of work. In some cases, this increased output might be attributed to increased skill or increased physical effort on the part of workers, but, in the overwhelming majority of cases, the increased output has been wholly due to more sophisticated machines or more efficient process technology. In either case,

the result is the same. More has been produced and thus more must be distributed. Since wages are virtually the only means available for placing purchasing power in the hands of consumers, wages have had to rise along with rising output in order to insure sufficient consumer demand to prevent surpluses from developing. The present income-distribution system encourages, in fact requires, that wages spiral upward with each new advance in production technology. Otherwise, the economy could not consume the increased production.

To an employer, rising wages represent rising costs. As wages rise, the marginal benefit of hiring each new employee declines. High labor costs are a production factor that must be minimized if a business is to survive. An employer must strive to hire as few persons as possible, not because he has nothing for additional employees to do, but simply because labor is such a significant cost factor that every effort must be made to keep the payroll at a minimum. Increases in the cost of human labor force employers to reduce the number of employees to as few as possible. Employees are hired only for the time period when their services are needed. Production cutbacks result in immediate layoffs. Job applicants are carefully screened so as to weed out all but the most capable and productive. Whenever possible, human workers are replaced by less expensive machines.

Distribution of most income through wages and salaries forces labor costs so high that many useful tasks are simply too expensive to be done. Streets need cleaning, buildings need repair, community health and recreation facilities need to be maintained, but the cost of labor is too high. Even in factories, universities, and research laboratories important work that needs to be done cannot be pursued because of the salaries that must be paid to even the lowest grade technicians. As a result we have an abundance of useful work that needs doing and a surplus of people willing and able to do it. Yet nothing can be accomplished because employers cannot afford to hire people for jobs that are not absolutely necessary. Under such circumstances it is virtually guaranteed that a sizeable percentage of the population will be jobless.

This is particularly true in the case of persons with no marketable skills. Anyone without capabilities for which employers are willing to pay the minimum wage simply will not be hired. If a worker cannot, even with machine assistance, produce enough output per man-hour to make it profitable for an employer to hire him, he becomes effectively unemployable. Distributing the wealth-producing output of machines and high technology processes primarily through wages and salaries artificially inflates the cost of human labor to the point where hard-core unemployment

becomes inevitable.⁷

Milton Friedman, the conservative economist who, among his other notable accomplishments, was economic advisor to Senator Goldwater during the 1964 presidential campaign, has for years argued against the minimum wage laws, not on the basis that they are ideologically repulsive to a conservative but because they virtually guarantee a high level of unemployment among low-skilled persons. If a worker's labor is not worth the minimum wage rate, it simply is not good business to hire him.

Presumably, it is possible to train some unemployed persons so that their labor becomes worth more than the minimum wage. However, in practice, job-training programs have not proven very successful.⁸ In a great many cases, hard-core unemployables have physical or mental defects that make it virtually impossible to ever increase their skills to the point where their labor would be worth present-day wages.⁹ Moreover, in many instances, job training or the lack of it is not even relevant to the issue of unemployment. The problem frequently is not a lack of training at all, but a lack of available jobs. The society has only a limited number of jobs in which persons of average mental capacity can produce enough wealth to justify present-day inflated wage rates. In order to screen a large number of applicants for a small number of available jobs, employers require credentials such as high school diplomas or college degrees.^{10, 11} This is done even for jobs requiring no education beyond grade school. The purpose is simply to limit the number of applicants to the number of available jobs.¹² In such cases, job training programs do nothing but increase competition for an already insufficient supply of jobs. The success of some individuals in acquiring sufficient credentials to qualify for a job merely means that someone elsewhere in the society will be laid off or find themselves unable to qualify for a promotion. Rising wages and, in particular, a rising minimum wages represent a moving employment threshold. Even if a few unemployed persons manage to overtake and pass this threshold, inevitably someone else will fall behind.

Handcraftsmanship and Personal Services

The distribution of most of the nation's income through wages and salaries not only generates excessive pressures for job employment, but it distorts the nation's production priorities by constricting the flow of income to a very narrow field of employment, namely capital-intensive labor. Most of the output of goods and services in a modern technological society results

from scientific knowledge embodied in machines and complex productive processes.¹³ The fact that this wealth must be distributed primarily through wages and salaries dictates that the only way for persons with ordinary skills and talents to obtain a decent income is to work for industries with a high capital-to-labor ratio. Except for persons with special talents or rare skills, workers involved in personal service industries or in the production of handcrafted goods find it virtually impossible to compete in an economic system dominated by capital-intensive labor.

The unaided human craftsman or service person simply cannot create wealth as fast as a complex piece of automated machinery. Therefore, if the non-capital intensive jobs are paid solely on the basis of what individuals can produce alone and the capital-intensive jobs are paid on the basis of what people and machines can create together, it is inevitable that non-capital intensive jobs will die out. The economy will become structured so that virtually all attractive jobs are concentrated in capital-intensive industries or industries supportive of capital-intensive industries. Severe shortages will develop in the skilled handcrafts and personal services. This, of course, is exactly what has happened. Handcrafted goods and personal services have virtually disappeared from all technologically advanced societies. We are told that they are victims of progress and that it is inevitable that the more efficient must force out the less efficient, even at the expense of convenience and civility.

But is this really progress? Is it even efficient? Where is the efficiency in unemployment? What is accomplished by driving the craftsman and the small farmer out of business? Where is the gain in forcing people out of nearly self-sufficient lifestyles in rural areas and small towns and crowding them together in urban ghettos where unemployment is epidemic and welfare is the principal source of income? If there is no gain and if society receives no net benefit from these social dislocations, then there must be something basically wrong with the system that produces these results.

The present income-distribution system operates as if the output of automatic machines and high technology processes were exclusively attributable to those persons in society who are directly or indirectly involved in high technology industries. In essence, the salaries of workers in capital-intensive industries are subsidized by the wealth-producing capabilities resident in complex machinery and high technology processes. As a result, an entirely disproportionate number of people are drawn into jobs supportive of, or supported by, capital-intensive labor. Services that the society desperately needs are not performed simply because the wages are too low. At the same time that millions of people are doing make-work jobs

in capital-intensive industries and other millions are desperately trying to gain entrance to this bloated segment of the economy, the society is seriously inconvenienced by the fact that there are insufficient service personnel for everything from auto and television repair to yard and house care. Service is poor, workmanship sloppy, and prices are exorbitant. Handmade goods are either shoddily made or incredibly expensive.

As long as the income-distribution system is structured so that virtually all income to the lower and middle classes is derived from wages and salaries, personal services and handcraftsmanship can never be a viable employment alternative for a significant number of people. High technology industry is where most of the wealth is created. Distribution of wealth through wages binds the labor force inexorably to these industries. Only when society's needs for personal services rise to the point where employers are forced to pay wages comparable to those paid by capital-intensive industries can workers be found to perform the needed services.

Women's Liberation

The distortion of social priorities resulting from constricting the flow of income to the capital-intensive sector is not limited to the effects on handcrafts and personal service industries. It has also created a situation of discrimination and injustice toward a great many citizens who through one reason or another do not fit into the capital-intensive sector of the economy. One of the most glaring examples of this phenomenon is the economic discrimination felt by women, particularly housewives. Certainly a great deal of the wealth that this society (indeed every society) enjoys is created by the labor of housewives who clean, shop, cook, chauffeur, care for children, and perform numerous volunteer community services. It has been estimated that the average housewife performs \$13,364 worth of such work each year (at 1970 wage rates). This amounts to roughly one-fourth of the Gross National Product.¹⁴ Yet the economic system does not pay wages for these services (unless, of course, they are performed outside of the woman's own household). Housewives are expected to live off the money that their husbands bring home from the capital-intensive sector. They are thus kept economically dependent upon the generosity of their husbands. They share none of the prestige of having "earned" their money, even though they may work just as hard, or harder, at home than their husbands do at the office or plant. "Women's work" carries a derogatory connotation that implies a lack

of importance. Yet “women’s work” is critical to the stability of the social order and is certainly more important than much of the paper shuffling and petty office politics that passes for work in offices and executive suites throughout America.

Preachers and politicians often wax eloquent about how the hand that rocks the cradle rules the world, but the present economic system works to “keep women in their place.” As long as virtually all wealth is channeled through wages paid by capital-intensive industries, it is inevitable that most of the social prestige and power will reside there too.

The Importance of Our Cultural Heritage

Modern society is complex and relies on many interdependent activities. In such a system, almost everything depends on everything else, and it is virtually impossible to determine precisely what activities are critical to the production of wealth or which are the most important. Certainly capital-intensive industry is where most material goods are formed out of raw materials. But there is a great deal of social overhead that is prerequisite to the very existence of a highly industrialized economy in the first place. The entire industrial-technological economic system rests upon a foundation of social stability that is nourished by a cultural heritage developed over centuries of hard and patient labor by free men and women alike and, in America’s case, by black slaves also. It is completely arbitrary to distribute wealth through wages and salaries as if the presently employed labor force were solely responsible for all the wealth created by the American economy. The output of present factories and businesses is no more solely due to the current salaried work force than the return of the Apollo moon rocks was solely due to the efforts of three human astronauts.

Figure III-1 suggests that most of the increase in economic output comes from productivity gains, not increased labor input.

SOURCE OF GROSS NATIONAL PRODUCT INCREASES, 1950-71

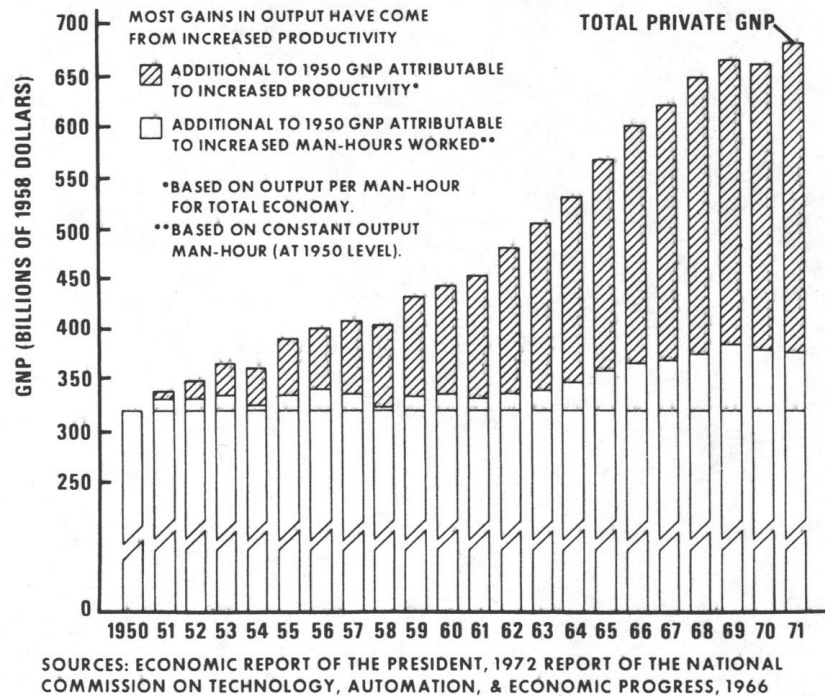


Figure III-1. Increased output is primarily the result of increased productivity. Our rising standard of living is based on better tools and more efficient machines, not on harder work or longer hours.

A strong case can be made that most of the output of modern industry is not due to the presently employed labor force at all, but rather to the capital stock, the scientific, technical, and managerial knowledge, the educational training, and the social and cultural behavior patterns that have accumulated and developed over the past three centuries or more.¹⁵

For example, the output of iron and steel tonnage per man-hour of labor increased 273 percent during the 1923-1950 period.¹⁶ Where did this increase come from? Judging from the fact that real wages paid to steel workers increased by about the same amount in the same time period, one might suppose that the increase derived from the steel workers themselves. But did it? Did steel workers in 1950 work 273 percent harder than their counterparts of 1923? This seems highly doubtful. Was the increase then due to better education on the part of the mill hands? Perhaps in part. However, there seems to be no reason to believe that a few years in school could have had such a phenomenal impact on a steel worker's output. If that were the case, then surely steel-mill owners in the 1920's would have found it

economical to hire only college graduates to man their furnaces. Some of the increase was undoubtedly due to the fact that what the workers were taught in 1950, in school or on the job, made them more efficient. Surely, also, some better management techniques were employed. But this was part of the cultural development of society and due only marginally, if at all, to any efforts by the work force. The simple fact is that most of the increase in productivity in steel mills, as well as in other sectors of the industrial economy, are almost always due to increases in the amount of capital equipment and the sophistication of the machinery and techniques used in the manufacturing process. They are hardly ever the result of any specific efforts of the currently employed labor force.

The economist Solow calculates that “less than half of the increase in America’s productivity per capita . . . can be accounted for by the increase in capital itself. Considerably more than half of the increase in productivity seems attributable to technical change — to scientific and engineering advance, to industrial improvements, and to “know-how” of management and educational training of labor.”¹⁷

And where does technical change come from? As defined above, technical change is the product of broad cultural developments not attributable to any single person or group. Not even the entire congregation of living scientists and inventors can claim sole credit for technical change. As any scientist or inventor knows, the person who is credited with a particular discovery or invention makes only a tiny incremental contribution to the totality of human knowledge on any subject or in any machine or device. For example, a new electrical machine for which an inventor receives a patent owes much of its wealth-producing capabilities to the enormous backlog of human knowledge concerning the properties of electricity and magnetism. This information has been accumulated over hundreds of years by scientists from many different countries. Thus, the major part of the wealth-producing knowledge embodied in any machine is derived from the culture itself, rather than from any single person or group of persons. As Isaac Newton once said, “If I have seen further than other men, it is because I stood on the shoulders of giants.”

The wealth-producing capacity of a modern economy is the result of hundreds of years of discovery and invention, of building and educating, of rearing children and developing communities. Surely both women and men share in building the social stability and cultural development that makes our present industrial society productive. To distribute the wealth that this society produces almost exclusively through wages and salaries unjustly ignores the contribution of millions of persons who work outside of the

formally recognized labor force and grossly distorts the system of values that society places on various types of culturally beneficial activity.

The present income-distribution system should be recognized as a basic contributing factor in the failure of the national economy to realize its full potential in eliminating poverty and progressing toward a state of universal affluence. The narrow dependence on wages and salaries virtually guarantees high levels of unemployment and makes poverty inevitable. It wastes a large percentage of our available resources and productive capacity on make-work and unnecessary trivia. It leads to the demise of handcraftsmanship and personal services and discriminates against those who work outside the regular labor force. It is not surprising that an economic system with such fundamental defects should fail to produce up to its potential capacity.

IV

The Threat of Productivity

Even though the distribution of most of the national income through wages and salaries tends to perpetuate the long list of social problems described in the previous chapter, over the long run the most serious cost to society may be the loss of wealth that can never be produced because of the threat to jobs posed by increasing productivity through technological innovation.

Productivity is a measure of how much wealth can be produced from a given amount of labor, capital, and raw materials. Increasing productivity means getting more output from less input. Since wages are paid on the basis of labor input and not product output, increased productivity is widely perceived as a threat to jobs. In some cases this threat is real; in other cases it can be shown to be an illusion.¹ Nevertheless, the belief in a threat is very real. It has persisted among the working classes since the Luddite riots against the Spinning Jenny in 1768, and today it represents a powerful political deterrent that effectively inhibits any national policy directed toward major productivity increases.²

Yet, the ability of modern technology to produce large amounts of goods and services at low cost is the backbone of modern civilization. The history of the industrial revolution is a chronology of the development of better and more productive machines for increasing the amount of goods and services that can be produced from a given input of labor, capital, and raw materials. During the 18th and 19th centuries, both in England and America, the substitution of machines for hand labor brought to the average citizen a degree of material prosperity, and even relative luxury that was previously undreamed of. Coal stoves for heating and cooking, glass for the windows, cotton underwear, a variety of food, earthenware dishes, soap, clean sheets on iron bedsteads—these were the early benefits of increased productivity through mass production.³

Shortly after the American Revolution, it was the increased productivity of the cotton gin and the river steamboat that transformed the southern United States into a major agricultural power. Slavery, of course, played a part, but slavery did not make cotton king. The efficient mechanical means of processing and transporting the raw cotton crop did that. The northern states grew rich and strong from the increased productivity of automated spinning and weaving machines, steel mills, and later oil refineries. The American West prospered as a result of the invention of the telegraph, the railroad, and automated farm machinery.

As early as 1853 the use of mass production, interchangeable parts, and automatic machines became known as the “American System.”⁴ The primary objective of American industry was not so much to make luxury items for the rich, but to satisfy the demands of the average worker for material pleasures that indeed would have been considered luxurious in other lands.⁵ The epitome of this philosophy was reached in the production lines of Henry Ford. Early automobiles produced in Europe were handmade and expensive. Ford succeeded in increasing productivity in automotive manufacturing to the point where cars could be made inexpensive enough for working people to afford.

Today, increased productivity has become more of a necessity than a luxury. The high productivity of modern agriculture is all that stands between the earth’s exploding population and mass starvation. New hybrid seeds, modern fertilizers, pesticides, and advanced farming techniques have enabled a relatively small number of farmers to produce large quantities of high-quality food on a limited amount of arable land. If it were not for high productivity in agriculture, virtually the entire world’s population would be reduced to malnutrition and starvation.

One has only to observe the desperate poverty of primitive agricultural communities in remote regions of Africa or Asia, or recall the terrible hardships of the early American prairie farmers, to realize how close we are to the threshold of survival, and how much we depend upon modern agricultural technology. As the population doubles over the next four or five decades, there will be a larger increase in the number of people than in all of previous history. Under these conditions, higher productivity in agriculture will be absolutely necessary in order to avert catastrophic shortages and famine.⁶

High productivity in the manufacturing and service industries is also essential for adequate housing, transportation, sanitation, education, and medical care. Modern tools and factories and efficient methods for processing raw materials is what produces enough wealth over and above mere subsistence so that the average person can enjoy a decent standard of living. Future productivity increases will be required just in order to maintain the present standard of living in the face of rising population and dwindling natural resources. If we ever hope to advance beyond our present quality of life toward any of the costly but socially desirable goals such as better health care, more livable cities, and a cleaner environment, major new increases in productivity will be needed. In a world where population demands are increasing and natural resources are running short, increased productivity is the only way that a substantial decline in the quality of life

can be avoided. The occurrence of worldwide shortages and rampant inflation is only the leading edge of much more serious economic problems that will inevitably result if productivity is not increased rapidly enough to meet the rising demands of emerging nations and a burgeoning world population.

It only stands to reason that the income any society enjoys cannot exceed the rate at which it creates wealth. If the people and machines in a society are inefficient and create wealth slowly, then that society will inevitably be poor. Conversely, if a society directs its work efforts productively and if machines and technological innovations are developed that increase the rate at which wealth is created, then that society will be affluent. Relative wealth and poverty within a society depend on the equity with which the income pie is sliced, but the total size of the pie itself depends on the wealth-creating capacity of the productive processes employed by the society.

Productivity and the Standard of Living

The relatively large income enjoyed by the average American worker and the high standard of living of the majority of the United States population result directly from the fact that productivity in American industry has for decades been the highest in the world.⁷ Figure IV-1 shows the relationship between productivity and growth in real income (i.e., income that is left after the effects of inflation have been subtracted) in America since 1950. As can be seen, there is a very close correlation between the two curves over the past quarter century. Data from Samuelson⁸ shows nearly the same degree of correlation going all the way back to the year 1900.

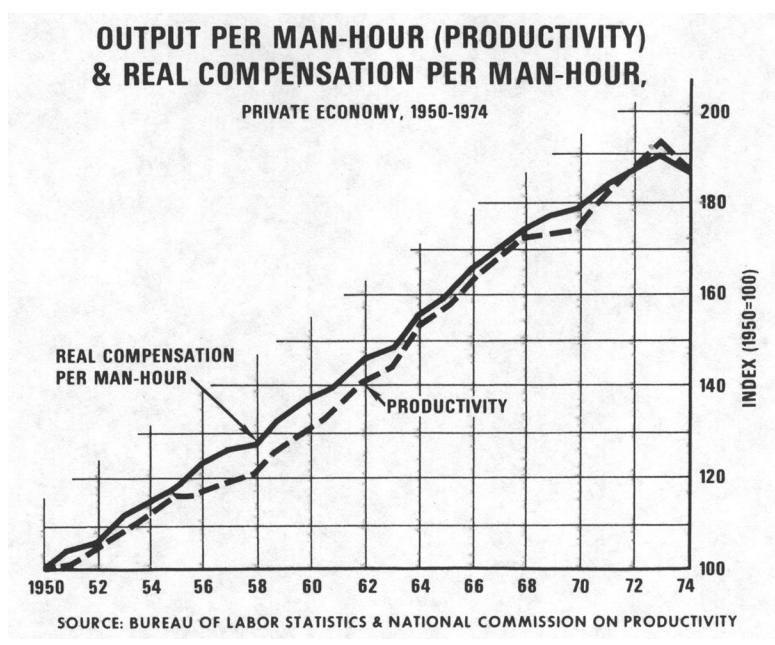


Figure IV-1. Real income (income that is left over after the effects of inflation have been subtracted) is closely correlated with productivity. This results from the fact that real income is based on real output.

Figure IV-2 shows the same relationship for seven industrialized nations of the world. Clearly, growth in real income is dependent on growth in productivity.

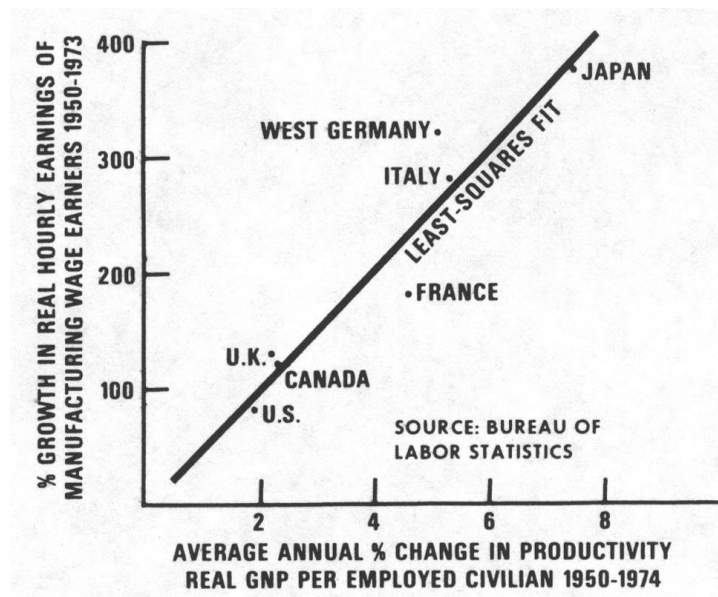


Figure IV-2. Growth in real income tracks growth in productivity in all industrialized countries. Only if more is produced can more be consumed.

The recent economic difficulties of the United States (that even before the mid-east oil embargo had given rise to balance of trade deficits, two devaluations of the dollar, sporadic shortages of critical items, and rising prices) have been due in large part to the fact that over the past ten-year period productivity gains in American industries have fallen off from their previous one hundred years' average.⁹ During this decade American productivity increases trailed most of the industrial nations of the world, causing our international economic position to deteriorate markedly.

There is no question that American technology and productivity is still the highest in the world. However, data in Figures IV-2 and IV-3, showing the rate of United States productivity growth relative to other industrialized nations, indicates a situation that, if continued, will soon eradicate our present lead. Department of Commerce economist Michael Boretsky calculates that during the 1965 -1971 period the United States was losing its productivity advantage at a rate 2½ times as fast as it achieved its pre-eminent position in the years prior to 1950. In 1970, the United States output per capita relative to the aggregate of other countries had already declined to the level it had been at the turn of the century.¹⁰

**GROWTH IN OUTPUT PER MAN-HOUR IN MANUFACTURING,
UNITED STATES & OTHER INDUSTRIAL NATIONS, 1960-72**

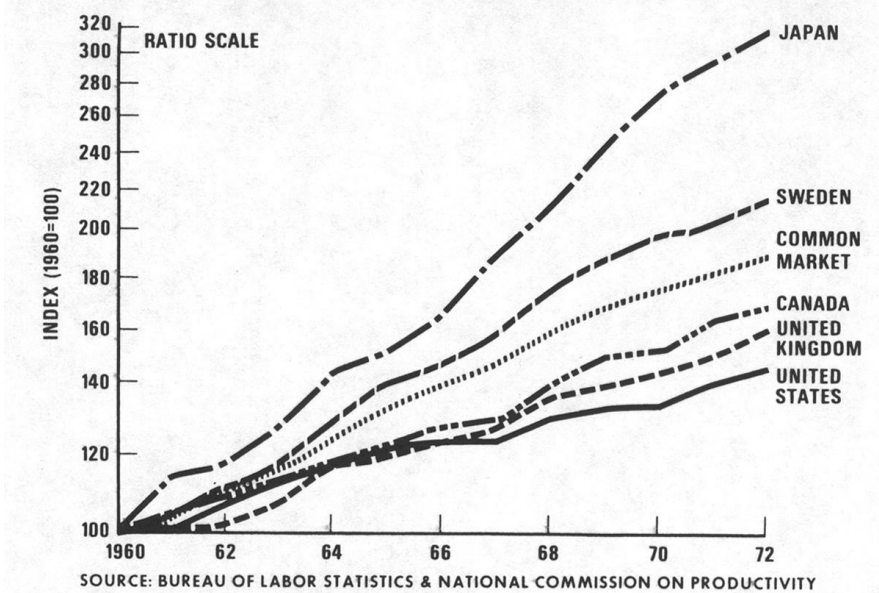


Figure IV-3. Productivity in the United States is still the highest in the world. However, U. S. productivity growth has trailed most of the in-

dustrialized nations of the world for well over a decade.

Boretsky argues that the rise of the United States to become the dominant economic power in the world, while certainly influenced by the devastation of other countries in World War II, was primarily due to the fact that productivity growth in the United States from 1870 to 1950 averaged a mere 0.9 percent higher than the rest of the world.¹¹ The dramatic reversal of this situation to where today we trail the world average by a full 3.0 percent, and Japan by more than twice that amount, reveals a disturbing weakness in the American economy.

Foreign businesses have already begun to view America as a future source of cheap labor. Volvo and Volkswagen are now building assembly plants in the United States because of changes in the relative salaries paid to workers in Sweden, Germany, and America.¹² This is a turn of events that would have been inconceivable only ten years ago. If present trends continue, this phenomenon may grow increasingly commonplace in the years ahead. Unless productivity is increased over the coming decades, the American standard of living is certain to decline relative to the rest of the world and, quite likely, in absolute terms as well.

The Effect of Investment

In the short term, productivity tends to fluctuate with the business cycle. When plant capacity is fully utilized and employment is low, as during the early phase of a recovery period, productivity tends to rise. Similarly, at the beginning of a recession, productivity tends to fall.

In the long term, however, productivity increases derive from much more fundamental causes. Three studies by Denison, Thurow, and Kendrick attribute the vast majority (76.7 percent, 69.8 percent, and 90.7 percent respectively) of long-term productivity increases to more capital, economies of scale, or improved technology.¹³ Investment, of course, is the source of all of these. Investment spending in some cases finances the replacement of obsolete equipment or the modernization of existing plants and facilities. In other cases, investment money purchases new machinery for workers who had previously used less efficient methods. Investment spending also finances research and development of new technology that leads to better machines, less expensive materials, and more effective methods of

production. Over the long run, investment in new technology is the fundamental source of all productive output over and above that which is possible by unassisted hand labor.

The data in Figures IV-4 and IV-5 indicate a strong correlation between productivity increases and the investment rate on a national scale. Those countries that invested a high percentage of their output in new factories, modernized equipment, and new technology showed a large growth in output per man-hour; those that invested less showed slower productivity growth.

This relationship is strong evidence for the theory that productivity is ultimately derived from new technology. Investment spending is the means by which a society channels its resources into research and development and by which it stimulates the diffusion of new technology through the building of new plants and modernized equipment. We produce more and better cars, ships, planes, dishwashers, computers, and television sets today than fifty years ago not because we work harder or because raw materials are more plentiful or less expensive, but because we know more and we use our knowledge to build machines and factories that produce more output with less input. It is often said that “they don’t build things like they used to” and that is true. If they did, either most workers would have to take a 90-percent pay cut, or most goods would cost ten times what they do today.

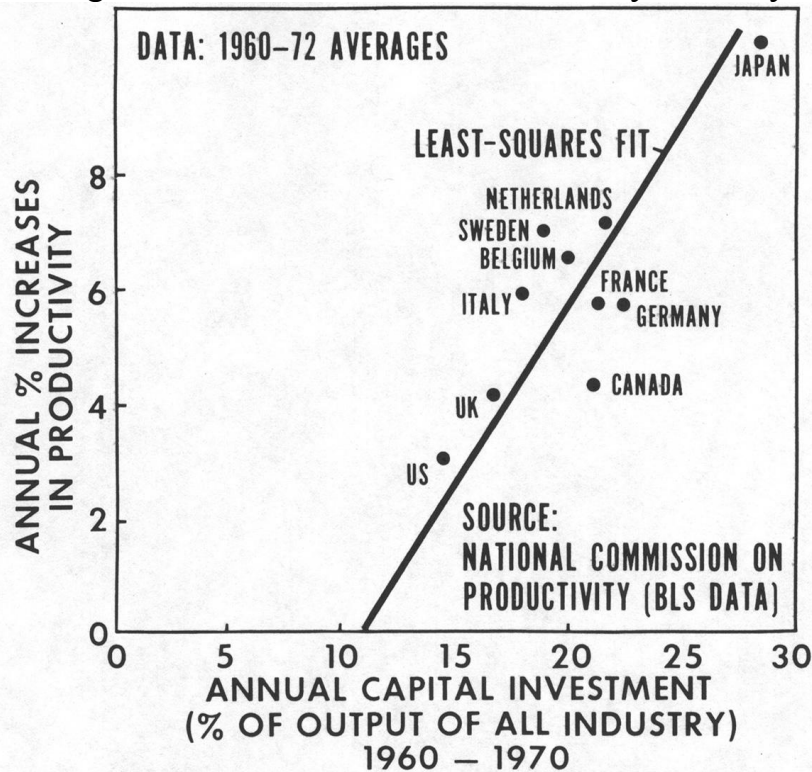


Figure IV-4. What causes a nation's productivity to grow? This chart shows that countries with a high rate of investment have high productivity growth, and vice versa. This implies that productivity growth is not serendipitous or beyond human control. Instead, it is the direct result of economic policies that promote investments in new technology and in more efficient plants and equipment.

It has sometimes been argued that the higher productivity growth of Europe and Japan is a transitory phenomenon resulting from the installation of modernized equipment after the destruction of World War II. The data in Figure IV-4, however, does not support that contention. Countries totally destroyed by the war show essentially the same relationship between investment and productivity growth as those largely, or completely, spared. Furthermore, it has been more than a quarter century since the war ended, and, except for the recent worldwide recession, there has been no slackening in the growth rates of either Europe or Japan. There is, in fact, good reason to expect that the United States productivity growth will continue to trail other countries simply because we have failed to modernize our capital equipment. In Japan 70 percent of all machine tools are less than 10 years old. In West Germany the figure is 63 percent, in the Soviet Union 57-percent, and in the United States only 33 percent.¹⁴ This implies that the Japanese have replaced nearly their entire stock of machine tools three times over since the end of the war.

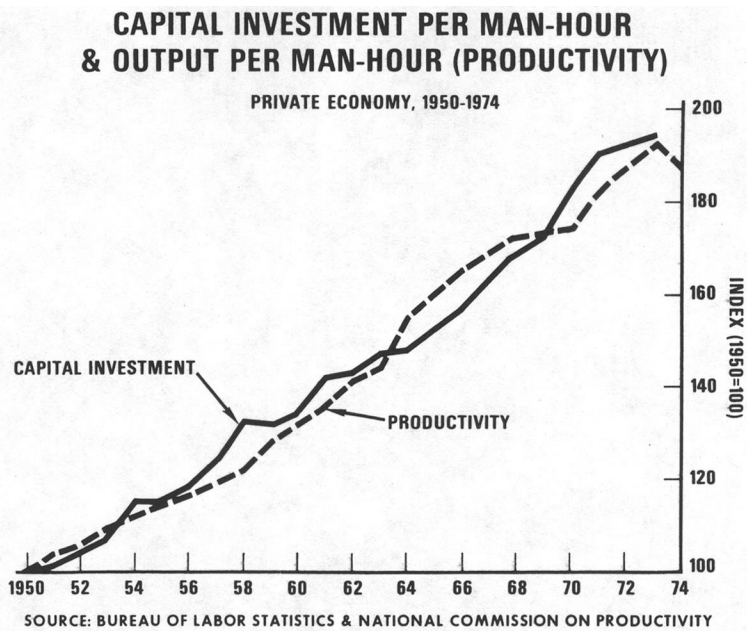


Figure IV-5. Productivity (i.e., output per man-hour) is closely correlated with the amount of sophisticated tools and capital equipment per worker. The data shown here, together with that in Figure IV-4 strongly imply that U. S. productivity could be increased by increasing the capital investment rate.

The simple fact is that other industrialized nations are investing at a much higher rate than we. The result, unsurprisingly, is that they have a much higher rate of productivity growth. The obvious implications are that a nation can control its productivity growth rate through its investment policy. For example, one might suggest from the data in Figure IV-4 that, if the United States were to double its investment rate, productivity growth would more than triple from its present rate of about 3 percent to over 10 percent per year.

Over the past 25 years, 3 percent annual growth in productivity has doubled the real GNP. If the present rate is continued until the turn of the century, real GNP will approximately double again. However, if the investment rate were doubled, leading to a ten-percent productivity growth as shown in Figure IV-6, real GNP would increase by more than ten by the year 2000. Present GNP is approximately \$1.5 trillion. Continuing the present rate of productivity growth will yield a GNP of \$3 trillion by 2000. However, ten-percent productivity growth would lead to a real GNP of more than \$16 trillion in 1975 dollars. The difference alone is more than triple the entire world GNP in 1970.¹⁶

EFFECTS ON REAL GNP OF PRODUCTIVITY GROWTH RATES

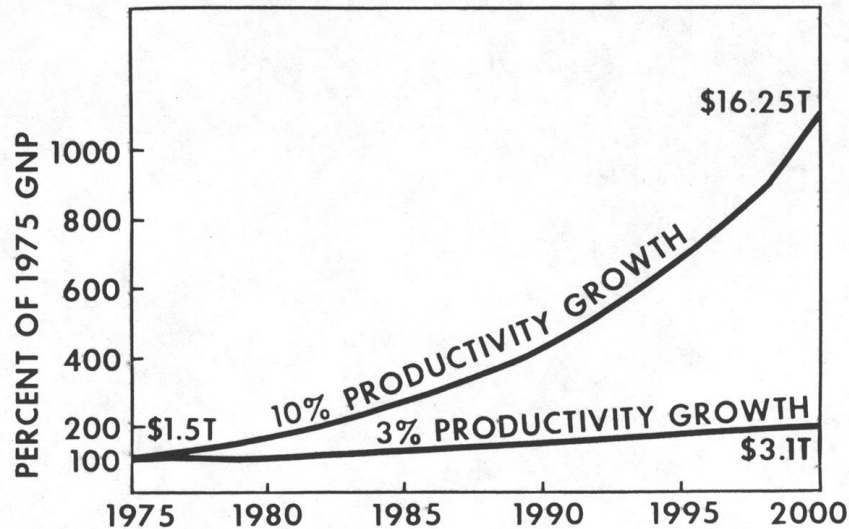


Figure IV-6. Productivity growth is the principle factor causing real growth in the Gross National Product (GNP). Increasing productivity growth through a higher rate of capital investment would have a profound impact on the GNP over the next quarter century.

Clearly, this is a matter of enormous consequence. A GNP surplus of \$13 trillion over what would otherwise be considered normal would mean that even the most exotic solutions to the problems of the environment would become economically feasible. We could afford to collect solar energy or dig for geothermal power anywhere on earth. We could afford to convert all industry, homes, and transportation to hydrogen fuel. We could process all sewage and farm drainage to the purity of rainwater. At the same time, we could afford to remake our cities, provide the best in health care for everyone, and guarantee adequate retirement income to all.

Of course, many economists would disagree that simply doubling the investment rate would triple productivity growth. The burden of proof, however, is on those who say it would not. It is difficult to interpret the data in Figure IV-4 in any other way.

It might be argued that recent changes in world conditions, particularly in regards to the availability of natural resources, will render the data of Figure IV-4 irrelevant to predictions concerning the next twenty-five years. However, as yet there is no evidence to indicate that the effect of

investment on technological innovations and hence on productivity has lessened. In fact, quite to the contrary, there are numerous reasons (to be outlined in the next chapter) for believing that over the next two decades new technology in the field of computers and robots will make productivity even more sensitive to the rate of investment than was the case during the 1960-1972 period.

It also might be argued that the United States has no mechanism by which the investment rate could be doubled. At the present, this is true. However, if the effects would be as profound as suggested above, then it would seem that the creation of such a mechanism should be made a number one national priority.

The Threat to Jobs

In the final analysis, the principal argument against a major shift in national policy towards increasing productivity lies in the threat to employment. Increased productivity implies greater output from the same or less input. From the very beginning of the industrial revolution, increased productivity has derived principally from the substitution of machines and mechanical energy for human labor in the production process.

Automatic machines increase the amount of output that the labor force can produce. Machines are essentially helpers or servants that work for nothing over and above the price of their own purchase and maintenance. The modern industrial worker is surrounded by these helpers, and, as a result, output per man-hour is large and wages are high.

Unfortunately, the capabilities of mechanical helpers are not an unmixed blessing. The practice of distributing almost all income through wages and salaries virtually assures that automatic machines will sooner or later change roles from helpers to competitors. Human workers typically own no part of the machines with which they work. The machines belong to the company that pays the workers' wages. Therefore, human workers benefit from the wealth-producing capabilities of automatic machines only so long as they remain employed. As machines grow more efficient, they produce more wealth, and the human workers' wages rise accordingly. Eventually, however, the machines become proficient enough to function without human assistance. At that point, human workers serve no further function, and their inflated salaries make them a costly liability.

To an employer whose survival depends on questions of profit and loss, it matters little whether a factory employs people or machines. In fact, in many ways machines are preferable to people. Machines, unlike human

workers, do not create personnel problems or generate labor disputes. Machines are willing to work twenty-four hours a day, seven days a week, fifty-two weeks a year, without coffee breaks, lunch periods, or vacation time. Machines never get bored or suffer from hangovers. Once they are adjusted properly, they repeatedly produce products that are free from defects. Furthermore, machines never pilfer material from the company storeroom. Thus, when an employer finds a situation where a machine can do a job more profitably than a human worker, it is almost inevitable that the machine will win out.

It is no wonder that labor unions and the public in general are ambivalent towards automation. Automatic machines are clearly essential to the production of the wealth upon which our current high wages, and indeed our entire way of life, is based. However, the average person benefits from these machines only so long as he remains employed. If the machines that a worker operates become too sophisticated, they can get along without him. They then become a threat to the very wages that they made possible in the first place. As a result, we have the paradoxical situation where automation is generally conceded to be a major source of our national wealth, yet new advances in automation are widely feared and often actively opposed by a large segment of the population. The average worker perceives his own personal financial future to be much more immediately determined by job security than by the general level of productivity in industry as a whole, and rightly so. After all, it is small consolation to know that productivity has risen a fraction of a percentage point if you have just lost your job.

Automation and Power: Economic and Political

There are other factors besides simple fear of losing income that contribute to public antipathy towards automation. One of these is a widespread feeling that the current trend towards machines taking over important functions in business, industry, and even government is politically dangerous. Unfortunately, the present income-distribution system makes this fear very well grounded, although not for the reasons most usually expressed. Popular science-fiction literature and movies typically depict future hordes of robots rebelling or developing psychoses that lead them to threaten their human masters. The fact is, however, that although such scare thrillers have dramatic impact, they completely miss the point of the real danger, and thus serve only to obscure the issue.

The real threat implicit in so-called superautomation derives not from any potential neuroses of the machines themselves, but from the

concentration of economic and political power that will fall into the hands of machine owners. Under the present income-distribution system, the profit resulting from machine productivity accrues directly to the owners of the machines first, and only by them is it distributed via the avenue of wages and salaries to the workers. This means that each increase in automation leads to an enhancement of the power of machine owners and to a greater degree of dependency on the part of the average worker. As machines become more and more capable of operating without human assistance, the human workers become less and less essential to the actual production of wealth. A highly paid but functionally superfluous work force is vulnerable to pressures from the employer establishment. Such a workforce, even though prosperous, is politically impotent, for its prosperity exists solely at the pleasure of the machine owners.

The Concentration of Ownership

According to the Department of Commerce Survey of Current Business¹⁷ one percent of the families in the United States presently own over 50 percent by value of all corporate stock. Less than five percent of American families own more than two-thirds of all stock. Thus, less than five percent of the people in this country control almost all corporate assets, including virtually all existing industrial machinery and capital equipment. This concentration of economic power in the hands of a tiny super rich elite shows no significant tendency towards decreasing.¹⁸ The prevailing practice among large corporations is to finance new capital investment from internal cash flow (i. e., withheld earnings, depreciation, depletion, amortization allowances, and investment credits against corporate taxes) rather than through issuance of new stock. For example, from 1955 to 1965, less than 0.5 percent of aggregate new capital formation came from newly issued stock while 99.5 percent was financed through internal sources or through debt securities that would eventually be repaid through internal sources.¹⁹

It is understandable that the average worker feels uneasy at the prospect of robots and superautomation technology. The great majority of automatic machines in American industry are owned and controlled by a relatively small group of men and women who are accountable to hardly anyone but themselves. Unless some changes are made in the present system of ownership and income distribution, the next generation of automation could reduce the entire economic system to complete domination by few superrich families.

Under these circumstances it is inconceivable that the American

people could be persuaded to support any large program of corporate tax cuts or investment incentives designed to increase capital investment, despite the needs for increased productivity. The benefits of increased productivity are too general and diffuse. The fear of unemployment and the concern over a growing concentration of economic power are too clear and specific. The average citizen simply does not see himself as the beneficiary of massive capital investments in big business.²⁰ The multinational corporations and the big conglomerates are perceived more as threats than as benefactors.

In such an atmosphere, really major efforts to increase productivity are politically impossible. As long as income is distributed almost exclusively as compensation for labor, massive new investments in automation technology would threaten the security of virtually every American family.

V

The Advent of Superautomation

Surely the development of the electronic computer will be viewed by future historians as one of the great milestones in human history. The introduction of the computer into the manufacturing process carries the potential for changes as profound as those resulting from the development of the steam engine or the discovery of electricity.

The computer is qualitatively different from all other machines in several important respects. First, its fundamental mechanisms are electronic rather than mechanical. As a result, a computer can operate many orders of magnitude faster than other devices. Typically, it can perform about a million separate and discrete operations every second.

Second, a computer does not wear out in any normal sense of the word. Although semiconductor components do deteriorate as a function of age and temperature, this deterioration is not appreciably affected by use. A computer does not age any faster when being operated at top speed than it does when sitting completely idle.

Third and most important, a computer can store and manipulate large quantities of information. A computer can store instructions, make decisions, calculate formulae, and execute procedures. As a result computers are able to manage businesses, schedule factories, maintain inventories, and control many types of mechanical systems in the performance of complicated operations. In theory, if not yet in fact, computers are capable of performing almost all of the decision and control functions currently done by humans in the basic manufacturing industries.¹

Computer -Aided Manufacturing

Computer-controlled machines and automatic factories are no longer science-fiction fantasy. Many hundreds of computer-controlled machine tools are already in operation throughout the United States and the world, and several computer-controlled factories have recently begun production.²⁻⁷ A technology forecast conducted by the University of Michigan predicts that by 1980 computer systems for full automation will be used in the manufacture of at least one-fourth of all parts, and by 1985 approximately 60 percent of all machine loading and scheduling will be done by computers.⁸

Recent advances in computer-aided design reveal just the merest hint of what will soon be not only possible but routine. Engineers, architects, and

scientists are now able to use the computer as a design tool to sketch objects in three-dimensions, to visualize how parts and structures fit together, and to analyze the performance of electronic circuits.⁹ A designer can communicate with the computer through a keyboard, a drafting machine, or a computer-controlled display device similar to a home television screen.¹⁰ Present computer-aided design techniques often reduce engineering and drafting costs by a factor of three or more.¹¹

In the future it will be possible to connect together computer -aided design equipment with computer-controlled machine tools. This will make it possible for an engineer to design a part at a computer terminal in his office. When he is satisfied with the design, he will be able to push a button and cause computer-generated control signals to be transmitted to an automatic machine tool, perhaps many hundreds of miles away, where the part will actually be produced without further human intervention.

Computer applications in manufacturing promise even more dramatic results. Over the past two decades enormous cost reductions in metal cutting, particularly in the aerospace industry, have been achieved by the rather simple expedient of operating machine tools under control of a magnetic or paper tape rather than human operators.¹² Numerically-controlled machine tools routinely result in productivity increases of 150 to 400 percent in present job-shop environments.¹³ Recently, direct computer control has been added. Since 1970, low-cost mini-computers have become available that make it economical to dedicate an entire computer to controlling a single machine tool. Preliminary results show that direct computer control can produce increases of 3 to 10 times in machine productivity, and even more dramatic improvements seem likely in the future.¹⁴

Computers also have potential applications in controlling automatic assembly machines, automatic parts -handling robots, automatic warehousing and inventory systems,¹⁵ and finally, computer-based management and factory scheduling systems. The Rand Corporation has estimated that, if computers were employed in controlling all these steps, overall reductions in total manufacturing costs of two to four times are achievable.¹⁶

There are two important factors concerning cost reductions obtainable through the use of computers in manufacturing that tend to make the benefits extend far beyond the industrial sector of the economy. The first is that the basic manufacturing industries are the foundation stone upon which the entire socio-economic system rests. The cost of manufactured goods affects agriculture and the service industries as much as it affects the manufacturing industries themselves. The cost of tractors, combines, milking machines,

irrigation equipment, fertilizer, fencing, and farm buildings all depend on the cost of manufactured goods. The same is true in the services. The cost of telephones, trucks, planes, railroads, typewriters, schools, books, hospitals, medical equipment, furniture, houses, even the cost of churches, vacation resorts, and sporting goods depends on the efficiency of the basic manufacturing industries. Of course, the cost of all raw materials such as steel, aluminum, concrete, oil, and nuclear power, as well as future costs of solar and geothermal energy, depends on the cost of manufactured materials. Thus, any significant reduction in cost in the manufacturing industries has a multiplier effect that ripples through the entire economy.

A second, even more important feature, of cost reductions in manufacturing is that they are regenerative. For example, if the cost of a machine tool is reduced, then the cost of another machine tool produced by the less expensive tool will be less expensive still.

Today, machines are used to make machines. Any basic improvement in technology that increases productivity at this point in the economy has a regenerative effect. It tends to make the cost of wealth-producing capital equipment spiral downward exponentially. Studies predict that even first generation computer-controlled factories will be no more expensive than conventional plants despite their greater complexity. They may, in fact, be cheaper by as much as two-to-one. Second and third generation automatic factories may be five or ten times cheaper.

The fact that this regenerative effect does indeed occur in basic manufacturing industries is dramatically illustrated by the history of the computer industry. Computer-aided design and computer-aided manufacturing techniques have been used most extensively in the design and construction of computers themselves. Computers are built from semiconductor devices of astounding complexity etched on incredibly tiny chips of silicon. The processes involved in designing, manufacturing, and testing these devices would be entirely impractical, if not impossible, without computer assistance. Yet by using computers, these processes are quite routine and, more importantly, inexpensive. The technique of using computers to make components for other computers has been a major factor in producing spectacular cost reductions in the semiconductor industry. Basic electronic circuits such as flip-flops, that two decades ago cost \$10 to \$100 apiece, today are available by the thousands for only a fraction of a cent each.

Computers are also used in the assembly, wiring, and checkout of other computers. It is quite common to see a computer being used to control the very machinery by which it itself was assembled.

The effect of this regenerative, almost reproductive, interaction between product and process can be seen in the performance versus cost characteristics of computers over the past two decades. The cost of computing power has dropped dramatically ever since the invention of the first computer. In the 1950's, the cost of large-scale computing machines was well over \$1 million. In 1970, the same computing capacity was obtainable for less than \$50,000, a decrease in cost of 2000 percent in 15 years. Figure V-1 shows the downward trend in the cost of mini-computers over the past decade. The price of new mini-computers has dropped at a rate of over 20 percent per year, and there seems to be no indication that the trend is nearing an end. In fact, it may be accelerating.

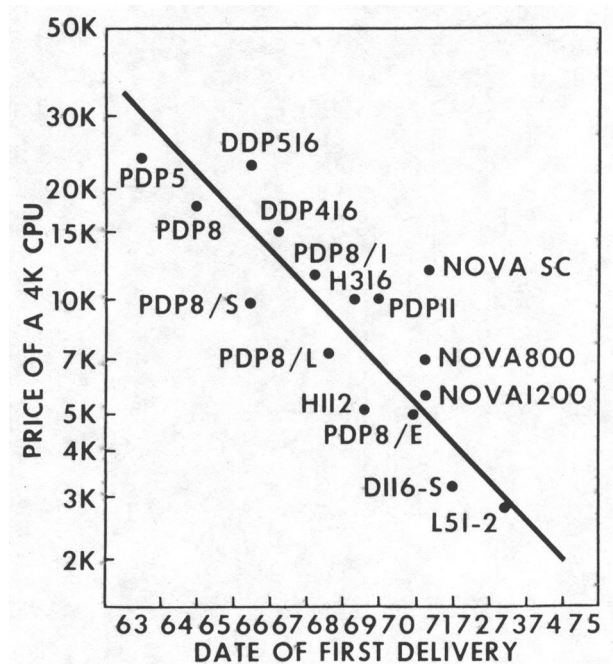


Figure V-1. The price of mini-computers has dropped at a rate of 20 percent annually for over a decade, and there is no indication that the trend is nearing an end.

Between 1965 and 1975, the cost of computing power in terms of bits per second per dollar dropped by approximately 5000 percent.¹⁸

During the past few years, it has become possible to put entire computer subsystems on a single chip of silicon. This technological feat has given rise to a whole new breed of devices known as micro-computers. Recently micro-computers have become commercially available for less than one hundred dollars,¹⁹ and predictions are that by 1978 these devices will cost less than ten dollars.

The impact of this spectacular reduction in the cost of computers has been enormous. First, it has revolutionized entire industries such as banking and insurance. Second, it has made possible technological achievements in space exploration, nuclear research, and electronics development, including home stereo and television equipment and pocket calculators that would have been inconceivable otherwise. But by far, the most important long-range effects have yet to be realized. These will occur when the decision-making and control capabilities of computers are fully applied to the basic manufacturing processes such as steel making, tool and die design, metal cutting, assembly, and inspection.

Today the cost benefits of mass production are achievable principally for items that are produced in quantities of many thousands per year. This is because expensive and complex machinery is profitable only when it is kept busy. Mass-production machines are highly specialized and capable of manufacturing only one product or, at best, a few different products of nearly the same type.

Computer-based automation, however, is flexible. The information concerning how parts should be shaped, where holes should be drilled, and how pieces should fit together are stored not in the mechanical structure of the production line, but in the easily changed memory of the computer. Computer-based automation can be switched from the manufacture of one item to another almost instantaneously. Machinery can be kept busy by manufacturing small amounts of many different items as well as large amounts of only one item. The prospect for the near future is that computer-controlled automation will make small-lot manufacturing as economical as mass production is today. Nathan Cook of MIT predicts that computers and robots may reduce overall costs in small-lot manufacturing by 80 to 90 percent.²⁰

The implications of this for society are far reaching, not so much because of the direct impact on consumer products, since most of these are mass-produced, but because of the regenerative effects on the manufacturing process. The machines used for mass production are expensive primarily because they themselves are produced in small-lot quantities. If computer-based automation were to reduce the price of small-lot manufacturing to the level of present day mass production, then the price of the machines used for mass production might drop by a factor of ten or more. Since the capital cost of machinery, together with material costs, almost entirely determines the price of mass-produced items, reduced costs in small-lot production would eventually be reflected in mass-produced items as well.

The revolutionary feature of this process is that it feeds on itself. Less

expensive machinery makes the production of new machinery less expensive. When automatic factories begin to manufacture automatic factories, cost reductions will propagate exponentially from generation to generation. The introduction of computers into the manufacturing process thus has the potential for increasing productivity on a scale never before conceivable. Eventually the cost of finished manufactured goods may fall to only slightly above the cost of unprocessed raw materials. U this ever occurs, the expense of production will become virtually independent of the complexity of the manufacturing processes.

The self-regenerative properties of automatic factories are unprecedented in non-biological systems. Their potential impact is so overwhelming that the entire concept has an air of unreality. To some it may even suggest the notion of perpetual motion. It might be useful, therefore, to digress for a moment to point out the distinction between self-regeneration and perpetual motion.

Self-regeneration is the phenomenon that results when a complex organism like a living cell (or an automatic factory) uses energy and information to assemble raw materials into other organisms like itself. The secret of regeneration is the information that directs and controls the various steps in the manufacturing process. The most important of these steps is the duplication of the information itself so that succeeding generations can carry out the same procedures. Of course, the act of self-regeneration can also produce useful by-products such as the food and oxygen that are produced by plants in their self-regenerative activities.

In biological organisms, it is the ability of the DNA molecule to store information and control biochemical processes that enable the living organism to function and reproduce. In a similar fashion, it is the ability of computers to store information and control manufacturing processes that raises the serious possibility of self-regulating self-reproducing factories and industries.

The critical distinction between self-regeneration and perpetual motion is in the supply of energy. Self-regeneration requires a net input of energy from the sun or some other external source. Perpetual motion proposes that useful work can be produced with no net input energy. Perpetual motion has never been observed to occur in nature and is considered to be theoretically impossible. Self-regeneration, in sharp contrast, not only is possible, but is commonly observed in nature and is, in fact, the process by which we all got here in the first place.

The fundamental scientific knowledge necessary to create self-regulating self-reproducing factories is already known.²¹ That is not to say,

however, that major engineering advances are not still needed in order to actually build and operate such plants.²² The situation is similar in many respects to that which existed in 1960 in regards to sending a man to the moon. Now, as then, the basic scientific knowledge is available. There are no theoretical reasons why such factories cannot be built. All that is needed is a large-scale commitment of resources and manpower to a clear and certain goal.²³

As was mentioned earlier, there have been a number of studies and reports that conclude that computer-controlled manufacturing systems are not only technically feasible but economically practical. In some areas automatic factories have already begun production, and others are in the process of planning, or construction. None of the available studies suggest that the cost of developing this technology for widespread use would be anywhere near as expensive as the Apollo moon expedition.

Among the critical items that still need further development are the computer programs for overall planning and scheduling, and the materials handling systems, or industrial robots for loading and unloading parts, changing tools, performing assembly operations, and inspecting for defects.²⁴

Computers and Robots

At present, most industrial robots are not computer-controlled. Instead, they use plug-boards, potentiometers, or plated-wire memory systems that restrict their capabilities to preprogrammed operations of a very simple nature.²⁵ Industrial robots today are typically used only for such tasks as unloading die presses, spot-welding auto bodies, and picking up parts from one predetermined point and placing them in another. However, research is now being conducted in several laboratories in the United States and abroad into techniques whereby industrial robots under computer control can sense conditions in the external environment and adjust their own programs to compensate for misalignments and variations in dimensions.²⁶ Computer-control techniques are developed that are similar to the muscle control circuitry in the human brain. These techniques will allow robots to be taught behavior patterns much in the same way that a child learns to use its own hands.²⁷ Computer programs have also been developed by which robots can sense the environment, make logical deductions, and plan their own course of action based on their sensory input.²⁸

Within a very few years, this research could lead to industrial robots capable of performing many, if not most, of the manipulative and assembly

tasks that presently require human workers. Once these types of robot operations become practical in a factory environment, the primary function of human workers will be to set up production runs, program the robots, and then allow the machines to run under computer control. It will then be possible for factories to operate four shifts per week with only one shift of human labor. This fact alone would produce an almost instantaneous productivity increase of 300 percent.

Once industrial robots are capable of performing sophisticated machining, assembly, and inspection operations automatically, it is perfectly feasible for them to be used to construct other industrial robots just like themselves. This step would initiate a regenerative, or reproductive, process similar to that which exists in the computer industry. The result would be an exponential decline in the cost of industrial robots.

Today, the best industrial robots cost between \$20,000 and \$60,000 each.²⁹ The addition of computer-control systems typically boosts this cost by another \$10,000 to \$30,000. This is far too expensive to justify investment for most present day applications, particularly if the robots are operated for only one shift per week. However, once these machines are installed in an environment where they can operate two, or three, or four shifts per week the economic picture changes dramatically. Present day industrial robots often show more than 50 percent per year return on investment for two-shift operation.³⁰

If the regenerative effect of robots producing other robots would result in anything like the 20 percent per year reduction in cost experienced by the computer industry, the price of even sophisticated computer-controlled robots might fall to several hundred dollars within two decades. Such a cost, when prorated for a 168-hour week, would amount to an effective robot labor rate of only pennies per hour. Return on investment might exceed 100 percent or even 1000 percent per year.

These are facts that are either terribly frightening or tremendously exciting, depending upon whether computer-controlled robots and automatic factories are viewed as a threat to the economic value of human labor or as a potential source of wealth for everyone. Almost surely, if computers and robots are cast in the role of competitors to human labor, then human workers will lose just as surely as John Henry was eventually replaced by the steam drill. However, if the ownership of future automatic factories is shared by a large percentage of the population and if the wealth created by automated industries is distributed so as to increase the income of everyone, then the benefits of automatic manufacturing may completely eliminate poverty, not only in the United States, but throughout the entire world.

The range of possibilities is enormous. It stretches all the way from widespread hardship to unprecedented affluence. Unfortunately, the existing income-distribution system contains no mechanisms designed to prevent direct competition between robot and human labor. It is thus not surprising that there exists no public support for a major national effort to accelerate the pace of robot development. The productivity gains that could strengthen our nation economically and solve many of our problems of rising costs and dwindling resources simply cannot be vigorously pursued in a society where income is so overwhelmingly dependent on wages and salaries.

Lack of public support, of course, will not indefinitely delay the robot revolution. The technology will eventually develop due to simple market pressures.³¹ A second industrial revolution is certainly coming whether the average American wants it or not. The world economic system is structured such that automatic factories are inevitable. Other nations are making serious efforts to avail themselves of the unprecedented wealth-creating capabilities of superautomation regardless of what we do.³² Japan, for example, has already committed more than one-quarter billion dollars to research and development in computer-aided manufacturing and robot technology.³³ Current Japanese plans call for the construction of a prototype automatic factory for the manufacture of machine tools to be completed by 1980. This plant is of a size that would ordinarily employ 700 to 800 workers, but will require only 10 persons to operate.³⁴ If this prototype plant is successful, other automatic plants will be constructed immediately. It is entirely possible that within two decades Japanese machine tools will dominate world markets the way Japanese cameras and electronic products do today.³⁵ Other countries are also aware of the potential economic benefits of robot development. Norway, Sweden, West Germany, and the Soviet Union all have vigorous research programs in robot technology and computer-based manufacturing.³⁶ The United States is no longer the only technologically sophisticated country in the world. The Russians proved that with Sputnik. If we ignore this new technology or if we simply allow market forces in this country to provide all the incentives for its development, we do so at great peril.

Robot technology, like computer technology, has military as well as economic implications. Any country that develops the capacity to run its factories around the clock seven days per week with only a few human workers will have a tremendous advantage both economically and militarily. If nothing else, this capability would allow military weapons to be produced in virtually unlimited quantities at extremely low costs. But, even assuming that such plants were never used for military production, the country that

possessed such a large surplus of efficient production facilities could easily dominate the world economically simply by selling manufacturing capacity at rates far below what countries using less efficient methods could hope to match.³⁷

In many different ways, the development of machines that can create wealth unattended by human workers and, in a sense even reproduce themselves, has potential historical significance that is difficult to project. It is almost as if a new race of creatures were to visit the earth and offer to work at substantially zero wages and produce offspring in perpetuity. Such an event would be bound to have profound effects on human history at least as great as any scientific discovery or political revolution that has ever taken place.

Whether this event results in unprecedented benefits or economic chaos depends largely on whether we can devise satisfactory answers to the questions: “Who owns these machines? Who controls them, and who gets the wealth they create?”

These are questions that go to the very heart of the income distribution system. As long as we have a system in which only a tiny minority of the people own or control virtually all of the wealth creating capital stock, and the rest of the population must rely on selling their labor for income, we will have a situation where automatic machines and advanced technology will inevitably threaten the security and personal dignity of the average person. Only if we can devise a means by which everyone can share in the control of modern technology, as well as in the wealth that it creates, will the fantastic capacities of the coming generation of superautomation be released to assist mankind in solving the urgent problems of our society.

VI

Peoples' Capitalism: An Alternative

Where the stimulus to investment is concerned, the system is somewhat in the lap of the gods. — Paul Samuelson

The great tragedy of the present economic crisis is that it is physically and technologically avoidable. The United States, and indeed the world, has more wealth and power at its disposal today than at any previous time in history. The world's stock of capital goods is larger than it has ever been. There exists more managerial expertise and a larger, more highly trained labor force than ever before. There are more machines, computers, scientific and technical knowledge available for creating wealth than has ever existed during the lifetime of the planet earth. We have the physical capacity to produce many more goods than are now produced at much lower prices than now exist. We have many more jobs that need doing than there are unemployed persons seeking work.

Few persons who experienced the dramatic events of the early 1940's would question that, if America were to mobilize for another major war, the present economic slump would end abruptly.¹ People would be put to work; new factories would be built, old factories would be modernized and operated around the clock. Manufactured goods would pour off the assembly lines in such huge quantities that we would have to revitalize our railroads and modernize our shipping in order to transport it. World War II put a dramatic end to ten years of economic depression and stagnation. Workers prospered. Women, blacks, and the chronically unemployed were put to work. America made more progress against poverty between 1941 and 1945 than ever before or since, including the Kennedy years, the Eisenhower Administration, and the Johnson Great Society.²

Yet most of the goods that flowed out of those defense plants benefited no one. They were either consumed in the fighting or destroyed as soon as the war was over in order to prevent flooding the civilian market. This is a phenomenon that demands explanation. Is there any reason that building tanks and bombers makes workers more prosperous than building homes and subways? If workers prosper during wartime despite the fact that most of what they produce is destroyed, then certainly they should prosper even more if the fruits of their labors were distributed so as to benefit themselves and society. Clearly, if our industrial capacity were mobilized for the benefit of mankind in the way that we know it can be for war, the problems of poverty, pollution, and economic stagnation would cease to

exist.

Why is it that, while hundreds of thousands of human beings are starving and hundreds of millions are living near the threshold of subsistence, we have factories sitting idle for thousands of hours every year, and millions of able-bodied, skilled workers are looking for jobs. There is something desperately wrong with the fundamental principles of an economic system that allows such overwhelming need to persist while unused capacity sits idle. Establishment economists have a hundred reasons for everything that taken together explain nothing. They can beat about the bush endlessly about interest rates, capital earnings, and depreciated rates of return, but they cannot answer the central economic question of the industrial era. Why can't we use what we have to produce what we need?

The simple fact is that most of the truly fantastic capacities of modern technology and industrial power have never been focused on the really important problems of hunger, pollution, and human suffering. We have wasted our resources on trivia and allowed the talents of millions to languish in underemployment while social problems of extraordinary magnitude consistently go unattended for lack of workers. We have the knowledge and the industrial capability to eliminate poverty from the spectrum of human problems. There are, in fact, no economic problems, including those resulting from the world's exploding population, that are beyond our present physical and technical capacity to solve.

What are lacking are the social and political institutions that can mobilize our capabilities and bring them to bear on the truly critical problem areas of our society. If we are to ever realize our true potential, we must somehow reorganize our system of rewards, incentives, and methods of wealth distribution so that they encourage individual behavior that is beneficial to society and societal behavior beneficial to the individual.

The Employee Society

The genius of free-market capitalism, at least in its early days, was, in the words of Adam Smith, that "every individual . . . by pursuing his own interest frequently promoted that of society more effectually than when he really intended to promote it."³ This symbiosis between private and public interests that Adam Smith called an "Invisible Hand" has largely disappeared from the present economic system. Today our economy is a battleground of competing pressure groups. Whatever economic justice exists derives from a tenuous balance of power. What is good for the individual

seldom benefits the whole, and vice versa.

A first step in restoring symbiotic harmony to our economic system would be to make our institutions for capital financing and income distribution correspond more closely with reality. We claim to be a capitalist society; i.e., a society based on the concept that private ownership of wealth-producing capital is a legitimate source of personal income. Yet the overwhelming majority of Americans, even in the middle and upper-middle income brackets are simply employees, dependent from pay period to pay period on wage and salary checks for income. In actual fact, America is not a capitalist society at all; it is an employee society.

We are a nation of employees. We derive our income from what we do, not from what we own. We are not capitalists; we are wage earners and, in a very real sense, wage slaves.

There is no wonder that the work ethic is pervasive and that unemployment is a dark specter. There is no wonder that our economy is choked with make-work, featherbedding, mass advertising of trivia, and wasteful use of natural resources and human talent. This is the inevitable result of distributing most income through wages and salaries in an economy where most wealth is created by capital.

If we were really capitalists deriving the majority of our personal income from the ownership of capital, then the benefits of productivity increases would be distributed primarily through dividends instead of through wages and salaries. Industrial robots, automatic factories, and computerized offices would then be no threat to jobs. Increased efficiency would benefit everyone. Technological innovation would be simply a means for creating income, eliminating pollution, and providing the basis for the good life.

Clearly, such is not the case. Instead, we cling dogmatically to the work ethic and the labor theory of value despite the transparent fact that the overwhelming percentage of productivity increases are not attributable to labor at all. People do not work any harder now than they did a thousand years ago and they are not inherently any more intelligent. The productivity of the existing labor force today is due to modern equipment, improved knowledge, and more efficient process technology. The truth is that labor has become a relatively small and rapidly diminishing factor in the production of material wealth.

There is no doubt that the Puritan work ethic once served America well. Dedication to the principle that everyone should pull his own weight through hard work made it possible for a powerful industrial nation to rise from a primeval wilderness in less than four centuries. Likewise, the labor

theory of value brought enormous benefits to the average worker. It provided the philosophical basis for organized labor's demands that the wealth created in America's factories and mills be distributed to the workers.

Unfortunately, cherished ideas cultivated over centuries live on long after they cease to be true or even useful. Human labor has long since ceased to be the most important ingredient in the industrial process; indeed, in many industries, human workers are the principal cause of production defects. Today, the first industrial revolution is complete. The labor theory of value and the work ethic are no longer useful concepts, and in fact may now constitute the most important impediment to the implementation of technological advances that could eliminate both poverty and pollution, not only in the United States but throughout the entire world.

We are at the beginning of an age of robots and automatic factories. If we could admit to ourselves the reality that machines can run industries just as well, if not better than, people, then we could devise an income-distribution system based on something other than employment. We would then have a society where machines provide the fundamental economic base and people are free to develop their creative talents to the fullest.

It must be emphasized, however, that there will always be some necessary work requiring human effort even in the most automated society. Medical care, teaching, counseling, entertainment, and personal services can never be satisfactorily automated in their entirety. Furthermore, there will probably always be large numbers of people who receive great satisfaction from regular employment. Certainly many will continue to desire opportunities for achievement and recognition offered by the competition of career employment. Thus, the distribution of some income through wages and salaries will continue to be necessary and desirable even when most goods and services are produced by automatic factories and robots.

Nevertheless, it is quite possible to have a hybrid economic system where a basic minimum income would accrue to everyone out of the profits from automatic industries while, at the same time, those who wished to work could supplement their basic income with a salary. There is no reason that wages and salaries should not coexist nicely with public dividends from automatic industries in an income-distribution system of the future.

How could such a system be practical? What new institutions would be necessary to implement the distribution of income through public dividends? The mechanisms outlined in the following paragraphs are one possible approach to how such a system could be organized within the framework of our present constitutional government and free-enterprise economy.

The National Mutual Fund

A semiprivate investment corporation, the National Mutual Fund (NMF), could be formed. Like any mutual fund, the NMF would earn a profit by investing money in stocks. The NMF, however, would differ from an ordinary mutual fund in four important respects.

First of all, it would be inclusive of the entire adult population. Every citizen would be a shareholder by virtue of his or her citizenship.

Second, the NMF would not obtain its investment funds directly from its shareholders, but instead it would borrow the necessary investment capital from the Federal Reserve Bank. Each year the NMF would be authorized by an act of Congress to borrow a specified amount for its investment operations.

Third, the NMF would concentrate its investments in areas of long-term productivity growth. It would attempt to promote the diffusion of advanced technology into civilian industries so as to achieve the most efficient use of resources possible. The NMF would finance the modernization of technically backward industries and the building of new automated factories. It would provide supplemental worker's compensation and retraining incentives where these would be necessary or useful in accomplishing its goals.

Fourth, the NMF would distribute the profits from its investments directly to the public on a biweekly basis. Every person, upon reaching the age of 18 years, would begin receiving regular NMF dividend checks and would continue to do so for life. NMF profits would represent wealth created by public capital invested in private firms that owe most of their productivity to the technological knowledge and cultural organization existing in the nation as a whole. As such, these dividends would belong to no single individual or exclusive group of individuals. They would properly belong to everyone and therefore should be distributed equally. The only exception would be that payments would not be made to minors so as to prevent generating new incentives for large families.

The amount of NMF dividend checks would depend entirely on the profits developed by NMF investments. If these profits increased, public dividends would also increase. If NMF profits declined, so would public dividends. The NMF would thus make every citizen a capitalist.

The Amount of NMF Investment

It is suggested that the National Mutual Fund be begun on a very modest scale, perhaps with a limit on borrowing authority for the first year of \$10 million, rising to \$30 million the second year, and \$100 million in the third year of operation. These first three years would constitute a trial period during which a staff could be recruited and policies and procedures could be evaluated and formalized. Following this initial test period, legislative authority for NMF borrowing would be roughly tripled every year for about ten years, or until the investment rate for the NMF approximately equaled the gross private investment rate for the entire nation.

During the 1968-70 period, the gross investment rate in the United States was approximately 18 percent of the GNP, or about \$180 billion per year. This was quite low in comparison with other industrialized nations. For example, West Germany invested about 27 percent of its GNP and Japan invested 39 percent, or roughly twice the United States investment rate during the same period.⁵ Additional investment by the NMF equal to the private investment rate would simply double the total investment rate. This is certainly not an excessive increase, particularly in light of the current performance of the United States economy relative to the other industrialized nations of the world.

GROSS INVESTMENT AS A SHARE OF GNP (1968-70 ANNUAL AVERAGE)

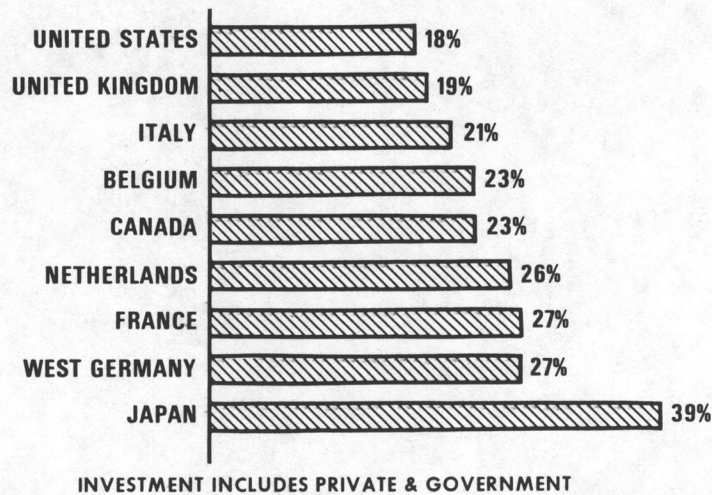


Figure VI-1. The gross investment rate of the United States is the lowest of the nine countries listed in this chart. Unfortunately, this is not an aber-

ration but represents a trend that has been going on since 1950. Information in this chart is taken from reference VI-5.

There are many indications that increased availability of investment capital would be highly beneficial to the American economy. There is presently a severe shortage of funds for long-term investment. James Needham, President of the New York Stock Exchange, estimates that over the next decade the need for investment capital will exceed the supply by \$650 billion.⁶ Chase economists estimate the shortfall at \$1.5 trillion for the same period.⁷ If these predictions are even close to being accurate, United States industry will be in desperate need of additional sources of investment capital for many years to come.

A shortage of investment capital, particularly when coupled with inflation and high interest rates, has a ruinous effect on long-term productivity growth. Firms tend to concentrate almost entirely on short-term quick-payback investments.⁸ These are typically limited to superficial innovations such as style changes and marketing gimmicks. Long-term investments that produce fundamental productivity gains simply are not good business when interest rates are high and stockholders are demanding large end-of-year return-on-investment figures.

The NMF would provide an ideal mechanism for creating the required additional long-term capital. The broad scope of the NMF, both in its investment activities and in its commitment to the financial security of stockholders comprising the entire population, would tend to give it a long-term perspective. Quick payoff investments would be much less appealing to the NMF than fundamental improvements in basic technology for the long-term benefit to the entire nation.

An important feature of solving the capital shortage through the NMF is that it would tend to decrease, rather than increase, the existing concentration of economic power in the hands of a tiny minority. Equity financing through the NMF would avoid the immense political difficulties inherent in more traditional methods of raising investment capital, such as cutting corporate income taxes or granting capital gains benefits to big investors at the expense of the average taxpayer.

Of course, the creation of investment capital through NMF borrowing from the Federal Reserve System raises serious problems concerning inflation. A method for increasing savings by a sufficient amount to compensate for this increase in the money supply will be discussed in a later chapter.

NMF Dividends

If the NMF were instituted in 1976, the gross investment rate would double by about 1989. As a result, the rate of growth in productivity, and hence real GNP, would substantially increase. Data from Figure IV-4 suggests that doubling the investment rate would raise productivity growth to approximately 10 percent per year. If this were to occur by 1989, real GNP by the year 2001 would be about 4.9 times its 1976 level, and National Mutual Fund investment would total \$10.4 trillion 1975 dollars.

It is estimated that the NMF could expect to pay at least 13-percent return on invested capital. This is based on the fact that the marginal return on capital for all business in America has not fallen below 16 percent since 1943. Total return on capital has remained above 25 percent during the same period.⁹

Even so, it might be argued that 13 percent is overly optimistic since real return on ordinary stock investments over the 1947 - 1965 period was only about 11 percent, and has averaged considerably less since 1965.¹⁰ However, these returns were realized in an economy where the investment rate was low and real economic growth was approximately 3 percent per year. In an economy where real growth was 10 percent, stocks could be expected to return considerably higher dividends. Thus, 13 percent does not seem an unreasonable expectation.

If present population trends continue, 13% return on investment would produce NMF public dividends in the year 2000 of about \$6000 per person per year in constant 1975 dollars. To some, this may seem a rather modest amount of income, especially if it would not occur until 25 years after the NMF was instituted. However, there are several factors that would make this amount very significant indeed. First, NMF public dividends would be completely independent of all other sources of income such as wages and salaries or social security. Thus, each family with two adults would receive NMF income in the amount of \$12,000 per year over and above all wages and salaries otherwise earned. Secondly, the estimate of \$6000 per person by the year 2000 is quite possibly conservative. If NMF investments were used to finance major advances in computer-aided manufacturing, it seems quite possible that higher rates of return might be realized. In any case, the year 2000 could be considered just the starting point for the full-scale operation of the NMF as a major source of independent income. An additional fifteen years could easily quadruple public dividends.

The Political Power of the NMF

Any institution such as the National Mutual Fund with discretionary authority over hundreds of billions of dollars of investment capital would wield enormous economic and political power. Its policy decisions would influence the structure of the entire socio-economic system and affect the lives and fortunes of millions of families. Such decisions would, by definition, be political in nature. Such a powerful institution would be extremely dangerous unless it were subject to effective checks and balances by other equally powerful institutions. It is thus imperative that the administration of the NMF be subject to the political process.

The National Mutual Fund would be administered by a publicly elected Board of Directors consisting of nine persons. Each director would be elected to an eight-year term and these terms would be staggered so that two directors would stand for election every two years, except for the eighth year when three directors would be elected. This arrangement would give the public an opportunity to express an opinion on NMF policy every two years, yet eight-year terms would give each director ample time to execute long-term policy decisions before standing for re-election. Five directors might be elected by regions of the country (i.e., the Northeast, the Southeast, the Midwest, the Southwest, and the Northwest), while the remaining four would be elected at large.

A Better Selection Process

Unfortunately, as was demonstrated by the Watergate scandal, public elections do not necessarily result in the selection of persons of integrity. It is therefore crucial that additional measures be devised to assure that only the best qualified persons are selected as NMF directors and that, after selection, their power be adequately circumscribed by effective checks and balances.

The recently implemented provisions of the 25th Amendment to the Constitution suggest a possible process for electing NMF Directors that would almost certainly be less subject to abuse than more traditional methods. The Congressional hearings pursuant to the confirmation of two Vice-Presidents demonstrated a commendable ability of legislative investigators to lay before the public the qualifications, philosophical beliefs, and susceptibility to conflict of interest of candidates for high office.

It is therefore suggested that for each vacant position on the NMF Board of Directors the President of the United States nominate a single

candidate. These candidates would then be subjected to investigation by a committee of the Congress. That committee would have the authority to take testimony under oath, to subpoena witnesses and evidence, and to conduct a thorough public inquiry into each candidate's credentials. At the completion of these proceedings, the public would vote for or against confirmation.

This procedure would completely eliminate the frantic campaigning and vacuous sloganeering that is so costly and sheds little light on the real issues. Each candidate would be subject to in-depth questioning by friendly, as well as hostile, interrogators. There would be a thorough but legally bounded investigation of each candidate's background and qualifications, and the public would have the information it needed to make its decision.

Equally important, the voters would not be presented with a choice between two undesirable candidates. After hearing the evidence, the voters would either confirm or reject each candidate. If a candidate is rejected, that position would remain vacant until another candidate could be nominated and processed through the confirmation proceedings.

Additional Checks and Balances

Even after a candidate had been confirmed, a bad choice would not be irrevocable. Each year the NMF would need to obtain legislative authority for its investment borrowing. This would mean that NMF policy would be the subject of public hearings on an annual basis. Businesses or consumer groups that disagreed with NMF policy would have ample opportunity to express their positions at those hearings. The Congress would, of course, have the authority to pass legislative regulations to assure that NMF policy was always directed towards the long-term public good.

Since the biweekly income of every adult citizen in the country would depend intimately on the efficiency and integrity of the NMF, there would be a sustained high degree of public interest in its day-to-day operations. NMF records would be open to the public and subject to scrutiny by the press. It is thus difficult to imagine how abuses of the NMF could continue uncorrected for long.

Nevertheless, if it were deemed necessary to further limit the power of the NMF, the National Mutual Fund could be established as a loose confederation of regional mutual funds whose investment activities would be independent and, to some extent, in competition with each other. Dividends paid to the public would reflect the combined total of the profits from all of the regional mutual funds. The advantage of this arrangement would be that no single investment philosophy would become dominant over all others,

and businesses could shop around for favorable terms on investment capital. The increased complexity of public elections and annual hearings for an NMF with several independent branches might be a small price to pay for the benefits of increased diversity and separation of powers.

In any case, the monopoly power of the NMF would always be limited by virtue of the fact that it would under no circumstances be allowed to exceed private investment spending. This would prevent the NMF from ever becoming the sole owner of a majority of the nation's productive capacity. The NMF should, in fact, not be allowed to financially control more than a small fraction of the nation's firms. This might be regulated by requiring that no more than 20 percent by value of NMF stock holdings could be in firms in which it owned a controlling interest.

It is felt that these restrictions and checks and balances would be more than adequate to assure that the NMF would not abuse the power vested in it by the public.

The NMF and Free Enterprise

It must be emphasized that, although NMF Directors would be elected officials, the National Mutual Fund would not be a branch of government; neither would its investment holdings constitute nationalization of private industry or the institution of socialism by any presently accepted definition of that term. The NMF would be a profit-making business institution operated for the primary purpose of earning dividends for its stockholders. It would not involve the expenditure of any tax money whatsoever.

Also, the National Mutual Fund would not be a replacement for any existing economic institution or policy. It would instead be a supplemental organization operating in addition to all the presently functioning institutions and organizations making up the existing economic system. For example, the NMF would not replace any of the methods presently used for capital financing. It would merely create an important additional pool of investment capital over and above presently available sources. Specifically, the institution of the NMF would not replace the existing stock market. In fact, during its early years of operation, the NMF would affect the stock market little more than any other large institutional investor. However, as the legislative authority for NMF borrowing from the Federal Reserve Bank was increased, the NMF might tend to dominate Wall Street unless it were prohibited from buying and selling on the open market. The NMF might therefore be restricted exclusively to purchases of new stock issues made by companies in need of investment capital. NMF sales, if any, would be made

solely to the companies that had originally issued stock to the NMF. The result would be that NMF operations would have only a secondary effect on the existing stock market.

In a similar way, the NMF would not in any way destroy the profit motive or dilute the requirement for efficiency imposed by a market economy. In fact, the distribution of NMF profits to the public would actually increase incentives for businesses to weed out sloppy management and poor service. The NMF Directors would effectively be proxy stockholders in businesses financed by stock sales to the NMF. They would participate in the election of corporate boards and would exert considerable influence over the operational philosophy of client businesses. The NMF board would thereby be in a strong position to insist on efficient business practices, and, if for any reason they were not effective in this endeavor, they would be subject to public censure at the ballot box.

This is a situation that is vastly different from that existing in socialist economies where state-owned and operated businesses have few incentives to be efficient or to provide convenient services. In socialist economies, the public has little control over industry either through market pressures or through executive policy decisions. The NMF, in contrast, would increase the power of the public in influencing businesses and industries both in the market place and in the boardroom. NMF controlled industries would be more responsive to the public interest than industries under socialist systems because of the need to win consumer approval in the market place so as to return a large profit. They would at the same time be more responsive to the public interest than ordinary industries in our present capitalist system because of the need to respond to public sentiment reflected through elected members of the NMF board. Thus, industries financed by NMF capital would have double incentives to be both efficient and responsive. The NMF would not convert private industries into public, but would merely broaden the ownership of private industries so as to make the interests of private industry more synonymous with the public interest and vice versa. In short, the NMF would not be a step toward socialism, but rather a broadening of private enterprise capitalism to include everyone. The result would be a healthy tension between the need to return a profit and the need to protect the public interest in all other areas, such as preserving the ecology and conserving natural resources.

The importance of the profit motive in the operation of the NMF can scarcely be over-emphasized. The fact that the NMF would be a no-nonsense profit-making institution would not only provide strong incentives for businesses to operate efficiently, but it would also force them to utilize

NMF-provided capital in the most effective way. In order to ensure the efficient use of NMF capital, stock bought by the NMF might carry certain obligations not common to ordinary stock sold on the open market. For example, companies selling stock to the NMF might be required to pay dividends at some fixed rate to be agreed upon by negotiation between the NMF and the company, on all profits resulting from NMF-financed investments. This rate agreement would be the result of negotiations in which the NMF governors, representing a profit-making institution with profit-minded stockholders (the public), would attempt to set the rate as high as would be profitable in the long run for its stockholders. Therefore, the NMF would force the asking rate for investment capital to the maximum value beneficial to its stockholding public. This, of course, would increase the cost of NMF capital sufficiently to assure that those businesses obtaining NMF financing would put it to the most profitable use.

Businesses would not be forced to accept NMF terms for financing. The traditional sources of capital (i.e., the private stock market, commercial banks, retained earnings, and various other sources of private financing) would still be available. The NMF would thus be subject to the restraints of competition in a free market. If the NMF governors were to demand too high a return on capital provided by the NMF, businesses would simply seek capital from other sources. If, however, the NMF Board of Directors were to be too generous with the funds it dispersed through stock purchases, then its stockholders, the public, would replace those directors with other directors more conscious of the public's desire for high dividend payments. The fact that the NMF stockholders would include the entire adult population and not merely some subset of the population would create a strong motivation for the NMF to pursue policies generally beneficial to the entire country, including the private business sector, and not merely to promote the welfare of another special interest group. Any conflict that might develop between the NMF and private industry would essentially be a conflict between private industry and the people of the nation. In such a case, there is little need to worry about the interest of the majority being subverted. The need is rather to protect the individual (in this case, the individual businessman or corporation) from tyranny of the majority. This, of course, is the proper function of the law, the courts, and finally the Constitution. The NMF and its directors would be subject to regulation by laws passed by both federal and state legislatures, as well as to regulatory action by the Executive Branch and judicial restraint by the courts. Thus, the NMF would not, indeed could not, go beyond the will of the final source of power and restraint — the people themselves. The people would have direct control over the NMF

through the electoral process as well as indirect control through various legislative, executive, and judicial authorities. The ultimate power of the NMF would, of course, lie in its access to funds borrowed from the Federal Reserve Bank. The authority to borrow from this source would rest with the Congress and President.

Incentives for Diversity

The NMF would not put the private enterprise system under a monolithic system of government control. In fact, the existence of NMF financing would actually increase diversity and competition within the private sector and, in the process, would provide a powerful counter force against the present trend toward concentration of economic power in the hands of a few enormous corporations. The present practice in American business of financing most capital investment through retained cash earnings gives large, established corporations an enormous competitive advantage over smaller firms. Furthermore, the use of retained earnings as collateral for obtaining preferred credit ratings enables large corporations to operate with flexible financial reserves that simply can not be matched by smaller firms. The existence of NMF financing would, to some extent, reduce the advantage of simply being big. The NMF would be a ready source of investment capital equally available to small firms as well as large. NMF financing thus would act as an equalizer, enabling small businesses to operate with more of the flexibility presently enjoyed only by large corporations with huge financial reserves.

The availability of the NMF as a source of investment capital might also make it feasible to consider major tax reforms with respect to corporate profits and capital gains. Tax laws might be changed to encourage corporations to pay out more of their profits as dividends to stockholders rather than retaining them for investment purposes. If there were sufficient incentive for industries to finance most of their capital investments from external sources such as new stock issues, either on the private market or to the NMF, then all industries, big as well as small, would have a more equal opportunity to survive and prosper in a free-market economy. The effect of the NMF in decreasing the advantage of simply being big might have a greater effect in promoting competition and discouraging conglomerate mergers than all of the antitrust legislation and court litigation that the federal government could conceivably bring to bear. Furthermore, the antitrust anti-conglomerate effects of the NMF would be much less subject to corruption and political abuse than the present system of regulation by

law. The NMF would combat the trend toward mergers by removing the economic incentives for bigness rather than by attempting to prevent by law what is now financially attractive for big companies to do.

The NMF, however, would not especially favor small businesses over large. The effect of the NMF would simply be to put all firms, big as well as small, on a more equal financial footing. The benefit in the long run would be neither to the biggest nor to the smallest, but to the most efficient and productive.

The fact that the NMF directors would be under considerable pressure to deliver high dividends to the stockholders would tend to cause NMF investments to be concentrated in industries where investment could be expected to earn high profits over the long run. NMF financing would thus be a powerful force for inducing all industries, big as well as small, to modernize their plants and production techniques. It would encourage innovation by two methods: first, by providing risk capital for promising new technologies, and second, by pursuing successful new developments with massive financing for rapid modernization of entire industries. The NMF would very likely invest in completely automatic factories, mines, and mills, that would result in enormous savings in labor costs. Income would not be lost to workers, but would instead be distributed through NMF public dividends rather than through wages.

In certain cases, the NMF directors might deem it necessary to finance supplemental worker retraining and/or compensation programs in order to make possible the introduction of major technological innovations affecting existing jobs. Such measures would be at the discretion of the NMF directors and would be set up through negotiations between the NMF, the companies, and the workers involved in each individual case. The use of such measures might make it possible to revolutionize entire industries such as the home construction industry so as to reduce the cost and improve the quality of newly constructed houses. Mass transit equipment and facilities might be made financially profitable and produced on a massive scale. New energy sources might be developed and exploited. Major new environmental protection industries might be started.

In summary, the profit motive working through the NMF would cause it to pursue policies that would be beneficial to the free enterprise system in many different ways. The NMF would encourage efficient management and effective performance in the market place. It would provide a readily available source of capital for investment purposes and would force the most efficient utilization of that capital. It would enhance competition between small and large industries and would foster extensive utilization of the most

modern and efficient technological innovations. The net effect of the National Mutual Fund would thus be the revitalization of free-enterprise capitalism by making it work for the benefit of all in a post-industrial world.

VII

Peoples' Capitalism and the Individual

Although the increased availability of investment capital through the National Mutual Fund (NMF) would undoubtedly contribute to the vitality of the free-enterprise system, the most important effect of the NMF would be to increase the personal freedom of the individual citizen. In this society, as in every society, there are three major factors that shape the day-to-day life of virtually everyone:

- 1) 1) the physical environment in which the individual exists,
- 2) 2) the amount of wealth that each citizen has at his or her disposal,
- 3) 3) the means by which this wealth is obtained.

In America, the physical environment is determined to a large and ever increasing degree by the major corporations. What we eat, what we wear, what we listen to, what we see, what we live in, what we work at, what we use to get from one place to another, in short, a significant percentage of our total environment is man-made — and not just man-made, but manufactured by the top 100 corporations. The power of the individual citizen to influence this process is virtually nil. Most often the choice is simply to either go along or drop out.

To some degree, the NMF would reverse this trend. The NMF would give to the individual an increased say in the policy of the nation's corporations. The accumulation of NMF stock ownership in private businesses and industries would effectively broaden the ownership of the means of production. Every citizen, through the NMF, would become a stockholder in the private enterprise system. Businesses owned by the NMF would belong to the people and thus would be sensitive to pressure from public opinion. The profit motive would remain as an essential ingredient in day-to-day corporate decisions, but profit per se would no longer be the sole criterion for company policy. Corporate management would be ultimately responsible to the public, and therefore the public interest would become an important factor to be considered in making long-term decisions.

Broadening the effective ownership of the corporate enterprise system would undoubtedly also affect public attitudes toward business. The fact that business profits, and therefore NMF public dividends, would be influenced by NMF policy would tend to make the average citizen much more aware of the importance of efficient business practices. The growth of the NMF would cause many average citizens to appreciate the problems and responsibilities of business ownership for the first time. Mill hands,

secretaries, clerks, and housewives would begin to be concerned with profit and loss statements because, through the NMF, these would directly affect their incomes. To some extent, this might create an atmosphere more conducive to cooperation between labor and management or, at least, reduce somewhat the intensity of the adversary relationship that now characterizes labor negotiations. The role of the NMF in making the interests of business more synonymous with the public interest, and vice versa, would thus undoubtedly result in many benefits both to business and to the public.

For the individual citizen, however, these benefits would be far overshadowed by the fact that the NMF would enormously increase the power of the average voter to determine the type of environment in which we all live. The NMF would provide a mechanism by which the immense wealth and power of the major corporations would gradually be brought under democratic control. The modern corporation is certainly the most important element in American society to have effectively resisted efforts to bring social institutions under democratic control. This is not to say that corporations are undemocratic in the sense that they fail to conduct public stockholder meetings with all the superficial trappings of New England town meetings. However, they are by no means democratic in a modern one-man-one-vote sense, due to the concentration of corporate stock ownership that places effective control of industry in the hands of such a tiny minority of the population. Democratization of ownership of the means of production, through a mechanism such as the NMF, would be a major step toward the principle of government (i.e., control of social institutions) of the people, by the people, and for the people.

Undoubtedly, there are many to whom the concept of subjecting corporate power to democratic control seems radical, perhaps even revolutionary. This perhaps is inevitable, even though the NMF would accomplish the democratization of industry through the free response of the market to a new source of investment capital, and not through nationalization or expropriation. Nevertheless, change is feared by most people and vested interests are quick to exploit this fear in order to protect the status quo. It should be noted, however, that only two hundred years ago the concept of subjecting governmental power to democratic control was considered by most people in this country to be revolutionary. Fortunately for us, our forefathers had the courage to make what for them was a revolutionary leap in the dark. They had enough confidence in the average citizen to entrust the enormous power of the national government to the democratic process. The experience of the past two centuries has been that the average person is not only capable of self-government but that democratic control of

government is absolutely essential to the concept of individual freedom as we now know it. It does not seem unreasonable that future generations may regard democratic control of industrial power to be as essential to their freedoms as we believe democratic control of the government to be to ours today.

Financial Security and Personal Freedom

Important as the democratization of industry might be, however, it seems certain that the most significant contributions of the NMF to the cause of individual liberty would derive from the payment of a secure and independent income to every adult citizen regardless of all other personal circumstances. NMF dividends would give to every individual a degree of personal independence and freedom from economic constraints that can be derived only from the secure possession of wealth-producing property. Persons receiving NMF dividends would have a financial cushion. They would be able to be more selective than otherwise in choosing their employment and more independent in pursuing opportunities for advancement. They would have more freedom to seek additional education and more latitude to choose where they wish to live. Supplemental income from NMF dividends would give to everyone a degree of the financial security and personal independence that today is enjoyed only by the wealthy. Ordinary citizens would find their freedom to structure their own lives according to their own tastes increased enormously.

NMF income would, for example, make it possible for many individuals to go into business for themselves. The NMF would make investment capital much more readily available, and the existence of regular NMF dividend payments would free would-be entrepreneurs from the imperative of producing an early positive cash flow. For other individuals, the existence of NMF income would make it possible to choose from a much broader range of rewarding occupations. People could afford to be more selective in seeking out jobs that offer a personal sense of accomplishment and fulfillment. Recent studies have shown that a very large percentage of Americans are dissatisfied with their present occupations.¹ The existence of NMF income would make it possible for many persons to quit their jobs and search for other work more to their liking. That this would in fact be the result of NMF payments can be inferred from numerous examples in recent years of men and women who, once having achieved a modest level of

financial security, have abandoned high paying, prestigious jobs in order to take up more personally satisfying occupations, even at reduced pay amounting to a loss of many thousands of dollars per year in salary. Once NMF payments grew to something approaching a comfortable middle-class income, it seems reasonable to expect many people to follow this pattern.

Quite likely, there would be a revival of such personally satisfying occupations as handcraftsmanship. The reason why the skilled artisan disappeared was not that people developed a distaste for working with their hands. This is obvious from the fact that many persons today pursue handcrafts as a hobby. Handcraftsmanship as a source of income was effectively destroyed by the advent of machine-made goods that made it impossible to earn an adequate living by hand labor. Hand-craftsmanship simply could not survive in an economy where capital-intensive labor was subsidized by machine-created wealth and craftsmen were not.

The NMF would distribute machine-created wealth to everyone—to the handcraftsman as well as to the machine operator. Thus, people who were so inclined could profitably pursue hand trades, and their incomes would be supplemented by NMF payments.

There is, and always has been, a market for handmade goods, particularly when such products are available at reasonable prices. In the present economy, handmade goods are either enormously expensive, or the craftsman is forced to live on poverty wages. Supplemental NMF income would allow craftsmen to sell their work at a reasonable price and still maintain a decent standard of living. The result would almost surely be a great revival in handcraftsmanship and a corresponding increase in the quantity and quality of reasonably priced handcrafted goods.

Family farming is another example of an occupation that very likely would exhibit a strong resurgence if the NMF were put into effect. The small farmer was forced out of existence by the industrialization of farming. Many, if not most, family farms were abandoned reluctantly and only as the result of an irresistible economic squeeze brought about by the intrusion of high technology mechanization into the field of agriculture. The small farmer was left out of the part of an economic system that distributes machine-created wealth. Thus, the family farm, like handcraftsmanship, has all but disappeared from the mainstream of American life.

NMF supplemental income would provide a channel by which a single family could successfully operate a small farm without an enormous investment in farm equipment. The NMF would be a mechanism by which the small farmer could share in the wealth created by modern machines. Although the lure of the land has little or no appeal for many persons, there

are millions of workers in air-conditioned offices and busy factories who would like nothing better than to farm a few acres in Missouri. Income from NMF payments would make such dreams a practical possibility.

Sociologists for decades have deplored the urban migration that has led to overcrowded city slums, as well as to depopulated and depressed rural communities. If the citizens of remote rural areas had some source of income from the technological/industrial sector, these regions would easily be self-supporting. In many cases what are now pockets of rural poverty could be turned into idyllic regions of remote serenity by NMF income payments.

It also seems quite possible that NMF income might stimulate an increased interest in the arts and in science for its own sake. If NMF income were available as a minimum guarantee, serious pursuit of an artistic career would be much less risky from a financial standpoint. It might be argued that this would only produce a great mass of mediocre painters, musicians, and actors. There are, however, good reasons to believe otherwise. One of the most prevalent reasons for bad art is commercialization; i.e., catering to the common taste in order to survive financially. NMF income would free aspiring but unrecognized artists from the need to compromise their work in order to eat. When an artist is financially independent, he or she can be true to his or her own tastes. Such a person can then concentrate on becoming recognized as an artist rather than worrying about financial problems. Great art is sometimes born of adversity, but it is more often a product of affluence.

The same holds true of scientific endeavors. In the early days of the scientific era, the pursuit of knowledge for its own sake was a highly respected concept and a primary motivating force for scientists. Much of the current disrepute in which science finds itself today stems from the fact that at present most scientists are salaried employees and derive their incomes either from big business or from military projects.² As a result, science in the past few decades has been largely confined either to commercial trivia such as spray deodorants and freeze-dried foods, or to military horrors such as the hydrogen bomb, intercontinental missiles, and biological weapons of mass annihilation. NMF income would allow the return of the gentleman scientist who pursues the intrigues of science purely for their esthetic value.

The NMF could also be expected to cause a great upsurge in volunteer work of all kinds. It is even conceivable that extremely interesting work, such as space exploration, and certain types of scientific research might be opened up to select groups of amateurs and volunteers. After all, if a particular endeavor is interesting enough, people will do it for nothing, providing, of course, they have some means for financially supporting

themselves and their families. NMF income could provide such support.

The modern industrial system of salaried employment is anthropologically a very recent phenomenon. The human race survived and prospered for hundreds of centuries before the first factory or office was ever built. There is no physiological or psychological reason to suspect that the human species is particularly well adapted for modern employment in factories and offices. In fact, there is considerable medical evidence to suggest that the present day job environment subjects the human body to many stresses (or lack of stresses) for which it is not particularly well adapted either physically or mentally. If supplemental NMF income were available, there is every reason to believe that people would pursue occupations that would be much more conducive to mental and physical health than are present jobs.

The NMF and Individual Incentive

It might be argued that the payment of NMF income over and above all other sources of income would cause a significant percentage of the population to quit working and simply atrophy. There is, however, strong evidence to the contrary. A major four-year government-sponsored study carried out by the University of Wisconsin indicates that the recipients of unrestricted cash subsidies worked as often and earned as much as others who did not receive the money.³ The study did indicate that women showed a tendency to quit their jobs and return to their homes. Also, elderly men often changed to less demanding jobs requiring fewer hours of work, and persons in poor health were inclined to stop working altogether. However, these were offset by evidence of increased work incentives among other groups, particularly the young and relatively well educated. These showed a marked tendency to abandon low-paying jobs and seek better ones. The income subsidies evidently gave individuals enough financial security to quit working for a while in order to search for better jobs.

The results of this study, as well as simple observations of everyday life, do not suggest that money, in the form of wages and salaries, is the only incentive, or even the principle incentive, that causes people to pursue productive lives. A non-uniform scale of salaries may cause workers to choose one type of job in favor of another, but there is little to indicate that money alone is the principle factor that induces people to seek employment rather than simply sit in idleness. The Wisconsin study was conducted with persons in the very lowest income bracket, but there is no reason to suggest that the results would be substantially different if the cash recipients had

been from the middle-class or high-income levels. The principal factor that causes people to work would appear to spring more from a psychological need to feel useful and achieve success than from a simple desire for money. Of course, in our present system, money is closely associated with success; but anyone intimately aware of what goes on in the average factory or office knows that increased recognition or responsibility, or even so trivial a reward as having an office with a window and a carpet, is often a greater incentive for hard work than simply the salary differential involved. Even where money is an important incentive, the total amount of money received is not nearly so important as the amount of money relative to what other people in the same factory or office, or even in the society at large, are being paid. There is little reason to suspect that a supplemental source of income paid equally to everyone would perceptibly affect in one way or another the system of practical incentives that cause people to leave their homes in the morning and go to work. After all, those persons in our society who work the hardest and longest are not typically those who are one jump ahead of the bill collectors. Those who work evenings and weekends and take work home from the office seldom do so because of absolute financial necessity. The compulsive workers among us are motivated by something much deeper than a weekly paycheck. There is no reason to believe that many, if not most, of us would not continue to work just as hard, if not harder, even if a substantial portion of our income were provided regardless of whether we worked or not. If the NMF were in effect, it seems quite likely that the primary incentives for work would remain what they are today; i.e., the need to socialize, to compete, to achieve, and to escape boredom. Most jobs would still pay wages and salaries, and only a few persons would feel no need for additional money. Furthermore, the urge to feel productive, to make a contribution, and to attract peer recognition would not disappear from the society.

Many wealthy Americans with independent incomes today hold regular jobs. There is no reason to believe that persons with NMF income would behave differently. The NMF would certainly not prevent anyone from working who desired to work. In fact, it would not impose anything on anyone. It would enlarge options, not narrow them. It would enable everyone to structure his or her own life more according to individual choice.

The NMF would extend the concept of individual liberty far beyond what any society has ever experienced before. Human beings would have the freedom to pursue whatever interested them. Jobs would be readily available for everyone who wanted work and the variety of occupations would be

vastly expanded. People could afford to pursue interesting, but not necessarily economically rewarding, occupations because of supplemental NMF income. No one's talent would go undeveloped for lack of opportunity. The NMF would give to the individual human being a degree of freedom for independent expression and creativity that today is almost inconceivable.

The Effect on Political Freedom

In many ways, the increased personal freedoms resulting from NMF income would be indistinguishable from political freedoms. If people cannot live where they wish, cannot travel where they want to go, and are prevented from providing their families with proper food and clothing, they are not free, and to some degree it is academic whether such restrictions are economic or political. However, income from the NMF would have a far more direct and long-lasting effect on the issue of political freedom than simply increasing the ability of the average citizen to afford a more personally satisfying lifestyle. NMF public dividends would provide to every individual a secure base of economic power.

There is a direct relationship between personal economic security and political freedom. Where a population is economically powerless, political freedom is almost meaningless, if it exists at all. To the degree that a person's livelihood is under the arbitrary control of either the state or private power, that person is not free. Economic power has been used in the past just as often and just as effectively to subjugate people as has political power. When the wealth of a nation is controlled by any small minority of the population, whether that group be made up of feudal barons, a ruling politburo, or the boards of directors of the major corporations, true democratic government is impossible. Wealth is power, and political power cannot be separated from economic power. Genuine political democracy is possible only where there is genuine economic democracy. Where the average citizen has a secure source of income representing an equitable share of the society's wealth-producing capacity, political freedom is virtually assured.

The history of the American Revolution is a classic example of the critical link between financial security and political freedom. It is no accident that the well reasoned principles of personal liberty and social justice that were the foundation of American revolutionary thought sprang from the pens of such men as Jefferson, Franklin, Madison, Hamilton, and

Adams. These men were financially secure property owners living in a rich and fertile land. They were self-sufficient and, as a result, self-confident; enough so that they dared to defy the British throne and trust their own wisdom over that of long-established traditions. A large percentage of the American colonists to whom the founding fathers directed their writings were the owners of prosperous farms and shops. This was a community of physically and financially secure citizens who felt no compulsion to tolerate the imposition of arbitrary authority from anyone, even the King of England. The American experience has been that people who are financially secure, especially through the ownership of the means of production, do not readily submit to political pressure or lightly forfeit their personal liberty.

It is readily understandable that most Americans of wealth and power today belong to that political party that emphasizes the importance of individual liberty and personal freedom. Almost invariably it is those who feel personally secure who most appreciate and promote the virtues of individualism. Those who are dependent from day to day on the sale of their labor for income cannot afford the luxury of very much independent thought or individual action.

NMF income would give every citizen the economic security to think independently and the power to make his or her views felt. No citizen would need to tolerate exploitation, and there would be little need for mass movements to protect minorities from oppression. The NMF would give to individuals the power to protect themselves.

A Bigger Pie with Bigger Slices

It has sometimes been suggested that all the benefits that the NMF would give to individuals could be achieved equally well by simply extending the welfare system or instituting a negative income tax. To the extent that these measures would redistribute the nation's income and raise benefits to the poor, this may be true. But welfare, social security, and negative income tax proposals only redistribute wealth. They do not create it. The NMF is much more than just another scheme to take from the rich and give to the poor. The NMF is a means for increasing the productive efficiency of the nation's industries so that more wealth can be produced at lower cost. Public dividends are paid on the increase, and they benefit everyone, rich as well as poor.

Redistribution of income through the tax system merely changes the way the pie is sliced; it does not increase its size. In fact, higher taxes on the rich may even reduce the size of the pie, because of disincentives to risk-

taking and to individual initiative. Increases in the welfare state or the institution of a negative income tax discourage innovation and retard individual excellence. They tend to homogenize society, to hold back achievers in order to assist the poor. This virtually assures that in order for some to benefit, others must lose. Since it is the rich and powerful who stand to lose the most, the practical difficulties inherent in such measures are large.

The NMF in contrast would benefit everyone simultaneously, rich and poor alike. NMF investment would increase productivity and encourage innovation. The total pie would get larger and everyone would share in the increase. NMF dividends would place a comfortable income floor under everyone, but more important, they would impose no ceiling on anyone. An economy based on the NMF would distribute most income from high technology industries equally, but the rest of the economy would be fair game for competition. There would be no need to limit rewards to outstanding individuals, because everyone would be financially secure and therefore not vulnerable to exploitation.

Unfortunately, Western culture is so steeped in the tradition of competition, that the concept of everyone benefiting together sounds alien, almost subversive. Many people simply do not believe that it is possible for someone to have more without someone else having less. Many others believe that everyone benefiting equally is equivalent to no one benefiting at all. This, of course, is pure nonsense. No one starving is surely not the same as everyone starving. An entire nation well educated, housed, and medically cared for is certainly not the same as a whole country with none of these benefits. The United States has the knowledge and industrial capacity to provide a decent and dignified life for everyone. The industrial revolution has made it so that material prosperity for some no longer depends on the deprivation of others. Today poverty is technologically unnecessary.

The NMF would guarantee a minimum income to everyone, but it would do much more than that. It would provide incentives for innovation and generate the investment capital necessary to support material prosperity for all. Increased wealth would accrue to everyone; no one would benefit at another's expense.

VIII

The Quest for Stable Prices

We still do not know how to find that perfect income policy that will spare us the need to choose between the alternatives of full employment and price stability.

— Paul Samuelson

In economics, as well as in the physical sciences, there are basic laws of conservation of mass and energy. A society cannot consume more than it produces without drawing down its stock of existing wealth. Consumption is the using up or the wearing out of goods and services. It is regulated by the amount of money that is available to individuals, businesses, and government for spending. Production, on the other hand, is regulated by the level of investment, by the availability of labor and raw materials, and by the efficiency or productivity of the techniques and methods used in the productive process.

Presumably, if income were strictly determined by the amount of goods and services produced, then demand would always equal supply, and prices would remain constant. In the present economic system, however, income is only loosely related to how much is being produced. Wages and salaries are primarily the result of political negotiations between labor and management, or of market demand for specific job skills. Only secondarily are wages related to value-added in production. Wages increases can, and in fact most often do, exceed productivity increases.¹ As a result, consumer income tends to rise faster than productive output. This leads inevitably to inflation.

Inflation is nature's way of maintaining a balance between consumption and production. If consumers receive more income than is produced in output, prices simply rise until the purchasing power of income is reduced to equal the value of the output.

Modern economists classify the causes for inflation into two categories -- "demand-pull" and "cost-push." Demand-pull inflation is the classical form caused by too much money chasing too few goods. Excess money causes demand to exceed supply, and prices rise. Theoretically, demand-pull inflation can be cured by monetary and fiscal restraint. If the Federal Reserve restricts the money supply and government spending is reduced, the amount of money in circulation falls, and inflation is brought under control.

In recent years, however, more and more of the pressures for inflation appear to be of the cost-push variety; that is, increasing costs in the production process itself forces the price of goods and services upward.² If the cost of obtaining raw materials rises or if wage contracts are negotiated that raise the cost of labor faster than productivity increases, then prices must rise. Cost-push inflation responds poorly, if at all, to the classical remedies of monetary and fiscal restraint. In fact, for reasons that will be discussed shortly, monetary and fiscal restraint may actually exacerbate cost-push inflation because these measures tend to reduce productivity and thus actually increase unit-production costs.

It is a matter of much disagreement among economists as to exactly what is causing the present worldwide inflationary crisis. Almost certainly, recent inflation is not purely of the demand-pull variety. If it were, the classical remedies would long ago have shown some desirable beneficial effects.³ Instead, the past decade has produced a serious recession, soaring unemployment, and unprecedented inflation simultaneously.

Productivity and Prices

Clearly, since productivity is a fundamental factor in the cost of production, it must be intimately related to prices. Evidence of the relationship between productivity and prices can be seen in Figure VIII-1. This chart shows that in

PRODUCTIVITY & PRICE CHANGES IN MANUFACTURING INDUSTRIES

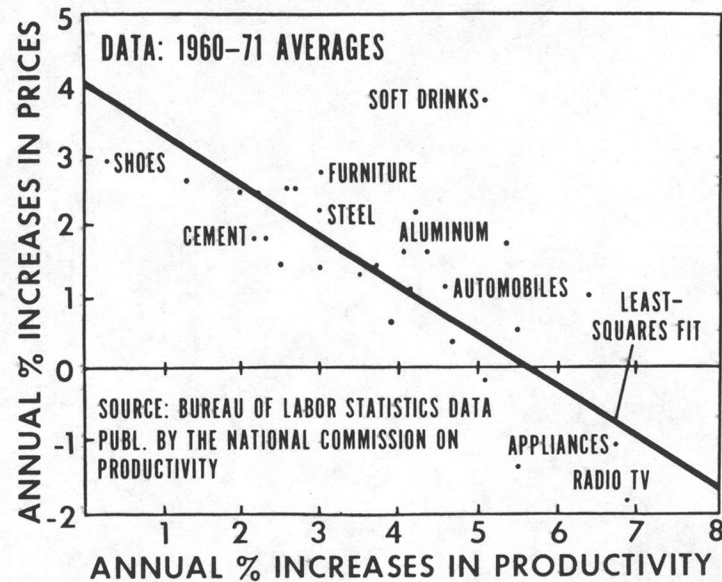


Figure VIII-1. Statistical data clearly indicates an inverse relationship between productivity and prices. In industries where productivity gains were high, price increases tended to be low, and vice versa. In industries where productivity gains exceeded the average annual wage increase of 5.6 percent, prices tended to fall.

industries where productivity gains were high, price increases tended to be low, and vice versa. In industries where productivity increases exceeded the average annual increase in wages (that was 5.5 percent for the period for which the figure was prepared), prices tended to fall rather than increase. This tends to support the theory that inflation is the result of wage increases that exceed productivity increases.

It might be suggested on the basis of Figure IV-4 that if the United States investment rate during the 1960-1970 period had been at 21 percent of the output of all industry instead of 14 percent, then United States productivity would have increased at 6 percent instead of 3.5 percent. If this had occurred, then Figure VIII-1 implies that the United States would have enjoyed an entire decade without inflation despite the 5.5 percent annual increase in wages that occurred during that period.

Certainly a great deal of the overall behavior of prices over the past quarter century can be explained simply by examining the difference between wages and productivity. Figure VIII-2 is a plot of the amount by which wage increases have exceeded productivity gains since 1950.

Superimposed on this graph is a plot of the consumer price index over the same time period. Except for the fact that prices did not fluctuate as quickly or as widely as wages and productivity, the two curves correspond very closely throughout the entire period.

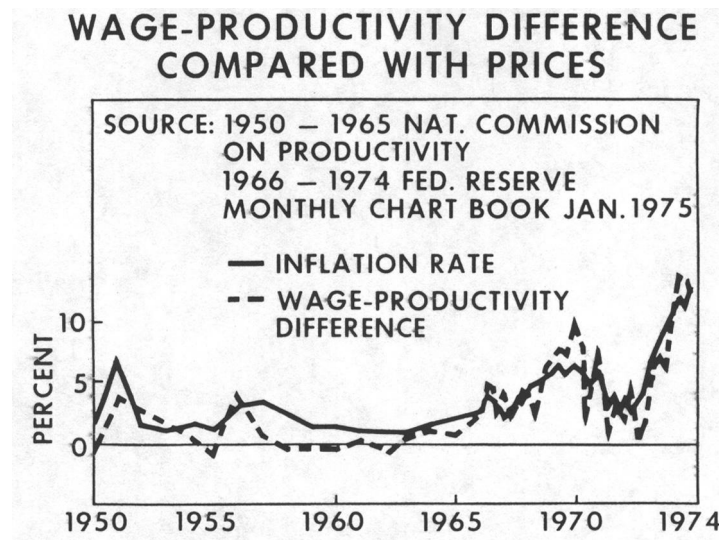


Figure VIII-2. The difference between wage increases and productivity increases is strongly correlated with the inflation rate over the past quarter century. This strongly suggests that a primary cause of inflation is wage increases that exceed productivity increases.

It is interesting to note that this correspondence holds true over a time span that includes the Korean War, Vietnam, several recessions, a long period of stable growth, periods of high interest rates and low, tight money, expansionist monetary policy, tax cuts, tax increases, oil embargos, and soaring oil prices. Throughout all of this, the consumer price index followed the difference between wages and productivity very closely. The correlation of the data in Figure VIII-2 contrasts sharply with the complete lack of correlation between inflation and federal budget deficits shown in Figure VIII-3. Contrary to popular political rhetoric, budget deficits seem to have no clear relationship to inflation at all. There appears to be a slight tendency for inflation to precede budget deficits, indicating that deficits may be caused by rising prices, but there is certainly no evidence for the reverse.

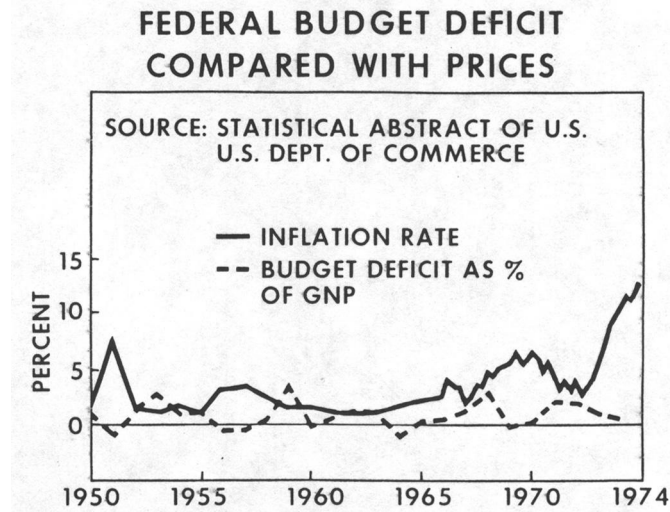


Figure VIII-3. Contrary to popular political rhetoric, there is little correlation between inflation and deficit spending by the federal government.

These data strongly suggest that the fundamental cause of inflation is wage increases that exceed productivity gains. The implication is that the only hope for a permanent cure to inflation is to close the gap between wages and productivity, either by reducing wage increases productivity or by increasing productivity gains.

As of this writing, virtually all efforts at closing the wage-productivity gap have been directed toward holding wages in check, either through wage-price controls or by deliberately creating unemployment. This latter strategy is based on the theory that wage increases are a function of the unemployment rate. Every modern economics textbook contains a discussion of the so-called “Phillips curve,” that pretends to show how much wages can be expected to rise each year for any given rate of unemployment. Samuelson shows a Phillips curve that requires five-percent unemployment to hold wage increases to a non-inflationary three-percent per year.⁴ Three percent is, of course, the prevailing long-term productivity growth rate. However, unemployment in the United States has been near or above five percent for over five years and there is no apparent tendency for wage increases to decline.⁵ Since 1966 wages have increased at a steady seven percent per year with only minor fluctuations.⁶ The principal result of policies designed to create unemployment has been simply that — unemployment. Very little effect has been apparent in the wages of those still holding jobs. If the Phillips relationship has any validity, it is clear that the amount of unemployment required to hold wages in check is much higher

than has been previously admitted.

A Different Strategy

Under the present circumstances a different strategy would seem to be in order. If wage increases cannot be held in check either by controls or by unemployment, why not try raising productivity instead? Raising productivity to equal wage increases would have the same effect on inflation as reducing wage increases to equal productivity gains. The principal difference would be that the unpleasant side effects of unemployment and recession would not occur.

Such tactics were actually proposed by President Nixon in his economic report to Congress on January 27, 1972, but aside from the establishment of a National Commission on Productivity to gather statistics, little of tangible significance has been done. Recently, there has been some activity in Congress concerned with measures to increase productivity,⁷ but there has certainly been no major shift away from a reliance on fiscal and monetary policies towards an overall economic strategy based on productivity growth as the primary economic stabilizer. Yet there are numerous reasons for believing that such a strategy would be much more successful than what is now being pursued.

First of all, increased productivity would attack the root causes of cost-push inflation. Increased productivity in all areas of the economy, but especially in the manufacturing, transportation, and construction industries, could more than offset rising costs of raw materials and energy and could reduce pollution without increasing prices. For example, reducing the cost of dies and molds would offset the increased price of basic metals and plastic resins. More efficient construction techniques would offset rising costs of cement and steel. Modernized railroads and more efficient cargo-handling techniques could offset the rising costs of fuel. Improved methods of smelting and forging could offset the increased cost of pollution control and safety standards. Increased productivity reduces costs, cuts waste, and produces more output for less input.⁸ This is the only solution to cost-push inflation.

Productivity is also relevant to the fundamental causes of demand-pull inflation. Shortages (i. e., insufficient supply to meet prevailing demand) are the basic sources of demand-pull inflation. The United States and the world are threatened by shortages of every description. The only hope of ever meeting rising demands for participation in the good life is to produce more

for less. This can only be done through increased productivity — indeed, it is the very definition of increased productivity.

Of course, an inflation-fighting strategy based on increasing productivity would have many other benefits besides stabilizing prices. The increase in investment required to improve productivity would reduce unemployment and end recession. The construction of new plants, machines, and transportation facilities would create jobs and stimulate business. Through increased investment we could mobilize our nation to overcome shortages, feed the hungry, house the poor, and, in general, make this land a delightful place in which to live. By increasing productivity through increased investment, we could defeat inflation while solving many other problems at the same time.

There is a great deal of evidence to indicate that productivity in the United States could be significantly increased over what it is today. The data in Figures IV-4 and IV-5, as well as similar data from other sources, strongly suggests that the low rate of United States productivity growth is a direct result of our low rate of capital investment.⁹

Figure IV-4 demonstrates that productivity growth rates of six, eight, and even ten percent are sustainable in mature industrialized economies for periods of a decade or more. There is a great deal of pent-up technology today that is unexploited simply due to a lack of risk capital. High interest rates and tight money policies over the past ten years have virtually eliminated the type of long-term investments that finance improvements in basic technology and yield major productivity gains over a period of many years.¹⁰ The institutional mechanism provided by the NMF would not only supply the necessary investment capital, but would do so in a way that would ensure that the benefits were distributed in an equitable manner. Increased investment through the NMF would not merely make the rich richer, but would make us all richer together.

In the near term when new plants, new machines, and new facilities are being constructed, NMF investment would stimulate business and reduce unemployment. As soon as new technology embodied in modernized capital equipment came into use, productivity would rise and inflation would be brought under control. Over the long run, after these investments begin to pay back, the NMF distribution of profits through public dividends would create a stable, long-lasting prosperity based on increased consumer income derived directly from profits on increased productive output.

Investment-Payback Delay

This optimistic scenario, unfortunately, contains one major problem that must be solved before a policy of fighting inflation through increased investment could be put into practice. That problem is the investment-payback delay. With any investment, there is an unavoidable delay between the time when the investment is made and the time when the effects of increased efficiency begin to be felt. During this interim period, investment spending tends to create short-term demand-pull inflationary pressures.

Investment spending, like all other types of spending, creates demand. Demand, in turn, increases employment, and stimulates business activity; however, it also tends to cause prices to rise. Investment spending is unique in that, once the investments begin to payoff, supply also rises and prices level off or even decline. However, the delay between investment and payoff can cause prices to fluctuate widely.

The reasons for inflation during this time delay are easily understandable. For example, while building new factories, construction workers are paid for their work immediately, while months or even years may pass before products from these new factories appear for sale on the retail market. Many more years may pass before the total value of the new products equals or exceeds the cost of the original investment. Thus, investment spending stimulates demand long before it increases supply to meet that demand. Whenever demand exceeds supply, prices tend to rise. Only after increased production pays back the cost of the original investment does supply catch up with demand and prices stabilize or decline.

The fact that investment spending influences demand immediately but does not affect supply until a later time tends to cause economic instability in the face of large rates of investment. The economy is a massive system with many interacting feedback loops. It is characteristic of such systems that they become unstable when significant time delays are introduced in critical places.

In a typical business investment, as much as five years or more may pass before increased production repays the cost of the investment. This time lag between investment-created demand and investment-created-supply has historically been responsible for the classical oscillations in economic activity known as business cycles, or alternating periods of boom and bust. During periods of boom, expectations are high and businesses tend to borrow heavily and invest at a high rate. This causes demand to increase faster than supply, and prices rise. High prices classically mean high profits leading to even more optimistic expectations and still higher investment rates. After a boom period of several years, however, investments begin to payoff and supply begins to overtake demand. This leads to the bust part of

the cycle. Oversupply causes prices to decline, and profits are reduced. Falling profits dampen business optimism and investment spending begins to decline as well. Thus, while supply is rising, demand is falling. The result is that prices fall dramatically and losses or bankruptcy occur to any business that borrowed too heavily during the boom period.

This classic cycle of boom and bust was characteristic of the early days of capitalism and for a long time was accepted as inevitable. However, the severity of the bust in 1929 leading to the Great Depression of the 1930's finally convinced world economists that something had to be done to prevent, or at least, smooth out the peaks and valleys of the business cycle. Since the time of the Great Depression, a number of policies have been developed that tend to keep economic growth more or less under control.

Unfortunately, all of the techniques that are presently used for price stabilization operate on the basic principle of reducing demand by limiting investment. If the NMF were to embark on a policy of drastically increasing investment spending, especially through money borrowed from the Federal Reserve Bank, it would be working at complete cross-purposes with all of the existing price-stabilization mechanisms. This is undoubtedly one of the reasons why the strategy of fighting inflation by increasing productivity has never been tried. It is certainly a reason why some new mechanisms for limiting short-term demand will be required before efforts to increase productivity can be seriously considered as a practical method for fighting inflation.

In the next chapter, just such a new mechanism will be proposed. It involves a system of mandatory savings for controlling short-term consumer demand while NMF investment spending is being increased. This savings program would allow major increases in the investment rate while preventing substantial inflationary pressures from being generated during the time interval between investment and payback. First, however, the currently used methods for inflation control will be reviewed so that the reasons (at least in this author's opinion) for their current ineffectiveness can be pointed out, and the provisions in the proposed demand-control technique can be more easily explained.

Monetary Policy

Of all the currently used methods for economic stabilization, monetary policy has the longest history and is regarded as the traditional, or classic, solution to price instability.¹¹ Simply stated, monetary policy is the regulation by the nation's banks of the amount of money in circulation.

According to monetary theory, the amount of money in circulation determines aggregate demand. Since prices are largely governed by the ratio of supply to demand, the proper regulation of the nation's money supply theoretically can control demand and hence produce price stability.

The inflationary impact of investment spending is obviously minimized if investment capital is derived from savings rather than from new money created through borrowing. Savings represent income that is not spent. Thus, investment spending from savings is merely a diversion of demand from the consumer to the investment market. Total demand is unaffected, and there is little inflationary effect. If, however, investment capital is derived from borrowing in such a way that the total supply of money is increased, then inflation is likely to be a problem due to an increase in aggregate demand before a commensurate increase occurs in supply. The management of the amount of new money allowed to be created through borrowing is the heart of monetary policy.

The money supply of the country is controlled by bank-lending policies and by Federal Reserve open-market activities. The Federal Reserve Bank can influence the amount of new money created by banks by regulating the prime interest rate and the reserve requirements of its member banks. The Federal Reserve can also influence the money supply by open-market purchases or sales of government securities.¹² Thus, theoretically at least, the money supply, and hence, demand can be regulated by monetary policy.

Unfortunately, the classical techniques of monetary policy such as changes in interest rates and manipulations of the securities market do not always affect prices in a predictable way. Tight money tends to reduce investment spending, and thus, overall demand. But in the long run, reducing investment is counterproductive in the extreme. Reduced investment spending reduces future productive output and thus assures that future supply will be reduced, as well as present demand. In addition, reducing demand by monetary restraints produces business slowdown, recession, and unemployment. These effects cause current, as well as future, productive output to fall. Thus, it is quite possible that restrictive monetary policies may reduce supply even faster than they reduce demand. If this happens (that it did in the 1969-70, and again in the 1973-74 period), monetary restraint will produce not only recession and unemployment, but continued or even increased inflation.

Furthermore, the control of inflation by monetary restraint, even when successful, exacts a terrible price. Short-term price stability is achieved at the cost of a long-term decline in the production of wealth.

Monetary policy understandably tends to be popular in conservative circles, particularly among bankers and established businessmen. Monetary restraint typically results in high interest rates and slow economic growth. These effects are seldom injurious and often are decidedly beneficial to those who have already amassed secure fortunes. Tight money and slow growth make it difficult to start new businesses and unprofitable to modernize old ones, and lead to increased levels of unemployment. These all work in favor of established wealth. High unemployment tends to hold labor demands in check and low rates of investment and modernization tend to minimize competition to well-established corporations. High interest rates, of course, also bring large profits to those in the business of lending money.

Needless to say, monetary restraint is less popular among the non-wealthy. The social costs of high interest rates and high unemployment fall most heavily on the poor. Thus, liberal politicians have traditionally sought other techniques for controlling prices that exact fewer hardships on middle and lower income groups. One technique popular among liberals is tax policy.

Tax Policy

The concept of regulating consumer demand through raising or lowering taxes is the heart of the so-called “New Economics” of Keynes. The basic idea is that, since consumer spending is a large and very constant percentage of disposable income and since consumer demand is the largest single factor in aggregate demand, prices can be controlled by regulating income taxes. According to Keynesian theory, taxes should be lowered to stimulate demand when overall demand is sluggish and should be raised to reduce demand when overall demand is excessive.¹³

The fact that at least half of this theory works was demonstrated in 1964 when, shortly after President Kennedy’s death, the Johnson Administration lowered taxes. Demand, indeed, increased impressively, and the economy quickened. The other side of the formula, however, is fraught with political difficulty. It is unpopular to raise taxes at any time, and particularly so when consumers are feeling the pinch of rising prices. Thus, even though the correct remedy for inflation (at least for demand-pull inflation) may be to raise taxes, such a policy is almost impossible to administer successfully. In the late 1960’s, it took the Johnson Administration more than two years to obtain a tax surcharge for combating inflation caused by the Vietnam war, and, by the time the tax increase finally took place, it was much too small to produce the desired effect.¹⁴

Historically, it seems to be easy to cut taxes in order to stimulate demand, but it has proven virtually impossible to raise them quickly enough or by a sufficient amount to stop inflation.

Budgetary Policy

A third method used in attempting to stabilize prices is budgetary policy; i.e., the regulation of government expenditures. Budgetary and tax policy are sometimes lumped together under a single heading entitled fiscal policy.¹⁵ However, as a practical fact in the real world, budgetary appropriations and taxes are only very loosely dependent on one another (as evidenced by a long history of federal budget deficits).

Government spending does, of course, create demand, but unfortunately the manipulation of government expenditures for purposes of price stability is largely impractical. Although government spending is the second largest factor in overall demand, only a negligible fraction of the federal budget is subject to manipulation for purposes of price stabilization. Government spending is primarily dictated by such considerations as defense or social needs or by fixed expenses such as social security payments or interest on the national debt. Contrary to popular political rhetoric, very little of the federal budget is subject to political control except in the most general sense. Very few budgetary expenditures can be increased or decreased for the purpose of regulating overall demand.

Unfortunately, one of the few areas of the federal budget that is readily subject to budgetary control is research and development expenditures. Research monies are usually among the first casualties of any serious budget-cutting attempts. Thus, new technology, that is the long-term source of most productivity gains, is typically curtailed at the very beginning of any program of fiscal restraint. This is exactly what happened at the beginning of the Vietnam inflation. Research and development spending was sharply curtailed in 1965.¹⁶ The intention, of course, was for the reductions to be temporary since no one expected the war to last more than a few months. However, most of those cuts have yet to be restored.

Of course, budgetary policy, like monetary policy, affects both supply and demand simultaneously. Government expenditures not only create demand, but they also affect the production of goods and services. This is a fact frequently over-looked. Government spending for school and hospital construction affects the supply, and hence, the price of education and medical care. Government spending for highways, air-flight control, subways, and shipbuilding affect the cost of transportation and, as a result,

the price of practically everything.

The reduction of government expenditures as a method for combating inflation is often self-defeating. Reduction of federal spending in one area frequently forces corresponding increases in retirement benefits, social security, and unemployment payments. Of course, these payments are smaller than salary dollars, so there is a net decrease in consumer demand. But there is also a simultaneous decrease in the production of government services. Thus, the overall effect on prices is ambiguous. Cutbacks in government regulatory agencies often result in less protection for the consumer and lead either directly or indirectly to higher prices and less services. Cuts in poverty programs often mean that potential taxpayers are thrown into welfare or, worse, into a life of crime. Thus, in many cases, reductions in government expenditures may actually contribute more to the overall cause of inflation than to its prevention.

Finally, it must be pointed out that the statistical evidence presented in Figure VIII-3 does not support the contention that budgetary policy has any appreciable effect on inflation one way or the other. If that is true, then all of the political crusades against inflation based on cutting federal spending are almost totally irrelevant. Whatever effects may be traceable to budgetary policy are largely overwhelmed by other, more important effects elsewhere in the economy.

Price Guidelines and/or Controls

During the Johnson Administration, wage and price guidelines were employed in an attempt to control the inflation brought on by the Vietnam war. President Johnson used his personal powers of persuasion to cajole and threaten business and labor leaders into holding price and wage increases within prescribed guidelines — a practice that came to be known as “jawboning.” Jawboning is based on the theory that inflation can be controlled by persuading unions and management to voluntarily limit their wages and profits below what the market would otherwise allow. The most remarkable thing about this strategy is that anyone thought for an instant that it would work.

During the mid-1960’s, the increase in military spending brought about by the Vietnam escalation increased the demand for labor and manufactured goods. At the same time, cuts in the investment rate made productivity increases difficult. The result was that inflationary pressures of both the demand-pull and cost-push variety were generated. To expect that such forces could be contained by verbal exhortations was like whistling into

a hurricane.

During the latter half of the 1960's, presidential jawboning was notably unsuccessful as along-term stabilizer of prices.¹⁷ It perhaps could be credited in a few cases with delaying price increases by several months, but, over the long term, the inexorable pressures of inadequate supply and increased demand brought about by the Vietnam war forced prices upward.

During the Nixon era, inflation continued. For about three years the Nixon Administration relied on the classic techniques of monetary restraint. The result was a predictable rise in unemployment and slowdown in business. There was also a continued decline in capital investment that predictably led to a decline in productivity. Unsurprisingly, inflation continued to be a serious problem, and finally in August 1971 the President imposed price and wage controls. Prices stabilized temporarily but eventually began to creep upwards again since the imposition of controls had done nothing to remedy the basic problem of low productivity and excessive demand. Many types and phases of price and wage controls were subsequently tried and discarded, but the result was always the same. Supply was insufficient to meet demand, and prices rose irrespective of controls.

Time for a Change

Out of all this one lesson seems clear. None of the current inflation-control techniques are capable of dealing with cost-push inflation. They all attempt to close the gap between wage increases and productivity increases by holding down wages. But wages no longer respond to such pressures and, perhaps even more significant for the years ahead, neither do raw material costs. The time has come for a new strategy. We must realize, first of all, that productivity is within our power to control and, secondly, that increased productivity offers the only hope for a decent quality of life in an overcrowded world. We no longer can afford to fight inflation by policies designed to reduce investment and create unemployment. Already people are starving and shortages are growing worse. A continuation of economic policies that deliberately restrain production and induce recession may very well lead to disaster.

Today Western civilization is in a state of arrested progress, if not actual retreat. We are being tested. We have no guarantees that were not given to Rome, or Egypt, or Assyria.¹⁸ The world has never been a benign or stagnant place and certainly is not today. If the Western nations cannot solve the basic problem of stable economic progress, other nations, perhaps in the Far East, the mid-East, or Africa, eventually will.

The economic dogma that inflation can only be cured by breaking the back of rising expectations may be the Achilles' heel of Anglo-European civilization. Another decade of monetary and fiscal strangulation could easily lead to a shift in the center of world power from the West to the East.

The time has clearly come for a change in strategy. Our entire civilization is threatened by shortages and by rising costs of raw materials. Surely the proper response to such a threat is to get people to work, to increase production, and, most important of all, to increase efficiency and reduce waste. To suppose that such actions are incompatible with price stability is to totally misunderstand the central driving function of the entire industrial revolution — increased productivity.

Inflation will recede whenever we produce as much as, or more than, we consume. That this can be done by increasing productivity, as well as by reducing wages, seems clear. The secret lies in increased investment. Capital investment is truly the goose that lays the golden egg. It is the life-blood of a technological civilization. Increased investment for increased productivity is the only solution to our current economic troubles. It may be our only hope for survival.

IX

A Formula for Price Stability

As was suggested in the previous chapter, one of the reasons that increasing productivity through investment spending has never been seriously considered as a cure for inflation is because of the problem of excess demand during the investment payback interval. In the short term, investment spending tends to aggravate inflationary pressures by increasing demand. Only in the long run does increased efficiency resulting from capital investment tend to close the wage-productivity gap and reduce prices. If NMF investment is ever to be practical on a large scale, particularly during periods of high inflation, it will be necessary to complement NMF investment with a savings program of sufficient magnitude to prevent increased investment from producing any net increase in demand. Savings is the key to increasing investment without inflation. Savings takes money out of circulation and reduces both demand and consumption.

Savings, of course, is only deferred spending. At some future time, savings can be put back into circulation so as to restore demand and consumption. This implies that a nationwide savings program, if properly managed both from the standpoint of withholding money from circulation during periods of excess demand and of returning money to circulation during periods of insufficient demand, could maintain price stability even during periods of high investment spending. A flexible fast-acting savings program would be a mechanism by which supply and demand could be maintained in equilibrium during all phases of NMF operation — during the early stages when investment predominates, as well as during later stages when investments begin to pay off. The Demand Regulation Policy (DRP) that will be outlined in this chapter is designed to accomplish this purpose.

The DRP consists of two parts:

Part one deals with excess demand, a problem that has plagued almost all modern economies for years and shows no sign of being solved in the near future.

Part two deals with insufficient demand, a phenomenon that has occurred in the past only during periods of economic downturn or depression, but that could happen again if the full power of a technological economy were ever released to produce wealth at the maximum rate physically possible.

There are three principal components to aggregate demand: consumer demand, investment demand, and government demand. Government demand

can be affected by budgetary policy, but, as was suggested in the past chapter, attempts to control inflation by budgetary policy are largely ineffectual and often counterproductive. Investment demand can be regulated by the classical tight-money techniques of monetary policy, but restricting investment is exactly the opposite of a policy designed to increase productivity by increasing investment. Therefore, the only significant component of demand that can be effectively used in conjunction with the NMF for controlling inflation is consumer demand.

Consumer demand is the largest single component of demand and also potentially the most controllable. The average consumer spends about 93 percent of his or her disposable income. This is a very constant percentage that has remained between 91 and 96 percent since the end of World War II.¹ Consumer demand is thus a very predictable fraction of disposable income. This fact has long been recognized and is the basis for the Keynesian concept of controlling inflation through tax policy. The Demand Regulation Policy (DRP) suggested here is a method for controlling consumer demand that would have all the power of Keynesian tax policy, but would avoid most of the practical political difficulties.

Part 1: Dealing with Excess Demand

The DRP would reduce consumer purchasing power during periods of inflation by diverting some fraction of consumer income into savings bonds. This savings bond money would be held in escrow, and thus the amount of money immediately available for spending would be reduced. The effect would be to reduce demand and decrease inflationary pressures.

The DRP would effectively balance the money equation by taking out of circulation about as much as the NMF put in through its investment policies. The DRP would withhold money and restrain demand until increased supply resulted from increased productivity. Once that began to occur, the DRP would release the savings previously withheld so as to maintain consumer purchasing power in equilibrium with productive capacity.

The DRP would produce a much more direct effect on the largest component of demand than either fiscal or monetary policy, and it would produce no counterproductive effects on supply. DRP withholdings would also have a stronger deflationary effect than increasing taxes by the same amount. Tax money is taken away from consumers but then is spent by the government. This does little to reduce aggregate demand, but merely transfers demand from the private to the public sector. DRP savings bond

money would not be spent at all and therefore would cause a net reduction in demand.

An important feature of the DRP is that it would not interfere with the availability of investment capital or with long-term investment planning. The DRP would only affect consumer income. It would operate completely independent of the capital markets. Investors would be able to plan for the long-term future with the assurance that prices would remain stable and consumers would always have sufficient purchasing power to prevent oversupply.

The diversion of consumer income into savings bonds would make it possible to keep track of how much money was withheld and from whom, so that when inflationary pressures receded (due to investment payback increasing supply faster than demand), then the savings-bond money could be returned to the same individuals from whom it was withheld.

It seems reasonable that savings bonds would be far more palatable to the public than tax increases because income would not actually be lost, but only temporarily converted into savings. Consumer purchasing power would thus be deferred but not permanently reduced.

An additional benefit is that DRP mandatory savings would guarantee that, whenever inflation needed to be checked, the discomfort would be equitably distributed to everyone and not concentrated upon the unemployed. DRP withholdings would be clearly and simply related to prices. The public would have no difficulty in perceiving the relationship and, hence, would always be able to understand the rationale for increased withholdings.

Simply deferring consumption, of course, only influences demand-pull inflation. But that is all that is necessary, since cost-push inflation is overcome by productivity increases due to NMF investment policies. When consumption is deferred, demand falls off and supply builds up, thus causing demand-pull pressures to recede.

Supply, however, must not be allowed to surpass demand to the point where profits become uncertain. If this were to happen, businesses would simply cut production and lay off workers. The result would be recession or depression, together with long-term shortages. Thus, the DRP must not withhold too much income — only enough to reduce demand so that it equals supply, and no more.

It is important that the amount of consumer income withheld by the DRP be carefully computed and adjusted frequently so that there is no tendency for demand to either fall behind or run ahead of supply. The exact formula for withholdings should be based on the best available price

indicators and predictors. Modern computer techniques have been sufficiently successful at making quantitative short-term predictions that such a formula seems well within the capabilities of present-day economic science.²

A simple example of a withholding formula based on the consumer price index might be the following:

$$W = 4 \times E \times T (I + 20 \times R)$$

where

W = the amount withheld from each person's income biweekly

E = the per-annum inflation rate as measured by the consumer price index

T = the individual's income tax rate

I = the individual's biweekly income

R = the increase in biweekly income since the same date two years earlier

As can be seen, the formula would take into account not only the inflation rate but the income of the individual, his or her tax rate, and the rate of increase in the individual's income. The formula states that the percentage of consumer income withheld should roughly equal the annual rate of inflation. (The assumption is that four times the average federal income tax rate is approximately equal to unity.)

As an illustration: If the inflation rate is three percent per year, a person's income tax rate 25 percent, and biweekly income \$500, savings-bond withholding rate would then be \$15 per pay period. If that person had received a raise during the past year of \$25 per pay period, withholding would be \$15 additional, or \$30 per pay period, total.

The above formula would make the withholding rate progressive. Persons with large incomes would have a larger percentage withheld than persons with small incomes. It would also mean that persons whose wages were increasing would have significantly more withheld than persons with fixed incomes. The withholding rate would, of course, be proportional to the rate of inflation. During periods of high inflation, more would be withheld than during periods of lower inflation. The overall result would be to defer consumer spending during periods of excess demand through mandatory

savings and to put the greatest burden on those most able to defer spending; i.e., those with large incomes and those with rising incomes.

The particularly heavy withholding rate levied on rising incomes is especially important in preventing inflation during periods of high investment spending by the NMF. Once NMF investment rose to a level approximately equal to the private investment rate (i.e., in the neighborhood of \$200 billion per year), it must be expected that personal income would rise by an equal amount since investment spending must eventually wind up as personal income. To a large extent, this increase in income would be due to reduced unemployment, to overtime, and to many new workers entering the labor force who were previously not counted as unemployed. Some of the increase would also go into higher wages for those already employed, as well as into larger dividends for the owners of capital. On the average, these increases would amount to about \$2000 per year per worker. In the long run, higher incomes would be matched by the increased output of goods and services that result from the productivity improvements caused by investment. It must be remembered that NMF investment would not simply be a means of temporarily increasing employment, although that would certainly be one of the side effects. NMF investment would produce new capital equipment, new factories, new machines, new transportation facilities, new pollution abatement devices, and new technological innovations of all kinds that would pay a return on investment for many years into the future. In the short run, however, during the investment-payback delay, the large increases in personal income due to NMF investment activity would be highly inflationary.

Thus, the DRP savings formula is calculated to withhold a high percentage of the increased income so as to defer a rise in consumer demand until after a commensurate increase occurred in the supply of goods and services.

DRP savings bonds would be redeemable after a period of five years, which is about the average payback delay for sound capital investments. Thus, the increased personal income from NMF investment activity would be impounded during the investment-payback delay only to be released when the increased supply of goods and services resulting from those investments began to flow onto the market. As a result, demand would keep pace with supply, and prices would remain stable despite a rapidly rising standard of living.

In order to assure that there would be no loss of purchasing power experienced by the holders of DRP savings bonds, the interest rate would be indexed to the inflation rate. Interest would be set at four percent above

current inflation. This would make the withholding of savings from consumer income during periods of inflation much more palatable to the average person. Consumer demand would be deferred, but not lost or even diminished due to inflation.

The technique of indexing interest rates on savings to the inflation rate is now being used successfully in Brazil³ and for years has been advocated for use in the United States by the conservative economist Milton Friedman.⁴

DRP withholdings would provide negative feedback stabilization of consumer prices. This type of feedback is known to be most effective when applied with a minimum of time delay. Thus, the savings-bond withholding rate and interest rate would be adjusted monthly and would be based on predictions for price behavior during that month. This would make the negative feedback effects of the withholding program fast acting and able to cope with inflation in its early stages, before inflationary momentum could build up. As a result, inflation rates would never grow very large, and hence, bond withholdings would never cause any severe hardship on consumers. Once the program went into full-scale operation, it is highly unlikely that the mandatory withholding rate would ever exceed three percent for anyone with a fixed income below \$10,000 per year. This would mean that, for a person with a fixed income of \$800 per month, withholdings would hardly ever exceed six dollars per week. Variations in that withholding rate from one month to the next would ordinarily be less than one dollar per week.

During periods of stable prices, the DRP formula for savings-bond withholdings would reduce the withholding rate to zero. At the same time, the interest rate on DRP bonds would be reduced to four percent. Stable prices would indicate that demand was in equilibrium with supply and no corrective action was needed. When prices were stable, the DRP would not withhold any more money, and the bond interest rate would roughly equal normal interest on savings accounts.

Part 2: Dealing with Insufficient Demand

If there ever developed any tendency for aggregate prices to decline due to excess supply or insufficient demand, the DRP would encourage redemption of the special bonds. This could be done by declaring DRP bonds mature at an earlier date than normal and encouraging their redemption by reducing the interest rate below four percent. This, of course, would force money out of savings and into circulation, thereby increasing demand.

It is quite possible, however, that, once NMF investment began to pay off, supply might continue to increase faster than demand, even after all the DRP savings bonds withheld during periods of excess demand had been redeemed. In such an event, the DRP could still maintain demand in equilibrium with supply by directing the Federal Reserve Bank to create new money and distribute it directly to the public in the form of bonus payments added on to the regular NMF payments. The size of these bonus payments would be calculated on the basis of the monthly price index. Payments would be adjusted so as to prevent any long-term changes in the price index. Monthly bonus payments would be made to every adult citizen, and everyone would receive exactly the same amount. A reasonable formula might be the following:

$$MP = PID \times MS/AP$$

where

PMD = Previous Month's Drop in the price index

MS = Money Supply

AP = Adult Population

In 1970, the nation's liquid money supply was about \$600 billion.⁶ Thus, for an annual deflation rate of three percent, the monthly bonus payment to each adult citizen would be about \$11.30 per month.

To some, the notion of printing money and distributing it directly to the public seems an impossible utopian fantasy. To others, it simply sounds like fiscal irresponsibility. It is neither. Maintaining demand in equilibrium with supply ensures that prices will remain stable. This is an eminently responsible economic goal. Stable prices with rapid economic growth has been the goal — indeed the dream — of economists even before Adam Smith. If demand is inadequate to prevent falling prices and printing money is the only way demand can reasonably be increased, then there is nothing irresponsible in printing money. If the NMF were to make investment capital available for the modernization of industry and the construction of computer-controlled factories on the scale suggested in previous chapters, it seems quite likely, indeed probably inevitable, that the supply of goods and services in future years would rise at such a rapid rate that nothing short of printing money could increase demand fast enough to keep up with it. In that case, there would be nothing utopian or fantastic about DRP bonus payments. They would constitute a simple recognition of the fact that the

nation's real wealth was increasing. Under such circumstances, they would be an economic necessity instituted in order to ensure price stability.

Furthermore, there is nothing particularly revolutionary, or even novel, about distributing newly created money to the public. In a roundabout way that is exactly what happens whenever the government shows a budget deficit. In order to finance deficit spending, the government borrows money by selling bonds. Printing bonds is not essentially different from printing money. The borrowed money comes either directly or in-directly from new money created by the Federal Reserve Bank.⁷ This money finds its way into the pockets of consumers in the form of salary checks from government jobs or government contracts. Thus, deficit government spending is essentially equivalent to direct payments of newly created money to the public.

Some persons might argue that money passed out through government salaries and contracts at least creates jobs, whereas DRP bonuses would not. However, this simply is not true. To begin with, if the NMF were creating wealth fast enough that it were necessary for the DRP to pay bonuses, then it would be extremely unlikely for unemployment to be a problem. Furthermore, even if it were, the fact that people tend to spend more than 90 percent of their disposable income on goods and services means that giving money to people to spend would create almost exactly the same number of jobs as giving money to the government to spend. There is no reason to believe that jobs created in response to consumer spending would be essentially different from jobs created by government spending. Besides, the fundamental drawback to unemployment is lack of income and not joblessness per se.

Aside from the question of jobs and employment, however, there are several reasons why distributing new money by direct cash bonuses would have far more beneficial results than the present method of deficit government spending.

First, the distribution of benefits would be more equitable. Each adult citizen would receive exactly the same amount. Those most in need of income would not be left out, as is often the case with government employment.

Second, fluctuations in the amount of direct cash payments would affect everyone equally. If DRP bonuses were increased to prevent prices from falling, everyone would equally share the increased wealth. If the bonuses were reduced or if withholdings were required to prevent inflation, everyone would share the burden equally. Cutbacks would not cause some individuals to lose their jobs while others felt no hardship whatsoever.

Third, direct cash bonuses could easily be adjusted on a monthly basis

so as to provide an immediate response to changes in the consumer price index. The bonuses would fluctuate automatically according to the fixed formula. Therefore, political pressures and special interest groups would not be able to interfere with the necessary corrective procedures.

Fourth, the fluctuations in direct cash bonuses would be clearly and simply related to consumer prices. The public would have no difficulty in understanding the relationship and, hence, would accept cuts in bonuses when necessary, as well as enjoy increases when possible.

Fifth, fluctuations in individual bonuses would be quite small, probably less than one dollar per week. Hence, no severe hardships would be experienced when cuts in bonuses were required to prevent inflation.

Sixth, there would be no need for creating make-work or marginally useful government jobs that develop into bureaucratic self-perpetuating empires.

An interesting feature of the Demand Regulation Policy would be that these direct cash bonuses would not represent budget deficits, nor would they even be government expenditures. Quite to the contrary, they would be taxable income. Thus, the government would actually realize increased tax revenue as a result of DRP bonuses.

Where then does the money come from? It comes from the government printing presses. Why does this not destroy the value of the dollar? Because the money is being printed exactly as fast as real wealth (i.e., net increase in goods and services) is created by industry. The value of the dollar is maintained exactly fixed because money is created and distributed at a rate calculated to maintain prices constant.

The real “backing” for money is not gold, but the goods and services that money will buy. Gold itself would be worthless unless it could be exchanged for goods and services. Thus, money created by the Demand Regulation Policy would be perfectly “good” so long as it would always buy the same amount of goods and services. This would be guaranteed since the DRP would maintain the price index constant.

Administration of the DRP

It is proposed that the administration of the Demand Regulation Policy be independent from that of the National Mutual Fund. The National Mutual Fund would be (and should be) a politically sensitive organization. The DRP, on the other hand, should be isolated from immediate political pressures. The Internal Revenue Service might be a suitable body for administering the DRP. The IRS already has the mechanism for withholding

taxes from biweekly paychecks. The withholding of mandatory savings bonds could be easily added. Furthermore, the IRS is suitably nonpolitical. The DRP withholding and bonus equations would be formulated by expert economists and then passed into law by the Congress of the United States, similar to the way in which tax legislation is currently handled. Any changes in the DRP formula would require an Act of Congress. The implementation of the actual withholdings or bonuses would be purely administrative operations not subject to political judgements. This is exactly the type of operation that the Internal Revenue Service is skilled in handling.

The DRP and NMF Working Together

It is commonly believed among economists that investment must come from savings and, hence, investment is dependent upon, if not strictly equivalent to, deferred consumption. It is, of course, true that the amount of investment must be matched by an equivalent amount of savings in order to prevent inflation. That is why the Demand Regulation Policy is suggested as a means for increasing savings sufficiently to compensate for the inflationary impact of financing NMF investments through newly created money. However, the NMF does not get its investment capital from DRP savings. Quite the reverse, the DRP saves what the NMF invests. Thus, the NMF and the DRP reverse the classical dependence of investment on savings. They instead make savings dependent on investment.

This is not an insignificant distinction for it implies that investment is now an independent variable that can be set to whatever rate is judged to be socially desirable. Savings becomes a dependent variable to be adjusted so as to prevent inflation. This is enormously important, for it implies that whenever excess productive potential exists within an economy, both investment and savings can be increased without any deferral or reduction of present consumption. New money can be created by the central bank at an arbitrary rate and invested through an agency such as the NMF. Savings are then withheld at an equivalent rate by the DRP. None of the money previously in circulation is removed, and hence there is no reduction in the existing level of consumption. The net effect is simply to employ previously idle resources in exchange for promissory notes represented by DRP savings bonds. These, of course, have no effect on demand until after a time period during which the investments pay back in terms of increased real wealth.

The classical economist may argue that this violates the free market. Classically, the capital market sets interest rates that make savings attractive and that is what provides the capital for investment. But historically, this

mechanism has proven itself disastrously inadequate time and time again. Lack of investment spending is what let this country waste its enormous productive capacities for ten years during the Great Depression, and it was not until the Government, for military reasons, began to invest in defense plants that the Depression was ended. It is the lack of investment spending today that makes us unable to use what we clearly have to produce what we so desperately need. In the United States and the world today there exist overwhelming needs of every description, and yet a large percentage of our potential productive capacity sits idle.

Certainly in the present United States economy, there is enormous unused capacity. Capital equipment is typically operated only 40 hours per week, and rarely more than 80 hours per week. There are over 7 million persons actively seeking work and many millions more who would gladly work overtime if the opportunities were available. Furthermore, there are endless productivity producing technological innovations literally awaiting investment capital to bring them to fruition. The United States economy is operating nowhere near its full capacity today, and probably never has except for a few years during World War II.

Making investment independent of the propensity to save (i.e., making it possible for investment to be increased without deferring present consumption) is a revolution in economic thought. It frees the industrial system from the artificial constraints of the classical capital markets and makes it possible for production to be increased up to the maximum rate physically and technologically possible.

Working together, the NMF and the DRP would enable society to invest freely in whatever enterprises were deemed to be both profitable and socially beneficial. Production could be expanded or reduced to whatever rates the people, through their elected officials, decided were desirable. There would no longer be any need for shortages or surpluses. Working together, the NMF and the DRP could release modern technology to fulfill its potential for benefiting mankind.

X

A Department of Science and Technology

Knowledge is the only instrument of production that is not subject to diminishing returns. — J. M. Clark

Although the National Mutual Fund would greatly increase the production of wealth through investments in capital equipment, there are many critical segments of the economy that require much more than simply increased investment capital. Many of the areas of the economy that are most in need of improvement do not typically produce high profits on capital investments. In general, such things as public transportation, housing, and health services are not sectors of high growth based on automation. In these areas, the NMF could not be expected to reap early or massive income for promoting the general welfare. In fact, public transportation systems and low-cost housing construction generally produce losses rather than profits. Increased capital investments in these areas by the NMF could reasonably be expected to produce even larger losses. Presumably, the investors who currently are financing the railroads and construction companies have invested in the most profitable (or the least unprofitable) rail routes and the most promising housing markets. Increased investment would almost certainly be forced into even less lucrative areas than those that are already losing money. This would seem to be a strong argument against the practicality of upgrading the quality of life by means of the NMF.

However, this argument is valid only in areas of the economy where technology is stagnant. It is based on the law of diminishing returns, that holds true only when nothing new is invented. Public transportation and low-cost housing are money-losing businesses today and will remain so in the future only so long as these areas remain technologically backward. If new technology were introduced into these areas, they would develop many profitable investment opportunities.¹

In order to support this assertion, we need only to observe that railroads have not always teetered on the edge of bankruptcy. In the early days of railroading, when technology was advancing rapidly, railroads were an extremely profitable business. Railroad investments made many men into multimillionaires. But over the years, railroad management has become entrenched in bureaucratic tradition, and unions have erected barrier after barrier to modernization of equipment and work procedures. As a result, technological advance has slowed to a snail's pace, and profits on railroad investments have fallen correspondingly.

In the field of home construction, one might observe that low-cost housing has never been a particularly profitable investment. This serves to further confirm the relationship between profitability and technology. Technology in the field of housing construction has been stagnant for several centuries. Alvin Toffler, in his book *FUTURE SHOCK*, describes housing as a pre-industrial craft.² The basic structure of the housing industry is modeled after the 16th century system of craft guilds. Houses are still built by itinerate artisans who migrate from one job to the next, much as they did in the time of Shakespeare. Modern-day construction-job classifications date back to the Renaissance; i.e., apprentice, journeyman, master craftsman, etc. Many unions refuse even to use simple power tools or prefabricated components. Mass production was developed as an industrial technique over a century ago, but it has not yet been adopted to any significant degree by the housing industry. Modern methods of computer-aided design and automated assembly of houses are strictly in the realm of EXPO exhibits and experimental demonstrations.

High profits on investment are commonly realized in industries where technological advancement is rapid. Examples of this can be seen in IBM computers, Xerox photocopiers, and Polaroid cameras. The extraordinary success of these companies does not imply that there is anything inherently profitable in building computers, photocopiers, and cameras. It merely suggests that profits are to be found in greater productive efficiency; i.e., in providing better products and more convenient services at lower costs. Likewise, there is no reason to assume that there is anything inherently unprofitable in building houses or transporting people. But until these industries find ways to reduce costs and improve their products and services, additional capital investment will simply produce more overpriced housing of inferior quality and additional trains that no one wants to ride. When businesses are technologically stagnant, increased capital investment merely increases their size and enables them to lose money faster. The only hope for making industries such as rail passenger service and low-cost housing profitable is to introduce more efficient procedures, reduce costs, increase output, and improve quality. This cannot be done by simply investing more money in methods and procedures that are already operating at a loss. It can only be done by new technological developments that provide greater efficiency and productivity.³ What is needed is abroad, long-range program of research to discover new knowledge in socially beneficial technologies.

A Role for the Federal Government

Conducting such a research program is the proper role of the federal government. There are several reasons why this is so. First, much of the research that needs to be done is expensive and of a high-risk nature. It is not the type of research that promises certain or early returns on investments. Thus, it is not attractive to private industry unless heavily subsidized by the government.⁴

Second, many of the sectors that are most in need of research are not areas in which inventions can be kept proprietary or converted into competitive advantage by private industry. Thus, there is very little incentive for private industry to pursue such research with its own funds.

Third, even where inventions can be kept proprietary, the benefits from an invention to society typically exceed by more than twice the profits received by the company that produced the invention in the first place.⁵ For example, the benefits to society of the transistor, or penicillin, or even Scotch tape far exceed the profits to the companies that originally developed these products. As a result, private industry tends to invest far less in research than is socially desirable⁶ and fails to invest at all in areas where private benefits promise to be small, even though social benefits may be potentially enormous.⁷

Fourth, many of the sectors of the economy that are most in need of technological innovation are made up of small enterprises with no central funding authority. Individual housing contractors, small service industries, and local town governments typically have insufficient capital surpluses for supporting basic research.⁸ Modern research often exhibits a threshold or critical mass phenomenon; i.e., a certain minimum amount of money is required to perform any meaningful investigations. The type of research that can be done by a few individuals for a small cost has already been done or is being done. The type of research being neglected is the high-cost high-risk research that requires large staffs of highly trained personnel and expensive equipment. This type of research is sorely needed in the civilian society today, but it is precisely the type that small service industries, school boards, local medical associations, and small contractors cannot afford. Even if small enterprises were supplied with research monies through government subsidies, diffuse fragmented groups are not equipped to initiate, plan, and manage major research efforts. In order to be effective, a research program needs to be coordinated and balanced in terms of long range and short-range goals. This requires central management. A diffuse collection of small enterprises is unable to maintain a coherent program with continuity and direction over a period of years.

Fifth, the federal government is the only organization with sufficiently

broad interests to carry out an adequate research program in the many different areas that need development simultaneously. Much needs to be done from the systems standpoint. Many new technologies need to be examined as to the ways they interact with each other and with society in order to understand their properties. For example, the building of a highway affects the need for sewers, and the institution of a job-training program affects the need for housing. Research into systems problems of these types is extremely complex and expensive. It is beyond the scope of interest of most individual groups. Systems research impacts many different sectors simultaneously, and, unfortunately, what is everybody's business is frequently nobody's business. The society in general suffers from systems problems, but no single group is individually responsible. Therefore, systems research must be done by the government, or it never gets done.⁹

Finally, the federal government is the only authority that would be able to adequately coordinate new technology with the passage of regulatory laws governing its use. Particularly in the housing industry (but in many other industries as well), archaic laws and regulations are the greatest impediment to the implementation of new technology. Private industry cannot be expected to invest money in developing new technologies if antiquated laws and union regulations forbid their use. A critical part of any research program in socially beneficial technology would be the modification of existing legal barriers to permit its implementation and, where necessary, to regulate its use so as to prevent abuse.

The unregulated use of new technology, of course, can often lead to worse consequences than the lack of its development in the first place. Many technological developments in the future will have the capacity to affect society in ways that the majority of people would consider undesirable. Such developments, therefore, should be subject to control and regulation by an agency that is politically responsible to the people. One way to protect the interest of the people in such cases would be to have the federal government draw up and pass regulatory legislation that would be subject to modification by state and local governments wherever special circumstances or strong local preferences would indicate.

In general, the most effective way to get workable legislation in complex technical matters is to have regulations drafted by experts who understand the potential shortcomings, as well as the benefits, of new technologies. An optimum means of achieving this would be to have the authority for scientific research, as well as regulatory action, coordinated by the same agency. This type of coordination has worked quite well in the Department of Agriculture where, for example, farm research and meat

inspection are both controlled by the same agency.

One of the constitutional purposes for which the federal government was established was to promote the progress of science and useful arts.¹⁰ Unfortunately, the federal government has never had a consistent policy for developing socially beneficial technology. Although the government does sponsor an adequate research program in agriculture and medicine, relatively little money is spent on technological development in other areas of social need.¹¹ The really large government-sponsored research programs are confined to military and aerospace research and to pure science.

It might be said that technology is the root of civilization and art the flower. Research in socially beneficial technology should be a primary function of the government. That it is not is evidence of a grotesquely distorted sense of priorities.

Science at the Cabinet Level

The United States Government should cease to ignore its clear responsibility to vigorously pursue technology for socially beneficial purposes. It should establish a Department of Science and Technology with cabinet level status.¹² The role of this department should be to conduct and encourage research into areas of technology beneficial to the society as a whole. Much of this research should be done under contract to private industry, but at least some of it should be conducted in government laboratories by government scientists. The Department of Science and Technology should be similar in structure to the National Aeronautics and Space Administration (NASA) during the mid-1960's in its mixture of in-house and out-of-house research and development programs. NASA, incidentally, could serve not only as a model but also as the nucleus for such a department.

There already exist many government departments and agencies that do bits and pieces of research here and there in the civilian sector. There is the National Science Foundation, the National Bureau of Standards, the Energy Research and Development Administration, the National Aeronautics and Space Administration, the Environmental Protection Agency, the National Oceanographic and Atmospheric Administration, the Agricultural Research Centers, and many others. There also exist many panels and committees that plan and recommend scientific policy such as the National Academy of Sciences and National Academy of Engineers. However, these advisory panels have no authority to do more than recommend, and there is no agency with the power to put their recommen-

dations into action. For example, in a 1971 meeting of the National Academy of Engineers,¹³ it was concluded that socially beneficial technology was woefully underfunded in this country and as a result productivity was lagging far below what could be achieved. Unfortunately, such recommendations are largely fruitless, since there exists no clearly defined agency that could turn such recommendations into coherent funding requests to Congress. It is most difficult to launch a coordinated research program or to generate effective momentum toward research goals when authority for conducting research is scattered among dozens of competing departments, agencies, and offices. Within the United States Government there exists no single authority that can present to the Congress a unified budgetary request for a broad, comprehensive, and coordinated research program in the socially beneficial technologies. Neither does there exist any central mechanism for setting goals, conducting research, letting contracts, monitoring performance, and managing funds so as to implement a civilian research program.

A Department of Science and Technology would remedy these shortcomings. It would provide coordinated planning, budgeting, and program management. It would do for civilian technology what the Defense Department has done for military technology and the National Aeronautics and Space Administration has done for space technology. A Department of Science and Technology would present to the Congress a unified program for budgetary appropriations and would provide for the Congress a single point of accountability and responsibility for research activities carried out. No longer would budgetary appropriations be fragmented to the point of incoherence, and no longer would hundreds of conflicting, overlapping, and inadequate research programs be funded and bootlegged under an incomprehensible jumble of divergent authorities.

A Department of Science and Technology would assure that the full potential of modern science and engineering was focused on relevant social problems before they reach the stage of crisis. One of the results would be that socially beneficial industries, that presently are technologically stagnant, would become profitable investment opportunities. These could then be exploited by both NMF and private capital. Thus, the Department of Science and Technology would provide technological development, the NMF would provide capital resources, and the DRP economic stability. Working together, these three agencies would produce economic prosperity and human well-being far beyond what is now considered possible.

XI

Peoples' Capitalism in a Finite World

With only minor modifications, Peoples' Capitalism could realistically be implemented in virtually any democratic country in the world. A capital financing institution that pays dividends to the general public, together with a nationwide mandatory savings plan, is not irreconcilable with any form of government except totalitarian dictatorships. The NMF and DRP could function in a socialist economy like Sweden, or even in a communist country like Yugoslavia, just as well as in more conservative countries like Britain, or the United States, or West Germany. Equally significant is the fact that Peoples' Capitalism might also be applicable to less advanced economies like Egypt, or Iran, or many of the nations in Africa and Latin America.

What kind of a country (indeed, what kind of a world) would emerge if the proposals outlined in this book were implemented? Almost certainly, material prosperity would increase. The availability of investment capital, the removal of disincentives to increased efficiency, the stabilization of prices in spite of heavy investment spending, and the focusing of modern technology on critical social problems all would work together so as to increase the production of wealth.

In the short term, NMF investment spending would create employment, encourage the modernization of industry, and in general, promote economic development. Meanwhile, the DRP would keep disposable income from rising (and thereby causing inflation) before newly constructed plants could begin producing more goods. In the long term, the sale of goods produced in newly built plants by newly purchased machines would generate NMF dividends. These dividends, together with the redemption of DRP savings, would give consumers the additional income to purchase the additional output. Over the longer term still, rising NMF dividends would induce many persons to voluntarily leave the labor force, thus eliminating the threat of long-term unemployment caused by major advances in computer-based automation. The overall result would be a degree of personal economic freedom and financial security far beyond what the world has ever known.

The NMF and Limits to Growth

Unfortunately, the development of nationwide or worldwide affluence on such a scale would in itself constitute a peril to human well-being. The

planet earth is clearly finite. There are limits to growth.¹ Affluence has historically led to increased levels of certain kinds of pollution and wasteful consumption of natural resources, many of which exist in limited amounts. If the result of the NMF were to simply increase the disposable income of the entire population so that everyone could engage in wasteful consumption on the scale presently practiced by the affluent minority, then the NMF would quickly lead to worldwide catastrophe.

This is a problem of considerable magnitude since it pits the interests of the “have” nations against the “have-nots.” Those countries that have already achieved a measure of affluence through industrialization are becoming concerned about the implications of pollution and the limits to growth. Yet much of the world’s population still lives in unbelievable poverty and squalor. Who is to tell these people that they should not improve their desperate condition? How can persons living in air-conditioned houses and driving gas-guzzling automobiles communicate their concern about the environment to people whose children are starving.

This problem is virtually insolvable within the constraints of classical economics. The existing needs of the present world population have already made us dependent on massive industrialization. Rural peasants in India, for example, are now dependent for their very survival on grain raised by highly mechanized agricultural techniques in South Dakota. Industrial machines must augment human labor if a large percentage of the present world population is not to die of starvation. Furthermore, there is presently no practical mechanism for the great masses of humanity to derive any significant fraction of their income from industrial machines other than as compensation for labor. Neither socialism nor capitalism presently incorporates a system of wealth distribution that offers any alternative to the classical scenario of industrialization. Even in China, the major portion of the national product is distributed as compensation to labor. This implies that the only existing road to affluence is through industrialization in roughly the pattern laid down by Europe, Great Britain, and the United States.

Classical industrialization, of course, requires urbanization. Factories and mills cannot be operated without a large, well-trained labor force. Workers must be recruited from rural areas and concentrated in cities. There they must be homogenized into disciplined production workers. Largely self-sufficient farmers and, in some cases, nomads and tribal huntsman must be reduced to tenement dwellers and taught to accept the routine of industrial work on a regular schedule.

This entire process creates enormous demands for energy and other resources where little or none existed before. New housing must be built;

food must be transported from distant areas; and sanitation, education, and social services must be provided. Roads and automobiles become necessary, along with filling stations, oil refineries, used car lots, and the inevitable junk yards.

The path of classical industrialization is extremely costly both in terms of physical and human resources. It seems unlikely that the earth could sustain the levels of pollution or the drain on resources that would result if the entire world were to follow the example of the United States and Western Europe.²

An Alternative to Urbanization

Peoples' Capitalism might provide an alternative to the classical scenario of industrialization. If the NMF were a primary source of investment capital, economic development could be accomplished through highly automated industries without the need for significant increases in urbanization.

Automatic robot factories could be built in underdeveloped countries near sources of energy, raw materials, and transportation facilities. These plants would not require a large labor force so there would be no need to uproot the population from the countryside and concentrate it in cities. This would allow economic development without the social upheaval that ordinarily accompanies industrialization.

NMF public dividends would distribute the benefits of industrial technology to the people without requiring them to significantly change their living patterns. Traditional rural customs could be preserved, and virtually self-sufficient lifestyles close to nature would not be disturbed. Industrial development and wealth distribution through an instrumentality like the NMF would enable even tribal and nomadic cultures to prosper without substantial alteration. Most of the population could continue in the same living patterns that their ancestors practiced successfully for centuries. Tribal chiefs would not need to become shop foremen. Farmers and villagers would not need to adopt regular hours as factory and mill hands. Nomadic herders would not need to become tenement dwellers. In short, the NMF would allow non-industrialized cultures to share in the wealth from modern industrial technology without becoming urbanized.

Furthermore, economic development could be achieved much more rapidly than by conventional methods. Increased economic wealth would become available as soon as robot industries could begin production. There would be no need to spend long years educating and training a generation of

workers. Education would come, of course, but more as a result of increasing affluence than as a precondition.

Some of the output from automatic industries in a developing economy would be used for foreign exchange to pay for the high technology equipment that would have to be imported. The rest could be distributed through public dividends or taxed for domestic needs such as health care, education, improved agriculture, and preservation of the ecology and wildlife on which many tribal and nomadic cultures depend.

Increasing affluence by this means would not significantly increase the world's consumption of resources or the level of pollution. In fact, just the reverse. Primitive cultures that have endured unaltered for centuries are inherently stable and resistant to change. In most cases, social innovation occurs only under great duress such as results from war or famine due to overpopulation or destruction of traditional hunting or grazing lands by competing cultural groups. If primitive peoples were supplied with sufficient income from high technology industries so that they could preserve and protect their native habitats, they are quite likely to continue their traditional lifestyles and improve their environments in such a way as to reduce pollution and improve the ecological balance.

Peoples' Capitalism thus offers a means by which non-industrialized countries might completely leap-frog the first industrial revolution. NMF financing and income distribution would make it possible for a nation to develop from a technologically primitive non-wage economy to a post-industrial non-wage economy without the cultural dislocations and environmental disasters caused by conventional industrialization.

Continued Growth and the Environment

Peoples' Capitalism could also reduce the environmental impact of continued economic growth in countries where industrialization has already reached an advanced stage. Distribution of income through public dividends would make income from high technology industries available to rural residents as well as urban. This would reduce incentives for the rural poor to migrate to city slums in search of high-paying employment or, as it often turns out, of more liberal welfare payments. NMF dividends would be paid equally to everyone, and the resulting real benefits would be greater in areas where the cost of living was low. Thus, not only would rural residents have less reason to abandon self-sufficient non-resource-consuming lifestyles in the country, but many urban and suburban residents would be encouraged to move to areas where the cost of living was lower.

Furthermore, the role of the NMF in providing income other than wages and salaries would reduce the absolute necessity for creating jobs at any cost. Much of the make-work, featherbedding, and deliberately wasteful practices that are now used to prevent unemployment would become unnecessary, and the pressures for unplanned growth would be greatly reduced.

This does not necessarily imply that economic growth would cease or that consumer demand for more luxurious lifestyles would disappear. It does mean, however, that if personal economic survival were no longer strictly dependent on job employment, a great deal of the pressure for environmentally destructive growth would be alleviated.

Equally important, NMF financing of highly automated industries would release society from the absolute necessity of massive urbanization imposed by the labor requirements of industrial production. As industries of the future become more automated, the requirements for a highly centralized labor pool will decline. Distribution of profits through a mechanism such as the NMF will then allow people to free themselves from the dominance of machines. Once entire industries become capable of operating themselves, there will be no need for people to structure their lives around the needs and requirements of machines. Factories will not need human workers, and vice versa.

NMF income could free people from the tyrannies of mechanization and allow them to live more by their own internal rhythms. Lifestyles quite likely would move closer to nature, as people divorced themselves and their families from the congestion and frustrations of the industrialized world.

The implication is that, if future economic development were accomplished through an instrumentality such as the NMF, increased affluence would not be incompatible with the environmental constraints of a finite planet. Peoples' Capitalism thus offers hope for a resolution of the fundamental conflict between the interests of the "have" and the "have-not" peoples that today represents such a strong potential threat to world stability.

The NMF and International Relations

A proposal for an economic system that promises to both increase wealth and distribute the benefits to everyone in an equitable manner has profound and far-reaching implications. It is an ideology that promises something for everyone. It is a means for producing a bigger pie, together with a guarantee that everyone will obtain a larger share. It thus seems possible that the NMF might have benefits in such problem areas as

international relations and overpopulation.

Within every nation that adopted it, the NMF would provide increased financial security for the individual and thereby increased personal freedom from political coercion. Such an event, if it were to occur on a worldwide scale, would certainly have an impact on international affairs.

To begin with, any country whose internal economy was rapidly expanding would become preoccupied with domestic prosperity. The average citizen would be too busy improving his own condition and that of his family to be mesmerized by inflammatory rhetoric. Blood feuds, like those in the Middle East or in Northern Ireland, thrive only in areas where economic conditions appear hopeless or where progress seems possible only at another's expense. Where prospects for the future seem bright, people are too busy improving their financial condition to waste much energy on fighting. This is true on an international as well as local level. Most wars in recent years have arisen either directly or indirectly from conditions of economic deprivation. J. Bronowski in his recent book, *THE ASCENT OF MAN*, argues that war is not a natural human instinct, but instead is a highly organized and cooperative form of theft. He claims that war originated only about ten thousand years ago when the harvesters of wheat accumulated a surplus and the nomads rode out of the desert to rob them of what they could not provide for themselves.³

Robot industries financed through the NMF would make the acquisition of wealth by industrial production far easier and more certain than the conquest of other countries. On the other hand, any nation whose economic strength derived from robot industries would have the technological capacity for a very effective military defense.

Furthermore, equitable distribution of wealth internally would tend to ease domestic political tensions and frustrations. Thus, the prospect of a better life through peaceful economic development would make conflict seem unproductive to all but a few crackpots. Even these would not be especially dangerous if there were no dispossessed masses to be enticed by promises of retribution or conquest.

The NMF and Overpopulation

Although it is not generally recognized, overpopulation is in large part due to economic factors.⁴ Average people throughout the world have good reason to believe that a large family is their best insurance against poverty in old age. Old age is a grim prospect at best, and the thought of having to face the sickness and infirmity of declining years in loneliness without anyone to

care or render assistance is a horrible thing to contemplate.

The NMF, of course, could not provide companionship in old age, but it could provide a secure source of income for life. The NMF would not only make people prosperous during their working years, but would continue providing a full income during the retirement years. Thus, the NMF would largely dispel fears of poverty in old age and thereby decrease many of the personal anxieties that create social pressures for large families.

A second factor that is related to high fertility rates is the inferior social position of women. If a woman's status is primarily determined by her role as a childbearer (as is the case in most underdeveloped countries) then the incentives for having a large family are great. If, however, a woman's status is determined by other factors, then the responsibilities of caring for many children may be regarded as socially disadvantageous. The payment of NMF dividends to every adult, male and female alike, would strongly upgrade the independence and social position of women in most societies throughout the world, and especially in underdeveloped countries. This could not help but reduce the incentives for childbearing.

NMF dividends would, of course, only be paid to adults. Thus, the NMF would not generate incentives of its own for large families. Quite to the contrary, additional children would visibly dilute the per capita income of a family unit. In countries where overpopulation is an extremely serious problem, the government might actually tax the NMF dividends of any parents having more than two children. This is an extreme measure, but it would be fair in that the additional social overhead incurred by large families would be felt by those directly responsible. The result would be that only persons desiring a large family would tend to have them. This would serve to quickly solve the problems of overturning taboos and of educating the masses in birth-control techniques. The prospect of losing some NMF dividends would generate powerful incentives for people to change their customs and get themselves educated.

Unfortunately, overpopulation is often least recognized as a problem in countries where the situation is most critical. In many nations, a large population is viewed by government officials as a source of national security. Poor nations tend to be militarily weak and often consider a large population to be their principal weapon in the struggle for national survival. For example, the Communist Chinese government frequently has voiced the opinion that China's strength lies in her large population. During the cold-war years, Chinese leaders often argued that, if war broke out with the United States, China might lose every battle but would eventually win the war simply because the U. S. could not possibly kill them all. This basic

argument, though usually not stated in such explicit terms, lies behind the reluctance of many poor but populous countries to initiate serious efforts at birth control. People are the principal resource in many countries. Human bodies are the one thing they can produce in large quantities, and they view attempts at population control as a threat to their national security.

In such cases, the NMF would provide a much more attractive means of achieving national security and of enhancing nationalistic pride. The NMF would make it possible for even the most backward nations to increase their economic wealth and power through advanced industrial technology. This fact alone might bring about a greater change in governmental policy on population matters than all of the mathematical arguments of Malthus and his latter-day counterparts. If this is true, then the NMF would indeed have a profound impact on what is perhaps the most serious long-range threat to human civilization — overpopulation.

XII

From Throughput to Storehouse Economics

The purpose of an economic system should not be merely to produce clothing, food, and houses, but to clothe, feed, and house people. Human beings are, after all, what the economic system was created to serve, not vice versa. If human needs could be met without a single commercial transaction (i.e., if we could develop houses and clothes that never wore out and if everyone raised their own food) human needs would be met. No one would be poor, no one hungry. But what would happen to the economy? Our present industrial economy, where income is dependent on job employment, would collapse.

Modern industrialized economies do not make the satisfaction of human needs a number-one priority. They are instead designed to stimulate business and promote commerce. Industrialized economies are based on throughput. They prosper only so long as production and consumption remain high. Income is derived from wages and salaries and, as a result, every effort must be made to assure that there is never any shortage of jobs. Products must wear out or be consumed so that they may be replaced. Styles must be changed so that whatever does not wear out is discarded anyway. People must be dissatisfied so that they want more. Resources must be exploited. Growth is essential.

Kenneth Boulding suggests that any economic system based on throughput is appropriate only in a “cowboy” world where there are endless frontiers of inexhaustible natural resources.¹ On the “spaceship earth” where we live today, resources are limited, and pollution is a serious threat. Under such conditions, an appropriate economic system would be one that concentrated on the satisfaction of human needs rather than on the rate of production and consumption. We should be attempting to maximize the accumulated supply of utilitarian goods, not simply the level of industrial output.

Today the human race numbers almost 4 billion persons. This is more than twice as many people as were alive at the beginning of this century and only half as many as will be alive shortly after the start of the next. Today one-half of all human beings are malnourished, and more than two-thirds are without adequate housing, sanitation, or medical care.² If the material needs of this great mass of unfortunate persons are ever to be met, we must devise an economic system that can feed, house, clothe, and provide basic health services in a much less wasteful manner than presently seems possible from the experience of the industrialized countries.

We must recognize the fact that there are no more frontiers left. We no longer can afford to behave as if this were a cowboy world. The earth is a spaceship and, if we are to live on it in peace and prosperity, we must shift from throughput economics to storehouse economics before it is too late.

The key to making such a basic shift is the elimination of the virtually exclusive role of wages and salaries in the income distribution system. So long as job employment is a prerequisite to obtaining income, any significant shift from throughput to storehouse economics would create chaos. If products were made more durable, if mass advertising of trivia were eliminated, and if all unnecessary jobs were discontinued, unemployment would soar, recession would occur, and millions would be without income altogether.

Throughput economics depends on continuous growth to create enough jobs to keep everyone employed. Storehouse economics would eliminate unnecessary jobs and seek to satisfy human needs with as little effort and expenditure of resources and energy as possible. Storehouse economics is based on the principle that, if things don't wear out, they don't need to be replaced.

The NMF and Storehouse Economics

The National Mutual Fund would provide the mechanisms necessary to make the shift from throughput economics to storehouse economics. NMF income would decrease the importance of job employment as a source of income. As NMF dividends gradually increased to the level where they could provide a comfortable living, a great many persons would voluntarily leave the labor force. This would create job vacancies at every level. Persons wishing to continue working would have numerous opportunities for advancement or for transfer to more satisfying occupations. As a result, unnecessary jobs could be eliminated with no hardship. Make-work and featherbedding would become passe.

NMF investments in robot factories and automatic industries would further accelerate the shift to storehouse economics. Robot factories would not require large numbers of employees to be concentrated within commuting distance. This would lessen the need for commuter traffic and substantially reduce congestion and pollution.

It would also mean that small-town communities might once again prosper. People would be free to live wherever they wished and could adopt slower-paced, less resource-consuming lifestyles.

The automation of some major industries would, of course, not

eliminate the need for human workers altogether. Not all industries would, or even could, be automated in their entirety. There would be many small businesses and community services that would not be automated. However, the existence of a substantial income from the NMF, together with the total automation of a major portion of heavy industry, would considerably reduce the pressures toward urban crowding and the inevitable costs in pollution and congestion.

An additional benefit of robot factories would be that they could easily cope with fluctuating production requirements without causing labor dislocations or financial crises. In periods of high consumer demand, automatic industries could be operated 24 hours per day 7 days a week. There would be no requirements for overtime or for importing new workers to industrial areas. High production would lead to high NMF profits, and consumers would have plenty of income to meet their needs. Furthermore, NMF distribution of profits through dividends would assure that everyone shared in the benefits.

Alternatively, when consumer needs were met and markets become saturated with durable products, production could be cut back. Robot factories could be shut down completely or shifted into entirely different product lines without creating any unemployment. There would be no need to artificially stimulate additional consumption through mass-media advertising, style changes, or planned obsolescence. Of course, reduced production would decrease NMF profits and lead to lower public dividend payments. But if people already had what they needed, they would spend less and therefore wouldn't need as much income.

The Demand Regulation Policy would prevent lack of income from causing personal hardships or precipitating a deflationary spiral. The DRP would always supplement NMF payments by reduced withholdings, accelerated redemption, or newly created money in an amount sufficient to prevent prices from falling. Thus, any reduction in demand due to consumer needs being met would trigger increased income from the DRP. This would assure that any decrease in consumer demand was not the result of insufficient purchasing power, but rather a manifestation of increased human contentment.

The DRP would guarantee that NMF dividend payments would fall only after the need for consumer goods had declined, and not the other way around. For example, if cars and appliances were made more durable, then production would fall because few people would need to buy new ones. This would reduce NMF profits and, hence, public dividends. But it would at the same time increase DRP payments by whatever amount was required to

prevent a decline in the price index. Thus, any reduction in NMF income would be more than compensated by the combination of increased DRP payments together with the benefits of more durable products at a constant price.

As a result, every shift in consumer preference to more durable products or less wasteful services would be rewarded by increased personal wealth for everyone! The DRP would, in effect, pay a bonus to society for every change in taste that led to more self-sufficient, less resource-consuming lifestyles.

The NMF and DRP would work together to assure that consumers would always have sufficient income to purchase whatever they needed. At the same time, there would be no need to produce unnecessary trivia or to artificially stimulate consumption in order to prevent unemployment. Free-market pressures for maximizing NMF profits would assure that nothing was produced that was not needed, yet the universal distribution of income through the NMF and DRP would assure that production was never curtailed while there were still human needs unmet.

The overall effect of the NMF and the DRP would be to encourage and reward every tendency within society to shift from throughput economics to storehouse economics. The effect would become significant as soon as NMF dividends became large enough to relieve the overwhelming pressures for full employment that today dominate virtually every major economic decision. As soon as NMF dividends and DRP bonuses became a substantial fraction of the average family's income, conservation would become as economically beneficial as new development; restoration would increase incomes as much as new construction.

There is no reason to believe that such a basic shift in economic values would not be just as satisfactory for the average person as our present throughput-oriented economy. It is true that many people enjoy new cars, new houses, and new clothing styles. However, it also seems likely that most people would welcome cars that operated trouble free. It is certainly true that antique furniture is often more prized than new, and fine old restored houses are more appealing to many people than the cheap crackerboxes that are sold as houses in many suburban developments today.

Storehouse economics would not mean that nothing new would ever be built. It would simply mean that new development for its own sake would no longer completely dominate the economy. People would have plenty of money to buy whatever they wanted. Individuals would be financially independent and free to choose for themselves what they preferred.

Also, storehouse economics would not mean that everyone would

leave the big city in favor of the small town. However, it would mean that those who wanted to, could. It would mean that the economic pressures that result in urban crowding, suburban sprawl, and the wasteful consumption of natural resources for the primary purpose of creating jobs would be substantially reduced, if not eliminated altogether.

The shift would undoubtedly be gradual. Basic attitudes of an entire society do not change rapidly. However, in many ways attitudes are already changing. The ecology movement and the efforts of those who are concerned about the environment have already begun to raise our consciousness concerning the beauties of nature and the value of what is old. Recent polls and other indexes suggest that people are embarking on a period of new respect for old values and restrained lifestyles after the upheavals of the past decades.

Unfortunately, this shift in attitudes runs directly counter to the basic goals of growth and exploitation that are so fundamental to the present economic system. It is difficult to see how these recent attitudinal changes, however desirable, can prevail in the long term unless they are accompanied by institutional changes in the existing system of capital financing and income distribution.

The National Mutual Fund and the Demand Regulation Policy would provide a mechanism for a fundamental shift in economic goals away from full employment and toward full income, away from maximum production and toward maximum utilitarian wealth, and away from increasing growth and toward increased well-being.

By themselves, the NMF and DRP could not force a national shift from throughput to storehouse economics. However, they could provide the institutional framework under which such a shift could occur without severe economic dislocations. And more than that, they could provide positive reinforcement for the shift by linking each step taken in the direction of conservation to increases in the personal financial security of every individual. By this means the NMF and DRP could reconcile the environmental goals of conservation and preservation with legitimate desires of human beings everywhere for participation in the good life.

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Post Script

As was promised in page vi of the Preface, feedback from readers will be incorporated into future editions of this book. This insert is an attempt to keep that promise and make this book a genuine and update-to-date vehicle for debate.

Much early critical response to Peoples' Capitalism has centered around the fear at the National Mutual Fund would pose a potential threat to liberty because of its size and centralized authority. This fear, I personally believe, is somewhat exaggerated, perhaps in reaction to the recent events of Watergate. It seems to me that the key issue is not centralization of power so much as accountability and control of power. As suggested in the text Chapter VI, the dealings of the National Mutual Fund would be open to public scrutiny, particularly by the press, and under the control of effective checks and balances. It is often easier to assure equity and fair dealing in a single large agency than in a wide diversity of smaller ones. A well known example of this is that the federal government tends to be more honest and free from corruption than city or county governments (Watergate notwithstanding). The reason is simply that scrutiny by the press is more intense and sophisticated and there are usually large and powerful blocks of diverse opinion that act, as checks and balances or at least as watchdogs. Accounting procedures tend to be more exacting and there is a greater dependence on rule by law as opposed to dependence on force of personality. It is my feeling that a National Mutual Fund would be more open to scrutiny and public pressure than more widely diffuse mechanisms.

Nevertheless, there are many good reasons for making at least a large percentage of investment decisions on a local rather than a national basis. It is certainly possible to conceive of the National Mutual Fund as merely a conduit through which funds are channeled to local banks and lending institutions where the final investment decisions are made. The NMF could simply grant credit to banks with the provision that the money be used for primary stock purchases with good prospects for long-term return on investment. It should be possible to devise sufficiently rigorous accounting mechanisms to prevent corruption, and the amount of credit granted to each institution could be made dependent on its performance in producing a high rate of return on previous investments. This would assure both honesty and efficiency without unnecessary restrictions on local decisions makers regarding specific investments. Rules similar to those set up by the Small Business Administration could be used to define qualifications for small business seeking to sell stock to local NMF sponsored banks. Normal

accounting practices regularly used by investment bankers could determine qualifications for larger corporations. Businesses that felt discriminated against could appeal decisions to the NMF or could seek redress through the courts.

The overall effect would be the equivalent of a dramatic easing of money by the Federal Reserve with the assurance that all of the newly created money would be used only for capital investments with good prospects for long-term payback. Furthermore, the channeling of this investment capital through the NMF would assure that the resulting profits would be directly converted into income for everyone.

The inflationary impact of this new easy money policy would be mitigated by the highly selective nature of what the money was used for. None would be used to stimulate consumer demand directly. All would be used to build new capital stock and increase the efficiency of production. Both of these are strongly deflationary. Furthermore, the Demand Regulation Policy described in Chapter IX would act to temporarily remove this newly created money from the economy before it could indirectly stimulate consumer demand.

About the Author

The Author was born in Louisville, Kentucky, during the depths of the Great Depression. He received a B.S. in Physics from Wheaton College (Illinois), an M.S. and Ph.D. in Electrical Engineering from Ohio State University and the University of Maryland. He joined the United States Space Program before Sputnik, and, while still a student at Wheaton College, designed the antennas and radio-frequency feed network for the Vanguard I “Grapefruit” satellite that is still in orbit. During fifteen years with NASA, Dr. Albus designed electronic systems-for over 15 spacecraft, conducted research in advanced computer technology, directed the NASA Artificial Intelligence Program, and studied the information-processing and computational capabilities of that most sophisticated of all computers, the human brain. He has published more than 20 papers in various scholarly journals, the most notable of which are “A Theory of Cerebellar Function” (Mathematical Biosciences, 10, 1971) and “A New Method of Manipulator Control” based on this theory of the cerebellum (Transactions of ASME, September, 1975). In recognition of this work, he was elected a Fellow of the Washington Academy of Sciences and, in 1975, was awarded the Departmental Silver Medal by the U.S. Government.

As a scientist, Dr. Albus is concerned about the economic, social, and political impact of the rapidly approaching advent of superautomation. He has recently coauthored a review of worldwide advances in robot technology (Scientific American, February, 1976), and in the book, *Peoples’ Capitalism*, he presents his vision of how these exciting new developments could become the means for liberating humankind from poverty and oppression.

[** More recent information about the author can be found at

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