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**UNDERSTANDING OUR  
NATIONAL ECONOMY  
AND ECONOMIC GROWTH**

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**SPECIAL REPORT NO. 51**

Edited by C. Phillip Baumel

**IOWA STATE UNIVERSITY of Science and Technology  
Agriculture and Home Economics Experiment Station  
Cooperative Extension Service**

**Ames, Iowa — February, 1967**

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## Overview: Understanding Our National Economy and Economic Growth

C. Phillip Baumel\*

This publication brings together eight papers focusing on our national economy and on economic growth. The individual papers are an outgrowth of two series of seminars held for businessmen in Charles City and Cedar Rapids, Iowa.

These seminars were designed to help businessmen develop an understanding of the economic environment in which their firms operate.<sup>1</sup> Their firms, for the most part, operated in national markets. An attempt was made to present the following types of information in the seminars:

1. An overview of how our national economic system operates, and how economic growth is achieved.
2. A discussion of the fundamental macroeconomic concepts and relationships in our national economy.
3. Implications of these concepts and relationships. The implications were pointed out and the participants were provided experiences in applying these concepts and relationships to problem situations facing individual firms.

To create an understanding of the national economy, the papers should be supplemented by lectures or discussions. The papers can be used most effectively as reading assignments prior to a lecture or informal discussion period on each topic. They should be readily understood by laymen. However, the teacher should supplement each paper with illustrations, detailed data and examples which are appropriate for each audience.

The papers in this publication focus primarily on how our national economic system operates and how economic growth is achieved. Some topics other than those included here may be appropriate for specific audiences. To help the audience understand the national economic system, it is important that each topic have a theoretical orientation with sufficient empirical application to make the concepts meaningful. Each of the papers in this publication does this. A brief summary of each paper follows:

1. Don Winkelmann describes some of the forces which influence the amount of activity in the economic system. He begins by describing the need for an economic system and then tells how to measure the level of economic activity. This leads to the interrelationships between firms, households and government and a discussion of how these relationships are influenced by private and government spending.
2. Dudley Luckett explains the role of monetary policy on the stability of the economic system in the United States. The paper first describes the national banking system, how the money supply is determined and how the Federal Reserve System influences the level of the money supply. This leads to the effects of the monetary policies of the "Fed" on the levels of income, employment and prices.

3. Erik Thorbecke examines the growth process at the national level. He lucidly explains the theory and the determinants of economic growth and the role of investments in economic growth. This paper emphasizes the major goals of economic policy in the United States as well as in other major mature economies and points out the conflicts which may arise between these goals. Finally, Thorbecke presents some economic policies available for achieving these goals.

4. Eber Eldridge describes the economic pressures (imbalances) created by new technology and by the failure of our nation to use existing economic resources to their greater potential. New technology increases the potential for economic growth. He points out needed changes in the existing use of resources necessary for our nation to make additional gains in economic growth.

5. Edward Jakubauskas describes the basic collective bargaining issues which arise as a result of economic growth. As technology and the composition of the labor force continually change, the resulting concerns of labor and management are examined. He then speculates on the measures which labor unions can be expected to propose to deal with these problems. Finally, Jakubauskas proposes a program for reducing union and worker opposition to technological change and economic growth.

6. Karl Fox focuses attention on the differences in economic growth among regions. He begins by pointing out some of the broad aspects of regional differences in growth and the reasons for these differences. Then he looks at some aspects of underdeveloped regions of the United States, including Appalachia, the Ozarks and the New England states. Finally, he presents a new way of looking at the growth pattern of individual cities, trade areas and labor markets. Specifically, he describes the functional economic area as a relatively self-contained economic area, ideally diamond-shaped, with a radius of one hour's driving time from the central city to the most distant outlying area.

7. Lee Kolmer reviews changes in United States agriculture. Specifically, he points out the trend toward specialized farming operations, the decline in the agricultural labor force and the continual shift to purchased inputs in agricultural production. Finally, he points out the implications of these changes on firms supplying inputs to agriculture.

8. Neil Harl considers the distinctions between types of markets and industries, emphasizing the legal and economic aspects of atomistic competition, oligopoly, monopoly, and monopolistic competition, and relates market structure to conduct and performance by firms. He then shifts his attention to relevant policy objectives and the framework of antitrust law which is designed to accomplish those objectives. Harl makes special mention of the role of the various antitrust enactments, the rationale of exemptions under antitrust laws, and the existing legal restrictions of mergers, resale price maintenance, and discrimination in distribution.

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<sup>1</sup> For a discussion of the need for providing information to management to develop an understanding of the economic environment, see C. Phillip Baumel and Lee R. Kolmer, *Opportunities in Economics Education with Marketing Firms*, Jour. Farm Econ. Vol. 47, Nov. 1965, pp. 1018-1020.

# 1. An Introductory View of Our National Economy

Donald Winkelmann \*

Our main purpose here is to describe some of the forces which influence the amount of activity in the economic system. We will begin by describing the *need* for an economic system; then move on to a brief consideration of the *level* of economic activity and its measurement. At that point, we will outline the main differences between two viewpoints about how to achieve an acceptable level of economic activity. This will lead to a short statement about some of the more important connections in the economic system and how these connections can be influenced by government and private spending.

## THE ROLE OF THE ECONOMIC SYSTEM

What does an economic system do? What is its role? What functions does it perform? Answers to these questions start by recognizing that, for any society, resources are short when compared with wants. That is, all societies experience scarcity. Because of this scarcity, each society needs a way to answer the questions:

1. What goods and services are to be produced and in what quantities?
2. How are the factors of production—land, labor and capital—to be combined in order to achieve the desired production?
3. Who will get the goods and services produced?

The job of an economic system is to provide a way to find answers to these three questions. The questions, remember, arise because the resources at a society's disposal are not sufficient to satisfy the wants that exist in the society's population.

It is obvious that resources are scarce relative to wants in an underdeveloped economy, but is this also the case in an economy like ours? According to a number of studies, the answer to this question is that, even in a society as wealthy as ours, resources still seem scarce relative to wants. So all societies—wealthy and poor—require answers to the three questions posed above. The economic system must provide a means for getting answers.

An economic system can take many forms. Some examples are:

1. A system in which some central authority—political or religious leaders, for example—decides how the scarce resources are to be allocated among the competing ends;
2. A traditional system in which things are done today as they were in the past;
3. A system featuring markets, where prices for goods and services and for resources guide the production and consumption of goods and services.

To focus attention on what responses might develop in each of these three systems, consider the following episode. Suppose a small firm employs 50 persons who all drive cars and that 55 spaces are available in the firm's parking lot. The spaces are not assigned but allocated on a first-come, first-served basis. There are always five spaces vacant.

With respect to parking and this firm's staff, there is

no economic problem. Space is not scarce relative to needs. Now suppose that business booms, the plant is enlarged and the staff is expanded to 100, but that natural barriers make it impossible to expand the parking lot. We are faced with a problem of relative scarcity. We need 100 parking spaces if everyone is to have a space, but we have only 55 such spaces available.

How might we handle this problem by each of the systems of allocation described previously? In the *centrally directed* system, the group in authority might decide that space will be allocated by seniority. We could array the staff by length of service, and the 55 senior employees could be assigned spaces while the remaining 45 would have to park elsewhere. The *traditional* system would continue to operate on a first-come, first-served basis with the 45 late-comers being forced to park elsewhere. With the *market* system, the spaces would be auctioned off and those willing to pay the highest prices would get the company parking spots. Notice that all three systems provide a mechanism for solving the problem but that the 55 people getting space might not be the same in each case.

In our society, most of the allocation is done through the market system. Economists have been studying the advantages of this system for years. As no short statement will capture the full flavor of their findings, suffice it to say that, given certain assumptions, it can be shown that the market system will lead to an allocation which is preferred over that generated by alternative systems.

The assumptions which must be made vary from the seemingly innocuous, e.g., that each individual is the best judge of what is good for himself, to the obviously unrealistic, e.g., that all buyers and sellers possess full and complete information about products and prices. Should these assumptions be satisfied, then the market will yield an allocation of goods, services and resources among competing uses and competing users that is said to be efficient.

*Efficient*, as used here, is a technical term. Imagine that we have all of the necessary assumptions satisfied and that the actions of buyers and sellers in the market have allocated the scarce resources among the competing ends. Now suppose we try to change the solution so as to make some one person better off. Any change that is made to help one person will, in this case, make at least one other person worse off. When this situation develops—that is, when the only change you can make in an allocation to make one person better off will necessarily make another person worse off—the allocation is said to be efficient.

This seems a rather weak justification of the market system. If certain assumptions are satisfied, the allocation is efficient. It turns out, however, that alternative systems for solving the so-called economic problems will not give even this solution without equally strong or stronger assumptions about the conditions under which these other systems are operating.

Briefly, scarce resources relative to wants lead to certain questions. Providing a mechanism for answering these questions is the role of the economic system. Among the alternative systems available, the market system possesses certain advantages given certain assumptions.

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## THE LEVEL OF ECONOMIC ACTIVITY

Given the need for an economic system, what will be the level of economic activity? Will all of those wanting work be able to find jobs? Up to the 1930's, the answer to this question would have been that the action of the market would assure a full employment economy.

### Classical Theory

How was this achieved? Suppose that workers were momentarily unemployed because, let's say, people decided to save more and consume less. According to commentators—let's call them classical economists—natural forces would be set in motion which would push the economy back to full employment levels.

How would these forces operate? Imagine a simple society consisting of firms and households. Let's agree that households—actors which supply factors of production to firms and which receive income from firms—can do only two things with their income: spend on consumption or save.

Firms, on the other hand, buy resources from households and buy both intermediate and finished goods—e.g., raw materials—from one another. We won't need to discuss the intermediate goods here because flows of these intermediate goods are directly related to flows of final goods. We can focus on final goods—on production for ultimate users—and omit consideration of intermediate goods. (After all, were there no flow of final goods, there would be no reason for a flow of intermediate goods.)

Think, now, about a flow of dollars as depicted in fig. 1.

All dollars flow to households. Households own all the factors of production—even those apparently owned by businesses—because the households own the businesses. Some dollars leak out of the spending stream into savings. Some dollars flow back into the spending stream from investment.

There is an obvious omission from this simple system. We have neither the dollar leakage occasioned by taxes nor the injections of the government. In the simple classical model, this omission is acceptable because neither the leakage nor the injection needs to be large relative to consumption or savings.

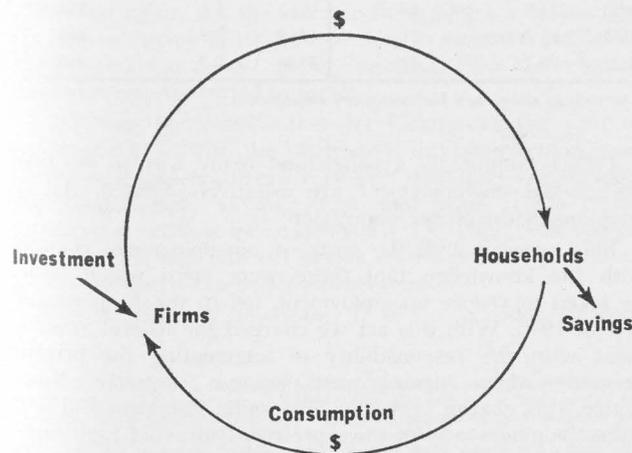


Fig. 1. A circular-flow diagram of a simple economy.

With this rudimentary apparatus and several additional assumptions about human behavior as made by the classical economist, we would have an economic model. If there were unemployment because, as per our earlier assumption, people decide to save more and consume less, this model—although a simplified representation of the real world—allows us to make statements about what things might happen.

In terms of the circular flow diagram, the act of saving more would be shown by more dollars leaking out into savings and less coming back around to firms in consumption expenditures. Then the firms, noting sales decline, would reduce their work forces and some unemployment would be evident. At the same time, however, changes would occur in the rate of interest. This would result because the extra dollars saved would be used to buy interest-bearing securities, thereby pushing up the price of securities with an accompanying decline in the interest rate. The new, lower interest rate would induce firms to invest more. Thus, the increased leakages into savings would be offset by increased injections from investment. The interest rate would continue to fall until the new rate of investment was equal to the new rate of savings—i.e., the leakages would be exactly offset by the injections. The new increased flow of investment expenditures would induce the firms to rehire the momentarily unemployed.

With the classical model—the model of “laissez faire”—all changes which caused the system to become momentarily unbalanced would be offset by counteracting forces, arising naturally to push the economy back to full employment levels. True, the adjustments would require time to complete—the necessary changes in prices, wages and the interest rate would not take place instantaneously—but the time period would not be long. There would be no cause to rely on the government to assist in maintaining full employment. Full employment would be assured without government, and increases in government expenditures would simply lead straightway to offsetting decreases in consumption or investment.

To some, however, this explanation of economic relationships seemed inconsistent with the facts, especially as seen in the 1930's. Many countries in Western Europe had experienced a decade or more with high rates of unemployment. In the United States, unemployment rose to nearly 25 percent of the work force in 1933 and was in excess of 14 percent for 9 of the 10 years of the 1930's. Some classical economists asserted that more attention must be paid to making prices and wages flexible so that changes in prices and wages would lead to the re-employment of those currently out of work.

Others, both in and out of the classical school, thought that the theoretical apparatus—the economic model—was invalid. How to alter the theory to make it consistent with the facts became their goal. (After all, it's nonsense to say, “It may be all right in theory, but it's not true in fact.” If the theory isn't consistent with the facts, then it's not all right—it's bad theory.)

### Keynesian System

An alternative approach to economic relationships was developed by John M. Keynes (kanes) in the mid-30's. He offered a different view of the way the actors on the economic scene are motivated. According to his view, it

was possible to have large numbers unemployed for long periods of time—in fact, indefinitely.

We can trace the differences between the Keynesian (KANE-Z-UN) and the classical systems briefly:

1. Keynes held that prices and wages were not free to fall. (The classical system assumed they were free to fall.) Keynes thought that a world characterized by cartels, labor unions, oligopolies—and other such forces—would be a world of sticky prices and wages. Further, he held that workers were heavily influenced by the dollar value of wages in offering their services, while the classical economists assumed that workers were conditioned by real wages—dollar wages adjusted by the price level.
2. While the classical economist assumed that people held money only to effect transactions—to buy commodities and securities—Keynes assumed that money was also held for speculative purposes. Moreover, at low rates of interest relative to past levels of interest, people would prefer to hold money rather than to buy interest-bearing securities. Furthermore, according to Keynes, interest rate changes would probably not lead to large changes in either investment or saving.

The first of these two differences meant that, for Keynes, wages and prices would not necessarily change so as to induce firms to hire the unemployed men. So wage and price changes would not necessarily lead to full employment.

The second difference leads to the conclusion that interest rate changes might not be sufficient to attract the investment necessary to bring about a return to full employment. Remember that in our earlier discussion, interest rate changes led to an increase in investment necessary to bring about a return to full employment. For Keynes this need not happen.

In short, then, the classical system assumed full employment while the Keynesian system allowed for less than full employment. This is the importance of the Keynesian analysis—it offered a way to explain the continued existence of widespread unemployment without imputing this unemployment to rigid prices and wages.

In addition, the point was made that, even if the adjustment mechanism posited by classical economists were available, the process of adjustment would require a long time to be carried out. During this period of adjustment, there would be unemployment.

Keynes and his followers went on to point out certain measures which could be undertaken to increase employment if increased employment was thought desirable. Many of the measures suggested involved government activities.

With the advent of World War II, the pace of economic activity increased and full employment was achieved in countries formerly plagued by high rates of unemployment. What had happened? Let's add another leakage (taxes) and another injection (government spending) to our circular-flow diagram. Spending now comes from three sources—consumption, investment and government—and there are three things households do with their income stream—spend on consumption, save or pay taxes.

In the 1940's, the government was making massive injections into the economy in order to acquire the tools of war. Meanwhile, on the household side, leakages into taxes were smaller than the injections by government. The government was borrowing money in order to pay its bills rather than raising money through taxation.

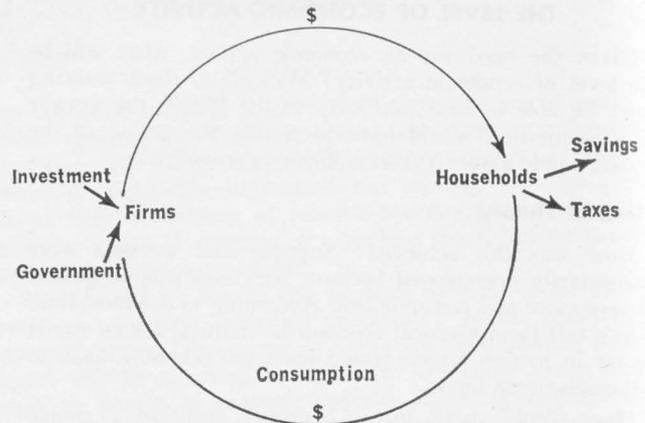


Fig. 2. A circular-flow diagram which includes government.

These actions, larger injections than leakages, led to an increase in the circular flow and hence increased the pace of economic activity. This increased flow was possible because we had unemployed resources to bring into play. By 1942, our resources were fully employed.

At the end of the war, there was fear that we might again encounter unemployment. By that time we were quite conscious of the cost of unemployment—high social costs, low growth rates, low profits—and we were aware that the classical scheme—which featured full employment and rapid adjustment to any changes in the system—might not be an accurate portrayal of the real world.

It is perhaps not obvious that high unemployment and low profits tend to go together. We can gain some impression of their connection by looking at corporate profit per capita (in 1957-59 dollars) in a 5-year period of high unemployment and corporate profit per capita in 1957-59 dollars in 5 years with lower unemployment (table 1).

Table 1. Corporate Profit per Capita 1931-35 and 1960-64 in 1957-59 Dollars.\*

Year	Percent unemployed	Profit per capita	Year	Percent unemployed	Profit per capita
1931	15.9	\$32	1960	5.6	\$245
1932	23.6	45	1961	6.7	239
1933	24.9	44	1962	5.6	258
1934	21.7	21	1963	5.9	268
1935	20.1	52	1964	5.2	295

\* Including allowance for inventory adjustment.

This is admittedly a rough and ready way to see that profits and unemployment are negatively related. But it does convey the proper impression.

This concern with the costs of unemployment, coupled with the knowledge that there were steps which could be taken to reduce unemployment, led to the Employment Act of 1946. With this act we charged the federal government with the responsibility of augmenting the private economy when unemployment became excessive. Now, notice, this charge grew out of a value judgment and this value judgment was that we preferred to avoid high rates of unemployment, presumably because the cost of such unemployment was deemed excessive.

## GNP AS A MEASURE OF ECONOMIC ACTIVITY

Given that there might be circumstances in which the economy could operate at less than full employment levels for long periods of time and given that we have made the judgment that we wish to avoid such unemployment, it is useful to have measures on which we can focus while discussing the level of economic activity. The most widely known measure of economic activity is Gross National Product, GNP. GNP is the market value of all goods and services produced for final use during the year.<sup>1</sup>

What happens to GNP if unemployment is high? First, GNP is lower than it would be if unemployment were lower and, second, GNP does not grow as fast as it would if unemployment were lower. (GNP can grow through price increases. That is, even if the same quantity of goods and services were produced in one year as in the previous year, GNP could be larger in the second year because of price increases.)

Our GNP has been increasing at the rate of about 5 percent per year since 1960. This increase has been due to an increase in the quantity of goods and services and to price increases. Prices, as measured by the Consumer Price Index, increased about 1 1/3 percent per year over the period 1959-64 and about 2 percent in 1965. It is also true, however, that the quality of goods and services we buy has improved. So, a part of the apparent price rise can be attributed to quality changes. These two phenomena, price increases and quality increases, are quite difficult to untangle.

The Consumer Price Index is computed by sending people out with a shopping list to buy various goods and services. Included on the list will be groceries, clothing, housing, amusement, medical care, transportation, etc. After the shopper has bought the listed items, the total price is established and compared with the total price of the same list of goods in the base period. The base period for the present index is 1957-59. The index stood at 111 in December 1965.

Suppose the shoppers went out in 1958 to buy the listed goods and suppose the total cost was \$1,000. Then the same "basket" of items cost \$1,100 in December 1965. Many people seem to think we've had more inflation than just 11 percent since about 1958. But notice that, when quality changes are considered, we've had less than 11 percent inflation over the 7-year span.

We can again use the circular flow diagram to describe the U. S. economy in 1964. According to estimates published in the Economic Report of the President, 1965, the relevant values are approximated in fig. 3.

GNP can be found either by looking at the sum of consumption (C in the diagram), investment (I) and government expenditures (G)—total spending—or by adding consumption, savings (S) and taxes (T)—which equals total receipts by households (H). Thus, total spending on goods and services equals total payments to factors used in production of goods and services.

This last idea is important. It is also a source of con-

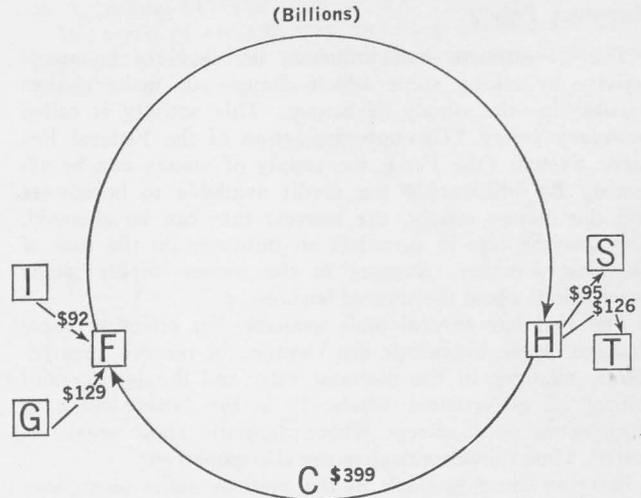


Fig. 3. GNP in 1964.

fusion. The confusion arises because the terms appearing in the circular flow diagram are used in two ways.

In one sense, it must be the case that payments to factors—the income receipts of the households—must be equal to total spending—the receipts of the firms (F in fig. 3). This is a result of the way in which the terms are defined. With these definitions, the circular flow cannot change. It must stay at one rate.

The terms are used in a second sense, however. They describe not what finally happens but what the economic actors plan to do if certain other events take place. Planned savings, for example, are contingent on income. If income reaches a particular level, then households will plan to save a particular amount. Should their plans be disappointed, they will take steps to try to achieve their plans. It is because what is achieved may not be in accord with what is planned that the income stream contracts to less than full employment levels or expands toward full employment.

In any case, we have GNP as a measure of the level of economic activity—when economic activity increases, GNP increases. It is now time to consider some of the ways in which GNP can be influenced.

### INFLUENCING THE LEVEL OF ECONOMIC ACTIVITY

Our purpose here is to discuss some of the ways in which government or private spending can influence the level of economic activity through the economic system. We're ready to do this now that we've discussed the need for an economic system, the possibility that the system will not always operate at full employment levels, and noting that the nation has made the value judgment that the government should augment the private economy when we do not have full employment. (By full employment, we don't mean 100 percent employed but, say, 96 percent employed.) Bear in mind that there is no law of nature decreeing that we should have full employment. We have simply made the judgment that this is what we want. We can, if we choose, change our minds.

We can use the circular flow mechanism to point out how the actors can exert significant influence on the GNP. Let us discuss the two main avenues of influence available to the government.

<sup>1</sup> Actually "all goods and services" is somewhat too strong, as some goods and services are not counted—the services of a housewife, for example. With a few exceptions, however, all goods and services are included in GNP. We should make one other point. In computing GNP, we try to avoid double counting. We don't count the wheat and the flour and the bread—just the bread. The idea is to add up the value of goods and services produced for final use.

## Monetary Policy

The government can influence the level of economic activity by taking steps which change—or make change possible in—the supply of money. This activity is called *monetary policy*. Through the action of the Federal Reserve System (the Fed), the supply of money can be affected. By influencing the credit available to borrowers and the money supply, the interest rate can be changed. The interest rate in turn has an influence on the rate of spending. Further, changes in the money supply shape expectations about the state of business.

The Fed has several tools available for effecting these changes. Most important are changes in reserve requirements, changes in the discount rate, and the buying and selling of government bonds. It is the latter which is most often used, except where dramatic steps seem required. Then the other devices are also employed.

Imagine there is slack in the system—some unemployment and a low rate of growth. Under these circumstances, the Fed would become a net buyer of government bonds, pushing up bond prices and lowering interest rates. Firms, seeing a decline in interest rates and sensing an easy money policy on the part of lenders, would, it is hoped, be induced by the lower rates of interest and greater availability of funds to borrow money in order to invest in new equipment, buildings or inventory. At the same time, the lower rates of interest should encourage more consumption spending, because installment rates would decline.

In terms of the circular flow diagram, these changes would constitute an additional injection into the income stream, thereby stimulating the economy and reducing the level of unemployment. Should there be an inflation, then a counter-policy by the Fed would be in order. The effort would be to reduce the quantity of money and increase the interest rate and thereby cause a decrease in injections into the circular flow.

According to many economists, monetary policy is more effective in retarding an inflation than in increasing employment.

## Fiscal Policy

The other main tool available to the government is *fiscal policy*. Fiscal policy involves changes in the receipts or expenditures of government. We'll limit discussion here to fiscal policy in its most elementary form and consider only deficits, surpluses and a balanced budget. In terms of the circular-flow diagram, a balanced budget is a situation in which leakages into taxes are exactly equal to injections from government expenditures. When the government runs a deficit, the injections exceed the leakages and the level of economic activity tends to increase. The reverse holds true with a surplus.

Suppose the economy is operating with high levels of unemployment and the government decides to run a deficit. (In point of fact, the deficit may be forced on the government as declining tax receipts resulting from declining incomes fall behind expenditure commitments. This development contributed substantially to the so-called Eisenhower deficit of 1958.) The government can run a deficit by reducing taxes while maintaining expenditures or by increasing expenditures while maintaining tax receipts.

Long arguments have been advanced in favor of each of the two "pure" methods. Those who favor the former assert that tax cuts can be more rapidly effected than

large-scale increases in spending, hence will have an impact sooner. Further, they argue, this leaves the allocation in private hands rather than in the public domain, since the increased expenditures come from individual consumers and firms.

Supporters of the other program argue that the tax reductions may simply lead to increased savings—another leakage—and not stimulate the economy at all. The recent large deficit—one of the first planned deficits in our history—was accomplished by reducing taxes. This apparently led to, or at least was accompanied by, a sizable increase in GNP. The effect on employment was not as dramatic.

We can also point to the effect on economic activity brought on by changes in the private sector. As in our earlier example, an increase in saving might occur—brought on, perhaps, by growing apprehension about the future. Should this happen, the level of economic activity would decline as the dollar flow to firms from consumption expenditures was reduced. Then less would go back to households as payments to factors, leading to another decline in consumption expenditures.

Alternatively, we could think of, say, an increase in investment. This might arise because of growing optimism by businessmen about the future state of business. It is likely that this happened in 1964. Firms, planning on increased expenditures by consumers because of the tax cut, increased gross investment by 7 percent over 1963. (Gross investment in 1963 was 4 percent higher than in 1962.) Again, the circular flow would be increased by this act.

In brief, then, changes in savings, investments, taxes, government expenditures or consumption can lead to changes in the level of economic activity. These changes can be viewed as occurring in approximately the same way in terms of the circular-flow diagram.

Were the economy operating at full employment levels and suffering from some inflation, the opposite fiscal policy might be employed. Under these circumstances, the government would seek to drain some of the spending from the circular flow by running a surplus.

Before continuing, remember that we are dealing with a simple economic model. Among the complications omitted here are interactions between fiscal policy and investment. Firms might, for example, become so apprehensive as a result of the fiscal policy being followed by government that they would reduce investment. This would offset the effect of the government's action and tend to nullify its impact. Such complications are not considered here. (Notice that investment has also increased recently, suggesting that the behavior of firms is more heavily influenced by anticipated profits than by apprehension brought on by an expansionary fiscal policy.)

## The Multiplier Effect

What about the total effect of any injection? Suppose, for example, that the government increased its expenditures by \$1 billion or that investment increased \$1 billion. Would GNP increase by only \$1 billion?

To see what would develop, let's assume that out of each extra dollar in income, the households save 8 cents and the government takes 20 cents in taxes. Then, with a \$1 billion increase, table 2 shows what might unfold.

If the economy has the characteristics assumed, then the total new spending generated will be \$3,571,000,000. This effect, where a newly injected dollar of spending will

Table 2. The Multiplier Effect.

Round	Expenditures	Household income	Savings	Taxes	Consumption
(Millions of dollars)					
1	1,000	1,000	80	200	720
2	720	720	58	144	518
3	518	518	41	103	374
4	374	374	30	75	269
	3,571	3,571	286	714	

lead to an increase of more than one dollar in total spending, is called the *multiplier effect*.

We could portray this in terms of the circular flow. Consider just the changes in the various accounts which arise from an injection of \$1 billion from investment.

In fig. 4 the \$1 billion is flowing to the firms in exchange for new equipment, buildings and inventories. The firms, in turn, pass this on to the households in the form of wages, rents, profits and interests. Imagine a counter—a GNP counter—at A. It has just ticked off \$1 billion.

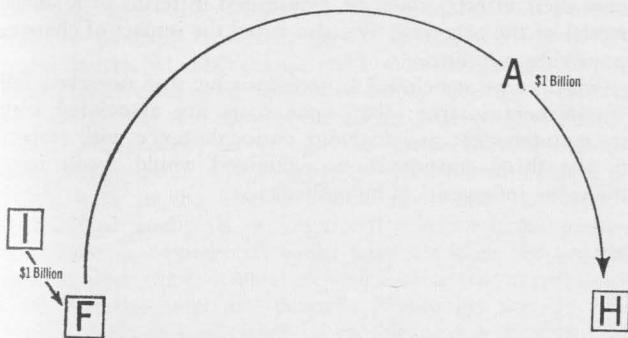


Fig. 4.

Now the households have the additional \$1 billion. They send \$200 million to taxes, \$80 million to savings, and \$720 million back to the firms for consumption expenditures, as in fig. 5. The firms receive the \$720 million in exchange for goods and services and send the \$720 million back to households as wages, rents, profits and interest in payment for the factors used in fabricating the goods and services. Then the \$720 million goes by the counter

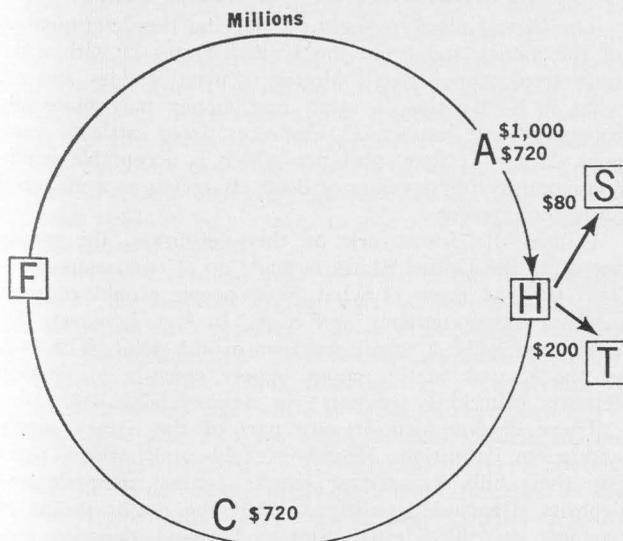


Fig. 5.

at A, making \$1,000 million + \$720 million by the counter.

We could go on with this, as in fig. 6 where the Roman numerals identify all transactions occurring in the same round.

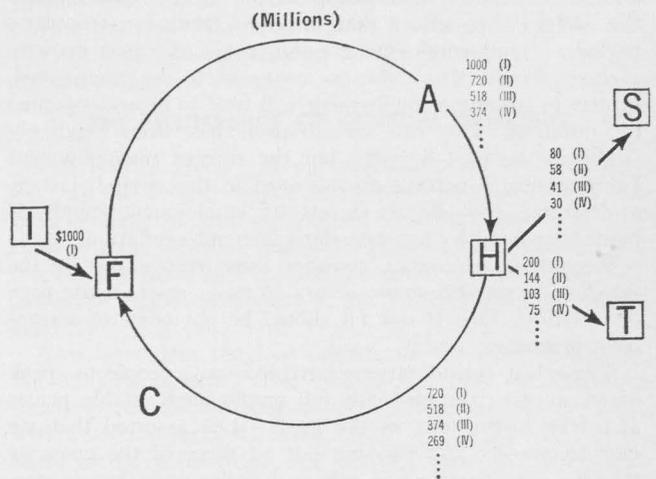


Fig. 6.

This scheme, with its GNP counter, may make it easier to conceptualize the multiplier. In essence, each time the dollars go around the economy, some leak out into savings and taxes. Over time, the leakages will reduce the flow caused by the new injection to zero, but only after—in this case—some \$3,571,000,000 has gone by the counter. (Adding the numbers at A in fig. 6 brings us to \$2,612,000,000 after only four rounds.) Suppose that we had new injections of this kind in every period. Then the income stream would be larger and would grow over time to the point where \$3,571,000,000 was coming by the counter on every turn.

Professional economists have given considerable attention to the absolute size of the multiplier in our economy. Although agreement has not been reached, it is widely acknowledged that the multiplier is larger than 1. Thus, a deficit will induce additional spending so that the total change in spending will exceed the deficit. Notice that the total leakages, \$286 million to savings plus \$714 million to taxes, add to the original injection of \$1,000 million in table 2. This is, not surprisingly, a condition which must be met in the economy: namely, either that desired injections must equal desired leakages or that forces will be set in motion which will bring on that equality.

### Cost of Policies

We have, then, policies open to the government for influencing the level of economic activity. From our discussion, it can be seen that even a balanced budget is a policy. Implicit in the balanced budget is a willingness to accept the level of unemployment and the rate of inflation.

But, before moving on to the next topic, let's consider the costs which may be associated with these policies.

It is apparent that government deficits add to the size of the federal debt. Does this have any undesirable consequences? It has been demonstrated that most of the fears associated with a growing federal debt are not well-founded. Still, there is at least one cost which must be faced. This grows out of the taxes necessary to pay interest on the debt. To the extent that these taxes diminish

the effort expended by the members of the national community, real output is lower than without the debt.

More serious for some citizens is the relation between the level of employment and the rate of inflation. An examination of this relationship in the United States since the early 1920's shows that inflation tends to accompany periods of full employment and periods of rapid growth. Hence, should this relation continue to be manifested, efforts to stimulate employment will tend to be accompanied by inflation. The rate of inflation has been relatively slight in the past 8 years, but the rate of unemployment has exceeded 5 percent during most of this period. Hence, a desirable end—higher levels of employment—tends to be accompanied by a not-so-desirable end—inflation.

We might, of course, consider some restrictions on the freedom of our economic actors so as to restrain the pace of inflation. This is not (it should be obvious) an attractive alternative.

These last considerations have led some people to speak of an uneasy triangle with full employment, stable prices and free institutions as the goals. It is asserted that we can accomplish any two but not all three of the goals or that we can accept a mix which includes some loss in one, two or all three areas. Whatever the choice, it again becomes a value judgment. The outcome will depend on how heavily we weigh each of the goals.

### SUMMARY

We have, in a superficial way, considered a variety

of issues. First, we established the need for an economic system. This system must provide answers to three questions: What will be provided? How will factors of production be organized? How will output be distributed? The questions arise because of the fundamental economic problem—scarce resources relative to wants.

We then considered whether or not full employment would necessarily be achieved by the market mechanism, unaided by government, and presented some of the observations made by Keynes in his argument that market forces were insufficient to maintain full employment or that reliance on market forces alone would imply long periods of unemployment while the economy returned to full employment. We went on to assert that establishing the goal of full employment requires a value judgment and that the U. S. Congress, reflecting this value judgment, has charged the federal administration to stimulate the economy when unemployment is high.

We then examined two devices, monetary and fiscal policy, which the administration can use to stimulate the economy; how these policies might be implemented; and how their effects would be manifested in terms of a simple model of the economy. We also noted the impact of changes in private spending.

Finally, we concluded by recognizing that not even full employment is free; that some costs are associated with its maintenance; and that our national stance with respect to the three considerations examined would result from the value judgments of individuals.

## 2. Monetary Policy and Economic Stability

Dudley G. Lockett\*

Monetary policy is one of the primary methods used for promoting economic stability. While it is probably not so powerful a tool as fiscal policy, it is nevertheless capable of exerting a profound and subtle effect on the level of economic activity. The purpose of this paper is to sketch in very broad terms the channels through which monetary policy operates.

To preview the matter briefly, monetary policy influences levels of income, employment and prices by changing the spending behavior of individuals and business firms. It does this by changing the money supply—making it larger or smaller—and hence influencing the total amount of spending in the country. The ultimate decision-maker in this series of events is the Federal Reserve System. The connection, however, between the decisions of Federal Reserve officials and the decisions of spending units is complex. There is a lengthy chain of linkages between the two points.

Our first task is to see how the money supply is determined in the United States, and then to establish the relationship between the money supply and the Federal Reserve System. Having done this, we may then consider

the relationship between the money supply and the spending decisions of households and business firms.

### THE MECHANICS OF THE MONEY SUPPLY

The logical place to begin considering the determination of the money supply in the United States is with a definition of money itself. Money is what it does and not what it is. By this, I mean that money may physically consist of any number of substances, from cattle to wampum. Money is that substance which is acceptable within a community for payment of debts. It serves as a universal means of payment.

Within the framework of this definition, the money supply in the United States is made up of two components. The first of these is what most people would consider money: paper currency and coins. In fact, however, this constitutes only a small fraction of the total. The bulk of the United States money supply consists of demand deposits (checking accounts) in commercial banks.

These demand deposits are part of the money supply within our definition: Most households and business firms pay their bills by writing checks against their demand deposits. Demand deposits are thus the major means of payment in the United States. Demand deposits plus currency and coins make up the money supply.

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The supply of currency and coins in the economy is determined by the public. If the public wishes to hold a larger part of its total money in this form (as it does, for example, around Christmas time) then the monetary authorities expand this component of the money supply. No attempt is made to fix coin and currency at some predetermined level.

That part of the money supply which is determined by the monetary authorities is the total demand deposit component. To understand how the total amount of demand deposits in the United States is fixed by the Federal Reserve System, let's look at our banking system.

### The Banking System

The United States has a dual banking system: Some commercial banks are chartered by the federal government and some are chartered by state governments. All federal banks must belong to the Federal Reserve System; state chartered banks may or may not belong to the Federal Reserve—the matter is optional so far as they are concerned.

There are about 14,000 banks in the United States and, of these, only about 5,000 are members of the Federal Reserve System. However, these 5,000 banks include all major banks. Member banks hold some 85 percent of the total dollar volume of demand deposit. The legal aspects of member and non-member banks are somewhat different, but I will proceed as though the entire banking system were in fact under direct control of the Federal Reserve.

We have in the United States, as in all Western industrialized countries, a fractional reserve banking system. That is, commercial banks need not keep 100 percent cash against their demand deposits. If a customer brings \$100 into the bank and deposits it into his account, the bank is not required either by custom or law to keep that \$100 in its vaults against the possibility that the customer may wish to withdraw that deposit at some future date. The bank must keep only a *fraction* of this deposit in the form of cash on hand or reserves. The remainder may be lent to individual customers, used to purchase government securities, or used to acquire any of a variety of assets.

There are a number of reasons why the bank does not need to hold 100 percent cash reserves. In the first place, the bank knows from experience that not all of its customers are going to withdraw all of their accounts at the same time. While some customers may withdraw some of their accounts in full, other customers may leave theirs untouched. It is unlikely that the bank will have withdrawals of more than a tiny fraction of its total deposits on any given day. Moreover, except for seasonal factors, the bank can usually count on an in-flow of cash which will tend to offset deposit withdrawals. Consequently, the bank needs to be prepared to pay only a small fraction of these demand deposits.

With this fractional reserve system, the demand deposits of the banking system may be several times the amount of its cash reserves. If, for example, the banking system has \$1 billion of reserves, it may have \$5 billion of demand deposits. Bank reserves vary, but remain in some more or less fixed ratio to the total deposits.

There are thus two ways the demand deposits in the country can be altered by the Federal Reserve System. First, the "Fed" may supply additional reserves to the banks. If the ratio of reserves to total demand deposits is constant, then an increase in reserves will increase demand deposits (and hence the money supply) by the

reciprocal of the ratio. Thus a ratio of reserves to deposits of 1:5 implies an increase of \$5 in deposits for every additional \$1 of reserves.

The second method of changing the money supply is to alter the ratio of reserves to total deposits. If this ratio can be changed (say from 1:5 to 1:10), existing reserves can be used by the banking system to support a larger amount of demand deposits.

### THE MECHANICS OF CENTRAL BANKING

The central feature of our discussion so far is that so long as the central bank can in some fashion control the reserve base of the commercial banking system, it can control total demand deposits. This in turn means that the central bank can control the total money supply, because the major component of the money supply is demand deposits.

Now how does the Fed operate on the reserve base of the banking system? The Fed is not able to determine precisely the total money supply; but it can fix the total within narrow enough limits.

As we have indicated, the methods used by the Federal Reserve to control the reserve base fall into two main categories: those which alter the dollar volume of bank reserves, and those which alter the ratio between bank reserves and demand deposits.

#### Altering Reserve Ratios

Taking the last first, the Federal Reserve in 1933 was given authority to establish, within statutory limits, the legal reserves of member banks. For "country banks," the Federal Reserve may establish reserve requirements between 7 and 14 percent of demand deposits; for "city banks," the Fed may establish reserve requirements between 10 and 20 percent. An increase in reserve requirements decreases the ratio of reserves to demand deposits and, hence, in the absence of any increase in the amount of reserves, has the effect of decreasing total money in the economy. A decrease in reserve requirements increases the reserve ratio and results in an increase in the total money supply.

However, the Federal Reserve seldom alters the reserve requirement ratio. The main difficulty with this method is that it is not capable of those finer adjustments usually felt to be necessary for the smooth operation of monetary policy. The Federal Reserve System usually doesn't alter reserve requirements by less than one-half of one percent in either direction. This means that changes in the reserve ratio are made in substantial increments. This instrument of monetary policy is thus something of a blunt instrument and as such is seldom used.

#### Discounting

The Federal Reserve can also use its discount mechanism. Simply put, the discount mechanism is member bank borrowing from the Federal Reserve. Just as an individual will borrow from a commercial bank, so commercial banks may borrow from the Federal Reserve. The Fed is, in this sense, said to be a bankers' bank.

Naturally, the Federal Reserve charges its borrowers interest. By raising or lowering its rate of interest, the Federal Reserve can discourage or encourage member bank borrowing. When member banks borrow, they increase the total reserves of the banking system; contrariwise, when member banks repay borrowings, total bank

reserves are decreased. Thus, by altering the rate of interest which the banks must pay in order to get loans, the Fed can influence total reserves of the banking system.

But this is still not the main method used to control the money supply. The difficulty here is that the amounts involved are small relative to the total reserve base of the commercial banking system. For example, total bank borrowings from the Federal Reserve are now about \$650 million. Total reserves of the banking system are approximately \$23 billion. Moreover, the Federal Reserve does not have absolute control over member bank borrowings. The Fed may influence the desire of the banks to borrow by changing the discount rate, but it cannot precisely predict borrowings. Consequently, this instrument also is incapable of making the precise adjustments needed to effectuate monetary policy.

### **Open Market Operations**

The third, and main, instrument used by the Federal Reserve to control the reserve base of the banking system is open market operations, whereby the Fed buys or sells government securities.

If the Federal Reserve wishes to increase reserves, it may buy government securities in the open market. The Fed pays for these securities by issuing liabilities on itself. These liabilities will eventually take the form of reserves in the commercial banking system. In the simplest case, e.g., if the Federal Reserve buys a treasury bill from a commercial bank, it could pay the bank by increasing its reserves. The bank receiving these additional reserves would then be able, together with other banks in the system, to expand the total demand deposits by some multiple of that amount.

The process also works in reverse. If the Federal Reserve wishes to decrease the reserve base of the banking system, it may sell government securities. The bank pays the Federal Reserve for these securities by decreasing its reserves. The monetary authorities can thus increase or decrease bank reserves by buying or selling government securities on the open market. Hence the phrase "open market operations."

Note that through open market operations the Federal Reserve can sell or buy any amount of government securities. It is entirely up to the Fed how much the reserve base of the banking system is altered.

To summarize at this point, we have established two connections between the Federal Reserve and the total money supply. The first is between the reserve base of the commercial banking system and Federal Reserve buying and selling activities (open market operations) in the government securities market. The second connection is between the reserve base of the commercial banking system and the total volume of the demand deposits in the economy. When the Federal Reserve buys government securities, it increases the reserves of the commercial banking system; this increase in reserves in turn results in a multiple expansion of demand deposits. The contrary is also true. Consequently, the Federal Reserve can determine the total money supply.

Next, let's turn to the relationship between changes in the money supply and the various economic goals of the nation. In other words, having established that the Federal Reserve can change the money supply, we now wish to know what role the money supply plays in the overall functioning of the economy.

## **THE EFFECTS OF MONETARY POLICY**

### **Monetary Goals**

Generally speaking, the goals of monetary policy are either defensive or active. The defensive goals are essentially short-run objectives. One defensive goal is stability in the government securities market. No useful purpose is served by excessively volatile prices in the market, and if it should appear (as it did in 1958, for example) that a panic situation is developing, the Federal Reserve will take steps to prevent this through its open market activities.

Another defensive goal is the prevention of widespread banking failures, although this is not a particularly operative one since the advent of the Federal Deposit Insurance Corporation.

In terms of these defensive goals, the Federal Reserve has been most effective in recent years. Most of the short-run, limited goals of this nature have been achieved. It is, rather, in the active goals of the Federal Reserve that questions arise about the effectiveness of monetary policy.

The active goals of the Federal Reserve are generally considered to be full employment, price stability, equilibrium in the balance of payments, and economic growth. There is probably little that monetary policy can do to promote economic growth (other than trying to maintain satisfactory levels of the other three goals). So we will ignore this as a primary goal.

There are many problems of definition of full employment, price stability, and equilibrium in the balance of payments. We won't go into all aspects of these various goals. Suffice it to say that full employment generally means unemployment of about 3 to 4 percent. Price stability means only that some index of prices (the Consumer Price Index, or the Wholesale Price Index) remains tolerably stable from year to year. There are several definitions for equilibrium in the balance of payments. We can summarize by saying that equilibrium in the balance of payments means that pressures to alter the exchange value of the dollar vis-à-vis other currencies are at a minimum.

### **Conflicts in Goals**

These goals are not always fully compatible one with another. The most obvious conflict is between full employment and price stability. With high employment, there is likely to be some inflation. Similarly, a period of deficit in the balance of payments coupled with widespread unemployment in the domestic economy also generates a paradox for the central bank: To correct the unemployment, the central bank should conduct an easy money policy, but the proper central banking action for a payment deficit is tight money.

The central bank must therefore establish some system of priorities by which it is willing to tolerate a certain amount of instability in one goal in order to achieve some target level of another goal. Thus, for example, the Federal Reserve System might be willing to tolerate a modest inflation in order to achieve a 4 percent unemployment rate. The priorities chosen by the Federal Reserve should probably not be carried to the extreme where its priorities conflict with the political party in power.

Given that the Federal Reserve has some system of priorities, properly arrived at and generally agreed upon, how does control over the money supply enable it to achieve

the various goals? The relationship between the money supply and the various economic goals is the special problem of monetary theory.

Monetary theory attempts to set up a stylized model of the economy. This model indicates channels which change the money supply and the effect of these changes on total economic activity. The precise form of monetary theory has been debated for several hundred years. Without entering into the debate at this time, let me indicate what I believe to be the majority opinion in the economics profession.

An increase in money, it is generally believed, will change both the price and the availability of credit. When the Federal Reserve increases the reserve base of the banking system, the banks will have a tendency to lower interest rates and to make the terms on loans less stringent. The lower rate of interest, together with the various other non-price features of the loan (for example, longer maturity, less collateral, smaller compensating balances), will encourage businessmen to make capital investments. These capital investments will stimulate the economy. That is, the effect of such capital investments is not limited to the investment expenditures themselves, but rather reverberates throughout the economy in a multiplier process which eventually leads to higher levels of income and employment.

Thus, an increase in the money supply (an "easy money" policy) will ultimately increase income and employment, and a decrease in the money supply (a "tight money" policy) will decrease income and the general price level.

### CONCLUSION

Here is the entire process of monetary policy: The Federal Reserve buys a government security; this ex-

pands the reserves of the banking system; this in turn increases the total amount of demand deposits and hence the money supply; the increase in the money supply makes credit terms easier and encourages investment spending.

This entire chain of events can be broken at any point. Although the Federal Reserve may buy a government security, the banking system may choose not to expand demand deposits, but instead simply hold excess reserves. Or, again, the expanded money supply, while it may lead to lower interest rates and easier credit terms, may not be enough to stimulate businessmen to increase investment.

Largely because of these weaknesses in the various linkages between the open market operations of the Fed and the ultimate decisions of businessmen to invest, most observers believe that monetary policy is a less powerful weapon for economic stability than is fiscal policy. The connection between government expenditures and total expenditures is immediate and direct; the connection between the open market operations of the Federal Reserve and business investment decisions is indirect.

But the weakness of monetary policy may also be its strength. Its very indirectness makes it considerably more flexible than fiscal policy. All the Federal Reserve does is buy and sell government securities. This apparently harmless activity hurts almost no one in the economy. Yet, a total credit situation may be set up which may eventually influence business decisions.

In the long run, monetary policy may not be such a powerful weapon for economic stabilization as is fiscal policy, but it does have advantages which are peculiarly its own. In terms of flexibility, niceties of adjustment, and its ability to blend into the background of a free enterprise economy, monetary policy is one of the best methods yet devised to stabilize the economy.

## 3. Determinants of National Economic Growth

Erik Thorbecke\*

This analysis of the major determinants of economic growth is divided into three parts. First, the circular flow of income and money is used to show the interdependence existing between economic variables. Second, an attempt is made at explaining the theory and the determinants of economic growth, and the role of investment as a conditioning influence in economic growth. The final part is devoted to a general discussion of the major goals of economic policy in the United States as well as in the major mature economies, and the conflicts which may arise between these goals.

Furthermore, an attempt is made at presenting a few policies which can be used to attain these goals, showing the conflicts which may exist between economic growth and other goals of economic policy such as full employment and price stability.

### CIRCULAR FLOW OF MONEY

The circular flow of money may be presented by dividing the economy into three sectors. The first sector

is the production sector, which would include all the firms in the economy. The second sector would be the consumption sector, incorporating all the households in the economy. The last sector might be called the financial sector, since it includes all the financial intermediaries such as savings and loan associations, commercial and savings banks, life insurance companies and all other intermediaries which channel savings into investments (see fig. 1).

National income flows from the firms to the households. It consists of wages, salaries, interest and rent payments and profits. It can be split into two components: consumption, which is the part of income going from the households to the firms in payment for goods and services, and savings, which is that part of the total income which is not consumed and which goes from the households to the financial intermediaries.

Thus, one branch of national income is converted into savings and the other branch into consumption. The financial intermediaries, in turn, make available investments to firms which are used to add to their productive capacity. This flow of investment gets back into the money stream and national income, to the extent that the money flow is converted into real output.

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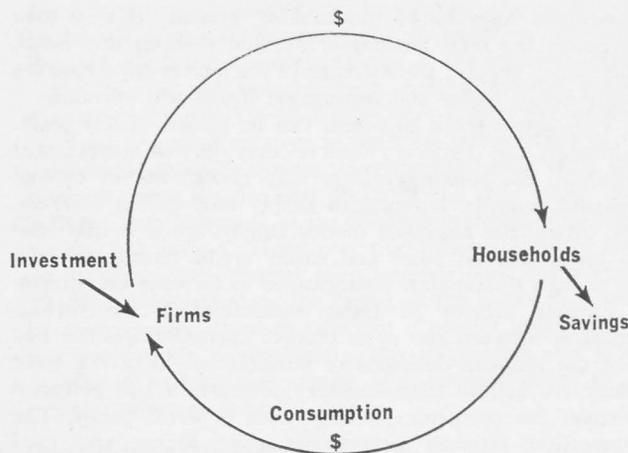


Fig. 1

This framework is an extremely simple representation of reality. It can, of course, be extended to bring out explicitly the government and foreign trade spheres and many others as well. For instance, if the foreign sector were added, a flow of money would "leak" out of the consumption sphere to buy imports and an incoming stream of money would enter the production sphere as payment for merchandise exports. The circular flow—as described here—provides us with a good starting point to show the major determinants of economic growth.

### ECONOMIC GROWTH

#### Demand

Starting from the demand side, the one major determinant of economic growth is the proportion of national income which is saved as opposed to the proportion which is consumed. Thus, one relationship which can be expressed in simple terms, and which should be kept in mind in the context of economic growth, is that providing the part of income respectively saved and consumed.

Let "s" be the marginal and average propensity to save, i.e., the ratio of savings (investment) to national income. Assume that all savings are channeled into investment so that  $S = I$ , and that s is given by the ratio of Gross Investment to Gross National Product, i.e.,  $s = \frac{S}{Y} = \frac{I}{Y}$ .

In the United States this last ratio has typically been on the order of about 18 percent. In other countries, such as Peru, for instance, the ratio of Gross Investment to GNP is substantially higher, amounting to about 26 percent. But in the United States, one can think in terms of 15 to 20 percent as the rough order of magnitude of the Gross Investment ratio.

Economic growth will occur only if a certain proportion of national income is saved (not consumed) and then channeled into investment in order to produce capital goods. After all, if all of the national income were to go into consumption, there would be no allowance made for an increase in the capacity to produce. As a result, there might be a lack of savings to produce the increased capacity necessary for economic growth. Thus, the demand side is important because savings have to be generated as one requirement for growth.

#### Output

Now, besides the demand side, we must look at the

output or productive capacity side. What happens to the savings when they are converted into investment? This investment is going to be turned into physical or capital equipment and is going to permit an increase in national income.

The question is: How much will national income increase as a result of investment? The relevant relationship here is the so-called output-capital ratio, which represents the increase in national income or output resulting from a dollar's worth of investment.

Let  $\Delta Y$  represent the increase in output from a given amount of investment. The output-capital ratio can be expressed as the increase in national income over investment, i.e.,  $\sigma = \frac{\Delta Y}{I}$ .

In other words,  $\sigma$  is a measure of the productivity of investment; the higher  $\sigma$ , the more productive the investment. In the United States, the output-capital ratio might be 25 percent—one dollar's worth of additional capital capacity (investment) will lead every year to an increase of about 25 cents in output. This can be expressed, alternatively, by saying that the capital-output ratio is 4 to 1. The underlying idea is that the increase in national income depends on the productivity of investment.

#### Rate of Growth of GNP

The two major relationships relating savings (investment) to national income and the addition in income to investment can be used together to derive the rate of growth of national income. Simple algebra shows that the product of the two ratios is equal to the growth rate of GNP:

*Demand Side*

$$s = \frac{I}{Y}$$

*Productivity Side*

$$\sigma = \frac{\Delta Y}{I}$$

$$\text{thus: } s \times \sigma = \frac{I}{Y} \times \frac{\Delta Y}{I} = \frac{\Delta Y}{Y} = \text{rate of growth of GNP}$$

By canceling the I's in the above expression, we see that the major determinants of the rate of growth of GNP—change of GNP over GNP—are the propensity to save and the output-capital ratio. The first conclusion reached is abstract. But at the same time, it is useful from the standpoint of studying economic growth.

Let's now work through an example to illustrate the above concepts, using rounded figures for the period 1962-63. Assume that GNP in the United States was \$560 billion in 1962 and \$588 billion in 1963. Gross investment in 1962 can be estimated at about \$112 billion, if public investment is included. Thus:

$$\begin{aligned} \text{GNP}_{62} &= \$560 \text{ billion} \\ \text{GNP}_{63} &= \$588 \text{ billion} \\ \Delta \text{GNP} &= \$28 \text{ billion} \\ I_{62} &= \$112 \text{ billion} \end{aligned}$$

Substituting these values in the growth rate relationship:

$$\frac{28}{560} = \frac{112}{560} \times \frac{28}{112} \text{ or:}$$

$$5\% = 20\% \times 25\%$$

$$\left( \frac{\Delta Y}{Y} = s \times \sigma \right)$$

These figures show that, in 1962, the propensity to save, or investment ratio, in the United States was equal to 20 percent, while the incremental output-capital ratio, the measure of the productivity of investment, was equal to 25 percent. The product of these two gives us the growth rate in the United States in 1962-63, 5 percent. The rate of growth of GNP is a function of the ratios  $s$  and  $\sigma$ . If, for instance, the United States economy allocated 25 percent of its output to gross investment instead of 20 percent, while at the same time assuming the same productivity of investment, the rate of growth would be 6.25 percent.

Are these ratios constant internationally and over time? Different ratios are found in different countries. Thus, the investment ratio in an underdeveloped country is usually low. Actually, a whole thesis describing the take-off into sustained growth is based on the changes in the investment ratio over time. This thesis shows that the backward countries may have an investment ratio of the order of 7 to 8 percent or less. Once they start achieving the preconditions for growth, their investment ratios will go up. After these countries have entered the so-called sustained growth period, their investment ratios will have to be at least 15 to 20 percent.

The investment ratio is a basic determinant of economic growth. Centrally planned economies may have an advantage in this area in the sense that the decisions with respect to investment are made neither by the consumers nor by the producers, but by the central planners. The investment ratios of many of the centrally planned economies and the developed Western countries are typically higher in the former. It seems, however, that policy centralization in the centrally planned economies was often accompanied by substantial inefficiencies in the productivity of resources.

### Measuring Economic Growth

The next question we might ask is "How is economic growth measured?" Generally, economic welfare is measured in terms of either per capita or aggregate income.

A definition of economic growth we can use is "an increase in per capita income not accompanied by a worsening in the distribution of income."

The reason for the qualifying clause becomes obvious if we put it into concrete terms. We can think of the theoretical possibility where the income of one individual goes up to infinity, while the income of all other individuals declines, resulting in a rise in per capita income. It would be difficult, in this last case, to say that "economic growth" had taken place. Hence, the qualification requiring no—or, alternatively, tolerating only a minimal—worsening of the income distribution. This qualification is particularly important in the lesser-developed countries where the prevailing (actual) distribution of income tends to be unequal and may act as a brake to economic and social development.

### OTHER ECONOMIC POLICY GOALS

The discussion, so far, has been centered on economic growth, which, as such, is only one of the goals of economic policy. There are other important policy goals which the government takes into account. Some of these other objectives may conflict with economic growth. Therefore, the policy maker must specify all the major objectives quantitatively whenever possible. Among the major goals of economic policy are:

1. *Price stability.* Most people want stable prices. Inflation hurts the fixed-income earners and reduces people's confidence in the home currency.

2. *Full employment.* The U. S. government has been legally obligated to strive for this goal since the passage of the Employment Act in 1946. This act makes it mandatory for the federal government to initiate and pursue policies conducive to the attainment of full employment or, at least, a high level of employment.

3. *Balance of payments equilibrium.* This objective has become important in the last 7 or 8 years. The United States had, until about 1957, few balance of payments difficulties. We were one of the few countries in the world which could afford to formulate and implement policies without regard to their effects on the balance of payments. Since 1957, however, the United States has had serious deficits in her balance of payments. An indication of the extent of the deficit over time can be seen from the decline in our gold reserves from about \$24 billion in 1957 to about \$15 billion in 1965.

4. A final goal is a *fairly equitable income distribution.* This objective does not signify that all individuals should receive the same income, but it does signify that a limit is placed on the degree of unevenness in that distribution. For instance, the people of the United States would not tolerate a situation where 1 percent of the population was getting 50 percent of the national income. Our society has some conception of the kind of income distribution we consider fair.

### The Welfare Function

In a democracy, the government has to initiate policies designed to attempt to achieve the major objectives discussed above, as well as a host of others. Since many objectives may be mutually incompatible—as we will show—and since the attainment of certain objectives may be considered more important than others, the policy maker must be able to express these goals quantitatively in terms of their relative importance.

Technically speaking, we could say that the policy maker tries to maximize a social welfare function. All the policy goals would enter as elements of the welfare function. The relative importance of the objectives could be expressed by stating, for instance, that a 1 percent increase in the rate of growth was analogous from a welfare standpoint to a 1 percent increase in the level of employment, an .8 percent reduction in the price level (to control inflation), an improvement of \$400 million in the deficit in the balance of payments, etc.

In other words, social welfare would remain the same if national income grew by 1 percent while the level of unemployment declined by 1 percent, the other objectives remaining at their previous levels. Alternatively, a 1 percent increase in national income, compensated by a \$400 million increase in the balance of payments deficit, would leave over-all welfare unaffected.

A basic question the policy maker must answer pertains to the relative weights to be attached to the various objectives entering the welfare function. The determination of these weights falls outside the domain of the economist. The economist is a technician who, as such, is neutral; he holds his own values as an individual but not as an economist. The determination of the relative importance of the goals is the proper domain of society.

The policy maker has to be sufficiently sensitive to the values and preferences of the electorate which he represents to accurately reflect the latter in his welfare function.

For instance, society might feel that full employment is such an overriding objective that it is willing to tolerate relatively much inflation and a relatively large deficit in the balance of payments to attain full employment. In this way, the terms-of-trade can be arrived at between the various objectives.

An attempt at specifying quantitatively the social welfare function may, at first thought, appear completely utopian. Yet, a number of such operational exercises have been undertaken in the Netherlands. One of the attempts relied on the interviewing technique to derive major goals and their respective terms-of-trade. Cabinet members, employers, labor union leaders and labor experts were interviewed and their tastes and preferences recorded to specify the welfare function. Different groups revealed different preferences. Labor, for example, considered employment a relatively more important goal than price stability, i.e., labor would be willing to accept a higher rate of inflation in order to have a 1 percent increase in the level of employment than management would. Likewise, labor unions desired a relatively more equal income distribution than did the other groups. The Dutch government has been fairly successful in using this kind of framework to formulate economic policies.

One good example of different goal valuation in the United States was seen in the presidential campaign of 1960. One of the areas of disagreement between Richard Nixon and John Kennedy appeared to be the relative importance of price stability as opposed to economic growth.

Throughout his campaign, Kennedy emphasized the necessity for a higher rate of growth of GNP. As a target, he set a 5 percent growth rate annually. Kennedy was also in favor of stable prices, but he seemed willing to tolerate a mild increase to achieve the high growth rate.

On the other hand, Nixon appeared to attach more importance to price stability. Price stability, fiscal soundness and balanced budget were terms much used by Nixon during his campaign. Nixon advocated the curtailment of inflation—almost at any cost in terms of the level of attainment of other goals.

The theory of economic policy which distinguishes clearly between policy objectives (targets) and policy means (instruments) and which attempts to derive optimum policies to attain the policy goals (i.e., maximize the social welfare function) is itself neutral from a value or political standpoint. If, for instance, society desires a maximum of freedom of enterprise, i.e., a maximum amount of reliance on the price system as opposed to government intervention, this can be incorporated in the welfare function or in the policy model relating the policy means to the objectives.

### Means and Goals

The next question to be examined—after the major objectives and their relative weights have been quantitatively specified—is the relationship which exists between

various policy means and the objectives which they are supposed to help achieve. Often, policy instruments have conflicting effects on different goals. While they help the level of attainment of some goals, they reduce the level of attainment of other targets.

Suppose, for instance, that the Federal Reserve System reduces the rediscount rate and lowers reserve requirements. An immediate effect of these policies would be to increase credit availability. Commercial banks will be willing to lend on easier terms, requesting less collateral and, in general, the economy would undergo an easing of credit.

This would have a beneficial effect on employment as long as there were unused resources available. Businessmen would be able to borrow more; investment in construction and new plants would likely increase; more people would be hired and the level of employment would go up. Thus, the use of the monetary instruments (reserve requirements and rediscount rate) would have a positive impact on the full employment objective.

At the same time, this policy might have some undesirable side effects on other objectives. For instance, aggregate consumption would, normally, increase together with an increase in the level of employment. The newly employed people would start spending the income which they had not previously received. Part of the increase in consumption would be for foreign goods and services. Thus, the total expenditures for imports would increase and the balance of payments deficit would become larger. Hence, the goal of full employment might be in conflict with the objective of equilibrium in the balance of payments, at least if monetary policy were used to achieve the former.

This example can be expanded to show another possible conflict between objectives. The easy money policy would work only as long as excess capacity existed and unused resources were available in the economy. But, clearly, as firms and industries expanded output, they would come closer to operating at full capacity and exhausting the pool of unused resources. Employment would go up, but as full capacity was approached, a further increase in prices could take place only at the expense of a push on prices.

### CONCLUSION

The effects of policies on different objectives are likely to be conflicting. Policy makers are faced with the hard task of trying to simultaneously hit a number of non-complementary targets. A systematic approach to the theory of economic policy will help them design policies which may permit the attainment of the best combinations of objectives, i.e., maximize the social welfare function. This can be done only by weighing the benefits to society resulting from given policies in terms of a higher level of attainment of certain goals (e.g., a 1 percent decline in the percentages of the labor force unemployed) as against the costs of these same policies in reducing the level of given objectives (e.g., a 1 percent increase in the price level, an increase of \$250 million in the deficit of the balance of payments.)

## 4. Technology and Reallocation as They Relate to National Economic Growth

Eber Eldridge\*

In the first paper, Winkelmann stated that our economy is not performing as it could. Unemployment and underemployment of our resources indicate that we have a performance gap. Underemployment of resources also suggests that Gross National Product would be higher with full employment.

I would like to review part of the first paper, because of its relationship to statements that I will make later.

Consider an economy with a fixed number of people—only so much technical knowledge, only so many factories and tools, and a fixed quantity of land, water power and natural resources. Suppose all our resources are thrown into the production of economic goods. There will be a maximum amount of goods that can be produced. The exact amount depends on the resources of the economy in question and the technical efficiency with which the resources are used. Suppose \$5 billion worth of goods is all that can be produced with the existing technology and resources.

At the other extreme, imagine that 100 percent of the society's resources had been devoted instead to the production of services. Let us assume that \$5 billion worth of services could be produced if we were really willing to produce no economic goods at all.

### Production Possibility

These are the two extreme possibilities. In between there are still others. If we are willing to give up some goods, we can have some services. If we are willing to give up some services, we can have some goods. Figure 1 shows a "production possibility curve," giving all the possible combinations of goods and services that could be produced if there were, in fact, a full-employment economy.

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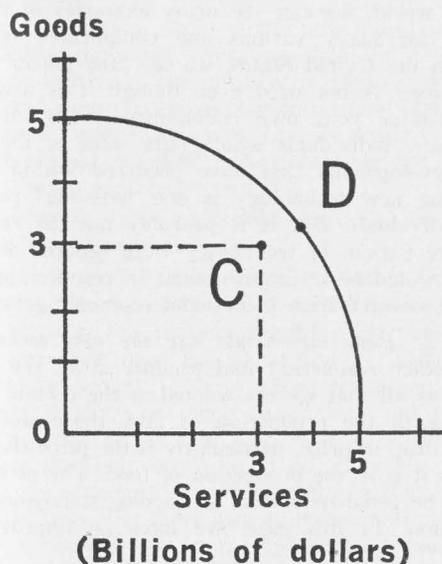


Fig. 1. Production possibility curve.

But what if there were widespread unemployment of resources—idle men, idle land and idle factories? With unemployment, we would not be on the production possibility frontier at all but somewhere inside it, say at C in fig. 1, producing \$3 billion worth of goods and \$3 billion worth of services—a total of \$6 billion worth of goods and services. If we put idle resources to work, we could have more goods and more services. We could move from the C position to the production possibility frontier or D. We would have about \$3.5 billion worth of goods and close to \$3.5 billion worth of services—a total of \$7 billion in all.

In the first paper, we saw that we are not producing up to our possibilities—that we do have unemployment and underemployment of resources. Therefore, one possibility of improving national economic growth, or of increasing the GNP, is to stimulate the economy by increasing the effective demand for goods and services.

Within this context, the circular flow of money diagram was presented. Effective demand for goods and services could be increased by increasing the injections, that is, by increasing private investment or increasing the amount of government spending. An injection into the circular flow would stimulate effective demand.

The second possibility would be to reduce the leakages from the flow. On the household side, this would mean a reduction in the amount of saving or a reduction in taxes. These actions would tend to stimulate effective demand for goods and services and move the position of the economy toward the production possibility frontier.

### Increasing the Capacity to Produce

In this paper, I would like to deal with separate but related questions. If the economy is producing on the production possibility curve, how can the curve be moved outward—or extended? If an economy is producing at capacity, how can this capacity to produce be improved or increased? In other words, national economic growth is concerned with two questions: (1) How do you move an economy that is not operating at capacity closer to its existing capacity? And (2) how can the capacity to produce goods and services be increased over time?

Using an oversimplification, we can say that the various means and methods of increasing the capacity to produce goods and services can be accomplished by (1) increasing the quantity of effective resources or (2) improving the productivity of the existing resources.

Consider the first category, increasing the quantity of effective (i.e. employed) resources. Effective economic resources include natural resources, such as soil, iron deposits, oil deposits, uranium, etc. Finding, discovering or developing more natural resources increases a nation's capacity to produce.

Increasing the quantity or quality of human resources (the productive labor force) also increases a nation's capacity to produce. If the economy is operating with unemployment, adding more workers would not necessarily increase the actual production of goods and services. However, adding to the effective labor force in a fully employed economy does improve a nation's productive capacity.

Manmade resources are a group of resources generally underemphasized. This category includes the nation's assets—its wealth, its capital inventory, its net worth. An increase in the capital inventory would improve the nation's capacity to produce.

The second broad method of improving a nation's growth capacity is to improve the productivity of existing resources. Resource productivity can be improved by technology. Without improvements in technology and increases in the effective quantity of resources, there would be a ceiling on the size of the national income. We would reach this ceiling when existing resources were distributed among alternative uses in the most efficient manner.<sup>1</sup>

The productivity of existing resources can be increased also by shifting resources from low return employments to high return employments. This increases total income and per capita income. National income and per capita income may be increased, as long as the returns to resources in some employments are out of line with what may be earned in other employments. National income increases because the movement of resources to a higher valued use tends to increase the total returns.

A technological innovation has two economic consequences. The first result of a new process or method is to increase the potential output of a given combination, or a given group, of resources. The second consequence is a little more complicated. The technological innovation seldom affects all resources in the same way. One resource is made more productive relative to another resource. As a result, returns to resources in some uses are out of line with those in other uses and a maladjustment is created. Managers of our resources then find it necessary to shift the low return resources to a higher valued use.

In summary, a useful technological innovation will increase the output of a group of resources. However, the technology also creates a maladjustment of resource use and we must shift resources around if we are to fully realize the gains from the improvements. Unless this is done, national income will not rise to the level permitted by resources and technology.

## Two Illustrations

Since the preceding discussion is somewhat abstract, let me give you an illustration involving Iowa agriculture. Only a few years ago, a farm with 160 crop acres was considered large enough to provide one farmer full employment for the year. However, technology in the farming industry has brought about significant and observable change. Today there is abundant evidence that a full employment unit for one man is closer to 320 crop acres, double the size of a few years ago. Consequently, there have been economic pressures on farmers to consolidate the 160-acre units. The net result of these pressures was a decrease of jobs in Iowa farming between 1950 and 1960.

Therefore, the results of technology in the farming industry are as follows: First, a given set of land, labor and capital resources in farming could produce more with the technology than without. Therefore, the productivity of resources used in farming had been increased due to technology. Second, the technology in agriculture has been labor-saving and capital-using. It has been profitable

to use more capital and less labor. The net result of the changing resource values has been larger farms and fewer farmers.

This whole process contributes to economic growth of the nation if the labor removed from the production of food is used for the production of other goods and services and not relegated to the ranks of the unemployed.

We can see the same process in other industries. Technological innovation changes the relative resource returns, thus making it necessary to shift resources from low return to higher return uses.

Perhaps another illustration will emphasize the primary economic considerations relating technological innovation to "improved resource productivity" and national economic growth.

Let us assume a hypothetical industry and, in order to simplify, let's focus on one resource only—labor. In this industry, four men efficiently using a combination of other resources can produce 10 units of product "A." These 10 units are all that the consuming public will purchase at a specified price.

### Case 1

$$2 \text{ men} + (\text{other resources}) = 10A^2$$

We live in a rapidly changing world, and new technology is one of the prime reasons for the change. Now, our hypothetical industry "enjoys" the development of a new technology which makes capital more productive relative to labor. As a result, it becomes "possible" to produce 10A more efficiently by using two men and a combination of other resources.

### Case 2

$$2 \text{ men} + (\text{other resources}) = 10A^2$$

The new technology makes Case 2 possible. However, the mere development of the new innovation does not greatly affect the nation's economic growth. It is the *use* and *adjustment* to the new technology which generate economic forces that are felt throughout the economy.

If Case 2 becomes a reality, all of the producers in this industry will not react in the same way or at the same time to this new development. Here are some possible reactions:

*Reaction 1: Technology could be ignored.* As we look around the world, we can see many examples of unused technology, for many various and complicated reasons. Even within the United States, we can find places where new technology is not used even though it is available. As you examine your own community, I am sure you can find many individuals who ignore some of the technological developments that have occurred within farming. Ignoring new technology is one "possible" reaction of some individuals. But it is probably not the reaction of the entire nation. If technology were ignored and not used, there would be *no* improvement in resource productivity and *no* contribution to national economic growth!

*Reaction 2: Four men could use the new technology (with the other resources) and produce 20A.* We stated that 10A was all that society wanted at the certain price. Therefore, with the production of 20A there would be an extreme drop in price, particularly if the price elasticity was low, as it is in the production of food. The producers might even be penalized (from an income standpoint) for overproduction. In this case, we have an improvement

<sup>1</sup> The economy would be operating on its "production possibility curve" in fig. 1.

<sup>2</sup> For illustrative purposes, we assume a constant 10A consumption level.

in resource productivity and an increase in total production.

*Reaction 3: Four men could use the technology (and the other resources) and produce 10A, but each man would be only 50 percent employed.* Here we have an example of "underemployment" of the labor resource. Even though the resource productivity has been increased, there has been a substantial decrease in the time that the labor resource is being used. Within an industry, this is frequently called "structural underemployment." There has been an increase in resource productivity but no increase in total production. Underemployment has become a problem.

*Reaction 4: Two men could use the new technology (and the other resources) to produce 10A; two men could leave the industry and become unemployed.* In this case, we also have an improvement in resource productivity but no increase in total production. We have introduced a welfare or unemployment problem. There has been no increase (or decrease) in the total product because the original amount has been produced. However, if the resulting unemployment causes additional welfare costs, economic growth would be slightly reduced.

Many fear that massive unemployment will be the result of automation. Others maintain that technological developments ought to be stopped because they contribute to unemployment. This is one of the possible reactions. But if we examine the amount of unemployment since World War II, we can only conclude that there has been no percentage increase in unemployment in the face of tremendous technological advance. One possible reason is that technology also creates new industries, such as the plastic industry, the television industry, the chemical industry and others. While technology tends to eliminate jobs in some industries, it also creates new jobs in other industries.

*Reaction 5: Two men can use the new technology (with the other resources) to produce 10A and two men can shift to producing other goods and services.* This is not unreasonable. It has been happening rapidly in the United States. Reaction 5 is possible because technology also creates new jobs and new industries. Frequently, however, the two men leaving one production line will have to be retrained before they can become proficient in a new industry. In addition, many of the new industries demand higher skills and more education than did the work in the old industries. Consequently, a greater premium is being placed each successive year on training and education of our labor force. Reaction 5 requires greater geographic and occupational mobility! These changes are characteristic of a highly progressive society.

In viewing the above potential reactions, we can make the following observations:

1. *Reaction 5* (where workers shift to other production) is the reaction which contributes most to national economic growth. The reason: Anything the two men produce who shift from the production of "product A" is a gain for society. The two men remaining in the A industry produce as much as all four did previously. Consequently, if the two men who leave the industry produce anything, *anything at all*, it results in an increase in economic growth for the nation. It should be noted here that there was an increase in productivity in the resources used in the "product A" industry: No underemployment problem, no unemployment problem and no increase in production of "product A" resulted

from reaction 5. Therefore, it is reaction 5 that contributes most to national economic growth and produces the fewest economic problems for the society, albeit, there may be some human problems and social problems introduced.

2. *Reaction 3*, "creation of underemployment," is one of the first consequences of the introduction of technology. Technology frequently causes a "structural problem" within an industry. It is important to note that the underemployment problem occurs as a result of new technology. The underemployment reaction would occur regardless of the price of the product. It is a result of technological innovation.

The five reactions just described result from the introduction of new technology into any industry—including the farming industry. If we examine the farming industry in terms of these reactions, we find that people do (1) ignore technology, (2) overproduce, (3) experience underemployment of the labor resource, (4) leave farming for unemployment and (5) leave farming to enter other lines of work.

The farmer's answer to Case 3, creation of underemployment, is to consolidate the neighbor's farm with his own or to somehow increase the size of his operation. The pressures toward farm consolidation would exist regardless of changes in farm prices.

#### Reallocation of Resources

Associated with the discovery of new technology is the shifting of resources by the resource owners and managers to their highest valued use. A combination of technology and shifting gives us our highest national income, our greatest economic growth, and extends our production possibility curve outward.

We are not condemning technology. It is technology that made the growth possible. But technology also sets up the economic pressures which caused the resources to shift. Resources that do not shift in response to these economic pressures will suffer economic penalties.

Rapid development of technological innovation can create structural maladjustments in an economy. As a result, we could have structural unemployment. When some labor is "shifted" out of one employment, it might not be trained, educated or equipped to serve well in another employment. Therefore, individuals may experience structural unemployment unless they receive further training and education.

The consequences of these economic pressures are shown in "The Economic Base of NIAD." (NIAD is short for North Iowa Area Development.) This study shows a declining employment in agriculture for the nine-county area. It shows an increase in nonfarm employment. However, the rapid decline in farm employment between 1950 and 1960 was not completely offset by an increase in nonfarm employment. There was a net decrease of jobs, both farm and nonfarm, between 1950 and 1960.

The economic base of NIAD and rural Iowa is changing in a manner that results in decreasing employment. When the economic base changes in this way, a series of imbalances are set up within a community. The imbalances are of two kinds, structural and human. The structural imbalance refers to the basic structure of the community—the activities which make it work. These include the production of goods, the retail and wholesale

<sup>2</sup> The Economic Base of NIAD, RAD-37, Iowa State University Coop. Ext. Serv., Ames, May 1964.

services, institutions such as schools and churches, and the political and governmental functions in the community. The other, the "human" imbalance, includes the abilities, the attitudes and the information of people.

### Structural Imbalances

Structural imbalance of production includes both farm production and nonfarm production in the community. The production imbalance on the farm can be indicated in different ways. We could say there are not enough farms for the farmers. Or, we can turn this around and say that there are too many farmers for the farms available.

The way we state the imbalance implies the solution. For example, in nonfarm production we might say that there are not enough jobs for the workers in the community. This implies the need to create more jobs. New industry is one answer.

Turning the imbalance statement around, it could be said that there are too many workers for the jobs available. This implies that the answer is out-migration. People go where they can get work. Actually, both of the implied answers tend to correct this production imbalance. One of them, out-migration, is not very popular, especially on Main Street.

On Main Street there are retail and wholesale services. A maladjustment here is the "service imbalance." As the population declines, the economic pressures create a need for some establishments to consolidate or move to larger cities. The businesses that depend upon the *volume of production* in rural areas (fertilizer dealers, gasoline salesmen, etc.) have been increasing their volume of sales even in the small towns. They are not complaining. The businesses that depend on the number of people (like the clothing store and grocery store) are feeling the economic pressure.

The institutional imbalances are well-known. With a mobile population, the schools and churches are either in the wrong place or they are too big or too small. In one study in a multi-county area, there were 35 high schools. This area has about the same population as the city of Des Moines, which is served by five high schools. I am not suggesting that five high schools is the right number, but an imbalance situation is indicated in the multi-county area.

The political functions of government, the offices and the political boundaries constitute another structural imbalance. Legal boundaries haven't changed since the great land survey, but people have crossed those boundaries in every direction. County lines were harnessed to the horse—you could take your buggy, conduct your business in the county seat town, and return home in one day. Although obviously outdated, the political boundaries remain the same as in the horse and buggy era. One Iowa county has four times the per capita costs of county government as another, while providing about the same services. The difference is in the number of people in the two counties.

### Human Imbalances

Other maladjustments are the human imbalances. When we say there are too many farmers per farm or too many workers for the job, it doesn't necessarily follow that these excess workers have the ability to perform the needs of our society in another capacity. The Department of Labor recently released many classifications of jobs in which there were shortages of labor, most of them requiring some skill or education. The mere fact of too many workers in the community doesn't mean that the workers are equipped for the jobs that are open elsewhere. This is a human imbalance. Many young workers will be entering and training for occupations of limited opportunities.

There is an imbalance of attitude. In the areas of rapid population decline, there is hopelessness, depression, defeatism, confusion, frustration. It is difficult to focus any attention on important problems. The people are not optimistic enough to put forth any effort. Attitude can be a major problem to any program. The young people from 20 to 35 years of age are leaving rural areas. They are taking with them their optimism, energy and progressive attitudes.

The last imbalance is one of information. People do not understand why these changes are happening. They do not know what makes them happen. They are confused by the alternatives and the procedures to follow to reach a satisfactory solution. Even the better informed residents of rural areas lack the information on how best to proceed.

There is no pat answer for every group or individual. But behind every decision for bettering any community, whether it be that of a citizen casting his vote at the polls, a school board member discussing salaries, a minister counseling an indigent family, or an industrialist planning an expansion of his plant, there is a need for better understanding of the operations of our society. Knowing and recognizing the imbalances within a society will help the citizen make a better decision. More informed citizens will help to bring about the fullest use of resources for the greatest human satisfaction.

### SUMMARY

I have emphasized the imbalances created by economic pressures which exist in a community with a declining employment base. The counterpart of these imbalances exists in rapidly growing urban areas.

Imbalances exist throughout Iowa and the nation as convincing evidence that our nation's resources are not being used to their fullest potential. Imbalances (underemployment or resources) have resulted from technological progress. This technological progress gives us an increased potential for national growth. However, this increased potential will not be fully realized until the "imbalances" are corrected. Shifting resources to their highest value use will correct the imbalances and permit our nation to make great strides toward improved national growth.

## 5. Future Collective Bargaining Issues and Economic Growth

Edward B. Jakubauskas\*

### THE ROLE OF LABOR UNIONS IN ECONOMIC GROWTH

Economic growth—most simply defined as a rising level of real gross national product per person—may be accompanied either by: (1) an enlargement of job opportunities and labor demand for workers in all occupations, or (2) disproportionate changes in labor demand resulting in shrinking job opportunities in certain areas and expansion in others.

The first situation represents an ideal but unrealistic case—at least for many industries and for the U. S. economy as a whole, particularly within the last decade or so. Here management is faced with few work force adjustment problems, and the union response can be anticipated as a repetition of traditional demands for “more, more, now,” at shorter hours if possible. Management’s problem is fairly simple—keep revenues above costs and avoid prolonged strikes which hinder production schedules.

Disproportionate changes in labor demand create more difficult problems. While management can point to better job opportunities in the long run, current adjustments must be made by workers in retraining for new occupations, transferring to newer plants, or in some cases (unskilled, displaced older workers) leaving the labor force entirely.

To provide a framework for the study of labor-management adjustment to change, we must first discuss some management goals and needs, and contrast these with the trade union point of view.

#### Management Goals

Professor Jack Barbash, in a challenging discussion on “the elements of industrial relations,” has indicated that management is motivated primarily by what he calls “the enterprise rationality.” In the writer’s words: “. . . enterprise rationality is really the logic of getting maximum results at a minimum cost. It is the dictatorship of the balance sheet. There is a plan in accordance with which all things are ordered aright. And the plan covers activities in the distant future. Efficiency is the test which is applied in the choice of all the means of production. The market regulates all economic activity and everywhere a surplus is sought for. Exact calculations become necessary in every undertaking.”

#### Labor Goals

Now what can we say in regard to the philosophy and the goals of unions and workers? One theory widely accepted by scholars in the field of labor states that the American worker is motivated by the “principle of job consciousness”—a feeling of job scarcity.<sup>2</sup> There is a close orientation to the job, for it is at this point that the worker’s survival is determined within society. A related factor

is the inadequacy of bargaining power on the part of the individual worker. He finds greater security and greater control of the job through the operation of his labor union. Here we find the essential elements of industrial conflict—a divergence between the ideology of the businessman and his preoccupation with efficiency, profit, higher levels of productivity, his optimistic attitude toward change, and a general tendency to view change in long-run terms—contrasted with the individual worker and the union’s preoccupation with short-run adjustments and with worker job security.

We can cite many extreme examples of union hostility, and often it may appear that there are few cases of union cooperation. In general, unions and workers appear to be seeking a control over the decision-making process involved in adjusting to the changes that develop out of economic growth and technological change. Unions appear interested in participating in the decision-making process insofar as it affects the workers.

The response of a union to change depends upon whether: (1) the union is a craft or an industrial union, (2) the machine or new process is useful in helping unionized employers to meet the competition of non-union employers or of other industries, (3) the number of jobs created by the new technique is large in relation to the number of jobs that it destroys, (4) the jobs created by the new technique require much of the skill and knowledge possessed by workers on the old technique and are readily learned by those workers, (5) in the event that new jobs do not appeal to workers on the old technique, the union is willing to admit the men who are employed on the new jobs and (6) control of the new jobs would materially assist the union in retarding the displacement of men from the old jobs.<sup>3</sup>

We cannot unequivocally state what the union reaction will be to change in a particular situation. We can cite instances of cases where hostility and obstruction have persisted to the point of actually preventing the early introduction of change; we can also cite instances where labor and management have cooperated effectively in accomplishing an orderly transition to labor force change. The relationship between managers and workers in regard to developing policies which will meet the changes of economic growth and technology flow along a continuum whose phases oscillate between hostility, conflict and resolution of conflict.

### TECHNOLOGY, LABOR FORCE CHANGES, AND EMERGING COLLECTIVE BARGAINING ISSUES

#### Shifting Priorities in Union Goals

Since the 1930’s, union goals have shifted away from a preoccupation with getting and staying organized, to obtaining higher wages, and currently with obtaining some degree of control over problems of labor displacement generated by changes in technology and product markets.

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<sup>1</sup> Jack Barbash, *The Elements of Industrial Relations*, *The British Journal of Industrial Relations*, London, March 1964.

<sup>2</sup> Selig Perlman, *A Theory of the Labor Movement*, reprint, Augustus M. Kelly Co., New York, 1949.

<sup>3</sup> See: Sumner H. Slichter, *Union Policies and Industrial Management*, The Brookings Institution, Washington, D. C., 1941.

The problem of attaining recognition was solved in large part through the enactment of legislation providing an orderly system for determining representation for purposes of collective bargaining. The rule of law has been largely substituted for force and violence on the industrial scene.

Although wages are of great importance to unions, other issues have taken precedence in recent years. Contrary to the wide publicity given to the extent of poverty in the United States, poverty and low income have not been the plight of the union worker as a general rule. Factory wages have averaged about \$100 per week, or around \$5,200 per year.<sup>4</sup>

Though unions are still interested in higher wages, the tendency to strike on wage issues has diminished. Studies of major work stoppages in recent years show that long strikes have been closely correlated with work rules disputes rather than wage changes.<sup>5</sup> Work rules disputes are, in turn, associated with probable and actual changes in technology. Over the last 30 years there has been a shift in the priority of union goals—a shift away from getting and staying organized, to wage gains and, today, to job protection and control in the face of displacement and technological change.

### Changing Labor Force Composition

Related and superimposed upon the shifting priorities and goals of unions is the changing composition of the labor force itself. Over the last half century, there have been three categories of labor force change. Some of these have enhanced union growth in certain respects while others have affected unions adversely. These have included a shift of labor resources away from: (1) agriculture and the extractive industries of the economy to manufacturing and, in recent years, a shift from manufacturing to the service industries, (2) unskilled and manual jobs to jobs which require skill, education, and often many years of formal preparation and (3) rural areas and small towns to large metropolitan and suburban areas.

These changes have brought about a greater interdependence on the work scene. A strike or dislocation in one area is no longer localized, but tends to spread quickly to other areas of the economy. Also, we can say that some labor force changes have benefited unions and others have worked against them. The shift from agriculture to manufacturing and service industries, combined with movements of workers to metropolitan centers, has tended to enhance union power, except for the fact that new jobs which are emerging are of a professional nature and not conducive to traditional union appeals. Consequently, the role of unions within the context of a growing economy appears to be that of a regulator within this transitional process, particularly in those areas experiencing rapid employment declines.<sup>6</sup>

<sup>4</sup> Summary of Manufacturing Earnings Series, 1939-1963, BLS Report No. 229, U. S. Dept. Labor, Washington, D. C. February 1964.

<sup>5</sup> Analysis of Work Stoppages, 1962, BLS Bulletin No. 1381, U. S. Dept. Labor, Washington, D. C. October 1963. Also, see: Loretta R. Nolan, A Review of Work Stoppages During 1963, Monthly Labor Review, U. S. Dept. Labor, Washington, D. C. July 1964.

<sup>6</sup> Some may disagree with this position, and say that unions have never been powerful or of great significance in agriculture. However, the National Farmers Organization has attempted to bring in certain aspects of trade unionism—namely, the principle of collective bargaining in dealing with buyers of farm products,

### Emerging Problem Areas for Workers, Union and Management

Within the context of changing union priorities and labor force composition, a number of problem areas emerge that will have to be considered seriously by management.

One is necessity for controlling change in an orderly fashion within existing corporate budget levels. Worker and union hostility can be eliminated either through expensive collective bargaining provisions such as earlier retirement, severance pay, "red-circle" jobs, etc., if the company treasury is unlimited. Or, opposition to change can be eliminated through costly anti-union measures reminiscent of an earlier era of labor-management relations. The solution probably lies somewhere in the middle. The basic problem appears to be one of minimizing costs of disruption, hostility and conflict, and at the same time attempting to maximize the benefits of change. The emerging role of the industrial relations practitioner is therefore one of maximizing returns and minimizing the costs of change.

While the decision-making process appears to be relatively clear for the business manager, union and worker responses appear to be somewhat more complex, more volatile, and harder to predict. Two factors appear to be most significant in understanding union behavior in the context of change:

1. Strategies often poorly designed, often contradictory, and at times giving the appearance of irrationality which attempt to maintain job security in a situation dominated by insecurity.

2. Even more complex—an attempt to maintain some sense of status in a situation where lowering of status due to change is imminent and apparent.

Superimposed upon the local scene is a third problem area—namely, the growing dependence upon national collective bargaining contracts with multi-plant firms and large national unions. Local needs may often be shoved aside and preference given to the over-all requirements of national union membership as a whole, often to the detriment of individual local unions and plants.

### Emerging Collective Bargaining Issues

The purpose of collective bargaining is to facilitate manpower adjustment within the framework of economic change—in a sense, to provide for a maximum amount of local decision-making and to shape adjustments which are meaningful to workers and employers alike. There should also be a minimum of government interference. To the extent that collective bargaining proves to be inadequate, economic growth can be hindered. Politically, society will, as a consequence, tend to move away from decision-making by many to one-sided control or anarchy.

For unions, the problem of job control and full employment will be aggravated by the entry of large numbers of younger workers beginning with 1965 and moving on into the 1970's. For management the problem of economic growth will be more urgent as a result of greater competition on the international scene and also because of change within domestic markets as products and methods of production change rapidly.

Efforts to protect workers against the effects of new technology have included three main varieties of union

response to worker insecurity.<sup>7</sup> There have been programs to: (1) increase or preserve job opportunities and income security, (2) allocate remaining jobs (after technological change has eliminated initial employment) more equitably and (3) ease the burden on those displaced.

In regard to programs of increasing or preserving job opportunities, union policy, in general, has been to control the *rate* of technological advance. This control has taken three main pathways: (1) minimizing the dislocating effects and containing the spread of technology, (2) attempting to reduce the work week and (3) attempting to obtain for workers a share in the proceeds of higher levels of productivity.

In regard to the second area of union response (the development of programs to allocate remaining jobs equitably), it appears that questions of seniority will continue to provide difficulty at the labor-management bargaining table. The question of ability versus seniority will continue to plague both sides. Unions, particularly in craft areas, can be expected to oppose changes in apprenticeship limitations. We can expect to find more discussion in relation to the development of job transfer rights for workers within multiplant firms.

In contrast to seniority provisions, some firms (particularly in the garment and shoe industry) have developed measures for equal sharing of work. However, this provision will probably not attract much union support nor will it supplant the seniority system.

On measures designed to protect the displaced workers, there have been four major provisions developed in labor management contracts. One has included severance pay. This has developed in the meat packing industry, in airlines, railroads, the garment industry, and in newspapers as well. The basic formula includes a lump sum payment to workers (sometimes paid out in installments) in proportion to the number of years of service that the displaced worker has given to the particular company.

A *second measure* has supplemented state unemployment benefit payments. In the automobile industry, supplemental unemployment benefits have even been expanded to the point where General Motors, in 1961, increased the take-home pay of workers from 65 percent to 75 percent and raised the benefit period from 26 weeks to 52 weeks.

A *third area* of response in protecting displaced workers has been the development of early retirement and increased pensions. By 1960, over 11 million workers, or 60 percent of those under union contract, were covered by collective bargaining plans related to pensions of various types. In the meat packing industry, there is a provision in the Armour contract whereby a worker with 20 years of service can retire at age 55 if he is displaced from work. The Central States Region of the Teamsters Union has reduced normal retirement age from 60 to 57. We can expect to see this type of provision spread to other industries as the pressures of technological change increase.

A *fourth area* includes retraining programs that have been developed through collective bargaining agreements.<sup>8</sup>

<sup>7</sup> For a detailed compilation of current collective bargaining clauses relating to technological change, see: Recent Collective Bargaining and Technological Change, BLS Report No. 266, U. S. Dept. Labor, Washington, D. C. March 1964.

<sup>8</sup> See: Joel Seidman, *The Union Agenda for Security*, Monthly Labor Review, U. S. Dept. Labor, June 1963.

Much publicity has been given to government training programs, but the public has been less aware of retraining programs negotiated by unions and companies through collective bargaining agreements. The Armour Automation Fund (established jointly with the United Packinghouse Workers and Amalgamated Meatcutters) provides for the use of funds to train displaced workers for new jobs. Within Armour, several hundred workers have been retrained and many of them have been placed in new jobs.

### The Union Response to Change

The measures that unions can be expected to propose in particular collective bargaining situations will depend upon the degree to which the unions have successfully dealt with management in collective bargaining on a day-to-day and a year-to-year basis and the confidence that management has in its relationship with the particular union that it deals with.

We can expect unions to press forward on all fronts. That is to say, unions will attempt to slow down the pace of technological change where it appears to be rapid and where the effects upon the work force are likely to be quite harsh. Also, unions can be expected to press harder for seniority provisions to allocate the remaining jobs equitably, and also to attempt to staff new jobs with personnel from union ranks. In situations where the pace of technology cannot be reduced and jobs preserved (either in the short run or the long run) unions can be expected to press for various cushions to alleviate the adjustment process for workers who are displaced.

The package of union proposals that will be presented in a particular situation will therefore depend upon the success of both parties in solving earlier problems at the collective bargaining conference table.

In a more general sense, collective bargaining—with all of its faults and problems—presents the best opportunity for both workers and management to solve problems developing from the adjustment process without the imposition of a large and oftentimes slow-moving governmental bureaucracy. The basic principle of permitting local parties and local groups to determine change as they see their needs and going to higher levels for governmental determination only when necessary is a sound principle. It appears that collective bargaining will continue to play its vital part in the adjustment process in the years ahead.

### A SUGGESTED PROGRAM FOR LESSENING UNION AND WORKER OPPOSITION TO TECHNOLOGICAL CHANGE AND ECONOMIC GROWTH

We can have higher levels of productivity and per capita income if management will modernize operations by introducing new methods of production, and if the economy operates at a level of relatively full employment. At the same time, change can be accomplished on the work scene in an orderly fashion if union organizations cooperate. In turn, union and worker cooperation can be obtained if management follows certain key guidelines. Among these, the following are suggested as most crucial:

1. *Advance notice of change.* One of the greatest factors accounting for worker opposition to change, the promotion of rumors, and the creation of work slow-downs is the lack of certainty as to when the shut-down will take place, how many and which workers are to be affected by the

changeover and how many new jobs will be created and made available to the company's work force.

2. *Consultation.* There has been a successful changeover to new technology where management has brought in the union in various phases of planning manpower adjustments to change. Lowering of status for workers can be a vital factor in opposition to change, and consultation serves the purpose of permitting workers and unions to participate in the decision-making process, however small that participation might be.

3. *Reduction of work force through attrition.* Wherever possible, large-scale layoffs should be avoided. Older and high seniority workers should be permitted to finish their jobs with the understanding that these jobs will not be filled in the future. If (as is the situation in many cases) management cannot indulge in "red-circle" jobs, then those workers who are likely to experience hardship in retraining and readjustment, but who have had many years of service in the company, should be permitted to finish their jobs at current wage levels.

4. *Transfer, retraining and placement.* In multi-plant firms, formulas for transfer to new plants should be considered with appropriate inducements for transfer. If transfer is not possible, retraining measures similar to the Armour Automation Fund provision should be considered. This type of organizational change can serve as an effective catalyst in goading governmental groups to act promptly.

5. *Maintenance of income in sharing high productivity gains.* It will not always be possible for management to retrain workers on a "red-circle" basis nor will it be pos-

sible to transfer, retain or place workers in new jobs. In situations such as this, adequate measures of income security must be designed to permit workers to make their own transition in the readjustment process. Severance pay provisions can be helpful in cushioning the effects of change, and adequate pensions can assist those who will, in all likelihood, never return to the labor force because of age or other re-employment problems. In a sense, human capital becomes obsolete and depreciates just as machinery does. As management allocates a part of its revenue to the replacement of machines, so also should a part of its revenues be allocated to the reclamation of human skills. The whole cost of the changeover should not be paid entirely by workers—those least able to absorb the cost of change.

People resist the way that change affects their social relationships, upsets their status, and threatens their security, rather than resisting the technical requirements of the change itself. The nature and size of technology itself does not determine the presence or absence of resistance nearly so much as does the social aspect of the change.

Management is recognizing that it needs to emphasize the social effects of change. Proportionately too much time has been devoted to technical problems, with too little attention to social questions of how to make the change. Management's general human relations objective regarding change should be to restore and maintain group equilibrium and to facilitate personal adjustment to change. Suitably formulated management policies can guide and determine future collective bargaining solutions to issues which evolve out of the process of economic growth.

## 6. Effects of Economic Growth on Regions

Karl A. Fox\*

Most of the preceding papers have been about national income, national economic growth and other topics related to the national economy. We will now devote our attention to the differences among regions and industries which are part and parcel of the process of national economic growth.

We will start out by using some maps of the United States to point out some of the broad aspects of regional differences which now exist and some of the reasons for them. Next we will consider some aspects of underdeveloped or lagging regions in the United States, such as Appalachia, the Ozarks, the Upper Lake states, and the New England states. Finally, we will look at economic growth at the level of individual cities and the trade areas and labor markets or commuting areas around them. In particular, we will examine *functional economic areas*.

### THE BIG (NATIONAL) PICTURE

Earlier papers have talked about the Gross National Product (GNP) and the net national product or national income. We might look at a map of the natural features

of the United States and ask ourselves: What is the best way to manage this piece of property so as to produce the maximum net income from it?

We might decide that there was no point in using much labor or investing much capital in the desert areas in the Great Basin and Southwest. It would be pretty clear that we shouldn't try to grow corn or to limit farm sizes to 160 acres in the drier parts of the western Great Plains. In fact, we would decide that some of those areas were best left in grass and used for range livestock, with one ranch covering several square miles. Farther east (but still west of the 100th meridian), we might decide that the best use of the land was to grow wheat on farms of at least 1,000 to 1,500 acres each. We would apply the same principles of farm management on across the rest of the country.

Historically, most of the United States was settled by farmers and ranchers on an individual basis. They speedily learned some of the limitations of the agricultural resources, including climate and rainfall, in each new territory they opened up. The pattern of agriculture which actually emerged is much like the one just described from a "rational and national" point of view.

After the farmers and ranchers had dug in, in the

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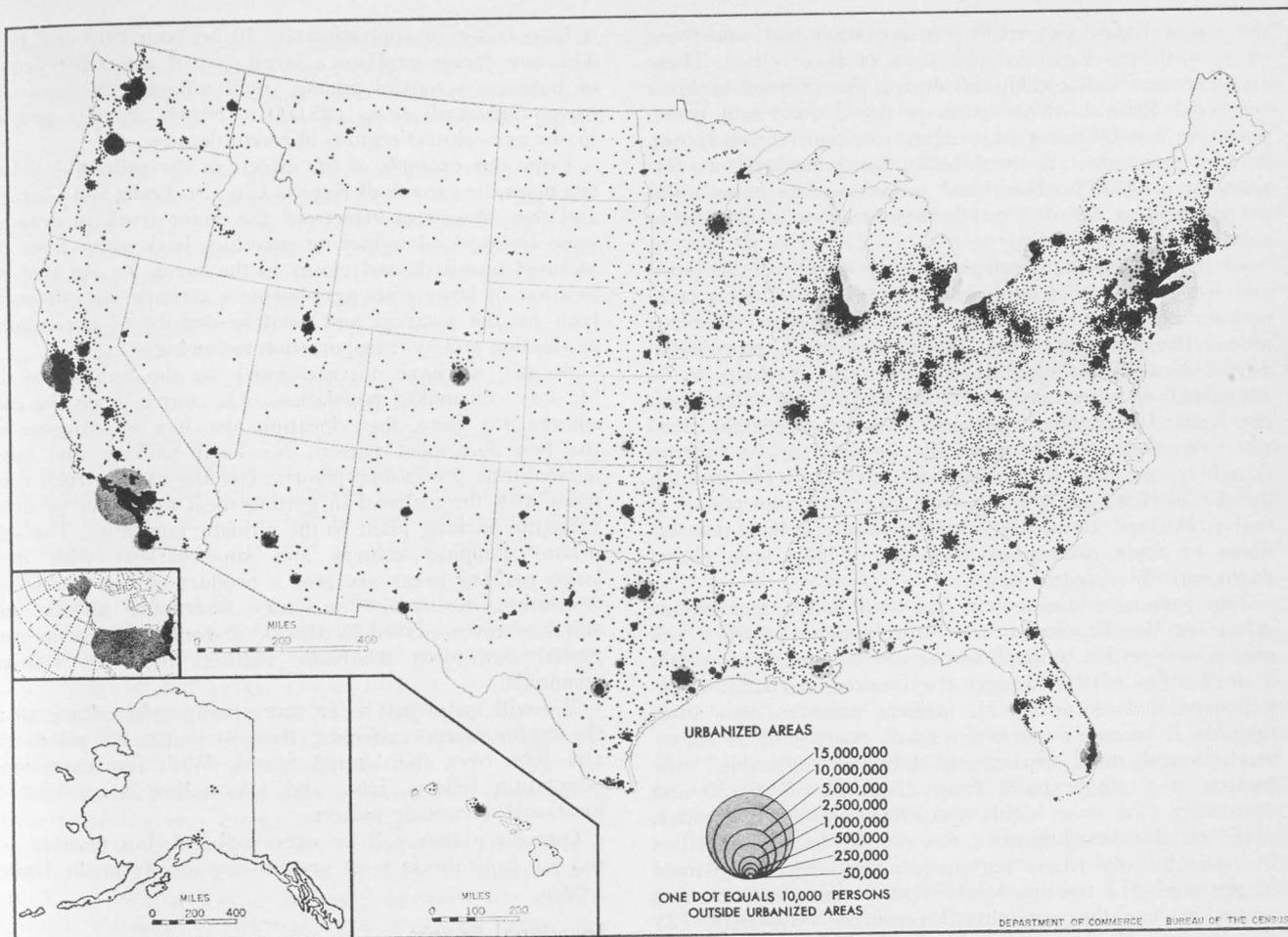


Fig. 1. Population distribution, 1960.

middle and late 1800's, villages began to spring up. Village merchants supplied farmers with the various consumer goods, farm tools and supplies which they could not very well make on their own farms. Obviously, there had to be some proportion between the number of storekeepers in a given stretch of territory and the number of farmers or ranchers in it.

Suppose that in Iowa, shortly after the Civil War, there were 10 farm workers (including the farmers themselves) per square mile, but that in the Dakotas there was only one farm worker per square mile. Offhand then, we would have expected to find 10 times as many village storekeepers per square mile in Iowa as in the Dakotas.

### Where People Live

Figure 1 shows the distribution of population in the United States, urban and rural, in 1960. We see that to this day the desert areas in the Great Basin, the Rocky Mountain area as such, and the western Great Plains have not developed towns or cities of any size. Salt Lake City and Denver appear to be exceptions. However, these cities are located on flat land at the western and eastern edges of the Rockies, not in the mountains themselves. Also, each city performs functions which give it a unique

role in a region covering 200,000 or 300,000 square miles.

Our "piece of property" has other natural resources in addition to agricultural land. It has mineral resources, forests and fishing grounds. As of 1966, these industries employ a much smaller fraction of the labor force than does agriculture. It is true, though, that during the historical settlement process, storekeepers, doctors, lawyers and others set up shop close to the mining, lumbering and fishery workers just as they set up shop close to the farmers. In each case, the number of storekeepers and similar workers bore a fairly consistent proportion to the numbers of workers engaged in the extractive or agricultural operations.

It is easy to understand the relationship between crossroads stores or general stores and farmers in the township which they serve. It is also easy to understand the relationship between grocery stores in a mining town and the miners themselves.

### Transportation Patterns

It takes more study and more knowledge to understand why the larger cities such as Kansas City, St. Louis, Chicago and others emerged when and where they did and why they grew to be as large as they are. Railroads,

the Great Lakes and river transportation had something to do with the locations and sizes of these cities. These cities became well established during the railroad building era from 1850 to 1890. In those days, short-haul transportation was by horse and wagon over poor roads. Hence, it was economical to haul bulky farm products as few miles as possible by horse and wagon and as many miles as possible by railroad on their journey to eastern consuming centers.

In the 1900's, the truck completely displaced the horse and wagon for short hauls and became a formidable competitor with the railroad for hauls of several hundred miles. Hence, after 1920, the motor truck represented a new locational factor. It enabled farm products to be assembled at points as much as 50 or 100 miles from the farm. It became economical to set up medium sized (or, according to some standards, small) hog- and cattle-slaughtering plants in the smaller cities scattered through the Corn Belt; as a result, the large packing plants at major railroad terminals found themselves hard-pressed. Some of these railroad-oriented plants have been closed down entirely in recent years.

The passenger automobile has also had a tremendous effect on the location of the storekeepers, doctors and others who settled in small towns and villages to be within 4 or 5 miles of the farmers they served. As rural roads improved and as nearly all farmers came to own automobiles, it became possible for retail stores such as supermarkets and small department stores to "assemble" customers at a single point from distances of 20, 30 and eventually (for some highly specialized services) 50 miles.

Hence, the distribution of the smaller towns and cities in agriculturally based regions can be largely explained in terms of (1) the number of farmers and farm workers needed to use the agricultural resources efficiently, (2) the number of farm supply dealers, hog-buying stations, grain elevators and the like which are advantageously located within 50 miles or less of their farmer customers and (3) the interaction of automobile speeds and transportation costs with the economies of size which are available to different kinds of retail stores and consumer services.

The supermarket would hardly be possible without the automobile. Nor (to jump ahead of our story) would the excellent shopping facilities in certain Iowa cities of 30,000 to 35,000 people be possible without the other 100,000 or 150,000 customers who are not residents of the cities themselves, but who live within a reasonable driving distance of them.

In a humid and fertile agricultural area such as Iowa, the forces we have just described may well account for some cities of as much as 20,000 population, based exclusively on services to farmers and to workers in farm-related business. In a broad sense, the department store workers in the town of 20,000 people are part of the "fundamental agricultural community" of 1966. There is a reasonable and fairly consistent proportion between the consumer-oriented workers in broad agricultural areas and the numbers of farmers and local agri-business workers needed to manage the basic soil resource. Hence, in the Dakotas—with their sparse farming and local agri-business populations—we also find a sparse distribution of consumer-oriented trade and service workers. In Iowa, we find much denser distributions of both kinds of workers.

The passenger automobile lengthened the tether which tied the storekeeper to his farmer customers—lengthened

it by a factor of approximately 10 between 1915 and 1966. This one factor explains a large part of the redistribution of business activities among small villages, medium-sized towns and small cities (25,000 to 50,000 or more people) in our agricultural regions in recent decades.

From our example of the effects of the railroad-building era upon the growth of Kansas City, St. Louis and Chicago, and the subsequent effects of the motor truck in drawing some livestock slaughtering activities back away from the railroad terminals and closer to the farm, we see that the location of large-scale agri-business activities is influenced both by the location and relative density of agricultural production and by transportation technology.

So far, we have not accounted for the location of the big city consuming populations. Of course, once the consumers are there, their location also has an influence on the best locational pattern for meat packing and other agricultural processing plants. And the motor truck competes with the railroad in getting meat and other products from the packing plant to the ultimate consumer. The suburban shopping centers and supermarkets with their large parking areas are also a product of the automotive revolution. So is the one-story warehouse on the outskirts of town, served by trucks, in contrast with the congested downtown wholesale markets near the railroad terminals.

We will spend just a few more paragraphs talking about the major factors affecting the distribution of population and jobs over the United States. With few exceptions, population follows jobs, and jobs follow some kind of locational advantage pattern.

Our discussion will be oversimplified, but perhaps not too far from the facts of present-day society in the United States.

### Locational Factors

First, let us talk about a certain kind of area as though it were a separate country. The size of this area will be governed by the distance an automobile can travel in one hour. It will be centered around a town of 20,000 or more people, and it will be a relatively self-contained labor market, commuting area and major retail shopping areas.

Inside the big metropolitan areas such as Chicago and New York, we will try to delineate similar relatively self-contained shopping and commuting areas around "regional shopping centers" of the type which include large branch stores of the huge downtown department stores—regional shopping plazas which may serve as many as 500,000 people.

Within the trade area of each such regional shopping center in a metropolis, there will be a number of district shopping centers serving perhaps 60,000 to 120,000 people with certain kinds of goods, and a number of smaller convenience or neighborhood shopping centers with supermarkets as their chief tenants. These shopping center-oriented clusters of people inside of metropolitan areas represent a fairly close analogy to the clusters we might find within a 50-mile commuting radius of an Iowa city such as Ottumwa, Mason City or Fort Dodge.

Roughly speaking, in an area outlined in this fashion, about half the workers are engaged in jobs which are *export oriented* from the standpoint of that particular area. By this we mean that the bulk of the commodities produced or services provided by these workers are "exported" to persons who reside in other areas. In contrast, the other half of the workers residing in any such relatively

self-contained area may be called *residential workers*. Essentially, these workers are the storekeepers, doctors and others whose numbers must bear a reasonable proportion to the numbers of export-oriented workers in the same area.

There are 400 to 500 such areas or population clusters in the United States. About half their total workers are export-oriented. If we settle 100,000 export-oriented workers in a previously uninhabited area, and provide them with earning opportunities equal to the average for the United States, they will automatically (given a little time) attract approximately 100,000 residential workers to their vicinity.

We may partition these export-oriented workers into five categories:

1. Workers in agriculture and local agri-business.
2. Workers in large-scale agri-business—that is, in plants or other activities which process products from several or many local areas or which manufacture equipment and supplies which are sold in several or many local areas.
3. Workers oriented to natural resources, such as mines, forests, fisheries, natural seaports and river ports, and recreational features which grow out of natural location.
4. Workers in industries whose location is influenced by the workers in category 3 (for example, historically, the location of steel plants has been influenced by the locations of iron ore, coal and limestone).
5. Workers in industries and activities not included in the preceding four categories.

Workers in categories 1 and 3 must be located near specific natural resources. The workers in categories 2 and 4 are located by an interplay between the export-oriented workers in natural resource-based industries, transportation technology, and the location of workers and consumers in category 5.

We will call category 5 the *locationally discretionary export workers*. For example, the federal government was located in Washington D. C. (a new city built for that specific purpose) because this location was relatively convenient and central for the original 13 states. As a practical matter, Washington, D. C., as of 1966, contains a number of large and expensive buildings which were designed to house the U. S. Congress and various executive agencies.

However, perhaps logically the federal government could be located somewhere near the *present* center of gravity of the U. S. population. Or, with modern air transportation, we could locate the federal government establishments almost anywhere. We would, of course, have to build a lot of new buildings to accommodate the federal establishment in a new home. We might also ask whether the financial district in New York City has to be just there. With modern telecommunications and transportation, couldn't we locate it in any of a number of places?

The total labor force of the United States will soon be approaching 80 million; of these, about 40 million are export-oriented. My guess is that as many as 15 or 16 million of these export-oriented workers are in the *locationally discretionary* class. Wherever they go, 15 or 16 million residential workers go with them. And, since about 40 percent of the total population is in the labor force, as many as 75 or 80 million out of the total U. S. population of nearly 200 million have no very logical reason (other than historical accidents) for living where they do.

Given a labor force of 80 million people and an average working life of perhaps 40 years, we would expect retirement at the rate of something like 2 million workers a year. The labor force is increasing on a net basis at approximately 1 million workers a year. If we think of all of the new entrants into the labor force, some 2.5 to 3 million each year, as being locationally flexible, we could relocate a substantial percentage of the total jobs and population of the United States within a 10-year period—without (in principle) discharging or uprooting any elderly workers before they are ready to retire.

So far, no one in the United States has seriously proposed that this tremendous stream of new workers be directed or influenced in its location in a planned way. However, we find some of our large metropolitan areas plagued by air pollution, water pollution and traffic congestion and a sense of alienation or "not belonging" on the part of large numbers of residents.

At the same time, there are some underdeveloped regions in the United States which are sparsely populated but which may not be basically limited by lack of water or by an excessively rugged terrain. If the new workers stay in the large cities, more houses, schools and shopping centers will be built there, adding to the existing problems of congestion. If we added up all the costs and benefits, we might find it reasonable to divert part of this stream of new workers into smaller cities. The smaller cities might grow to more efficient sizes, providing a wider variety of consumer goods and public facilities than at present. Some of the new workers might be diverted to new towns.

So far, whenever a new federal laboratory or other installation has been "up for grabs," my impression is that senators and congressmen from the congested metropolitan areas have been just as eager as anyone to attract the installation to their cities. Would it be possible to create a political climate in which Congress might recognize that the national interest would be better served by directing some of this federally influenced or federally induced economic growth to less-congested areas? State legislators can and do make decisions as to where state-supported institutions will be located within their state. Will representatives from big cities always want to make their cities bigger, or can their constituents be persuaded that it would be a good idea to locate certain installations in less densely populated places?

I don't want to give the impression that I know the answers. For example, I don't know whether anyone has ever calculated how much it would cost to build an entirely new city to accommodate 300,000 people in Iowa or Missouri as against expanding the housing, shopping, and other facilities in Chicago or New York City to accommodate an extra 300,000 people. So far, I expect that a good many costs are going unmeasured—the costs of smoky chimneys, the treatment of public water supplies, and the cost of traffic congestion.

Figure 1 gives us an impression of the United States as a national system of cities. The locations and rates of growth of these cities are partly determined by nearby locational factors. But, to a considerable extent, the system of cities seems to have a life of its own.

During World War II, tremendous numbers of civilian workers were attracted to the Pacific Coast shipyards and aircraft factories. Once houses, shopping facilities, public utilities and schools were built to accommodate

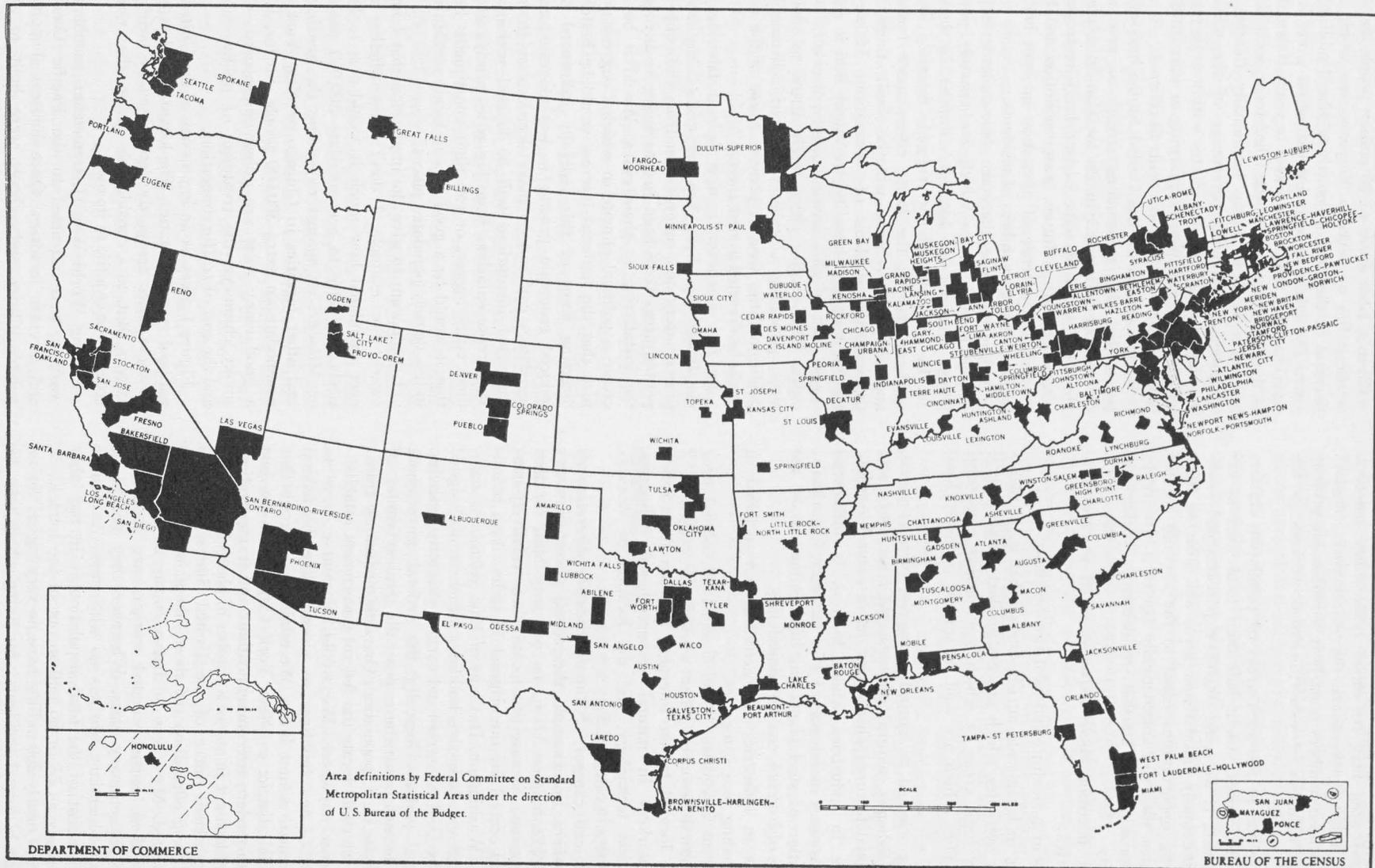


Fig. 2. Standard metropolitan statistical areas of the United States and Puerto Rico, 1960.

this influx of population, they became a new locational factor influencing the rest of the national system. With larger consuming populations on the West Coast, some new branch plants or assembly plants were established there which otherwise might have remained east of the Mississippi River. In many subtle ways, the balance of the national locational system was shifted in the direction of reducing transportation costs between various export-base industries and the increased consuming population on the Pacific Coast. Thus, particular short-run decisions made during World War II have had lasting effects on industrial location. Also, the rapid increase in population on the Pacific Coast has increased the number of congressmen elected from that area and their political influence in attracting new federal investments.

### SMSA'S

Figure 2 is perhaps a digression. How policy makers and citizens look at problems depends in part upon how these problems are presented. Figure 2 shows the approximately 220 Standard Metropolitan Statistical Areas in the United States in 1963 (they are called SMSA's for short). An SMSA is a county, or a cluster of contiguous counties, which contains a city of 50,000 or more population.

Clearly, the SMSA's include the largest and therefore most important individual members of the national system of cities. The relatively urbanized county (or counties) surrounding the central city is included because we recognized, in a vague way, that people living outside the city limits but working and shopping in the city are somehow related to it.

We will show later how the concept of the SMSA can

be clarified and extended to include all or most of the population of the United States. In relation to the population distribution map (fig. 1), the SMSA classification is arbitrary; Dubuque is the center of an SMSA; Mason City is not. Is the difference really one of kind, or only a rather moderate one in the sizes of the two central cities?

### Model of U. S. Economy

We have talked about industrial location and its relation to economic growth in a broad sense, in terms of five categories of export-oriented jobs. Preceding papers referred to the "circular flow of national income."

Figure 3 is a flow diagram of the Brookings Institution-Social Science Research Council Econometric Model of the United States. The figure looks complex, but it is really a highly simplified operating model of the U. S. economy. It is anchored in the circular flow of national income. At the right side of the diagram we have the various components of the Gross National Product (GNP) broken down into various categories of personal consumption expenditures, gross private domestic investment, state, local and federal government expenditures, and net foreign trade. Another part of the diagram accounts for the distribution of the Gross National Income (GNI) among wage and salary workers, corporations, non-incorporated business (including farms,) capital consumption allowances, interest royalties and net rents.

It is possible to combine both the industrial and the regional effects and aspects of national economic growth into a single network of relationships and (for that matter) of economic policy problems. It turns out that the problems of national economic stability are interrelated with the

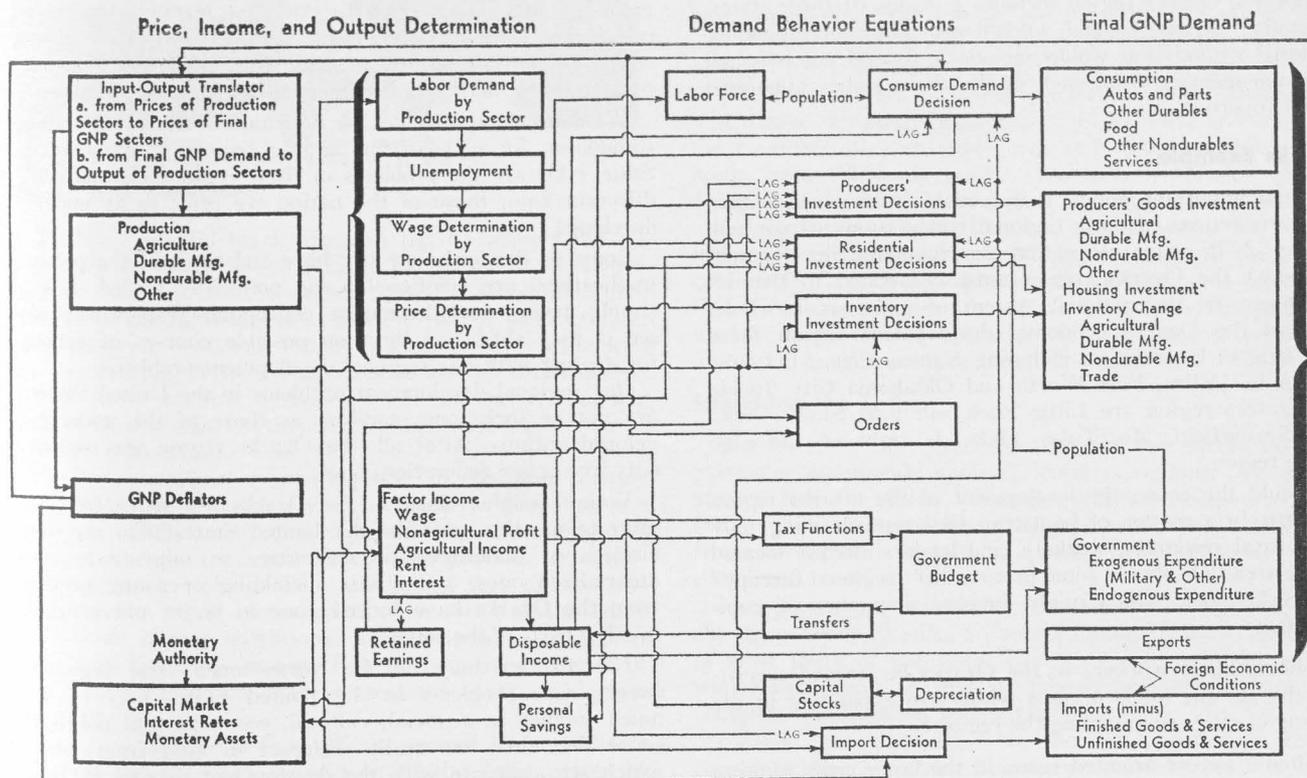


Fig. 3. Flow diagram of Brookings-SSRC econometric model.

problems of national economic growth and development. Some, at least, of the policies designed to stimulate national economic stability and national economic growth have incidental effects on the relative growth rates of different industries and regions.

### THE MIDDLE-SIZED (REGIONAL OR MULTI-STATE) PICTURE

Recently Congress has shown increasing interest in regional economic development. The Appalachia Act is to foster the economic development of a region which is approximately co-extensive with the Appalachian Mountains and which includes portions of 11 states.

The economic Development Act of 1965 provides for a number of multi-state Economic Development regions. Three such regions have already been delineated, the Ozarks, the Upper Lake States, and New England. These regions contain no cities of more than 250,000 people. The economies of two of these regions have been based on agriculture, forestry and mining, and regional employment in these industries has been declining.

Both the Appalachia Act and the Economic Development Act make considerable use of the concept of a *growth center*—a town of 20,000 or more people which seems to have the potential for stimulating growth in its immediately surrounding territory if the number of jobs located in the town itself is increased.

Both acts make use of the concept of an economic development district, which is a cluster of contiguous counties surrounding a growth center and actually or potentially interrelated with the growth center by a pattern of shopping and commuting travel and communications.

A Regional Development Commission will be appointed for each of the Economic Development regions. For example, the Ozarks region includes portions of three states, Missouri, Arkansas and Oklahoma. The corresponding regional commission would include a federal co-chairman and one member from each of the three states, appointed by its governor.

#### Ozarks Example

Some important policy issues could be resolved within the jurisdictions of these regional commissions. If we look at fig. 2, it seems clear that the economic development of (say) the Ozarks region must be related to the development of the national system of cities as a whole. Around the Ozarks economic development region there is a ring of large cities, including Kansas City, St. Louis, Memphis, Dallas, Fort Worth and Oklahoma City. Inside the Ozarks region are Little Rock and Fort Smith, Ark., and Springfield, Mo. Tulsa, Okla., is right on the edge of the region.

Should the economic development of the Ozarks region be entirely a matter of bootstrap elevation, drawing only on natural resources, workers, and leaders already located in the area? Or should some program of "regional therapy" be worked out, which might involve a number of components:

1. Should some workers in the Ozarks be trained specifically for the kinds of jobs which are expanding in the ring of cities surrounding the region?
2. Should export-oriented firms in the large cities ringing the Ozarks be encouraged to locate some branch plants

or other installations 30, 40 or 50 miles away from the home city into or toward the Ozarks? Should firms in different, non-competing industries be encouraged to locate their branch facilities in such a way as to build up a specific growth center or to contribute to the grouping of population near the edge of the Ozarks region into towns of "adequate" size for certain purposes?

3. Should the federal and state governments in cooperation use their power to influence locationally discretionary employment with the purpose of building up (say) the four largest cities located in (or on the edge of) the economic development region? Should they cooperate to build up certain smaller growth centers in the region in a systematic way, to produce a stipulated number of towns of 25,000 or more people throughout the region?

These are some of the questions which will inevitably arise as the various Regional Development Commissions approach their tasks.

#### "Foreign Aid"?

We might, of course, look at an economic development region in the United States from the same relatively detached point of view which economists use in advising the government of an underdeveloped country in Latin America, the Middle East, or elsewhere.

"Foreign aid" is usually an essential ingredient of an economic development plan for such a country. There is much talk of "social overhead capital," such as transportation facilities, electric power plants and grids, irrigation works, primary and secondary school systems, and facilities for training technicians and engineers. Frequently, students from the underdeveloped country are provided with fellowships to study at leading American universities; some government workers may have their expenses paid for a few months while studying how the corresponding activities are handled in advanced economies.

Would such approaches be desirable, from an objective standpoint, for some of the lagging regions of the United States? Or are the problems of these regions distinctively different from those of the nation we refer to as underdeveloped?

Some of the terms we use here and some of the policy implications are emotionally and politically loaded. I am simply trying on alternative conceptual frameworks to see if they shed any light on possible courses of action for dealing with our regional development problems.

Our regional development problems in the United States are not of such long standing as those of the underdeveloped nations. After all, the Ozarks region was settled only five or six generations ago.

Young people raised in the Ozarks are more free to migrate to other parts of the United States than are the citizens of underdeveloped countries to migrate to industrialized ones, and a fair sprinkling of young people from the Ozarks have indeed gone to major universities in other parts of the country.

The analogy may not be worth much; our regional development problems in the United States may be so much smaller in a social, cultural, economic and political sense that they are really different in kind from those which we associate with the development process in less economically fortunate nations.

## THE "LITTLE ECONOMIES" — THE CONCEPT OF A FUNCTIONAL ECONOMIC AREA

In 1915, a sociology professor at the University of Wisconsin, C. J. Galpin, published a study of Walworth County, Wis.—a classic among rural sociologists—entitled *The Social Anatomy of an Agricultural Community*.

Figure 4 is copied directly from one of the maps in Galpin's 1915 study. Walworth County contained 16 townships and a total area of 576 square miles. In this county, Galpin found 12 trade centers, mostly ranging from 500 to 2,500 in population. He and his interviewers delineated the trade area around each such town or village by asking farm families in the open country where they did their shopping.

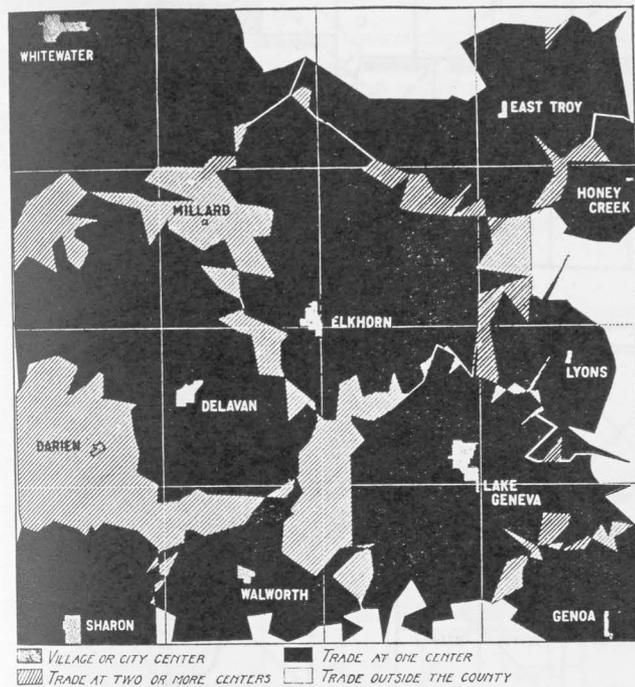


Fig. 4. Trade communities.

Within the solid black areas in fig. 4, farmers did all or nearly all of their shopping at the single trade center nearest to them. In the shaded areas, a substantial proportion of the farm families traded in two or more centers. The particular patterns found by Galpin were influenced by the location of lakes and marshes and by interruptions which these natural obstacles made in the rectangular grid of rural roads. On the average, his trade areas covered about 50 square miles.

There were about as many people in the open country who traded at a small town or village as people in the town or village itself. Galpin found that the stores and service enterprises in each trade center provided essentially the same services to farm families as they did to residents of the trade center itself. The sizes of the trade areas were clearly conditioned by the speed of travel on foot or by horse and wagon. Few farmers lived more than 5 or 6 miles from the trade centers they patronized most frequently.

In fig. 5, I have drawn squares around 10 of Galpin's 12 trade centers. The distance from the trade center to each corner of the surrounding square is 5 miles. Ex-

cept where the pattern is interrupted by lakes and marshes, Walworth County, like many other counties in the Midwest, has a rectangular road grid running north-south and east-west.

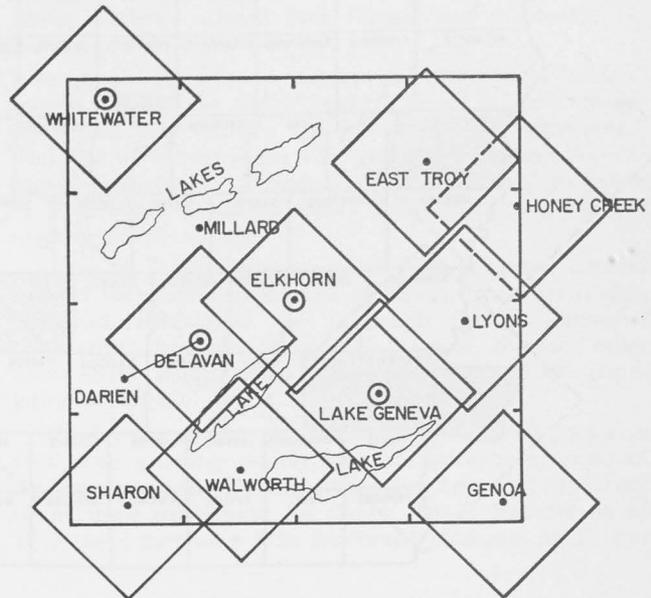


Fig. 5. Schematic map of county studied by C. J. Galpin (1915), assuming a rectangular road grid and travel (pedestrian or horse and wagon) at 5 miles per hour.\*

\*Pattern of settlement and roads was influenced by lakes, marshes, etc.

Thus, one can proceed from Honey Creek for 5 miles in any of the four compass directions and arrive at a corner of the square. However, if we want to reach the north-east boundary of the square, we may travel 3 miles east and 2 miles north, 2 miles east and 3 miles north, 4 miles east and 1 mile north, and so on.

The main object of these squares is this: Assuming that it takes an hour to travel 5 miles by horse and wagon, the boundary of each trade area is 5 miles, or about one hour, from the trade center. We have a "circle" of 60 minutes of travel time by horse and wagon projected on a rectangular road grid. The road grid converts our circle into a square oriented at a 45 degree angle to the road grid itself. This looks odd, but the conclusion is inescapable. Similarly shaped areas have been found in analyzing the procurement operations of agricultural processing plants in areas with rectangular road grids.

### Stretching the Tether

We have already discussed some of the effects of the passenger automobile upon agricultural regions. We commented that the tether connecting the storekeeper to the farmer was stretched about tenfold when the transition from horses and wagons to passenger automobiles was complete.

Iowa has a predominantly rectangular road system. We can drive about 50 miles an hour from one point to another in most parts of the state. Under these conditions, what would we expect to find as the modern counterpart of Galpin's "fundamental community"?

Clearly, the distance from the trade center to each corner of the trade area boundary should be not 5 miles, but 50 miles. It follows, then, that the 1966 trade area

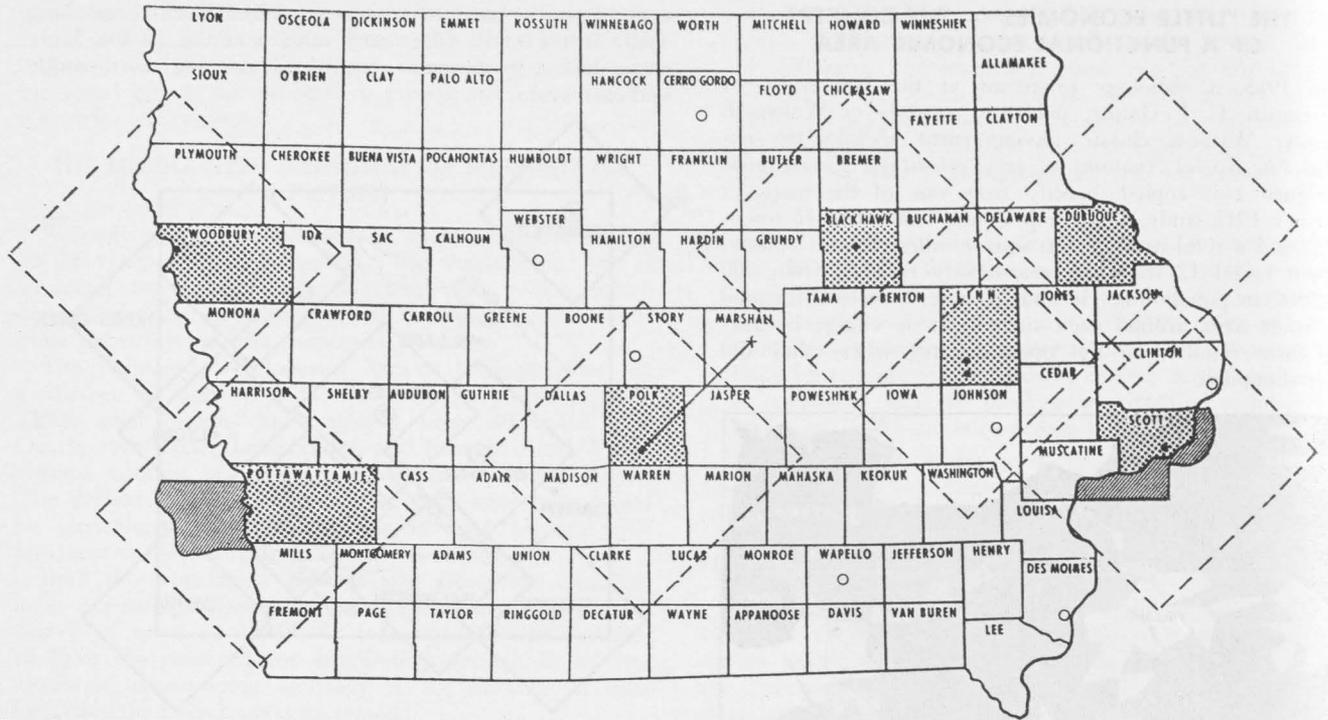
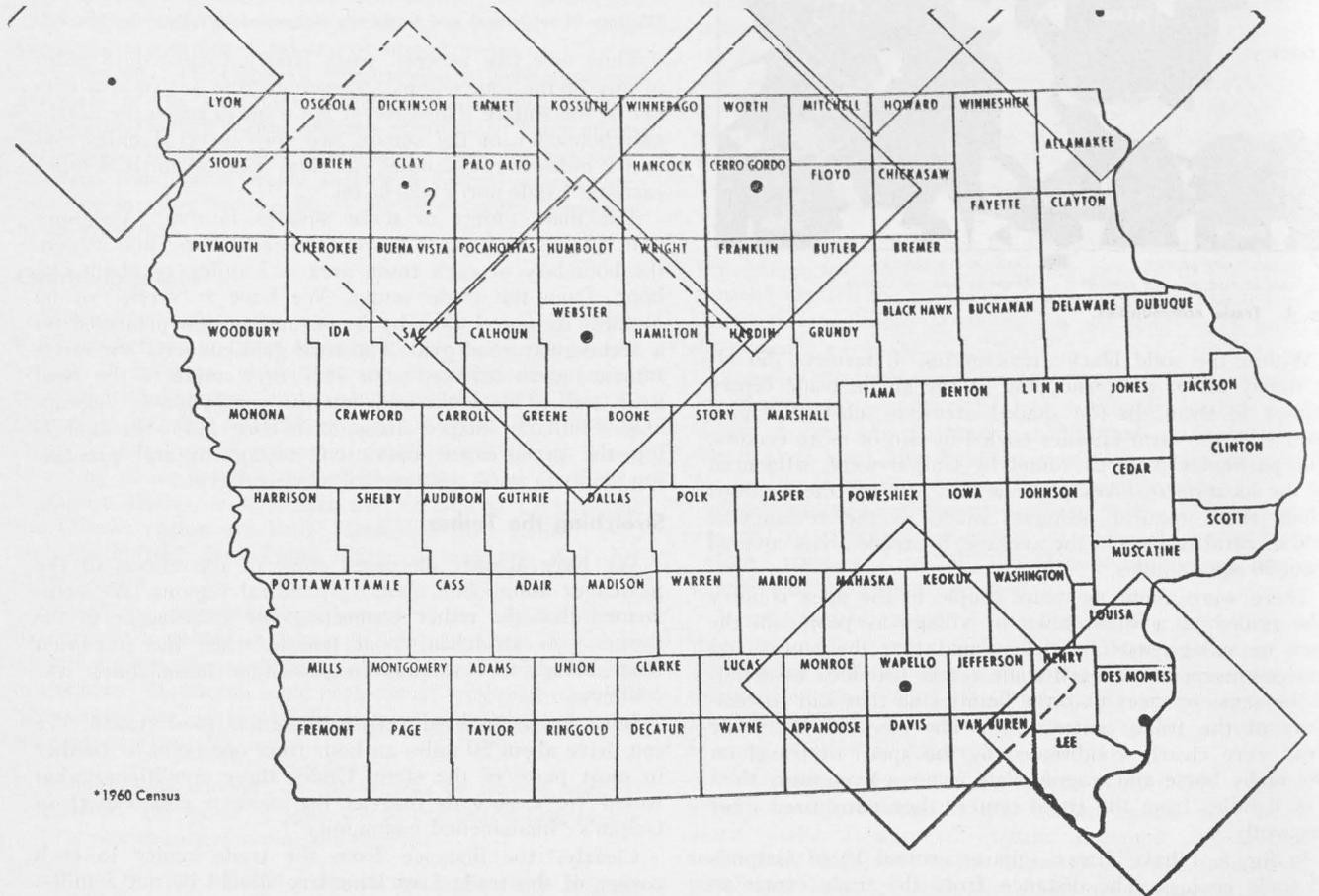


Fig. 6. 50-mile commuting distances from the central business districts of Iowa SMSA central cities.\*  
 \*Central cities of 50,000 people or more in 1960. Each shaded county or pair of shaded contiguous counties are SMSA's.



\*1960 Census

Fig. 7. 50-mile commuting distances from the central business districts of Iowa FEA central cities with less than 50,000 population.\*





\$40 million wholesale-retail  
 \$75 million wholesale-retail

SELECTED BUSINESS FUNCTIONS

Minimum Convenience	Full Convenience	Partial Shopping	Complete Shopping	Secondary Wholesale-Retail	Primary Wholesale-Retail	Business Functions	Category
			\$5-11 million retail	\$11 million retail	Any 10 to 13	Automotive Supplies Bulk Oil Chemicals, Paint Dry Goods, Apparel Electrical Goods Groceries Hardware Industrial, Farm Machinery Plumbing, Heating, Air Conditioning Professional, Service Equipment Paper Tobacco, Beer Drugs Lumber, Construction Material	WHOLESALE
		Any 4 to 8	Any 9 or More		ALL	Antiques Camera Store Children's Wear Florist Music Store Photo Studio Paint, Glass, Wallpaper Plumbing, Heating Supplies Radio, TV Store Sporting Goods Stationery Tires, Batteries, Accessories Women's Accessories	SPECIALTY
	Any 3				ALL	Family Shoe Store Farm-Garden Supplies Lumber, Building Materials Hotel-Motel Mortuary	
			ALL			Appliances or Furniture Jewelry Men's or Boy's or Women's Clothing Laundry, Dry Cleaning	
Any 2						Garage, Auto, Implement Dealer Variety Store Meat, Fish, Fruit General Merchandise	CONVENIENCE
ALL	ALL					Gasoline Service Station Grocery Drug Store Hardware Store Bank Eating Places	

TRADE CENTER TYPE

Fig. 10. Trade center types defined by business functions.

Table 1. Distribution of Town Sizes, Retail Sales, Education, Income and Occupations in Two Functional Economic Areas and Another Group of Contiguous Counties, Iowa, 1960.

Area and Town	Population June 30, 1964	Total retail sales, year ending June 30, 1964 (\$ million)	Persons 25 years and over with 4 or more years college (both sexes)		Families with incomes of \$10,000 or more		Occupations of Males		
			Number	Percent	Number	Percent	Professional, technical and kindred workers	Managers, officials and proprietors other than farm	Farmers and farm managers
<b>Area A: Fort Dodge</b>									
Total, 8 counties.....	173,018	219.060	5,190	100.00	4,120	100.00	2,511	4,368	12,619
Fort Dodge .....	28,399	66.262	1,306	25.16	1,011	24.54	631	905	16
Boone .....	12,468	20.662	471	9.08	306	7.43	243	419	45
Webster City .....	8,520	16.668	321	6.18	244	5.92	170	336	36
Jefferson .....	4,570	10.507	212	4.08	130	3.16	112	156	19
Eagle Grove.....	4,381	6.755	125	2.41	149	3.62	69	136	21
Humboldt .....	4,031	11.644	196	3.78	151	3.66	107	194	26
Clarion .....	3,232	7.393	160	3.08	137	3.33	58	185	25
Belmond .....	2,506	5.750	90	1.73	62	1.50	56	82	15
Remainder .....	104,911	73.419	2,309	44.50	1,930	46.84	1,061	1,955	12,416
<b>Area B: Mason City</b>									
Total, 8 counties.....	176,364	237.287	4,923	100.00	4,089	100.00	2,700	4,202	13,078
Mason City .....	30,642	65.575	1,349	27.40	988	24.16	700	1,050	44
Albert Lea, Minn.....	17,108	40.000	621	12.61	452	11.05	348	599	24
Charles City.....	9,964	18.117	481	9.77	372	9.10	318	304	12
Clear Lake .....	6,158	10.966	227	4.61	213	5.21	125	218	60
Hampton .....	4,501	12.618	155	3.15	143	3.50	73	211	36
Osage .....	3,753	8.891	172	3.49	98	2.40	65	124	18
Forest City.....	2,930	6.212	182	3.70	55	1.34	108	77	17
Remainder .....	101,308	74.908	1,736	35.27	1,768	43.24	963	1,619	12,867
<b>Area N:</b>									
Total, 6 counties.....	109,083	129.742	2,891	100.00	2,576	100.00	1,429	2,722	10,684
Webster City.....	8,520	16.668	321	11.10	244	9.47	170	336	36
Iowa Falls .....	5,565	16.037	261	9.03	198	7.69	120	210	24
Hampton .....	4,501	12.618	155	5.36	143	5.55	73	211	36
Eagle Grove.....	4,381	6.755	125	4.32	149	5.78	69	136	21
Clarion .....	3,232	7.383	160	5.53	137	5.32	58	185	25
Eldora .....	3,225	6.069	130	4.50	93	3.61	96	159	18
Belmond .....	2,506	5.750	90	3.11	62	2.41	56	82	15
Remainder .....	77,153	58.462	1,649	57.05	1,550	60.17	787	1,403	10,509

area with incomes of \$10,000 or more. (In contrast, Fort Dodge had only 16.4 percent of the area's total population.) This city also contained one-fourth of the area's professional, technical and kindred workers and more than 20 percent of its nonfarm proprietors, managers and officials. It's a similar story for the eight counties around Mason City.

Figure 11 shows the distribution of town population sizes in the Fort Dodge functional economic area.

Figure 12 shows the distribution of town population sizes within 50 miles of Mason City. Austin and Albert Lea, just north of the Minnesota line serve to remind us that the actual arrangements of the national system of cities do not exactly fit any preconceived theoretical pattern. In this case, perhaps, the problem of delineating a logical functional area around Mason City is simplified by the existence of the Minnesota-Iowa boundary. For operations of the government of Iowa and of Iowa universities, Mason City is clearly the dominant center of a multi-county functional area, consisting of approximately seven whole counties and portions of two others.

### "Brand X"

Figure 13 is the "Brand X" of our demonstration. Shown are six contiguous counties which overlap the Fort Dodge and Mason City areas just shown. However, the six-county area lacks a single dominant center of the Fort Dodge or Mason City class. The largest town in the six counties is near the extreme western boundary.

The lower portion of table 1, containing statistics for the six-county area, reflects this fact. Webster City is

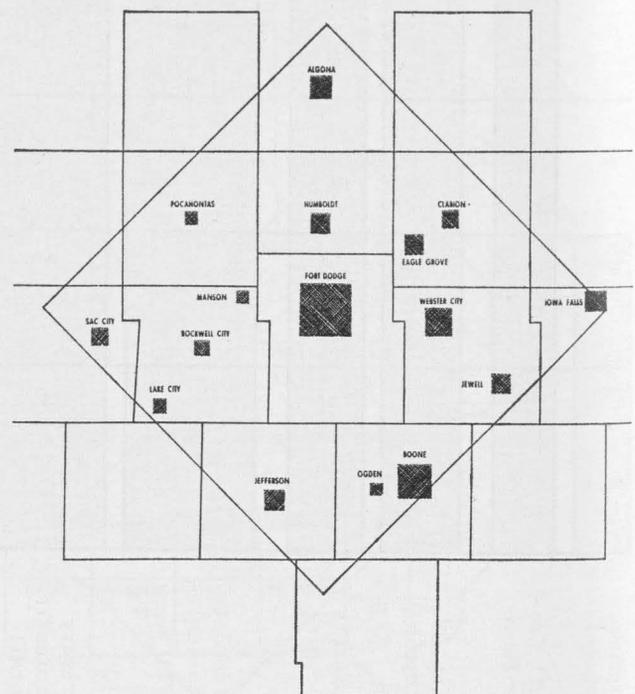


Fig. 11. Distribution of town population sizes in the Fort Dodge area.\*

\*Areas of squares are proportional to 1960 town populations. Only towns with retail sales of \$2.5 million or more for year ending June 30, 1964, are shown.

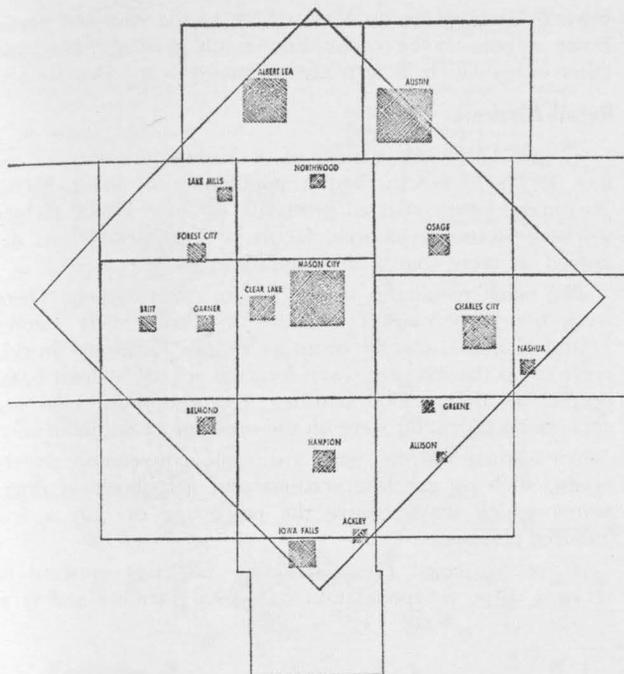


Fig. 12. Distribution of town population sizes in the Mason City area.\*

\*Areas of squares are proportional to 1960 town populations. Only towns with retail sales of \$2.5 million or more for year ending June 30, 1964, are shown.

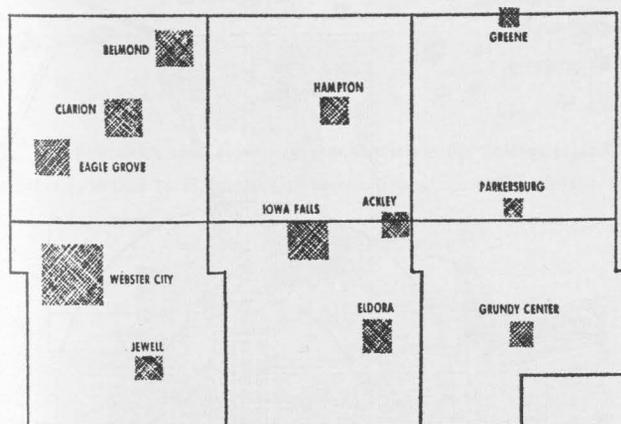


Fig. 13. Distribution of town population sizes in six contiguous counties.\*

\*Areas of squares are proportional to 1960 town populations. Only towns with retail sales of \$2.5 million or more for year ending June 30, 1964, are shown.

the largest city in the six-county area. It accounted for about 13 percent of total retail sales in the area in 1963-64. Webster City had 11 percent of the adults over 25 years of age who had completed 4 or more years of college; it contained less than 10 percent of the families with incomes of \$10,000 or more. It contained only one-eighth of the area's professional, technical and kindred workers and of its nonfarm proprietors, managers and officials.

In contrast, Fort Dodge and Mason City had approximately one-fourth of these workers, and showed a greater

relative concentration in terms of retail sales, 4-year college educations, and family incomes of \$10,000 or more.

### Commuting Patterns

Figures 14, 15 and 16 contain no surprises in view of what we have said about the relation of the automobile to the functional economic area. Each arrow in these diagrams originates from a township. To the extent that workers residing in that township were employed in counties other than that in which the township is located, each arrow reflects the average distance and the average direction of this commuting across county lines. The width of each arrow indicates the number of commuters living in the given townships and working in counties other than the one in which that township is located.

These commuting patterns (based on 1960 census data) indicate that the functional economic areas are relatively self-contained labor markets. Few people living inside of the area work outside of it, and vice versa. The pattern of arrows just outside the southeast boundary of the Mason City area (fig. 15) is particularly impressive.

Figure 16 suggests that residents of the six contiguous counties are oriented toward several different central cities, all located outside the boundaries of Area N. Intuitively, it seems that Area N would be very difficult to work with in an economic development program or to represent in a state legislature. My assumption is that persons in this area who are commuting eastward to Waterloo and Cedar Falls are interested in the economic and social growth of the area centered on those cities and that many other residents of Area N are primarily oriented

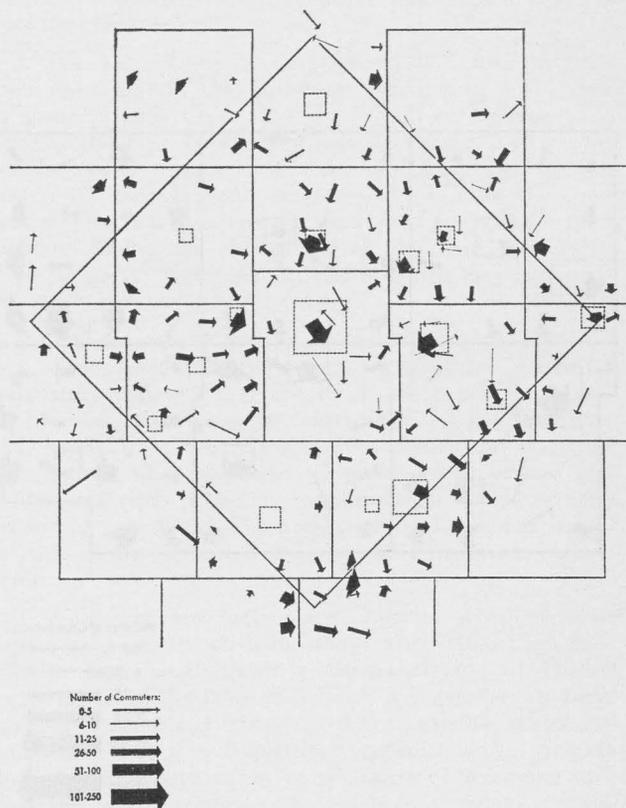


Fig. 14. Commuting pattern in the Fort Dodge area.

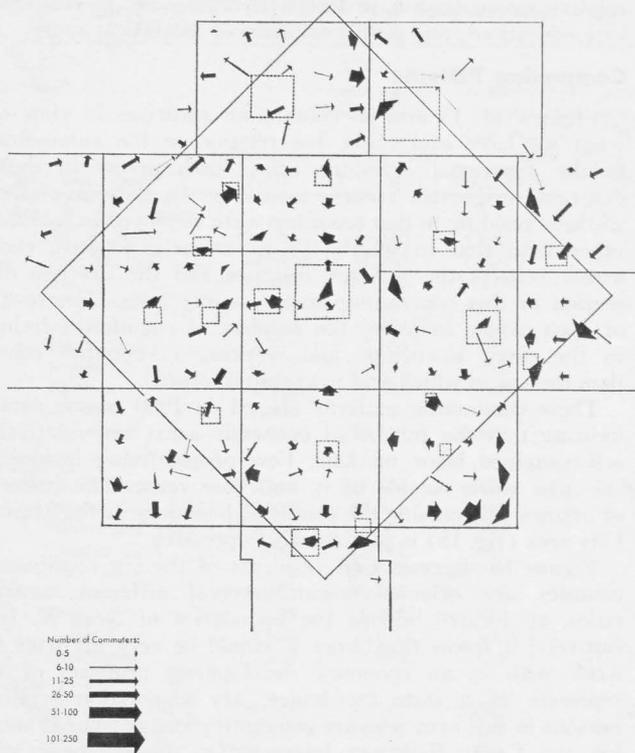


Fig. 15. Commuting pattern in the Mason City area.

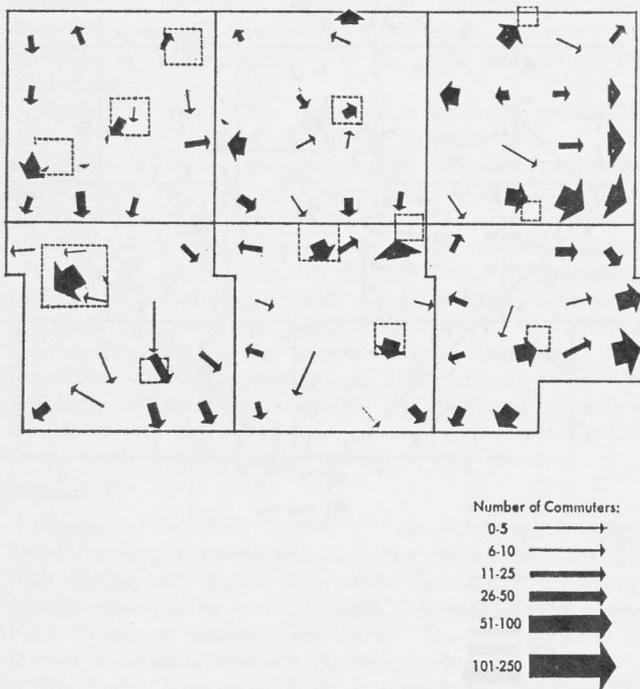


Fig. 16. Commuting pattern in six contiguous counties (area N).

toward Fort Dodge or Mason City to the east and north. Some appear to be commuting south toward Ames and other cities which in turn are oriented toward Des Moines.

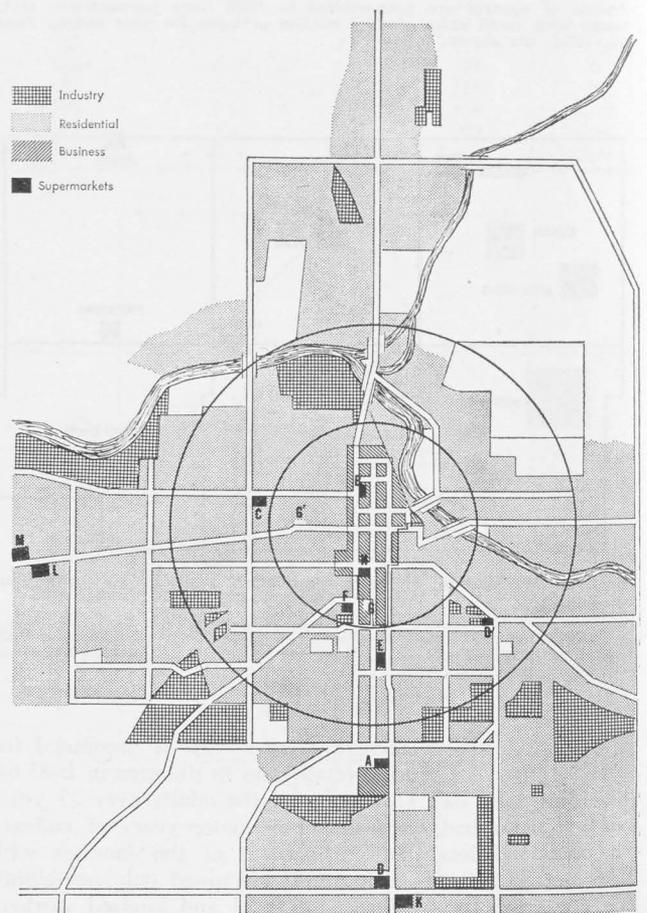
### Retail Markets

Figure 17 shows a map of a Midwestern city in the late 1950's. The city had a population of about 50,000. Its export base consisted primarily of some 10,000 factory workers whose residences, factories and parking lots occupied no more than 3 or 4 square miles.

The black rectangles in fig. 17 are supermarkets. There were nine supermarket locations in Center City (stores D and K and L and M count as single "locations" in this sense); on the average, each location served at least 6,000 people, or about 2,000 families. Average retail sales per supermarket location were on the order of \$2 million a year.

Not shown on the map are some convenience enterprises, such as gasoline stations and neighborhood drug-stores which may require the patronage of only a few hundred persons.

If we projected these shopping facilities outward to serve a dispersed population of 10,000 farmers and farm



Source: Bob R. Holdren, *The Structure of a Retail Market and the Market Behavior of Retail Units*, © 1960 Prentice-Hall, Inc. Adapted by permission.

Fig. 17. Map of Center City.

## CONCLUSION

In conclusion, we turn once more to fig. 8. We shall make a few summary remarks about the kinds of functional economic areas it represents.

1. The square (rotated 45 degrees) boundary is strictly appropriate only for a rectangular road grid. The basic concept in establishing the boundary of a functional economic area is approximately 60 minutes of commuter travel time from the central city. In hilly country with winding roads or poor roads, 60 minutes of travel may take us only 30 miles from the central city; or, an hour's travel may take us 30 miles in one direction and 40 or even 60 miles in another. (Consider, for example, the location of Salt Lake City with high mountains to the east and flat desert land to the west.) To exaggerate a little, the general outline of a 60-minute commuting area often looks like an amoeba under a microscope!

2. In some parts of the United States, the 60-minute commuting boundaries of different areas will overlap; in other parts of the United States, there may be some gaps between 60-minute commuting boundaries. The interstate highway system and other superhighway developments are tending to reduce the sizes of these gaps. If the central city itself is growing rapidly, new industrial plants may be located on the outskirts of the city; also, regional or district shopping plazas may grow up on the outskirts of the central city, reducing the dependence of workers and shoppers in the open country upon the downtown business district. So, it seems likely that population growth and highway improvement will reduce the apparent gaps between the 50-mile squares. A planned system of diagonal highways between central cities could also reduce the effective gaps.

3. The same kinds of development will tend to pack even more tightly the currently overlapping areas such as those around Cedar Rapids, Waterloo, Dubuque and Davenport. This means that sizable percentages of the populations of areas such as those in eastern Iowa will be within 60 minutes commuting travel of more than one central city. On the average, however, we would expect them to choose the shorter travel time (or, conversely, to locate nearer to the central city in which they are working at any given time).

4. Our projection of the modern functional economic area from Galpin's fundamental agricultural or urban community suggests that the FEA might provide a useful base for some quasi-municipal activities and functions. This implies that, regardless of what county and municipal jurisdictions were operating within the area, certain prescribed activities would be organized on a multi-county functional area basis. The area vocational-technical school districts being organized in Iowa in 1966 are a case in point.

5. We might also ask whether public school systems should be organized on a functional area basis. Each such area in Iowa would have a population base of 150,000 to as many as 500,000. With such a population and tax base, an area should be able to hire a capable school administrator and a well-qualified specialist staff. Schools throughout the area might be administered according to a standard salary schedule for teachers of equal qualifications; promotions might take place from a job of lower

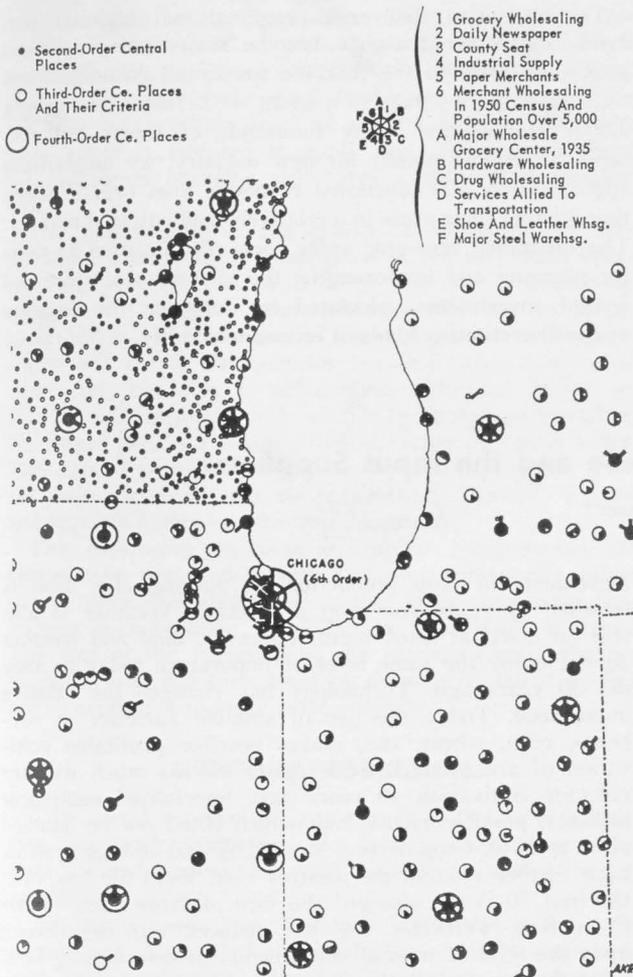


Fig. 18. Philbrick's areal functional organization in the Chicago region.

Based on: Walter Isard, *Methods of Regional Analysis* (Wiley, 1960).

workers, our area would have to include the equivalent of several counties. The central business district would remain as the business district of a city of perhaps 30,000 people; the supermarket locations (shopping centers) would be county seat towns or towns of similar size; and the gasoline stations and other neighborhood stores would be found on the main streets of villages of 1,000 population or less.

Figure 18 contains a specially modified map, designed to serve as a "before and after" picture. In the horse and buggy era, each of the smallest circles in the Wisconsin part of the map corresponded with a trade center of the type observed by Galpin. These smallest villages and towns have been deleted from the remainder of fig. 18, so that interest focuses on the fourth-order and larger third-order central places. Some of these places correspond to the FEA (and sometimes SMSA) central cities shown on our Iowa maps.

responsibility in any school in the area to a job of higher responsibility in any other school in the area.

If this kind of suggestion seems far-fetched and impractical, let us consider two points: (1) We have indicated that the modern functional economic area is a logical outgrowth of Galpin's fundamental urban community of 1915; (2) according to the 1960 census of population, some 80 percent of the residents of Fort Dodge and Mason City were born in Iowa. If elderly people in the more rural counties of such an area are worried about big city domination of their local schools, it may be possible to point out that the big city residents are for the most part their own sons and daughters!

## 7. The Economies of Agriculture and the Input Suppliers

Lee Kolmer\*

The traditional view of agriculture divides the industry into two sectors, on-farm activity and marketing. Marketing includes what happens after the product leaves the farm gate. This view was adequate until the late 1940's, but it does not classify the agricultural economy adequately today. Harold Breimyer suggests that instead of two, we have three economies of agriculture today:

1. Crop production.
2. Livestock production.
3. Marketing and distribution.<sup>1</sup>

Breimyer also recognizes that there could be a fourth economy, the farm input sector. For our purposes, I would suggest that we have four economies within the structure of agriculture. We will come back to the fourth economy later.

### CROP PRODUCTION

Beginning with the traditional sector, we have the crop production economy. On the surface this is the same as always, producing food and feed crops which are inputs for either the livestock producing economy or for the food processing and distribution economy. While the products remain the same, however, a closer examination of this sector reveals some basic structural changes which have a greater impact than we sometimes suspect.

Historically, the level of agricultural output has been closely associated with the quantity and quality of land available and the weather. We still think this way today. Iowa has more Grade A land than other states, and usually the weather is favorable for crop production. These are immutable factors and represent a natural endowment. In a primitive agriculture, the fixed factors determined the level of return. If both factors were favorable, land owners enjoyed a high level of return. If one or the other was unfavorable, land ownership returns declined quickly. Land returns were only possible after the labor input had been granted a minimum of a subsistence level of living.

Enough land and suitable weather are still essential

To the extent that area, regional and national economic development are to become matters of conscious policy, it seems to me that the functional economic area concept simplifies matters a great deal. Instead of having 3,000 counties and many thousands of towns and villages contending noisily for new industry, we might have approximately 400 functional economic area organizations representing their areas in a relatively sophisticated manner. The functional economic areas could also be used as units for planning and implementing the allocation of state and federal investments calculated to influence the location of the discretionary kinds of economic activity.

ingredients in crop production. If nothing else, land is required as space for crop production. Weather is also still an essential fixed input. However, land and weather do not enjoy the same level of importance today as they did 30 years ago. Technology has changed the relative importance. Today the use of suitable varieties of soybeans, corn, wheat, etc., makes possible profitable cultivation of areas which were subject to too much weather risk for cultivation 40 years ago. Specialized equipment makes it possible to use land which could not be handled prior to 1940. Crop drying, harvesting and storage systems have further reduced the weather risk. Field tile has, over the past 50 years, changed the face of large parts of the Corn Belt. Fertilizer use has reduced our dependence upon the level of natural endowments in determining level of production.

What has all this meant in terms of crop production? It has of course meant large increases in total output. But it has also changed the basic structure of crop production, in that each of the pieces of technology we have developed is a variable input rather than a fixed factor or natural factor. Since technical inputs are used up over time and must be replaced if production levels are to be maintained, we can vary the rate of replacement of one or more of these factors in light of price relationships, labor supplies and managerial objectives. Admittedly for some of these factors, such as field tile, replacement time is measured in decades rather than in years. This, however, is only one of many variable inputs. Machinery and fertilizer have a much shorter replacement cycle and producers recombine them continuously.

These human-directed, as opposed to natural-directed, inputs are subject to control and through this control output is less variable than in the past. Surplus problems of recent years illustrate this. Farmers have decided to control output on the up side within program limits, rather than on the down side. The failure of bringing crop output for some crops into balance with demand does not say output cannot be manipulated. Rather, it says that the social, legal and economic measures we have been using do not reflect the change in the basic structure of agriculture.

As our crop production economy acquires more and

\* Professor of economics.

<sup>1</sup> Breimyer, Harold F., *The Three Economies of Agriculture*. Jour. Farm Econ., Vol. 47, No. 3, August 1963.

more variable inputs, the structure will more closely resemble the structure of our industrial economy. High levels of variable inputs require, as a proportion of total investment, a relatively small land area. Crop production will not achieve this level of control because relatively more space is required to apply the variable inputs and the individual operator still faces a substantial weather risk.

The implications of the change in structure are far-reaching, both from the standpoint of the individual operator and society. The availability and use of increasing quantities of variable inputs places a premium on managerial ability. The selection of a combination of technology which will permit the operator not only to survive in the short run, but also to accumulate additional capital so that he can acquire more of the technological variables for future use, is a major problem facing operators today. The capital demands of the crop-producing sector have not only increased, but the proportion invested in land and variable inputs has changed drastically.

The continuing increase in capital requirements for controllable non-land inputs and the managerial talent to use them effectively means that large-scale crop production is a realistic possibility in areas such as Iowa. The size of the investments, the increased specialization of inputs and the high level of managerial talent needed are all conducive to large-scale output.

### LIVESTOCK PRODUCTION

The second economy of agriculture is livestock production. Livestock production, like crop production, provides semi-finished inputs for still another economy within agriculture.

Not many years ago, livestock production was an integral part of total farm production, closely associated with crop production. Livestock production provided further processing for farm-produced grain and winter employment. Feeding systems tied the level of livestock production, in any given year, to land. If crop yields were good, livestock production increased. If the harvest was poor, livestock production declined. On many farms this is still true today. However, in some livestock enterprises and some areas, this is no longer the case.

The broiler industry is completely divorced from crop production or the producers' acres. Feedlot cattle feeding operations base their output decisions on price relationships rather than on feed production on specific acreages they control. We in the Midwest have not divorced our livestock operations from crop production as much as producers in the West and South. If we had, I don't think we would have produced as many 1,300- to 1,600-pound cattle during the 1963-64 price decline. However, we have moved further in this direction than many realize. In recent years, the fluctuations in hog output are price responses, rather than feed supply responses.

Many reasons have been advanced for this change in the structure of the livestock feeding enterprise. Increased use of technology is one of the major reasons, in my opinion. Feed grains are now further processed and the use of non-farm-produced proteins, antibiotics, hormones and medicine necessitates greater involvement of non-land-derived inputs than previously.

Also, as the labor supply on farms becomes more fully utilized in crop activities, farmers are purchasing more

labor services from off-farm sources in the form of feed grinding and mixing, feed delivery, health services, etc. This further removes the livestock enterprise from the direct association with crop production.

The beef-calf producing enterprises of the West are still closely tied to a crop-producing land base—the amount and quality of range land available. Some recent developments in cornstalk-urea rations, and high tonnage sorghums for year-around rations for beef cow operations, could reduce this association substantially in feed grain producing areas.

On a national basis, the Midwest probably is closer to the traditional crop-livestock production association than are other areas. However, as livestock production specialization increases, the crop-livestock production separation becomes more apparent. As in crop production, the larger amounts of capital involved, the great and increasing array of non-farm produced inputs which must be combined and the smaller labor-management margin available, all point to an increased need for high level management which can be spread over more animal units.

### MARKETING AND DISTRIBUTION

The changes in structure in the crop and livestock producing sectors have been accompanied by similar changes in the processing and distribution economies. Some of the changes are obvious, especially in distribution. The shift in 20 years from neighborhood stores to supermarkets has been cited many times. Today about 25 percent fewer stores serve about 30 percent more people than in 1945.

Structural shifts in processing have not always been as obvious, but they are equally far-reaching. The consolidation of small processing and handling operations hasn't made national news many times, but it has been extremely important at the local level.

In Iowa alone, the number of milk plants declined from 315 in 1956 to about 175 in 1963. Meat packing has undergone great structural shifts during the past 10 years. In this case, the shift has been from multi-floor terminal-based plants slaughtering all types of livestock to highly capitalized plants killing one species or even one grade within a species. Many of these plants, located in heavy production areas, only slaughter livestock and chill the carcass. Further processing is carried out in plants located near metropolitan centers. This structural change has resulted in a basic realignment of the meat processing industry. Since 1957, it has resulted in more specialized plants being located in high production areas such as Iowa.

The changes in the processing and distribution industries have not only been surface changes. The rapid expansion of population and consumer incomes has resulted in a set of consumer demands undreamed of 20 years ago. Also, the communication and transportation systems have permitted managers to exploit this greatly broadened demand. This has taken the form of frozen foods (4 percent of all food sales), higher value foods, meat instead of beans and potatoes, and more food consumption away from home (20 to 25 percent of all food sales presently).

The changes in the processing and distribution sectors have one thing in common: Each requires substantially higher inputs of capital and labor after the product leaves the farm. This proliferation in processes, packages and services has, since World War II, resulted in a continu-

ing upward trend in the portion of the consumer's dollar needed to pay the "marketing bill."

Each month the U. S. Department of Agriculture compiles the retail value of the consumer's "market basket" at the farm and the "food marketing bill" incurred by this combination of foods in the marketing channels. From 1948 to 1960, the total value of all food products as they left the farm increased only 7 percent—less than the population growth of about 25 percent during the same period. During the same period, the total food marketing bill increased 71 percent.

In 1948, the consumer's dollar was divided almost equally between producer and marketer, 51 percent and 49 percent respectively. By 1961, the producer's share had declined to 38 percent and the marketer's share had increased to 62 percent. If the 38 percent being returned to the farmer is divided between crop producing and livestock producing activities, we find that 27 percent of the consumer's dollar goes to pay the farmer for crop production, and 11 percent for converting feed into livestock products. The percentage being returned to the farmer for non-food products is even lower, approximately 14 percent for 25 cotton items and 15 percent of the consumer's cigaret dollar.

These figures are often used to illustrate the plight of the farmer. This is not the intent in this case. Classifying the consumer's dollar by final recipient is not a measure of farm income. However, it does illustrate that a smaller and smaller proportion of the total value of final goods sold at retail is generated by the primary producing part of the economy.

Also, it illustrates that, for all intents and purposes, the marketing sector is detached from the crop and livestock producing sectors. About the only direct ties left are farmer roadside markets or local marketing operations by individual farmers. Also, an increasing portion of the total costs in marketing are incurred in changing the form of the raw material. The egg seems to be one of the few farm products that retains its form as it progresses through the system.

As we look at the three economies of agriculture, it is obvious that we cannot think and speak of "agriculture" as one homogenous economic sector. Rather, each area has a distinct structure and set of economic relationships.

### IMPLICATIONS

The increased use of capital and technology has resulted in substantial adjustment strains in the producing economies of agriculture. These stresses have been aggravated in many cases by the changes in the demands for different products. While the market has been demanding more meat products, on a total and a per capita basis, it has also demanded less "fat on the meat." Since a greater proportion of crop production inputs are not fixed resources such as land, the economy is expansible. This does not mean that output must expand, but rather that output can expand at a rapid rate. The livestock producing economy is also changing. Farm-produced feed supplies do not set the absolute limits on output they once did. Urea and stilbestrol are two significant laboratory-developed feed ingredients.

These changes in production result in farmers being able and willing to increase output rapidly if price expectations or income pressures dictate. Conversely, since

a greater proportion of the total farm inputs are variable, it is now easier to control the level of output by controlling the level of inputs. In an agriculture which is based primarily upon fixed factors such as land and weather, output levels are variable and uncertain. As a greater proportion of the total inputs are variable inputs, such as in industrial production, it is easier to control and stabilize output.

The farm producer has always faced an inelastic food market—consumers buy about the same amount of food, no matter what the price. This inelasticity, coupled with variable output, has resulted in wide fluctuations in income. These income fluctuations, in a sense, are the cost of variations in output. In the past decade the demand elasticity for food products has declined.

Demands for more highly processed food products have increased, and the costs of processing and handling have increased. As this occurs, the food raw material becomes a relatively smaller portion of the total cost of the final product. This means that farm prices lose some of their responsiveness to small changes in the consumer product price and also that consumer product prices are less sensitive to small changes in primary product prices.

An example for milk:

1. Farm price—\$4.00 per cwt.  
Retail price—25 cents per quart or \$11.12 per cwt.
2. Assume farm price rises 10 percent or 40 cents per cwt.  
The retail price increases one cent a quart, or 3.6 percent, if processors raise retail prices accordingly.
3. If retail price declines to 24 cents per quart, or 4 percent, the price drops to \$10.68 per cwt.
4. If this is reflected in the farm price, the price at the farm would decline 11.2 percent.

Milk is not the best example of this. Studies at Iowa State University show that wheat consumption would be about the same at \$1.50 per bushel as at \$1.15 per bushel. USDA studies in 1960 showed the same type of response. Cotton and soybeans, in many ways further removed from the final products than other products, are very inelastic at the farm level.

The change to a more inelastic product demand and a less inelastic product supply places a premium on a stable supply with a built-in dividend for underproduction. This places the burden on supply response rather than on demand response.

### SHIFTS IN NATIONAL DEMAND AND FARM EFFICIENCY

The more inelastic demand for farm products, combined with a less inelastic supply response, is further complicated by the shifts in demand in the national market. Technology has not only been applied to the production of farm products, it has also been lavishly applied to the processing and fabrication of these products. The result has been new products, new uses and substantial shifts in national farm product demand.

Table 1 shows the relative shifts in production since 1949. Admittedly, production does not equal consumption in all cases (beef in 1963 and 1964, feed grain and wheat), but for our purposes it does give some notion of the magnitude of the demand shifts in recent years.

Products showing the greater shifts are soybeans, broilers and turkeys and beef. However, output of all products except lard have increased since 1949. Population has also

Table 1. Total Supply of Selected Farm Products.

Product	1949	1954	1959	1963	1964
Beef (bil. lbs.)	9.5	13.0	13.6	16.4	18.4
Pork and lard (bil. lbs.)					
Pork	10.3	9.9	12.0	12.4	12.5
Lard	2.5	2.3	2.7	2.5	2.5
Broilers and turkeys (bil. lbs.)	2.4	4.4	7.2	9.0	9.3
Eggs (billion)	56.0	58.9	63.3	63.2	64.5
Milk (bil. lbs.)	116	122	122	125	127
Feed grains (bil. bu.)	4.6	4.7	5.8	6.0	5.4
Soybeans (mil. bu.)	234	341	533	701	700
Wheat (mil. bu.)	983	885	1,121	1,137	1,291

Source: USDA reports.

increased, from 146.4 million eating from civilian food supplies<sup>2</sup> in 1949 to 188.1 million in 1964, an increase of 29 percent.

This rapid increase in output has been accompanied by rapid increases in agricultural production efficiency. Kaldor<sup>3</sup> estimates that, since 1940, about 80 percent of our increase in output has been the result of increased efficiency, while 20 percent was accounted for by increases in total inputs. The nature of inputs, as cited previously, has changed drastically. Since 1920, labor input has declined 60 percent; 45 percent since 1940. Inputs of mechanical power and machinery have risen 200 percent; fertilizer and lime, 750 percent; feed, seed and livestock, 350 percent; and land and buildings only slightly since 1920.

The lower labor input has offset the larger capital input to the extent that there has been little net change in the total input of labor and capital *per unit of land*. However, the labor input *per unit of output* has declined by nearly 70 percent since 1940 while capital input *per unit of output* has increased by 30 percent. While the total input per unit of land has remained about the same, the total input per unit of output has declined and physical efficiency has increased.

<sup>2</sup> Does not include military, Hawaii or Alaska.

<sup>3</sup> Kaldor, Don, *Rising Farm Efficiency*, Farm Policy Institute, Des Moines, Iowa, February 1963.

## AGRICULTURAL EFFICIENCY VERSUS "OTHER"

Farm output has risen more than 40 percent since 1940, while the output of the remainder of the economy has more than doubled. About 80 percent of the increased farm output has come from increased efficiency and 20 percent from additional inputs. About 55 percent of the industrial sector increase has been from increased efficiency and 45 percent from employment of more resources. Output efficiency is still not as great in agriculture as in industrial sectors.

However, it is much closer today than from 1919 to 1957, when the average annual increase in total output per unit of input for agriculture averaged 0.7 percent and industrial output per unit of input increased about 1.9 percent per year. The rate of increase in farm efficiency was less than half of the industrial sector.

Labor input efficiency, however, tells a different story. The average product of labor has risen more rapidly in agriculture than in industry. Since 1945, output per man-hour in agriculture has increased about 6.5 percent per year while output per man-hour in industry has increased about 2.5 percent per year.

The significance of the shifts in inputs and the increased efficiency hits home dramatically if we examine the change in inputs and outputs on typical farms (table 2).

This again illustrates the very rapid increase of off-farm inputs in production. These shifts in composition and size of farm input costs are going to continue and intensify the next few years.

## CONCLUSION

We have rambled over several facets of the nature of the agricultural economy, agricultural efficiency and changes in output and inputs. It's time we get back to the input economy of agriculture.

The fact that the price elasticity for many farm products is declining and supply elasticity increasing has implications for input suppliers. In the absence of a system, government or private, to control output, these shifts in elasticity will result in continuing substantial year-to-year

Table 2. Changes in Farm Size, Livestock Enterprises, Feed Purchased and Labor Hired on the Different Types of Midwest Commercial Farms in Selected Years.

Type of farm	Item	1950	1955	1960	1963	1964
Hog-dairy (Corn Belt)	Acres in farm.....	159	163	178	186	188
	Pigs raised.....	106	126	123	149	222
	Cows & heifers 2 yrs. old & older.....	16	18	18	19	23
	Chickens .....	156	147	102	100	
	Fertilizer purchased.....	\$ 175	\$ 234	\$ 350	\$ 453	\$ 665
	Machinery expenses.....	2,049	2,126	2,837	3,461	3,077
	Feed purchased.....	912	1,139	1,282	1,691	2,540
	Hired labor.....	631	537	482	512	1,207
	Total cash receipts.....	8,321	8,808	11,050	12,414	17,273
	Hog-beef fattening (Corn Belt)	Acres in farm.....	194	200	216	231
Pigs raised.....		158	161	152	209	272
Feeder cattle purchased.....		33	42	55	77	80
Chickens .....		125	125	103	91	
Fertilizer purchased.....		\$ 160	\$ 238	\$ 400	\$ 542	\$ 982
Machinery expenses.....		2,381	2,375	2,782	3,443	3,844
Feed purchased.....		1,368	1,854	1,966	7,086	6,418
Hired labor.....		542	630	609	702	888
Total cash receipts.....		19,481	16,094	22,591	29,031	33,190

Source: Cost and Returns on Commercial Farms, Long Term Study, 1930-57, USDA Stat, Bul, 297 and Farm Costs and Returns, Agr. Inf. Bul. No. 230, June 1964.

income fluctuations. Income fluctuation has always been present, but as farm production becomes more specialized, the impact will be different for different types of suppliers.

Specialized production means specialized equipment. While this opens market opportunities, it also entails market risks. Increased variability in farm income means fluctuations in sales. Specialized equipment producers may have to do more planning for a combination of products which will reduce annual sales and earnings fluctuation.

At the same time, the increased specialization will demand a greater degree of farm market management knowledge on the part of the supplier. The sophisticated, specialized large farmer with a minimum of hired labor inputs is not now willing—and will be increasingly unwilling—to buy his supplies and services on a helter-skelter basis. He will do business where he can get a package of goods and services, including specialized production management advice, that meets his needs and where he is confident that the supplier is at least as knowledgeable as he is. Why ask advice of an ignoramus!

This means more sales engineering or sales consulting and less order-taking. Nothing is quite as frustrating as asking a salesman a question and having him hand you a factory brochure in response.

In my mind, it is essential to sell programs instead of articles for land cultivation, corn production, land management, livestock health, etc. All input suppliers are involved in this today.

The input supplier has fewer but substantially larger accounts than he had a few years ago. This really represents more sales opportunities in that each of these accounts buys services along with the product to partially compensate for the smaller labor input on his farm. These opportunities can only be exploited if the local dealer and the manufacturer remain competitive in price, service and information. This doesn't necessarily mean the lowest price or the most service or the slickest brochures. Rather it means having a product service and information combination that serves the specific needs of each of these larger accounts.

## 8. Antitrust Policy and Business Regulation in a Capitalistic Economy

Neil E. Harl\*

The economy of the United States has traditionally been regarded as capitalistic in nature, with decisions governed by the interplay of supply and demand in competitive markets. However, in the past three quarters of a century, the federal government and, to some extent, the states have deemed it to be in the public interest to play an increasingly pervasive role in providing a limiting framework for business decision making.

Ironically, the necessity for increased business regulation has been attributable in part at least to the high degree of productivity and innovation of business. Forces accompanying the generation and application of industrial technology, the development of vast financial combines, the creation of mass promotion means, and the extension of transportation and communication networks, have operated centripetally to increase business concentration, stimulate interdependence between firms in decision making, and add to the consumer's burden in acquiring knowledge sufficient to be a rational decision maker.

As a matter of regulatory policy, an economy experiencing such forces and desiring to react positively to them, faces three basic alternatives under the assumption that reliance on competition among firms or the countervailing power concept of creating opposing power constellations does not completely fulfill policy requirements.

First, the appropriate law-making body could undertake to define every type of behavior or practice believed to be unacceptable and circumscribe such conduct by law. Such an approach, while perhaps imparting substantial certainty to the system, would necessitate a highly detailed, highly complex set of legal rules, thus increasing

the rigidity and likelihood of obsolescence of the legal structure.

A second approach would be for firms to be subjected to continuous administrative regulation by a government agency. However, it is generally believed that such intensive regulation would be a relatively inefficient means of maintaining an acceptable level of performance.

A third alternative, and the one adopted in the United States, involves enactment of a relatively few fundamental principles into statutory law, with the courts interpreting the statutes for the multiplicity of fact situations as they arise. Although accompanied by some uncertainty, this alternative provides flexibility and permits continual reinterpretation to minimize obsolescence of the legal system.

### PUBLIC POLICY OBJECTIVES

Any attempt at business regulation necessarily assumes, implicitly or explicitly, a set of relevant goals toward which the regulatory framework is oriented and by which the efficacy of the system is measured. Although universality of agreement on any articulated set of objectives is unlikely, substantial agreement exists on certain basic political, social and economic goals.

In the list of political and social goals, concentrated economic power has been suspect as being inimical to the foundations of democratic government and inconsistent with the free enterprise system and the maintenance of individual liberties. Moreover, it has been considered highly desirable for political parties to be free from domination by economic power groups; for individuals to have a maximum of economic opportunity, mobility and personal freedom; and for unfair methods of doing business to be prohibited. Furthermore, the protection of the

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health, safety and general welfare of the people has long been of paramount importance. Because of their nature, it has been public policy to protect small business, labor and agriculture in varying degrees.

Regarding economic goals, there is fairly widespread agreement that efforts to promote economic growth, increase per capita levels of real income, insure economic stability and improve efficiency in resource allocation and distribution are in accord with basic goals of society.

Society has come to accept yet other goals. Thus, a certain level of military preparedness and defensive capabilities is a relatively high priority goal as, apparently, is the goal of being "on the moon by 1970."

These objectives present a formidable problem in attaining an acceptable balance in the over-all scheme of societal goals. In the final analysis, the political process provides a composite judgment, and the various objectives are weighted according to their relative importance.

### ELEMENTS OF INDUSTRIAL STRUCTURE

The degree of seller and buyer concentration and the number of firms operating in a particular market are believed to have an impact on the conduct and performance of firms. Thus, price levels may be influenced and levels of output affected by the number and relative size of firms in an industry or in a particular market. Also, the progressiveness of firms may be affected by industry or market structure.

From an economic standpoint, it has been generally believed that society's objectives would be better served by a market characterized by competition than by monopoly. In the real world, few if any industries actually conform to the economic constructs of either pure monopoly or pure competition. Agriculture, except for governmental output-limiting or income-supporting programs, approaches pure competition; pure monopoly is almost unknown, although many firms bear some monopoly characteristics. A description of each type of market follows:

#### Pure Competition

In pure competition, firms are sufficiently small and numerous to be price takers; in varying their outputs, price is not affected. Therefore, firms under pure competition adjust output to the most profitable level according to the prevailing price and their own cost figures. Since no single firm has a perceptible influence on price, individual sellers are not likely to limit output in an effort to raise price.

In the long term, under pure competition, industry output presumably is extended to the point where (1) production takes place at the lowest cost per unit of output, (2) the market price is equal to the minimum per unit cost (which includes "normal" profits) and (3) there are no "excess" profits.

With pure competition, market forces of supply and demand serve as the basic regulator of firm and industry action. As the demand for a product increases, the price rises and induces established firms to increase output or new firms to enter the market. Conversely, as demand falls, the price of the product declines and encourages established firms to cut back output; new firms are discouraged from entering the market.

#### Pure Monopoly

Pure economic monopoly may be defined as the control

of all economic goods within the range of substitutability by the same person or firm. Thus, for pure monopoly, the firm must operate in isolation.

Many industries frequently referred to as monopolies do face some measure of competition. For example, a firm distributing electrical power may face competition from natural gas distributors. A railroad, although not always subjected to competition from other railway firms, may encounter competition from airlines, trucks and barges. However, in all of these examples, some elements of monopoly are present; the firms are a long way from being pure competitors.

A monopolist can set either his price or his output. He cannot determine his price and his output at the same time, however, unless he has the power to force consumer purchase of the goods or service produced. A monopolist is generally looked upon with disapproval by economists because a firm with monopoly power tends to produce at a lower level of output and charge a higher price than for pure competition.

Moreover, monopolies are often characterized by "excess" profits in the sense that amounts paid or attributed to factors of production are in excess of the "normal" profit needed to keep the factor in that particular use.

The degree of monopoly power is heavily dependent upon the "elasticity of demand" for the product. The elasticity of demand with respect to price is the relative change in quantity taken that is induced by a given percentage change in price, all else held constant.

The lower the elasticity of demand, the greater the monopoly power in most instances. Thus, a situation where consumer buying habits are little affected by changes in price would indicate high potential monopoly power. In contrast, if a cent or two rise in the price of milk causes droves of consumers to turn to drinking fruit juice, the monopoly power of the local dairy would be relatively weak.

#### Oligopoly

An oligopolistic market lies between the extremes of pure competition and monopoly and typically involves a few large sellers of an identical product. Each seller supplies enough of the total market output to influence market price by adjusting his output. Accordingly, an oligopolist may anticipate reactions by rivals as to price and output policies. Thus, there may be a recognition of interdependence by oligopolistic firms operating in the same market.

Price and output levels under oligopoly may fluctuate over a broad range and are generally less determinate than for pure competition or pure monopoly. Collusion (either express or tacit) may occur, with the result that the collective action resembles that of a monopolist. On the other hand, a stalemate may result, with each firm adhering to past policies in fear of triggering reactions by rivals that might come with change. In some instances, open price warfare or rivalry is a possible outcome of oligopoly structure.

The precise economic result from oligopoly appears to depend upon many factors: The number of firms and their geographic position; the nature of the product in terms of supply, demand and perishability; and the extent to which it is feared that higher prices and reduced output will attract new entrants all affect the ultimate price and output pattern. Also, the knowledge levels of rivals' activities, personalities of the decision makers and legal inhibitions to cooperation or collusion impinge upon the

end result. Some instability in prices, outputs and market structure can be expected in an oligopolistic market framework.

### **Monopolistic Competition**

Although similar in some respects to oligopoly, monopolistic competition involves sellers of differentiated rather than identical products. The market may be characterized by a few sellers, or it may have many sellers of products of differing real qualities or which the buyer thinks differ in real qualities.

Product differentiation may be explained in part by advertising, brand names, trademark, patents or custom. Each seller has a degree of monopoly power with respect to his product; however, the presence of relatively close substitutes denies the monopolistic competitor the power of a pure monopolist.

### **Cartel Arrangements**

Even though an individual firm may be operating in pure or near pure competition and be unable to affect price levels by varying its output, if all firms in the industry or the market were to collude in making price and production policy, the firms acting in concert could exert monopoly power. This is the basic idea of a cartel. United States policy has long been to prohibit most types of cartels under the antitrust laws.

Unless entry by new firms is effectively blocked, cartel arrangements often disintegrate because of erosion of the monopoly advantage due to the increasing market position of newcomers or payments to induce newcomers to participate in the cartel. The most effective cartels are those protected by legal or governmental sanction with entry blocked on the basis of patents or licenses.

## **RELATIONSHIP OF MARKET STRUCTURE TO CONDUCT AND PERFORMANCE**

Classical economic theory extols the virtues of pure competition. In theory, pure competition is consistent with most public policy objectives, at least in the short run. However, pure competition has been a rarity in the 20th century. Economies of large-scale production and distribution in many industries enable costs per unit of output to decline as plant size increases over a substantial range. In those instances, pure competition could, perhaps, be attained, but at a price of higher product costs. Moreover, it is often argued that additional incentives are provided for research and development in firms that are less than purely competitive. Monopoly promises to protect gains from technological innovation and new ventures necessary to encourage expensive or high-risk development activities. Therefore, a range of competitiveness may exist between policy goals of economic efficiency and widely dispersed economic power on the one hand and the goals of minimum cost production and economic progress and technological innovation on the other.

With neither pure competition nor monopoly providing suitable standards for evaluating actual conduct and performance by firms, attention has been directed to conditions of "effective" or "workable" competition.

The problem is essentially one of defining an acceptable character of competition as a process in terms of market structure such that it can normally be expected to presage the kind of performance and conduct considered acceptable in light of relevant policy objectives. "Workable" competition may be considered as "attainable" competi-

tion producing socially desirable results.

Structure of markets and industries is in itself relatively unimportant. However, particular structural patterns may be productive of predictable conduct and performance in the future. And conduct and performance are important economic variables.

Ideally, an unbroken chain could be forged from market structure to conduct and performance, with present and future performance deducible from observations of present market structure and with precise alterations in performance predictable from specified changes in structure. It is generally conceded that perfect competition provides a one-to-one correspondence of structure and performance. But in markets having a mixture of competition and monopoly, market performance and conduct cannot be predicted from structure with such certainty.

Some authorities stress structural conditions in attaining a state of workable competition, with attention focused on eliminating barriers to entry, making product and market information equally available to all, encouraging standardization of products so consumers will not be hesitant to substitute, and insuring that buyers and sellers in each market are sufficiently numerous and limited in size so that alternate sources of supply and market outlets are available.

A second school of thought begins by specifying standards of desirable performance and then characterizing as workably competitive whatever market structures and trade practices are likely to produce that performance level. Adherents to this school commonly assert that firms are performing adequately if they use resources economically, operate at minimum size consistent with the lowest unit cost, pass on cost reductions to consumers, and continually innovate with respect to new techniques and processes. Critics of this latter school argue that firms might lack adequate incentives to behave in the desired manner; therefore, this scheme places too much reliance on the good intentions of firms and the fear of antitrust laws, and would require intensive administrative observation of actual performance.

## **LEGAL MEASURES AFFECTING LEVELS OF CONDUCT AND PERFORMANCE**

The law may be considered as a malleable framework, within which economic and social activity is carried on, ever changing in an attempt to mirror with greater fidelity the dictates of avowed public policy but with sufficient rigidity to impart certainty, uniformity and stability to public and private activity. Both federal and state laws impinge upon conduct and performance by firms.

Law and economics approach the regulation of firms with a different language and different definitions for the same terms. In technical economic usage, "competition" means inability of a market participant to influence price. The term may also be used, as it is conventionally in law, to connote market rivalry.

In economics, "monopoly" is defined as power over supply of commodities in a market within the range of substitutability and is considered beyond economic redemption except by those who posit a competitive relationship between progressiveness and pure competition. Under the law, the mere existence of monopoly, without more, is no offense. Firms acquiring monopoly power solely by competitive merit or because of monopoly power being "thrust upon" the firm may not be in violation of the antitrust laws.

## State Laws

All states have laws regulating trade and many have antitrust laws as such, comparable to if not parallel with the federal system of antitrust laws. However, with a few notable exceptions, states have generally not been active in antitrust enforcement. In fact, many state laws have a direct or indirect effect of stifling competition, restraining trade or promoting monopoly-like practices.

For example, several states sanction vertical price-fixing practices or resale price maintenance. More than half of the states by statute restrict sales of specific products "below cost" or prohibit "loss leaders." Many jurisdictions impose barriers to entry for occupations by requiring licenses or permits as a condition precedent to entry.

With parallel systems of antitrust laws, state and federal rules occasionally come in conflict. In that event, state law must generally give way. However, federal jurisdiction is limited by the concept of "regulation of interstate commerce." Judicial interpretation of federal statutes has gradually enlarged the concept until, as colorfully expressed by the U. S. Supreme Court, "if it is interstate commerce that feels the pinch, it does not matter how local the operation which applies the squeeze." Yet a substantial amount of activity does not affect interstate commerce and, therefore, is subject to state regulation if it is regulated at all.

## Federal Statutes

Three statutes, and their interpretative cases, largely comprise the federal antitrust law.

The Sherman Act, known as the "charter of economic freedom," was enacted by the Congress in 1890. Section 1 of the act condemns in broad terms every contract, combination or conspiracy in restraint of trade or commerce. Section 2 outlaws monopolization, attempts to monopolize and combinations or conspiracies to monopolize any part of trade or commerce.

The U. S. Supreme Court, in interpreting the provisions of the Sherman Act, early articulated a "rule of reason" for determining legality of conduct and business arrangements under the act. This rule emphasizes the direct or indirect effects of given conduct upon interstate or foreign commerce, considered in light of the standard of reasonableness applied at common law. The rule of reason therefore affords flexibility in deciding antitrust cases and defers the difficult problems to the courts for a case-by-case interpretation. However, the courts have identified various offenses where the rule of reason is not applicable. In those cases, the practices cannot, in the eyes of the court, be justified under any circumstance. Commonly referred to as *per se* offenses, they include agreements to fix prices, agreements to control production, group boycotts, market decisions and tying contracts.

The Clayton Act of 1914 supplements the Sherman Act with comparatively more specific provisions relating to certain types of activities. The most frequently used sections of the Clayton Act deal with price discrimination (expanded by the Robinson-Patman Act of 1936), acquisition of control of competing corporations or mergers (amended in 1950 to enlarge scope of provisions) and exemptions from the antitrust laws.

The Federal Trade Commission Act, also enacted in 1914, established the Federal Trade Commission and outlined its authority as an enforcement and quasi-judicial agency. The act, as amended, contains a substantive pro-

vision that "unfair methods of competition in commerce and unfair or deceptive acts or practices in commerce are hereby declared illegal."

## Exemptions from Federal Antitrust Law

For various policy reasons, a substantial amount of economic activity is exempt from antitrust enforcement.

Organized labor, whose activities would otherwise be in violation of antitrust law, is largely exempt by virtue of the Clayton Act and the Norris-La Guardia Act of 1932. Section 6 of the Clayton Act provides that "the labor of a human being is not a commodity or article of commerce." However, the courts have denied the exemption in several instances, including those where union activities were part of a concert with employers to accomplish objectives outlawed by the Sherman Act, where no labor dispute was involved in the union's activities, and where the union agreed with one set of employers to impose a specific wage scale on other bargaining units to drive weaker employers out of business. Critics of the exemption for organized labor have urged that union power be limited by making the Sherman Act applicable to labor unions or limiting the size of collective bargaining units and making collusion among them unlawful.

Certain types of agricultural organizations have had a limited exemption from antitrust coverage since 1914.

Section 6 of the Clayton Act provides that "nothing . . . in the antitrust laws shall . . . forbid the existence or operation of . . . agricultural or horticultural organizations, instituted for . . . mutual help, and not having capital stock or conducted for profit . . . nor shall organizations or the members thereof, be held or constrained to be illegal combinations or conspiracies in restraint of trade under the antitrust laws."

The Capper-Volstead Act of 1922 expanded the Clayton Act exemption to organizations having capital stock, and to include among exempt practices the "collective processing . . . handling, and marketing of their products." However, the Capper-Volstead Act imposes upon the Secretary of Agriculture the duty of instituting proceedings against an agricultural organization if the Secretary "shall have reason to believe that any such association monopolizes or restrains trade in interstate or foreign commerce to such an extent that the price of any agricultural product is unduly enhanced by reason thereof." The agricultural exemption has been further limited by judicial action. Activities of agricultural organizations with "other persons" are not beyond the pale of antitrust law. Moreover, "predatory practices" by agricultural organizations seeking to monopolize are forbidden. In a recent U. S. Supreme Court case, the court held that the anti-merger provision of the Clayton Act was applicable to agricultural cooperatives. Agricultural organizations cannot use their position to foreclose competition, destroy competitors or gain a competitive advantage.

In the area of professional sports, baseball has long enjoyed an immunity from antitrust laws by decision of the U. S. Supreme Court. However, the court has been unwilling to extend similar immunity to other forms of entertainment, including professional football.

Insurance companies, to the extent regulated by state law, are not subject to federal antitrust laws. And export associations entered into for the sole purpose of engaging in export trade are exempt as well.

### Specific Parameters of the Legal Framework — Three Illustrations

Since federal antitrust law is highly refined and moderately complex, we will not make a detailed analysis of all relevant aspects of the complete regulatory system. The areas of merger, resale price maintenance and discrimination in distribution are selected for further illustration of the nature and characteristics of federal antitrust law.

*Mergers.* Mergers have reached an all-time high in the 1960's. Neither the 1950 amendment (Celler-Kefauver Act) to the Clayton Act anti-merger provision nor stepped-up enforcement activities appear to have stemmed the tide.

Section 7 of the Clayton Act, as the primary anti-merger statute, presently applies to all types of mergers and acquisitions which have the specified effects of substantially lessening competition or tending to create a monopoly.

Greatest scrutiny is generally given to horizontal mergers due to the supposedly adverse effect on competition in virtually all cases. Horizontal mergers involve the acquisition of the stock or assets of a firm producing an identical product or close substitute and selling it in the same market.

Vertical mergers, those concerned with the acquisition of the stock or assets of a firm that buys the product sold by the acquirer or sells a product bought by the acquirer, usually receive slightly less attention by antitrust enforcement agencies. However, a number of vertical mergers have been challenged successfully in the courts.

Mergers that are neither vertical nor horizontal are classified as conglomerate in nature. These range from the pure conglomerate in which there is no discernible economic relationship between the businesses of the acquired and acquiring firms, through a variety of "mixed conglomerates" involving various elements of vertical or horizontal merger other than the straightforward vertical or horizontal types. Although conglomerate mergers are least likely to encounter opposition by antitrust agencies, recent objections to some conglomerate mergers have been upheld by the courts.

Although the antitrust laws hardly reflect enthusiastic support of mergers, it has not been suggested that mergers be banned outright. Section 7 of the Clayton Act, as amended, is directed only at mergers with respect to which there would be a reasonable probability of anticompetitive effects. While Congress obviously intended to limit mergers significantly, it also wished to leave some room for those promising beneficent effects and posing no serious threat to competition.

Mergers may prove to be economically beneficial in some instances. The burden may be eased for individuals and firms desiring to liquidate their holdings for personal reasons. Economic welfare is generally served by maintaining a market for capital assets. Moreover, merger may enable firms to take advantage of economies of scale, to stabilize profits and to reduce the risks and consequences of business failure and bankruptcy.

In other instances, mergers may be detrimental to economic growth and development and inimical to other policy objectives. Horizontal mergers allegedly have contributed heavily to the growth of monopoly and oligopoly. Through vertical merger, firms may extend their market power from one level to another and impair competition by foreclosing substantial markets to competitors or pro-

spective new entrants. There is less agreement among economists as to the probable effects of conglomerate mergers.

According to one economist, "the exact mechanics by which the total power possessed by the firm gets larger than the sum of the parts (in individual markets) escapes me, and I am not sure that there are any companies that meet the specifications of the conglomerate firm."

It is arguable, however, that a firm possessing substantial market power in some markets may use such conglomerate-derived power as leverage to enter or expand in others. Furthermore, conglomerate firms may have an advantage in reciprocal trading—a conglomerate firm may have as suppliers or potential suppliers firms which are also potential customers of products produced by another division of the conglomerate firm. In those cases, firms dealing with the conglomerate firm as both buyer and seller may be induced to enter transactions that otherwise might be economically less advantageous than dealing with other firms.

*Resale price maintenance.* The practice whereby suppliers of goods specify the prices to be charged on resale and take action to insure compliance with price lists has come to be known as resale price maintenance. The practice has also been referred to euphemistically as "fair trading." Resale price maintenance, which is a form of vertical price fixing, differs from typical collusive price fixing agreements in that resale price maintenance normally applies only to branded goods and competition may exist between different brands although price competition is eliminated between sellers of the same brand.

Arguments made on behalf of resale price maintenance stress the injurious effects likely to be suffered by manufacturers if their branded products are used as "loss leaders" or are otherwise sold at cut-rate prices. Also, it is sometimes argued that demand for goods may fluctuate widely (to the supposed detriment of the supplier) if price is permitted to vary. Some suppliers cite better customer service as an advantage of resale price maintenance if dealers are assured of a reasonable and stable margin of profit. Proponents of resale price maintenance have also argued that small businessmen may be protected and kept in business if a rate of profit above that expected without resale price maintenance were to prevail.

Arguments against resale price maintenance emphasize that it is in restraint of trade and hence illegal. The U. S. Supreme Court agreed as early as 1911. Later cases held that price setting through genuine agency relationships was permissible. Moreover, it was held that a firm has the right to choose its own customers and to withhold its goods from those who will not sell at the suggested prices. The Supreme Court indicated that a firm might not use coercive means to bring noncooperating customers into line, however.

Beginning in the early 1930's, a number of states enacted resale price maintenance laws.

The Illinois law was upheld by the U. S. Supreme Court in 1936 on the argument that the primary aim of the statute was to protect the good will of the manufacturer. But that decision did not protect the price fixing practices sanctioned by state law if interstate commerce was involved; federal antitrust law was violated in that event.

In 1937, the Miller-Tydings Act was enacted by Congress to provide federal protection to state resale price maintenance statutes where interstate commerce was in-

volved. After the U. S. Supreme Court held that the Miller-Tydings Act was not enforceable against nonsigners of price agreements, the McGuire Act of 1952 was passed to extend the Miller-Tydings Act to nonsigners.

Although only seven states have no type of resale price maintenance statute, such laws in 24 states have been held unconstitutional in whole or in part. In 1961, the Iowa statute was held to involve an unconstitutional delegation of power in letting a manufacturer regulate the sales policy of a retailer not a party to any contract or agreement with the manufacturer.

*Discrimination in distribution.* In the early years of the Clayton Act, emphasis on combatting price discrimination had been placed on discrimination which was destructive of competition among sellers. With the emergence of concentrated economic power in the form of chain stores and large mail-order firms in the 1920's, the focus shifted to discrimination among buyers. This led to strengthening of the discrimination provisions by the Robinson-Patman Act of 1936.

Section 2 of the Robinson-Patman Act is of substantive interest. Section 2(a) makes it unlawful for any person engaged in commerce to discriminate in price between different purchasers of goods of like grade and quality where any purchase is in commerce if the necessary anti-competitive effect is shown. The Robinson-Patman Act is violated if the effect of the discrimination may be substantially to lessen competition or tend to create a monopoly in any line of commerce, or to injure, destroy or prevent competition with any person who either grants or knowingly receives the benefit of such discrimination.

However, several defenses are available for section 2(a) violations. Allowances may be made for differences in cost of manufacture, sale, or delivery resulting from quantity sales or deliveries. Moreover, price changes may be made for imminent deterioration of goods, distress sales under court process and going-out-of-business sales. And a seller can in good faith meet but not beat the price of a competitor.

Section 2(c) of the Act makes it unlawful to give or receive any commission, brokerage or other compensation or discount, except for services rendered in connection with the sale or purchase. In effect, the provision prohibits the payment of brokerage in any guise by one party to the other, or the other's agent, at the same time expressly recognizing the right of either party to pay his own agent for services rendered in connection with the transaction.

Sections 2(d) and 2(e) provide that any services furnished by the buyer and paid for by the seller or furnished by the seller to the buyer must be available on proportionally equal terms to all other customers competing in the distribution of such products or commodities.

These services might include (1) radio or television advertising, window and counter displays or other promotional service rendered by each buyer up to a uniform maximum percentage of his dollar volume, (2) granting each buyer a set dollar allowance per unit of merchandise bought on condition that he perform a specified minimum quantity of promotional services, or (3) furnishing direct promotional services to the buyer worth a uniform percentage of each buyer's volume. To insure appropriate benefits to all qualified customers, the seller is expected to offer bona fide alternatives enabling all buyers to participate in promotional programs in some form.

### CONCLUSION

The regulatory and antitrust scheme of the United States is workable, though admittedly complex. It is one of the more elaborate frameworks for regulating private economic activity in the free world.

Perhaps one of the most essential qualities of antitrust law is that it remain flexible and amenable to change as public policy changes or as knowledge is generated relevant to the regulatory process. For this reason, antitrust law deserves continued reappraisal by all those interested in the structure, conduct and performance of firms in the business community.

