ECONOMIC INDICATORS IN ECONOMIC ANALYSIS

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COLONEL BARNES: Admiral Hague and gentlemen: I think by now everybody here has come to recognize the importance and the value of statistics. By gathering and studying pertinent statistical facts of the past, we are able to reach some logical appraisal of the present and even, without going too far out on a limb, make some predictions of the future.

Now this process has developed into a real science and it is important to us to understand some of the techniques of that science, particularly as it relates to the analysis of the economic position of the country. You can't study logically economic mobilization without knowing something about the economy you are trying to mobilize.

This morning we have a real expert in this field. It is Dr. Paradiso's job to analyze and evaluate the national economy. This includes current appraisals as well as the forward outlook. Also from these studies he is able to reach some determination of the probable magnitude of our war potential.

This morning Dr. Paradiso is going to explain to us the specific usefulness of the economic indicators that are used in studying our national economy; he is also prepared to answer any questions that you may have regarding the meaning of the various charts and tables published in that report of economic indicators which was on your reading list and which you have been advised to bring to this class.

Dr. Paradiso is a very able teacher and I recommend highly that you take full advantage and don't miss an opportunity to clear up any points on which you may be fuzzy in this field. This is the third time we have had Dr. Paradiso with us on this subject and he has cleared up lots of points for the previous classes. It is a great pleasure to me to be able to present him to this class. He is Assistant Director and Chief Statistician for the Office of Business Economics, Department of Commerce. Dr. Paradiso.

DR. PARADISO: Thank you very much, Colonel Barnes. What I want to do this morning is to give you some idea as to the principal types of economic indicators which are used by government officials, by businessmen, and by various economists in and out of the Government in the appraisal of the economic situation. There are essentially five basic types of economic indicators which are utilized for the purpose of analyzing the economy. I will enumerate those and then go through an

explanation of each one, with particular reference to the uses made of the various types of indicators.

The first set of indicators comprises the production indexes; the second consists of the employment and unemployment data; the third group consists of the purchasing power and consumption indicators; the fourth group consists of the price indicators; the fifth are indicators of monetary changes; and finally, a set of indicators which to my mind are among the most important, namely, the series which purport to anticipate business fluctuations.

Now let us proceed to the first group of indicators, those on production. The two most commonly used of these indicators are the gross national product and income, and the Federal Reserve Board index of industrial production. You have already had in previous lectures a discussion of the national income and the gross national product so I will not go into the details of those but I will try to illustrate the uses which are made of these two basic indicators. The gross national product is the most general indicator of business activity that we have. It represents essentially the total production of all goods and services in our economy.

There are simply two points to get about this gross national product: The first is that it measures the value of our total production in terms of market prices, in terms of the prices which you as a consumer pay when you buy an article, or what the businessman pays for the goods and services he buys. If you buy a pack of cigarettes, say, for 20 cents, which includes the excise tax, that is the amount which is included in the gross national product. If you buy an article at wholesale, then that amount is included in the gross national product. All goods and services are valued at prices prevailing in the respective markets where they are bought.

The second point to get is that the gross national product consists of only final products. For example, it does not include explicitly the amount of steel that is produced nor the amount of leather that goes into producing shoes. It contains the final products produced by the economy. "By final product" I mean those that are utilized by the final consumer, whether the consumer is the businessman, the Government, the farmer, or the consumer such as you and I.

Now obviously the steel that goes into a final product is included. In other words when you buy a refrigerator, the portion of steel that went into that refrigerator is included in the gross national product. Steel that flows into inventories is included under the heading, "change in business inventories." Similarly, for all other raw materials or intermediate products.

There are four principal components of the gross national product. I will go over these very quickly because I think you may already be familiar with this particular breakdown.

First, the consumer purchases of all goods and services of all types.

Second, the business purchases of plant and equipment and for inventory needs, and in this total we also include purchases of residential houses. This aggregate of business purchases for investment plus the new residential houses is what we call the gross private domestic investment.

Third, the next foreign investment, which is essentially the difference between our exports and imports of goods and services.

Finally, all government purchases of goods and services at all levels of Government. That would include the pay of civilian government employees and pay for the armed forces. These are the services bought. Also included are purchases of munitions, all the capital goods such as desks and typewriters, and all other types of government purchases at the Federal, state, and local levels.

These are the four major categories. The combination of these four groups of expenditures gives the total output for the economy as a whole.

Currently, the gross national product is at an annual rate of 343 billion dollars (third quarter 1952). In fact there has been very little change in total output in the last six months. Of this total the national security expenditures are at an annual rate of 50 billion dollars. I know you will see that term "national security expenditures" used over and over again in newspapers and elsewhere. The national security expenditures are defined as the expenditures of the Department of Defense, including the Mutual Defense Assistance Program, plus atomic energy expenditures, that is the expenditures of the Atomic Energy Commission, plus expenditures for the stockpiling of strategic materials, and plus foreign economic aid. Keep in mind that it includes the whole category of defense expenditures, including foreign economic aid. The total of security expenditures has risen from a pre-Korean rate of about 17 billion dollars; it is these expenditures or purchases by the Government for national security which have been a major factor in the strength of our economy in the past year.

Since early 1951 government purchases, primarily because of these defense purchases, have increased by 26 billion dollars, that is in just a little more than a year, or 50 percent. The gross private domestic investment, on the other hand, has declined by 11 billion dollars, or about 18 percent. Personal consumption expenditures--this might be surprising--increased only moderately over this past year, only about 4 billion dollars, in other words only a 2 percent rise in the purchases of goods and services by consumers.

The reason for the decline in purchases by business of 11 billion dollars which I mentioned--this is over the past year--has been primarily due to the shift in inventory policy on the part of businessmen. A year ago businessmen were accumulating inventory at an annual rate of about 16 billion dollars. Today there is practically no accumulation; that is, there has been a very substantial shift from a heavy accumulation to practically a stoppage of that accumulation on the part of business.

As a result of that, these investment expenditures in total have declined very substantially over the past year. So what has held up business essentially has been the rise in the government purchases of goods and services together with an increase in the purchasing by business of plant and equipment. But even the rising purchases of plant and equipment by business have been associated quite closely to our defense program. In other words the expansion going on there has been pretty much the expansion which was necessary to produce and obtain more capacity for steel, chemicals, petroleum, aircraft plants, and other programs associated directly or indirectly with defense.

The proportions involved in these expenditures in 1951 are: (1) the consumer expenditures comprised around 63 percent of the total output of gross national product--think of it roughly as three-fifths of the total production flows to the consumer; (2) the business sector, this gross private domestic investment, comprised 18 percent of our total production; and (3) the government purchases comprised around 20 percent of our total production. Expenditures for foreign investments were very small, a fraction of 1 percent.

So in general the way to think of this is that three-fifths of the total output of goods and services goes to consumers, a little less than one-fifth is absorbed by business in its capital goods purchases, and about one-fifth is purchased by the Government. Those are the rough proportions to keep in mind.

The date on gross national product are available on a quarterly basis and annually. As a matter of fact, we have developed the data back to 1889 on an annual basis, thus permitting a longer-term analysis, covering many cycles of business. Quarterly, it is available from 1939 on.

Gross national product is adjusted for seasonal variations. If you eliminate the seasonals for each quarter, you are able to compare the true trend, aside from the influence of seasonal factors.

I might say a word about the sources of the data which are utilized in compiling this over-all measure of economic activity. Essentially

we base the information on literally hundreds of sources. The government purchases, for example, come directly from the government sources such as the Department of Defense and the Civil Service Commission. The construction sector of this total comes from private sources. Private information, from F. W. Dodge, for instance, is gathered, put together, and analyzed by the Bureau of Labor Statistics in the Department of Commerce.

Purchases of durable goods, which are equipment purchased by business, equipment of all types, including trucks and automobiles used for business, farm equipment, the engines, the turbines, machine tools, and all such producers' durables--this information is based pretty much on the enumerations of the Bureau of the Census, of the Department of Commerce, special surveys, and on information obtained from the Bureau of Internal Revenue on the new fixed assets of business.

Sampling procedures are used for getting current data on inventories, while the basic figures on an annual basis come from the Bureau of Internal Revenue. The Department of Commerce conducts monthly surveys of business firms which report to the Department their position month by month.

For consumer expenditures we again use a combination of Bureau of Census data and a sampling approach which the Bureau utilizes in connection with its gathering of retail sales data.

Every conceivable private and governmental source of information is utilized to put the data together. To obtain the data which are unavailable from such sources, we usually conduct a special sample survey of our own in order to fill in the gaps.

These data are published in two ways: first, in terms of current dollars, and, second, in constant dollars of same year. In some respects a current dollars gross national product may be misleading in comparing changes in physical output from one period to another because the current dollar value would also include changes in prices from one period to another.

In other words the total value of output is essentially quantity times the price and we sum all of these values for all the expenditures. That gives the total gross national product in current prices. In order to eliminate the effect of changes in prices, just a year ago we completed a new version of the gross national product whereby we have deflated the gross national product for price changes. Such a series then enables us to compare changes in the real gross national product from one quarter to the next so as to give us indications of changes in physical quantity production. Therefore, for the purpose of comparing, let us say, man-hour

changes with production changes, the figure to use is not the current dollar figure of the gross national product, but this total adjusted for price changes, that is, the real gross national product. Let me describe briefly the nature of the trend in the total output of our economy.

Chart 1, page 7, shows the physical output of the economy in terms of constant 1939 prices. In other words the effect of the price change has been eliminated so that this is essentially an index of the physical production in our economy. You will notice that the chart goes back to about 1900.

Note also the sizable fluctuations over the period with the ups and downs representing periods of recession and recovery. But the interesting point is that each time we did go down, we apparently went up afterward to a higher level. By putting a trend to these production data, we see that the economy in the past 50 years has been growing at an average rate of 3 percent per year. That is an extremely important fact to keep in mind. To understand this think of it this way, that the total production of the economy has increased 3 percent per year, 1 percent of which is accounted for by the average increase in the labor force from year to year and the effect of reduced hours, and 2 percent of which represents our improvement in production per man-hour from one year to the next. The increase in productivity per man-hour--the 2 percent per year--is essentially what gives us a higher standard of living over the long range. This represents substantial gains resulting from new and more efficient machines and from the greater utilization of our management and labor force.

Keep in mind, however, that fluctuating above and below the trend are the cycles which at times have been extremely disturbing, particularly the last depression. Now let us see what is basic to these cyclical fluctations.

Chart 2, page 8, shows the dominant factor causing these ups and downs over the last 50 years and also shows the changes in the new plant and equipment purchased by business. Again this is in real terms. In other words price fluctuations have been eliminated from the value of these purchases.

These are the quantities of plant and equipment purchased by business over the last 50 years. The dynamics of these fluctuations is very striking. It is this sector, the business sector, with its purchases of plant and equipment, much of which is autonomous, that has an important influence on the rest of the economy. Often businessmen make decisions to expand and modernize their plant independently of the general economic situation. In other cases obviously the decisions depend on whether our economy is going down or up. It is this area which must be stabilized and continued at a high level if we want to achieve a relative degree of stability in our total economy.

CHART I

Physical Output of Goods and Services

The LONG-TERM GROWTH in total production has averaged 3 percent per year

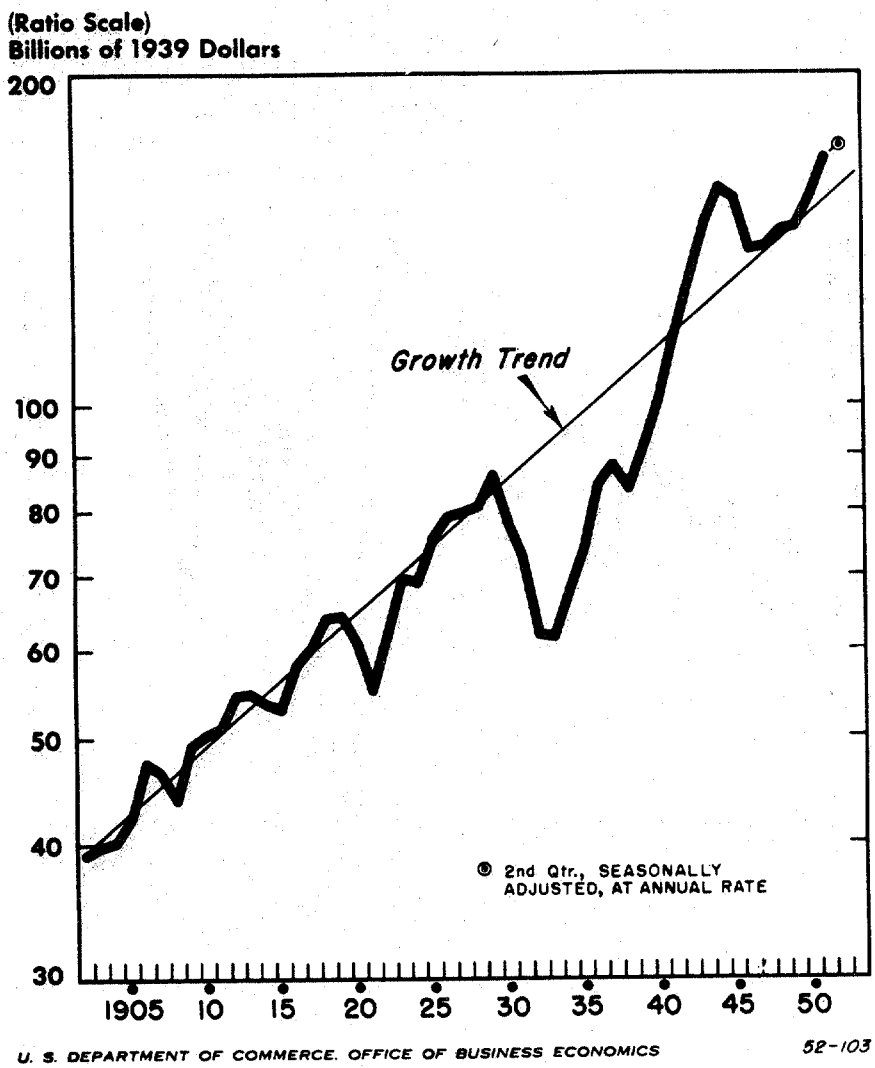

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CHART II

Fluctuations in New Plant and Equipment

The GROWTH in new producers' durable equipment and private nonresidential construction has been at the rate of 2.8 percent per year

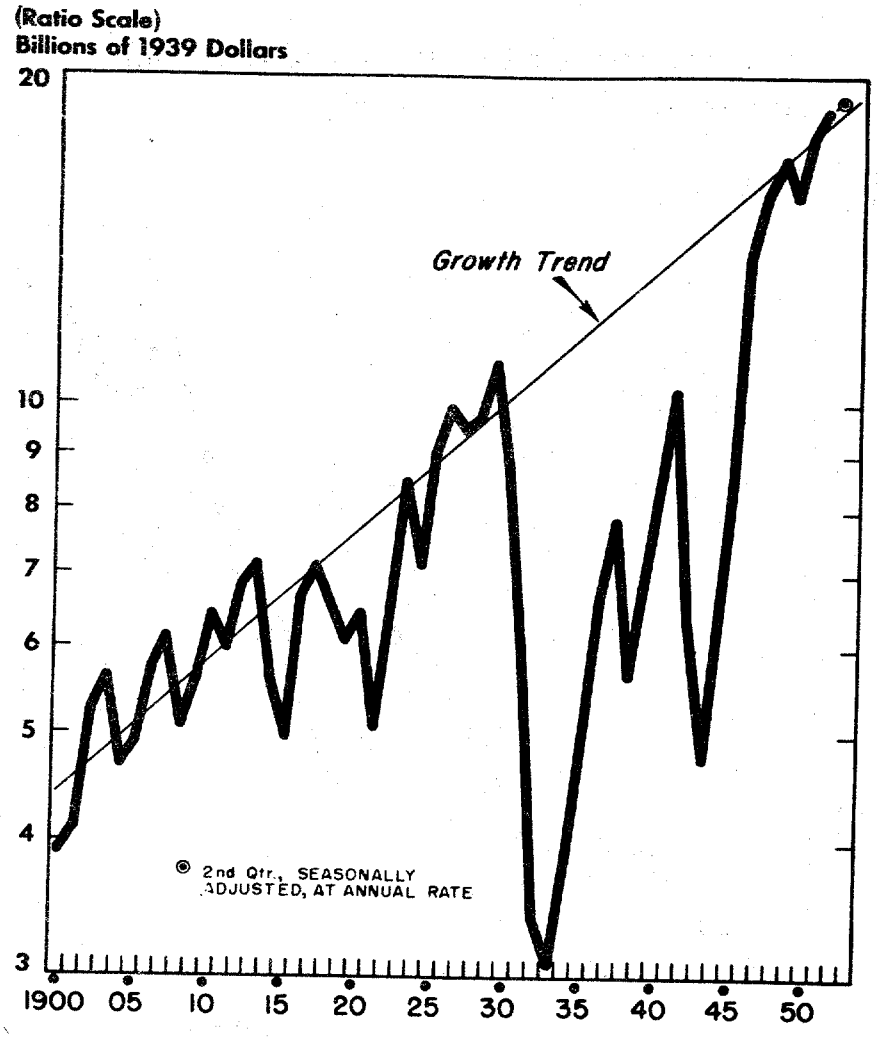

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CHART III

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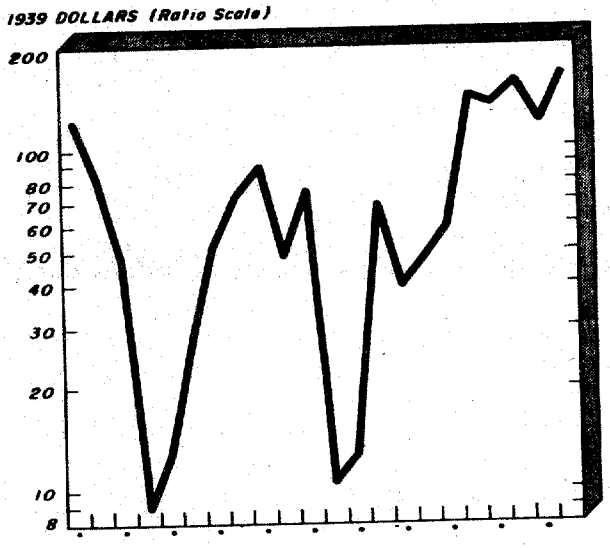
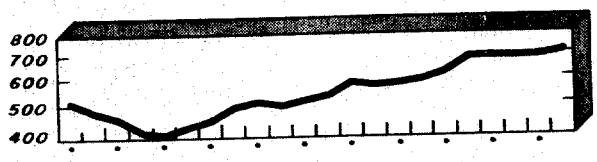
Domestic investment per capita has shown the widest swings in the general business fluctuations since 1929 in real terms . . .



while real consumption expenditures per capita have been relatively stable, but expanding substantially since mid-nineteen thirties.



Except for the World War II years, real government expenditures per capita have tended steadily upward.

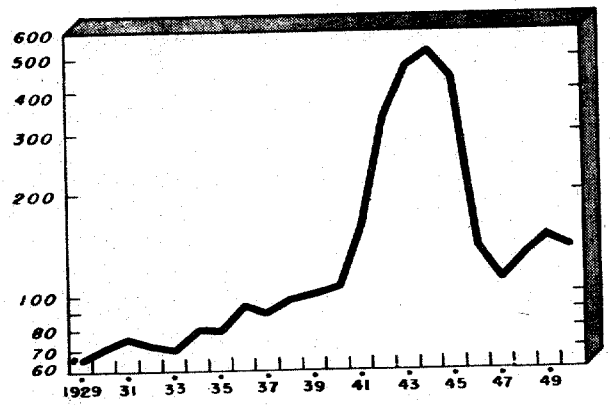


Chart 3, page 9, shows the per capita physical purchases by government, business, and consumers. The data are from 1929 through 1950. About two-thirds of the total gross national product represents consumer expenditures. See the difference in the fluctuations of this sector with the other two.

You will notice that consumer expenditures vary only moderately, relative to the variations in the business sector. Consumer purchases, in other words, represent a relatively much more stable element in the gross national product than does the business sector.

Also note that the government purchases have shown a moderate rising trend over this period, with the exception of the big bulge during the wartime period, and with the rise after the Korean incident purchases reached higher levels. But generally government purchases, including Federal, State, and local government, on a physical volume basis, have tended to rise gradually, aside from the wartime periods.

That is essentially the anatomy of our total production--tremendous fluctuations in business purchases, relative stability in the big sector of consumer purchases, and a gradual moving up of the government purchases.

Much of the rising government purchases is associated with the fact that the economy as a whole is getting bigger and bigger. As the economy grows, it demands more services from governments at all levels--more schools are needed, more police departments, and more services from the Federal Government. That is one of the reasons why we are at these very high levels, in addition to the very important reason that we are spending currently (third quarter 1952) 50 billion dollars at annual rate for our defense effort.

Let us consider the other way of measuring total production, namely, through the national income. The national income measures total output in terms of the costs involved in current production. National income comprises four major categories. These are: (1) compensation of employees, which is the labor cost; (2) income of proprietors and from rents; (3) corporate profits; and (4) net interest payments. If you can keep those four items in mind, you will have the basic composition of our national income--labor; income of unincorporated businesses, including farm proprietors and professional income; profits of corporations, and the net interest paid out (exclusive of government interest since this is not considered interest paid for services currently rendered). In other words these payments and incomes originate from current production. They do not include, for example, benefits paid to members of the armed forces or to the veterans, and transfer payments of that kind. Any relief payments, for instance, would not be included in the national income because those payments are not made for services which are currently being produced.

Just to give you an idea of the proportions involved in this major breakdown of the national income, I will put it this way: In 1951 the compensation of employees comprised 64 percent of the national income; proprietors' and rental income comprises 18 percent; then the corporate profits before income taxes, plus the inventory evaluation adjustment--an adjustment made to eliminate from the book, profits as reported by business, the amount included because of the effect of changing prices on their inventory values. Finally, net interest comprised a very small proportion--only 2 percent of the national income.

Briefly, think of the national income as a pie broken down roughly in this way: two-thirds go to labor in the form of compensation of employees; one-fifth goes to unincorporated businesses as income; and, about one-sixth represents corporate profits.

The proportion of compensation of employees to total national income has varied very little over the past, particularly in high-employment years.

In contrast corporate profits have fluctuated very widely. In some years corporate profits were negative, representing losses. It is only in periods of high prosperity that corporate profits become very large.

Just a word about the sources of data in compiling the national income. They are generally different from those we use in estimating the gross national product. For compensation of employees a large part of the data is based on the records of the Social Security Board. Since all employers have to report pay rolls to the Social Security Board, they have a good set of records there. Then there is the Bureau of Internal Revenue for unincorporated business and corporate records; the Bureau of Labor Statistics to supplement the pay roll data; the Bureau of the Census; and literally hundreds of other sources from private organizations provide us with dividend payments and other components.

Thus there are two measures of national production--gross national product and national income. They measure essentially the same thing, our total production. Two different sets of sources are used to arrive at these estimates. When we put them together, we find some discrepancy between the measure of production as obtained from national income and that obtained from gross national product. This difference we call the "statistical discrepancy." It comes about because neither measure is completely accurate.

Let us go on to the uses of gross national product and the national income; I will be brief about that. Gross national product is used by businessmen, government economists, statisticians, and others concerned,

primarily to gage where the economy is showing weaknesses or strength. For example, the gross national product account contains a wealth of detail on consumer expenditures. Thus we can see if consumers are holding back on their purchases of cars, refrigerators, or washing machines.

The breakdown of government purchases is also shown in detail--the national defense program, public works construction, payrolls, etc. The business account is in detail making it possible to trace inventory changes, business spending on capital goods, and the fluctuations in residential construction.

From the gross national product account we can see the impact of each of these sectors and this provides guides to business and government, based on what is actually taking place in the economy.

So that is the essential use that is made of the gross national product, to gage the strength and weaknesses of the economy. It is used by businessmen, particularly by producers, in seeing how their production is related to the production of their entire category of goods and to the total economy.

Mostly, this is done in terms of correlation analysis and other technical methods. A company often can observe a definite relationship between its sales, its production to sales, and production of a major sector of the economy or to the entire economy.

A company may make an analysis of its sales in relation to the construction component of the gross national product for example. This is done by comparing the data over a long period of years and correlating its record with the construction component. By forecasting total construction, the company is able to gage its business prospects; make plans with respect to the purchase of materials, inventory policy, and with respect to the employment of the labor force in its plants.

So these are extremely useful data to have, both from the standpoint of the over-all analysis of the economy and from the standpoint of the businessman who must gage his operations relative to the operations of the country as a whole.

The national income is used primarily for gaging the changes which are occurring on the various shares of the income. Labor is particularly interested, for example, in how it is sharing in the pie, in the total income of the economy. Farmers look at this to see just how they are doing relative to the other major groups. Businessmen always have an eye on profits and take a look at labor's share and see what is happening there. So this is the primary use made of national

income, namely, to see the shifts which arise in the shares going to the various groups of our economy.

Let me go on to the next indicator--the industrial production index. This is compiled by the Board of Governors of the Federal Reserve System and covers two industries, manufacturing and mining. The index is very useful because it provides a detailed breakdown by industry. Production indexes are available for the iron and steel industry, metals, textiles, paper, printing, publishing, and a whole list of industries--more than 100. As a consequence, any particular firm in one of these industries can immediately see how his industry is doing relative to the total. It is a month-to-month index and so we have a very quick and sensitive guide to what is happening to total production in our economy.

The "Economic Indicators" gives only a three-way breakdown of the index, but keep in mind that you can get in the "Federal Reserve Bulletin" and the "Survey of Current Business" of the Department of Commerce, a very detailed breakdown of these production indexes by industry categories. It is important to note that the index measures production in many segments in terms of man-hours since there are no basic data available to measure the actual physical output for some of the industries.

For example, in the case of machinery industry, it is very difficult to measure production because from one year to the next machines differ in character, quality, etc. There is no direct comparability. So the procedure is to measure the output of many of these industries, when there is no uniform product or where there is a shift of skills in these products, by man-hours. Then man-hours are converted to production on the basis applying a productivity factor. If you take the production per man-hour and multiply it by man-hours, you mathematically get a production measure. To obtain the productivity factor to apply to man-hours is extremely difficult on a short-term basis, particularly in complex industries such as machinery and automobiles.

So in certain respects there are deficiencies in this Federal Reserve Board index of production because of the fact that it is difficult to measure productivity from one month to the next. Since 45 percent of the total index is currently measured by man-hours, you have to use the total index with a great deal of caution. The index is most reliable where physical quantity data themselves are used to measure production--the number of shoes, steel ingots, the amount of flour, sugar, lead, zinc, copper. All these industries are measured in actual physical units, and there, of course, the index is accurate. In the other cases the indexes must be used with a great deal of caution because of the difficulty with respect to the productivity factor.

Businessmen use this index a great deal. In fact, before we had the gross national product and income accounts, it was used as the over-all indicator of economic activity. It is not too useful in that respect since it covers only mining and manufacturing and their production fluctuates much more violently than the production in most other major areas of our economy. Consequently, if you use the index of the Federal Reserve Board, you will find that it fluctuates a great deal more than does the real gross national product.

Let us get on to the next set of indicators--employment and unemployment. You will find that there are two basic sets of references. on page 7 of the "Economic Indicators" are the Census Bureau's data. This agency releases month after month the total picture of the labor force in our economy, total employment--farm and nonfarm--and the unemployment. These data are extremely useful as guides as to what is happening in this area. They indicate whether our labor force is tight or easy or whether we are running into a period of a difficult unemployment situation.

You will recall that in 1949 we were getting into a period of increasing unemployment. The fact that at one point we reached nearly 4 million unemployed was regarded by many government officials as a disturbing situation.

The Bureau of the Census collects this basic labor force data by months on a sampling basis. The data are issued by the Secretary of Commerce and they are always looked at with keen interest by all business economists and others who are interested in the economic health of our country.

Now one thing you want to keep in mind with regard to these data is that they are based on a representative sample. Thus as with all samples there is a margin of error involved. For example, when you see an announcement, as we did in August, that unemployment was reduced from about 2 million in July to 1.6 million in August--1.6 million is a very low level--keep in mind that there is some margin of error involved which is indicated in the Bureau of Census release.

Also keep this in mind: 2 million, which is about 3 percent of the labor force, is essentially frictional unemployment. This number is unemployed simply because people shift from one job to another, have a job but quit working for short periods, or become sick. In other words when you see that there are 2 million unemployed, you want to think of that as representing a relatively full-employment situation. At times unemployment goes below 2 million. In wartime unemployment was a half million. In other words people kept on their jobs; they didn't move around so much. So you could reduce unemployment below this frictional amount. But 3 percent is generally recognized by economists as being frictional unemployment that arises in the economy just because of these factors that I have indicated.

The other type of information which covers the data on employment is given by the Bureau of Labor Statistics; this information is extremely useful because the Bureau publishes employment data by industries. It collects the information from the employers on a sampling basis. businessmen look at these figures by industry to see what is developing in relation to industrial employment. Employment over short periods reflects closely changes in production. Except for the productivity trend, which I just described, you can note the industrial trends by the use of these figures.

The detailed breakdown of the employment data is given in the "Economic Indicators" on page 8 details are given particularly for manufacturing, showing the employment trends of wage and salaried workers--we call those the production workers. A study of these details gives a guide to: (1) what the trends of employment are by industries and (2) whether the industry is a declining one or one that is growing. It is an extremely important set of data to have and is used in conjunction with the over-all information published by the Bureau of the Census on total employment and total unemployment. The Bureau of Census does not have a breakdown other than farm and nonfarm of these total employment figures so that you have to go to the Bureau of Labor Statistics data on employment to get a breakdown of these total figures.

Now let me get to the next set of indicators which are those of purchasing power and consumption. These indicators are extremely important from the point of view of the use made of them by businessmen.

Personal income is essentially the national income with certain modifications. Personal income includes not only all incomes received from current production but also all of the transfer payments--all the benefits received by the GI, all the direct relief payments, all the benefits paid out to individuals from retirement funds, and the interest paid by the Government. Thus all types of incomes paid out are included.

Essentially what is excluded from the personal income but is included in the national income is the amount of profits which the corporations retain. In other words if the corporations keep a certain portion of their profits, that amount is not a part of the personal income.

The personal income data are avilable monthly so that you can gage on a month-to-month basis the changes in the purchasing power of individuals, one of the most useful indicators we have of the strength of our economy in terms of purchasing power. It is also available annually by states so that you have personal income by states, and businessmen use that extensively, particularly in the determination of quotas.

If a businessman sells a product over a number of states, he will use the personal income by states as a proportion of the total United States income and then compare that proportion to the proportion of his sales in the various states. Thus he is able to make some judgment of whether to put more salesmen in particular areas or concentrate his efforts in a certain region. I can cite many, many cases where businessmen have used personal incomes data in such a manner to determine their quotas.

The Treasury Department uses personal income by states to determine the quotas for the savings bonds program. The Red Cross uses personal income by states to determine how much of a drive it should make for Red Cross money in the various states in terms of incomes per capita in these various states.

So it is a very useful indicator, both as an over-all indicator of purchasing power and as an indicator to businessmen on the trends in the various states.

In addition to personal income, we have a much closer indicator of purchasing power in the disposable income. Disposable personal income is simply the personal income after we take out the income taxes paid. What is left then is the amount available for the purchase of goods or for saving. Disposable income then is a much closer measure of purchasing power in the economy. It is available quarterly and annually back to 1929.

Total disposal income is the most useful indicator business has in gaging consumer demand. In other words if a retailer wants to know what the prospects are for his sales, he appraises the trend of disposable income for the period ahead.

Business finds there is a close relationship between sales and disposable income. Having its sales and having some idea of the disposable income over the future, a businessman is able to judge what his sales are likely to be.

Many private firms in New York and elsewhere, that are consultants to business, do exactly what I have described. They indicate to various firms what the sales trends are likely to be, based on the association between sales and income, and where relative deficiencies in sales are indicated, the businessman could take action to offset them.

This is an extremely useful approach for business as a guide to policy making in respect to its capital expansion programs, its iventory policy, and its buying policy. Keep in mind, therefore, that here is one indicator, purchasing power, which is used by business in judging

both the prospects for sales in the future and spotting the internal factors that are operating in his own business relative to what he should have had, based on income.

Now let me go on to another set of indicators which are used by businessmen in conjunction with purchasing power, namely, the trend of consumer expenditures. I will just say a brief word about that.

Many businessmen find they can get a closer relationship to their sales by using consumer expenditures or by combining certain groups of consumer expenditures. For that reason, at times, the trend of total consumer expenditures or a combination of various categories of consumer expenditures is utilized to see how the particular sales are likely to go.

To give an example, one of the large national magazines wanted to look into the problem of why its advertising receipts were going down and whether it was keeping up with the general trend of purchasing by consumers. The approach used in making that analysis was combining categories of consumer expenditures that corresponded to the items advertised, relating those to the receipts from the advertising. They saw that there was very close correlation between the two, except that year after year there was a loss in advertising receipts relative to these expenditures made by consumers. The loss was attributed in part to the inroads made by television, radio, and other media, and to the fact that its management was not so alert as it could be.

Let me go on to the two final indicators. First, prices are also used as indicators of changes in our economy; the two groups of prices most widely used are the wholesale prices of the Bureau of Labor Statistics, for which there is a wealth of detail for both farm prices and nonfarm prices. Actually the Bureau can make available detailed price quotations for 2,000 items. Prices are extremely significant for the appraisal of the inflationary pressures as indicated by a balance or imbalance between supply and demand.

Sometimes the only way we have for getting at the problem of whether supply in a particular period is in excess of demand, or vice versa, is through looking at the prices, because essentially they must reflect in the long run two basic tendencies, One is the discrepancy between supply and demand; the other is the changes in the cost factors. When labor costs go up in industry after industry, that is reflected in price adjustments. Sometimes they can't make a price adjustment because of the competitive situation. In fact right now some of the companies are wondering about passing on the increase in steel costs in higher prices of commodities to the consumer. Basically, the most important factor in price changes is the relation of supply to demand.

Therefore, whenever you want to get at the problem of inflationary or deflationary tendencies, take a look at the way prices are moving. Take our farm prices and look at those separately. Then see what is happening to the industrial prices by categories. It may be that prices generally are moving upward. That is a truly inflationary situation. Sometimes adjustments occur where some prices are going down and others are going up, that is adjustment going on in the price structure itself which is reflected by varying demand-supply conditions product by product.

This price information, therefore, has to be used with a great deal of analysis and looked at in some detail to get an understanding of the situation.

The other indicator is the Consumer's Price Index of the Bureau of Labor Statistics. It is an extremely important index because many wage contracts today are tied to the fluctuations in this index. In fact companies make decisions with respect to rents, wage policy, or other policies on the basis of the movement of this index. This index then is a reflection of what is happening to prices of the category of consumer items and it is used as a part of the contract by many labor organizations in order to participate in the higher cost of living which might eventuate.

A word of caution--don't try to compare the wholesale price index with the consumer price index. They measure two different groups of items. One, as indicated, is the wholesale price index, covers only goods. The consumer price index measures prices of goods and services at retail; it covers many services such as rents; admissions to movies, and dental and medical services.

It is even difficult to compare just the goods part of the retail index with the wholesale price level because the wholesale index has many raw materials, many goods in process, and so on.

What we find is rather interesting. Over the past year wholesale price index has been drifting downward, but the consumer index is up a couple of percent, for the reason that some components such as food and rents have been creeping up. So we hear about a higher cost of living from month to month and yet the wholesale price index has been drifting downward.

In the last two years, when we have been going through an inflationary period, monetary statistics have been very important in gaging the demand for funds by business and consumers.

Bank loans and interest rates are published by the Federal Reserve Board in a monthly bulletin. Those are divided into real estate, farm,

commercial, and so on. This information is useful in appraising Federal Reserve Board policy with respect to interest rates, reserve requirements, and other factors. The availability of mortgages loans at reasonable terms has been an important factor in new residential construction. Inventory policy also has been influenced to some extent by the ability and terms of borrowing.

Consumer credit has been a factor in purchases of consumer hard goods.

The Federal budget is closely watched as to its influence on the economy. You will find this discussed on the last page of "Economic Indicators." Care must be taken to consider seasonal fluctuations in the receipts and expeditures. When the Federal Government is in a deficit position, all other factors being the same, this adds to inflation.

First the use of these statistics is very important, particularly in connection with Federal controls on credit and on net contribution of the Government to purchasing power.

Second, anticipatory statistics are important in gaging what the economic outlook is likely to be. There are three categories of anticipatory statistics: First, the Securities and Exchange Commission and the Department of Commerce each quarter ask businessmen to report for the two ensuing quarters their programs with respect to plant and equipment expenditures. These reports cover all industry, all the registered corporations with the Securities and Exchange Commission, and a representative sample of other corporations. You can see what this does. It enables us to see for six months ahead whether businessmen plan to buy more or less of the items shown in Chart 2. Once a year we ask businessmen to give us their program for the year ahead.

These are extremely important statistics because they indicate not only the programs of businessmen, but also their psychology at the time of reporting. The toughest thing in economic forecasting, as you might well guess, is trying to judge the factor of psychology, whether the businessman figures his sales will improve at a particular time and how that might influence his program.

This year we will come up with a total plant and equipment expenditure of 27.5 billion dollars, 4 percent above last year. In other words this is a sector which is still very strong.

The expanding programs are defense and defense related. There are certain programs that are declining. The question now is, when these

expanding programs begin to taper off or decline, what will be the trend of total investment. Will the level be enough to keep us in a high-employment economy or will it go down to the point where we really begin to worry about the economy as a whole?

The other set of anticipatory statistics is collected by the Department of Commerce from businessmen themselves on the position of orders. These are significant in the area of capital goods and they provide us with very valuable information on the backlogs of such orders and the volume of new orders placed each month.

Today, for instance, the durable goods industry--including iron and steel, transportation equipment, nonferrous metals, and machinery industries--has an unfilled orders backlog of what is equivalent on the average 5.5 times the current monthly sales. In other words, 5.5 months of sales is what is on their books as unfilled orders. That by itself doesn't mean very much but it does mean something when you think that the normal months of sales of these unfilled orders is around two to three. They have twice the unfilled orders they normally have. In some of the industries, such as the transportation equipment industry, they have as much as seven months and eight months of sales, and the aircraft industry has several years of sales in unfilled orders. In other words these unfilled order data, together with the new orders received by business, give a very important indication of the short-term outlook.

Now it is true that orders can be canceled overnight, but when they are considered in terms of economic climate for the rest of the economy, you can come to a pretty good judgment on the prospects ahead.

One final indicator is the consumer purchase intentions survey of the Federal Reserve Board. The Federal Reserve Board publishes consumer intentions to purchase houses and other durable goods. This survey has been going on for quite sometime. Analyses have been made of its accuracy and it has turned out to be quite reliable. Businessmen are using it much more extensively in gaging what consumers are likely to do in the year ahead with respect to purchasing automobiles, of housing, refrigerators, and so forth. It has become one of our main guides in the consumer purchasing sector.

I think I have covered the major indicators. There are many other types which businessmen use of a particular kind, such as car loadings and electric power. The basic ones are those which I have defined and are used most by businessmen in an analysis of the economy and their operations relative to the total trend.

QUESTION: I notice a term used in a number of these charts "seasonally adjusted, annual rates." Will you explain it?

DR. PARADISO: Let us take a very simple illustration. Let us suppose you were concerned with the trend in department store sales. Consider the sales over a year's period. We find that in December they are at a peak. We don't know just from looking at November and December whether there is a real upward trend or whether it was simply the fact that December reflected more Christmas business. So what we try to do in all these economic data is to eliminate from the statistics that part of the sales or production, whatever it is, which is attributable to seasonal influences. So for these department store sales, through the use of historical data, we are able to develop factors which tell us that normally every December, let us say in this case, department store sales are 20 percent higher than the average for the year. Then we take the actual December figures and bring them down 20 percent. This takes us to the level of sales with the influence of the Christmas season eliminated. If we disregard entirely the fact that is a seasonal phenomenon, then we are able to compare December with November and November with October and we can tell whether December was a better or worse month than November.

What we are trying to do is eliminate the effects of seasonal changes, mainly due to the weather. In order to determine the "true" sales trend, we make an adjustment to eliminate that factor.

QUESTION: On page 7 of "Economic Indicators," I find that in 1939 the number of personnel employed by agriculture was 9.6 million and in July 1952 it was 7.6 million, which is quite a decline despite the fact that the population has had quite a sizable increase. We also hear that the farmer is better off today than he ever has been before. I would like to know how you analyze this trend?

DR. PARADISO: The data for 1939 are for the year as a whole while July reflects a seasonal level. The point is this, farm employment fluctuates tremendously over the months of the year. In the winter months obviously it is very low. You can see the monthly decline there. So you can't compare July with an average for the year.

The other point is that over the period of years concerned here, agriculture lost on an average 200,000 personnel per year. There has been an orderly decline in the whole agricultural area year by year of 200,000 so that if you compare annual figures, you will find this steady decline in farm employment.

The reason we have production in the agricultural area as high as it is despite the fact of a smaller number of employed is that, instead of an increase of an average of 2 percent per year in production per man-hour for the economy as a whole, in agriculture it has been 3 percent per year. In other words new machines, farm tractors and so on, have contributed enormously to increased productivity in the agricultural area despite the fact that the number employed has been steadily going down year after year.

QUESTION: Why was the year 1939--a depression year--used as a basis for the figures? Why not use 1940, for instance?

DR. PARADISO: The basic reason for that is this: This information was put together before the 1947 census was available, and the last census before that was 1939 census. As you will recall, the Federal Government has had a policy heretofore of putting all indexes on a 1935-1939 base because that was considered to be a fairly normal period. So all indexes were on that base.

Now since the end of the war, that base has become out of date and therefore the government agencies are trying to put all our indexes on a 1947-1949 base. We are going to do that as soon as we are able to get around to using the new census of 1947 and 1948.

COLONEL BARNES: Dr. Paradiso, we certainly are indebted to you for clearing up a lot of confusion and mystery in this important field. You have been a great help to us and we are very grateful. Thank you very much.

(7 Nov 1952--350)S/mmg