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NATIONAL INCOME DATA

8 September 1953

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Publication No. 154-14

INDUSTRIAL COLLEGE OF THE ARMED FORCES

Washington, D. C.

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8 September 1953

COLONEL BARNES: Admiral Hague, General Greeley, Gentlemen: Andy Kress, who is about to lecture to you this morning, certainly does not need any introduction. You have seen a lot of him in these past three weeks. But knowing his modesty, there's one thing I want to point out to you before he starts. That is, this economics refresher course that you have been so busily engaged on these three weeks is his brain child. He did practically all the planning for it and is doing quite a bit of its execution.

The thing I wanted to say about it is, if you think it is adequate, give him the credit. If there's anything wrong with it, give me the blame.

Andy.

DR. KRESS: Admiral Hague, General Greeley: Thank you, Elmer, for those nice words. I can tell the class, too, that you checked up on me in various ways to see that I was doing it all right, too.

This afternoon we are going to have our final set of movies. There's a two reeler for us today on foreign trade. It has a little monkey business of the engineer talking to you out of the cab window of the train he is driving, but it has a lot of common sense in it. We will follow that by two film strips. We expected to do these things earlier. The film strips are one of the MIT teaching devices. We have two short scripts, one on business cycles, and one on profits.

Today, then, we are to discuss national income data and their use in national defense. Let me hasten to say at once that we are talking about "data." This is therefore a technical discussion.

Now, up to this time, for several years back, I have made that same statement, in about that form. I have a different reason for saying it this time. This time everybody and his brother have given you a quick definition of gross national product so they could use it as a tool for something else they wanted to give you. If I didn't have something technical to give you this morning, we wouldn't have anything.

I have prepared a set of handouts which will be in your mail boxes during the day. They include all the important charts we will use, 2- $\frac{1}{2}$ pages of definitions, and four very fancy charts that I will

tell you about a little bit later. So, you will not need to take any notes; you can just relax a bit. Do not lose these handouts, because you are going to need them during the year. When you come to the Economic Potential Course you will certainly use them. Last year, if my memory serves me, there was a lot of refurbishing among the students of what was known about gross national product during the Mobilization Unit of the course.

Let us get a two-pronged concept of what we are after. The question is: How do you find out what the economy is doing, and, having found out, can you get it to do something other than what it is presently doing?

We will develop our subject under six special topics:

1. National income and its usefulness in the study of the national economy.
2. National wealth and how it is measured.
3. Components of national income and their interrelationship.
4. The use of indexes in measuring trends in national income.
5. An analysis of changes in national income components as a guide to the functioning of the economy.
6. National income analysis as a tool in economic mobilization.

Our first topic:

NATIONAL INCOME AND ITS USEFULNESS IN THE STUDY OF THE NATIONAL ECONOMY

National income is the aggregate earnings of labor and property which arise from the current production of goods and services by the Nation's economy, recorded in the forms in which they accrue to residents, inclusive of taxes on those earnings. They take the form of wages, profits, interest, and rental income.

Both the economist and the statistician are interested in developing and using national income data. The general economist (and I plead guilty to being one) is interested in these national income patterns as a guide to the way the economy is going. In connection with any problem being studied, the economist always wants to know "why?"

The statistician is equally interested in this problem, but he always wants to know "how?" He is always refining his definitions and always refining his methodology.

The general economist loses interest after developing the over-all concept. What I am leading up to is this: If you ask me too finely drawn questions in the question period, I shall simply have to say that I will have to look them up for you, because I am not a statistician.

At a convention last year of social scientists, I learned that a social scientist is a person who cannot refrain from attempting to answer any question put to him. I recognize that as one of the identities of my group and I shall try to resist it during the question period. But I hope not to identify myself as an expert--if you define an expert as one of our students did last spring by breaking it down into its component parts: Ex, from the ancient Latin--a has been spert, from the modern idiom--a drip under pressure.

The economist is always asking himself whether or not economics is a science. Some say it is not, because an economist doesn't have a laboratory. Some people say that the economist's laboratory is the whole wide world. Well, if you accept this, and some do, I immediately say that this laboratory is peopled with human beings who have the power to say "no" when all the data indicate the answer to be "yes."

Economics has enjoyed several approaches or methods of study during its 175-year history--that is, the more or less formal history of that period. One of the latest and fairly current vogues is the mathematical-statistical approach. This approach digests, or attempts to digest, huge masses of statistics. For what reason? It is seeking patterns, patterns of economic behavior.

As I said before, if you can identify these patterns, can trace them and understand them, you may know what action to recommend in connection with further developing or further restricting the current trend. Notice I say "you may know." This mathematical-statistical method is still a young approach in the attempt to make a science of economics.

On 9 June 1932 the United States Senate, by resolution asked the Secretary of Commerce to report to it on or before 15 December 1933 (giving him about 18 months) two sets of estimates: First, a set of estimates showing the total national income of the United States for the calendar years 1929, 1930, and 1931, as well as an indication of the portions derived from agriculture, from mining, from transportation, from manufacturing, and from other gainful industries and occupations.

The second group of estimates requested was to show the distribution of this national income in the forms of wages, rents, royalties, dividends, profits, and other types of payments.

Thus was the United States given a national income accounting system. Some other nations had such an accounting system before this time. The same data are now collected by the United Nations and published periodically for all its members.

Topic II:

NATIONAL WEALTH AND HOW IT IS MEASURED

This concept of national wealth, as distinguished from national income, is always, for me, a more or less static concept.

We are all accustomed to value our possessions as "worth" thus and so much, but we often get a rude awakening when we actually attempt to sell them, because we find that value-in-use and value-in-the-market place are often of very different magnitudes. But the concept has some uses. We say that the United States Capitol Building is worth "this" or "that" sum, when it is not for sale at all.

In 1806 Samuel Blodgett published a little book called Economics, A Statistical Manual for the United States. It contained two sets of estimates--an estimate of the value of real estate and an estimate of the value of personal property.

In 1850 the Bureau of the Census became interested in this problem and continued its interest until 1922. It published, in the Statistical Abstract of the United States, about two years after each decennial census, an estimate of the national wealth in three categories: real estate, personal property, and stocks of consumers' goods. For 1932 this study was left uncompleted. In 1942, two years after the 1940 census, it was not even attempted.

More recently, after World War II, the National Bureau of Economic Research, a non-profit scientific institute, and reliable for purposes of this kind, became interested in the problem. It published a study giving the estimates of national wealth for each year from 1896 through 1948. This study is more elaborate, and covers six components: residential structures; private non-residential structures; government structures; land; equipment (including both producers' durables and consumers' durables); and inventories.

For 1948, then, the Bureau found the estimated wealth of the United States to be 800 billion dollars, without allowances for military assets, or consumers' semi-durables, or consumer perishables, or sub-soil assets, or collectors' items.

Now, from 1896 to 1928 the national wealth of the United States doubled, rising a little more than two percent per year. From 1928 to 1944 it increased very little, and most of that increase, three-fourths of it, was accounted for by new government buildings. From

1944 to 1948, of course, there was a sharp increase, particularly in producers' durable equipment and consumers' durable goods. The national wealth, then, of the United States has now passed 1,000 billion dollars. (That's a trillion dollars in the United States, if you are interested. In England it is not.)

Topic III:

COMPONENTS OF NATIONAL INCOME AND THEIR INTERRELATIONSHIP

To develop this third topic, I have used a series of charts.

Chart 1, page 6.--This chart shows national income concepts under five headings. If I give you a definition for the first one, the others will follow almost automatically. GNP, or gross national product or expenditure, is the market value--note that, the market value--of the goods and services purchased before deduction of depreciation charges. It includes, using the product approach, consumers' purchases of goods and services; gross private domestic investment; net foreign investment; as well as the goods and services purchased by the Government. Using the income approach, as you see it in this chart, it is made up of wages and supplements; unincorporated net income (this means income from businesses which are not incorporated); farm incomes and professional incomes; rents; interest; corporate profits (subdivided into three sections--dividends, undistributed profits, and corporate taxes); indirect business taxes; and depreciation. We are going to deduct all of these.

Underneath, in a broken line, you see the words, "Purchases from Other Firms." Double counting, the fear of counting the same thing more than once, is the bugaboo of the national income accountant. We must avoid counting the value of the same thing twice.

An example is a farmer who sells wheat to a flour manufacturer. The cost of the wheat is counted once. To this cost is added only the additional value caused by the flour manufacturer's turning the wheat into flour. The value of the wheat is not added the second time. The same process holds for the baker, the wholesaler, and the retailer. Finally, when the cost of the loaf of bread is added up, it is 14, 15, or 16 cents, without the cost of the wheat having been added in several times. The same thing would be true of raw steel in an automobile.

The second bar on the chart is called MNP, Net National Product. You will notice the bar is composed of the same items, except the item of depreciation, which has been cut off. Depreciation is the sum of the national product that gets used up each year in manufacturing or producing the gross national product. A part of the product is retained as capital replacement. So gross national product, less depreciation, equals net national product. The rest of the items are the same.

In the next column you proceed in much the same way. Net national product and national income have the same items, except that in national income we have dropped indirect business taxes. Now, taxes are "costs" of a kind. They take the forms of excises, sales taxes, and some real estate taxes. They represent a cost to business but not income to receivers.

What about personal income? You carry the same items across, except that you drop undistributed corporate profits, because they were not distributed as income. You drop corporate taxes because the government got them; income receivers did not. But you do keep corporate dividends, because they were distributed to individuals.

You will notice the personal income bar extends upward above the height level of the others. This is because extra payments are included. These are social security payments, pension payments, and even gifts. These sums may not have been earned in the year in which they are being distributed but they do increase the amount of personal income for that period over that indicated by the annual gross national product. There are income deductions also: the amounts taken out of your wages for future social security payments.

Finally, we come to the last column, which is Disposable Income. After personal taxes are taken away, you save some and spend the rest.

You will notice that this chart is taken from Economics: An Introductory Analysis, by Paul Samuelson. Some of you have this book to read, and the library has copies.

You may say, "That is all very well for something theoretical, but what is its practical application?" Let us see.

Chart 2, page 8.--This is the very same chart, actually using the United States Department of Commerce figures. Notice these columns are chopped off at the top so that the various headings exactly exclude the items that were eliminated from each column. In the previous chart which you saw, the columns were shortened from the bottom.

Under the first column, Gross National Product, the first item is Capital Consumption Allowances (depreciation and economic obsolescence), 28.1 billion dollars for the year 1952. That was the last item in the first column on the other chart. We deduct it from column two and are left with net national product. Deduct 27.9 billion dollars for indirect business taxes and we are left with net national income. If we deduct corporate taxes and undistributed profits, leaving only corporate dividends, we have personal income. So the height of each one of those columns is exactly inclusive of the remaining number of items.

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CHART 2

U. S. NATIONAL INCOME AND PRODUCT, 1952

(Billions of dollars)

Capital consumption (depreciation and obsolescence)	GNP \$28.1				
Indirect business taxes and business transfer payments	27.9	NNP 27.9			
Corporation profits and inventory valuation adjustment	40.5	40.5	NTL INCOME 40.5	PERSONAL INCOME 9.1	Corp. dividends
Interest	7.0	7.0	7.0	7.0	
Rents	9.6	9.6	9.6	9.6	
Non-incorporated busi- ness, profit and farm net income	42.8	42.8	42.8	42.8	
Wages and supplements	190.4 \$346.1	190.4 318.0	190.4 290.4	190.4 258.9	
<u>Plus:</u> Government and business transfer payments and <u>Less:</u> net interest paid by govern- ment.				9.3 \$268.3	

Personal income less personal taxes: \$234.3 disposable income.

Disposable income less savings: \$216.3 expenditures.

Source: Department of Commerce. Discrepancy: Rounding.

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Personal income for 1952 was 268.3 billion dollars. Personal taxes were 34 billion dollars, and personal consumption expenditures were 216.3 billion dollars, so we saved 18 billion dollars that year.

We see, then, that somebody is working very hard at collecting and keeping these statistics, day after day. You can just imagine the number of clerks, statisticians, and equipment it takes to gather these data throughout the country and keep track of them in the Department of Commerce. It is something of a luxury service, perhaps, and maybe we are not to be criticized too much if we didn't have it before 1932.

The next thing the national income accountants do is to break national income down by distribution shares. This is a somewhat different approach to the same concepts. The accounting is accomplished by an entirely separate process and this makes a double check on the other sets of figures. In this approach we account for the monies paid out. In the product approach we account for the value of the products, as purchased by groups.

Chart 3, page 10.--We have here national income as it is distributed: Wages and salaries, plus supplemental income from social security payments and pensions; non-incorporated business and professional income; farm income; rental income of persons; corporate profits in the usual three portions; inventory adjustment; and, finally, net interest. So the national income total is the same--290.4 billion dollars.

Chart 4, page 11.--I have selected several years for this chart. This allows us to compare the same data for 1929, a good year, 1933, not so good, and two postwar years. These data are not corrected for price level changes.

Topic IV:

USE OF INDEXES IN MEASURING TRENDS IN NATIONAL INCOME

Chart 5, page 12.--This chart illustrates the construction of a single index number and is part of our Topic IV over there on the main chart. Due to your refresher course and to the very excellent lecture on Friday by Dr. Paradiso, I need only touch on the uses of indexes in connection with the national income data.

Economists like to use market prices as a yardstick to measure the value of goods and services. But price levels have a way of shifting. If money incomes remain the same from one year to the next, while prices double, real income is actually halved. To compare national income over a period of years, we correct money income by some standard of purchasing power. Perhaps the best known such standard is the monthly consumers'

CHART 3

NATIONAL INCOME, U. S., BY DISTRIBUTION SHARES, 1952

(Billions of dollars)

Wages and salaries	\$181.1
Supplemental (social security and pensions)	9.2
Non-incorporated business and professional	27.6
Farm	15.2
Rental income of persons	9.6
Corporate dividends	9.1
Undistributed profits	8.8
Corporate profits tax liability	21.8
Inventory adjustment	.8
Net interest	7.0
National income	\$290.4

Source: Department of Commerce

CHART 4

NATIONAL INCOME BY DISTRIBUTIVE SHARES

	<u>Annual totals</u>				<u>Seasonally adjusted</u> <u>annual rates by quarters</u>
	1929	1933	1947	1952	1953 1st quarter
National income	87.4	39.6	198.7	290.4	N. A.
Compensation of employees	50.8	29.3	128.0	190.4	201.6
Proprietors' and rental income <u>a/</u>	19.7	7.2	42.4	52.5	53.6
Corporate profits and inventory valuation adjustment	10.3	-2.0	24.7	40.5	N. A.
Net interest	6.5	5.0	3.5	7.0	7.4

N. A. Not available.

a/ Includes noncorporate inventory valuation adjustment.

Source: Department of Commerce.

Note: Details may not add to totals because of rounding.

CHART 5

INDEX NUMBER CONSTRUCTION

Commodity	1900		1901	
	Base price (dollars)	100	Price (dollars)	Percentage to base
Iron	15 ton	100	20.00	133
Wheat	1 bushel	100	1.25	125
Cotton	.10 lb	100	.10	100
Wool	.40 lb	100	.36	90
Total		<u>400</u>		<u>448</u>
Average (arithmetic mean)		100		112

price index, a weighted average of the prices of various cost-of-living items. If the index for 1939 as a base year is 100, then the 1951 index would be stated as some percentage of the base year. Real income, then, equals money income, divided by the price index. By comparing money national income and real national income, we can spot inflation periods and deflation periods. The elimination of fictitious changes in the price level gives a measure of real income, measured in terms of dollars of constant purchasing power.

Constant dollar price-index series for any considerable number of years are hard to find. Samuelson has constructed such a constant dollar index for the United States, showing the costs of all U. S. wars. You will find it on page 304 of his book.

Chart 6, page 14.--Now, this chart is a constant dollar-index and shows per capital disposable income. If you read on the left hand scale, we have a constant value series comparing disposable income in terms of 1952 prices with earlier annual current prices since 1940. The broken line is the constant value series in 1952 prices. The solid line represents actual annual prices. Most constant value series deflate the series by taking some earlier date as a base when prices were probably lower. This one takes the peak date and works them backwards. It accomplishes the same result but not the way you are more used to reading it.

Topic V:

ANALYSIS OF CHANGES IN NATIONAL INCOME COMPONENTS

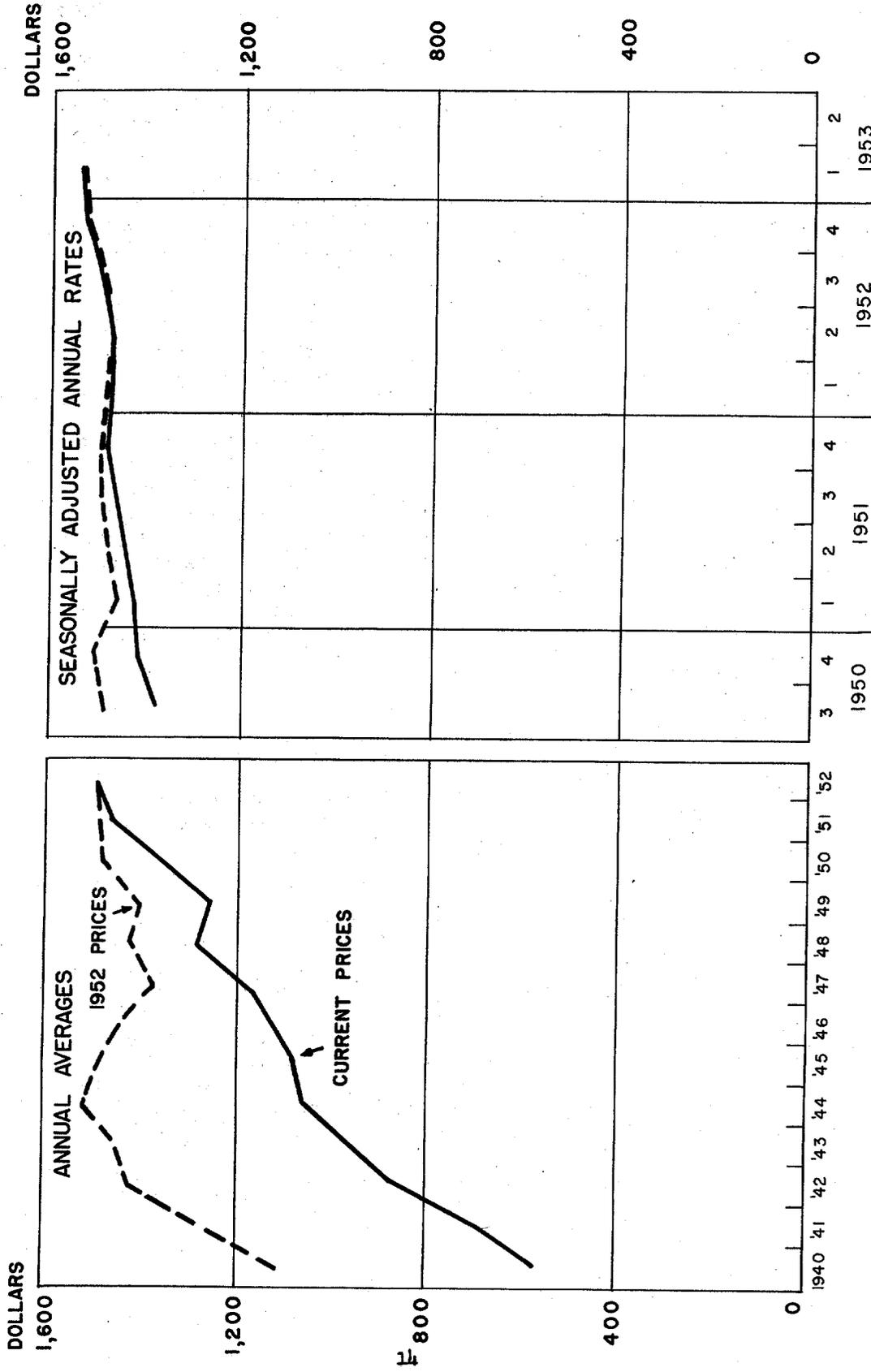
Proceeding now to our Topic V, I have a series of charts which have been previously touched upon here and there, but they are a good review. So don't worry about it if we don't seem to spend too much time on any one of them.

Chart 7, page 15.--This chart permits us to compare these items for several years. Now, if the current dollar is worth 58 cents, in terms of 1939 dollars, we can roughly halve the figures for 1952 and learn that GNP is still much more than 1933 real income.

Chart 8, page 16.--This chart shows the same material for the same years, but from the product and expenditure viewpoint. In addition to GNP, then, it shows expenditures for personal consumption, for domestic investment, for net foreign investment, and for government purchase of goods and service.

Chart 9, page 17.--This one shows the gross national product in graph form for a series of years from 1940 all the way through 1952.

CHART 6
PER CAPITA DISPOSABLE INCOME



SOURCE: DEPARTMENT OF COMMERCE, OFFICE OF THE ECONOMIC ADVISER TO THE PRESIDENT.

CHART 7

GROSS NATIONAL PRODUCT, NATIONAL INCOME, AND PERSONAL INCOME

(Billions of dollars)

	Annual totals				Annual rates by quarters
	1929	1933	1947	1952	1953 1st quarter
Gross national product	103.8	55.8	233.3	R346.1	361.0
National income	87.4	39.6	198.7	290.4	N.A.
Personal income	85.1	46.6	191.0	268.3	281.3
Disposable personal income	82.5	45.2	169.5	234.3	245.6
Personal saving	3.7	-1.2	3.9	18.0	19.5

R Revised

N. A. Not available

Note: Estimates of the Department of Commerce.

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CHART 8

GROSS NATIONAL PRODUCT OR EXPENDITURE

(Billions of dollars)

	Annual totals				Seasonally adjusted annual rates by quarters
	1929	1933	1947	1952	1953 1st quarter
Gross national product	173.8	55.8	233.3	R346.1	361.0
Personal consumption expenditures	78.8	46.3	165.6	216.3	226.2
Gross private domestic investment	15.8	1.3	30.2	52.1	54.4
Net foreign investment	.8	.2	8.9	R.0	-2.0
Government purchase of goods and services	8.5	8.0	28.6	77.8	82.4

R Revised

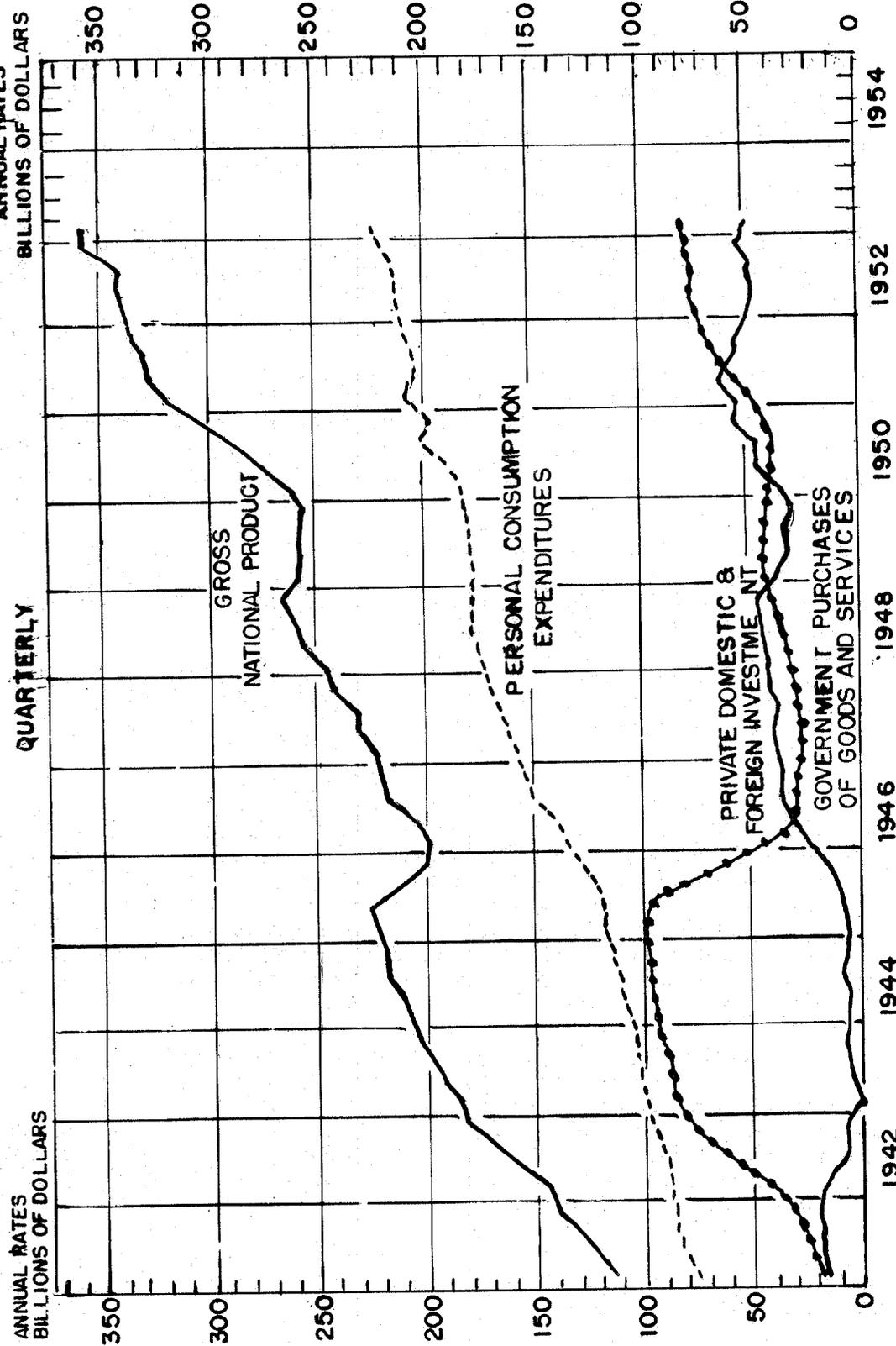
Note: Estimates of the Department of Commerce.

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CHART 9

GROSS NATIONAL PRODUCT

DEPARTMENT OF COMMERCE ESTIMATES, ADJUSTED FOR SEASONAL VARIATIONS



LATEST FIGURES: 1st QUARTER

Chart 10, page 19.--We have purchasing power here for selected years. National income, seasonally adjusted, increased in the first quarter of 1953. By the way, all of these charts end with the first quarter of 1953. Whereas the second-quarter figures are now available, my object is to instruct you in the use of these materials rather than give you the latest figures.

Reading on the right-hand scale, there was a rise in compensation of employees, primarily in manufacturing industries, a rise in corporate profits, and a rise in net interest. A decline in farm proprietors' income offset a further increase in non-farm business earnings.

Chart 11, page 20.--Total personal income in April was little changed from the March 1953 level. Again reading on this right-hand scale, a billion dollar increase in labor income was somewhat offset by a decline in farm proprietors' income, as both prices and volume of marketings fell below the March level. Changes in other categories were minor.

Chart 12, page 21.--Again reading on the right-hand scale, consumer spending rose more than disposable income in the first quarter of 1953. In consequence, the saving rate dropped a little, although it remained at a high peacetime level.

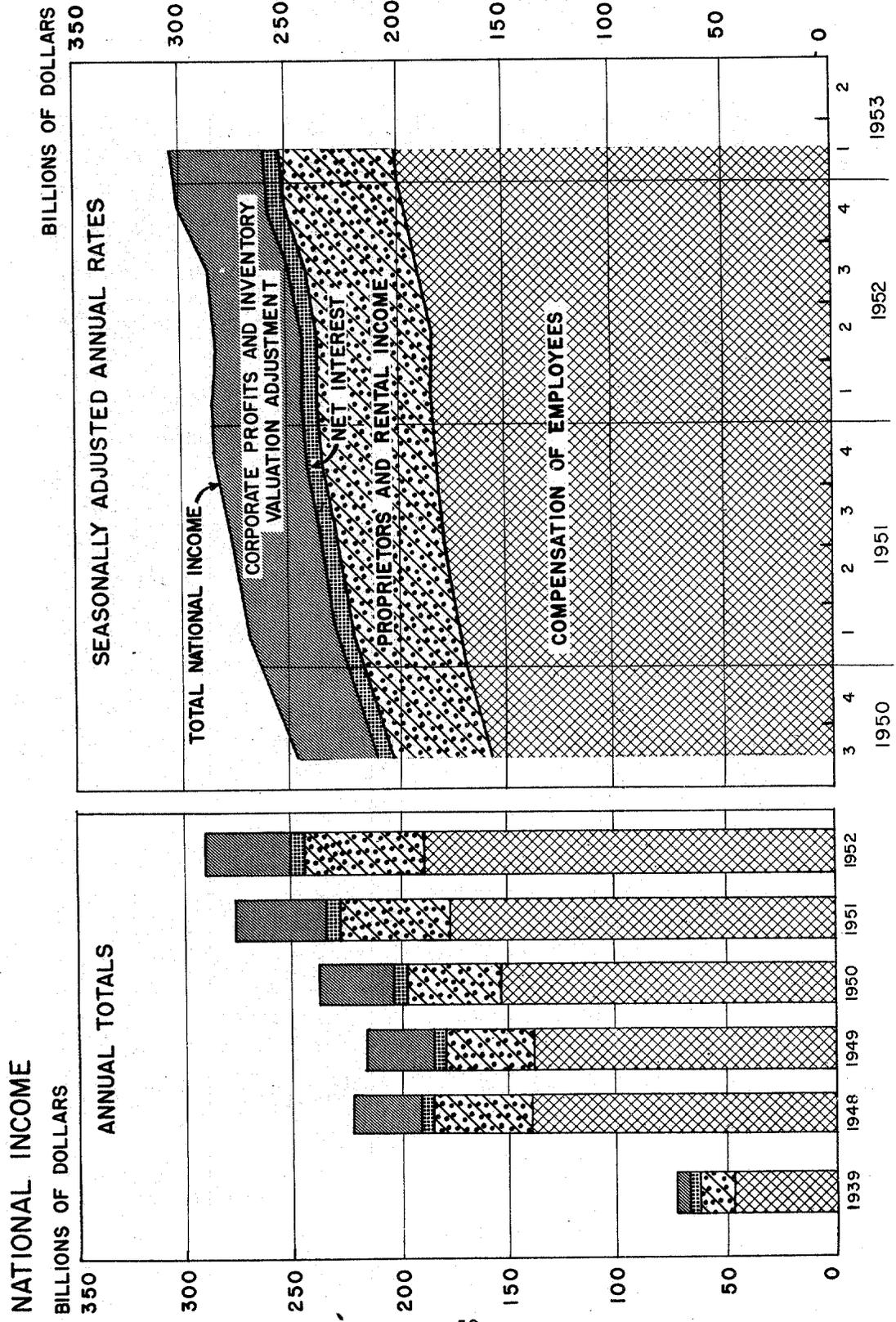
We now have seen some charts showing studies indicating changes in national income. What is to be gained from these studies? Who is responsible for developing and digesting this mass of material, and to what purpose?

I have said that in 1932 the Senate asked the Secretary of Commerce to gather and furnish national income data estimates. That was step No. 1. Step No. 2 came in 1946, when Congress passed the Employment Act of 1946, approved in February of that year. It is more often known as the Full Employment Act, but its actual title is The Employment Act of 1946. Its stated purpose is to foster and promote free competitive enterprise and general welfare conditions, under which there will be afforded useful employment opportunities, and to promote maximum employment, production, and purchasing power.

To accomplish this purpose, the President of the United States is required to send to Congress, within sixty days after the beginning of each regular session, an economic report (and such supplementary reports as he deems necessary). Actually, they have been coming out about each six months. This report is called The Economic Report of the President. You are undoubtedly familiar with it. This report must tell the Congress four things:

1. The levels of employment, production, and purchasing power obtaining in the United States and such levels needed to carry out the policy declared in the act.

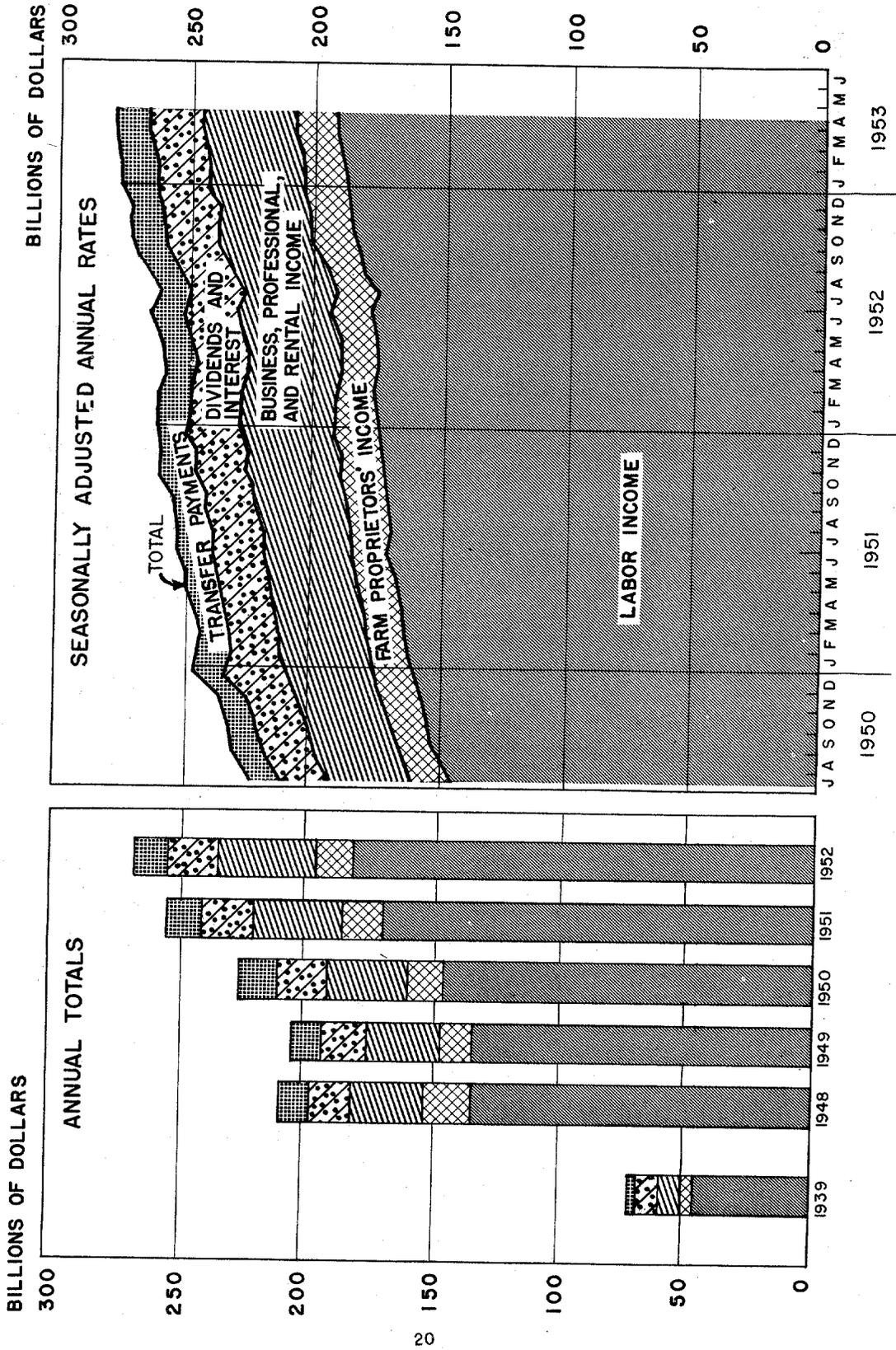
CHART 10
PURCHASING POWER



SOURCE: DEPARTMENT OF COMMERCE, OFFICE OF THE ECONOMIC ADVISER TO THE PRESIDENT.

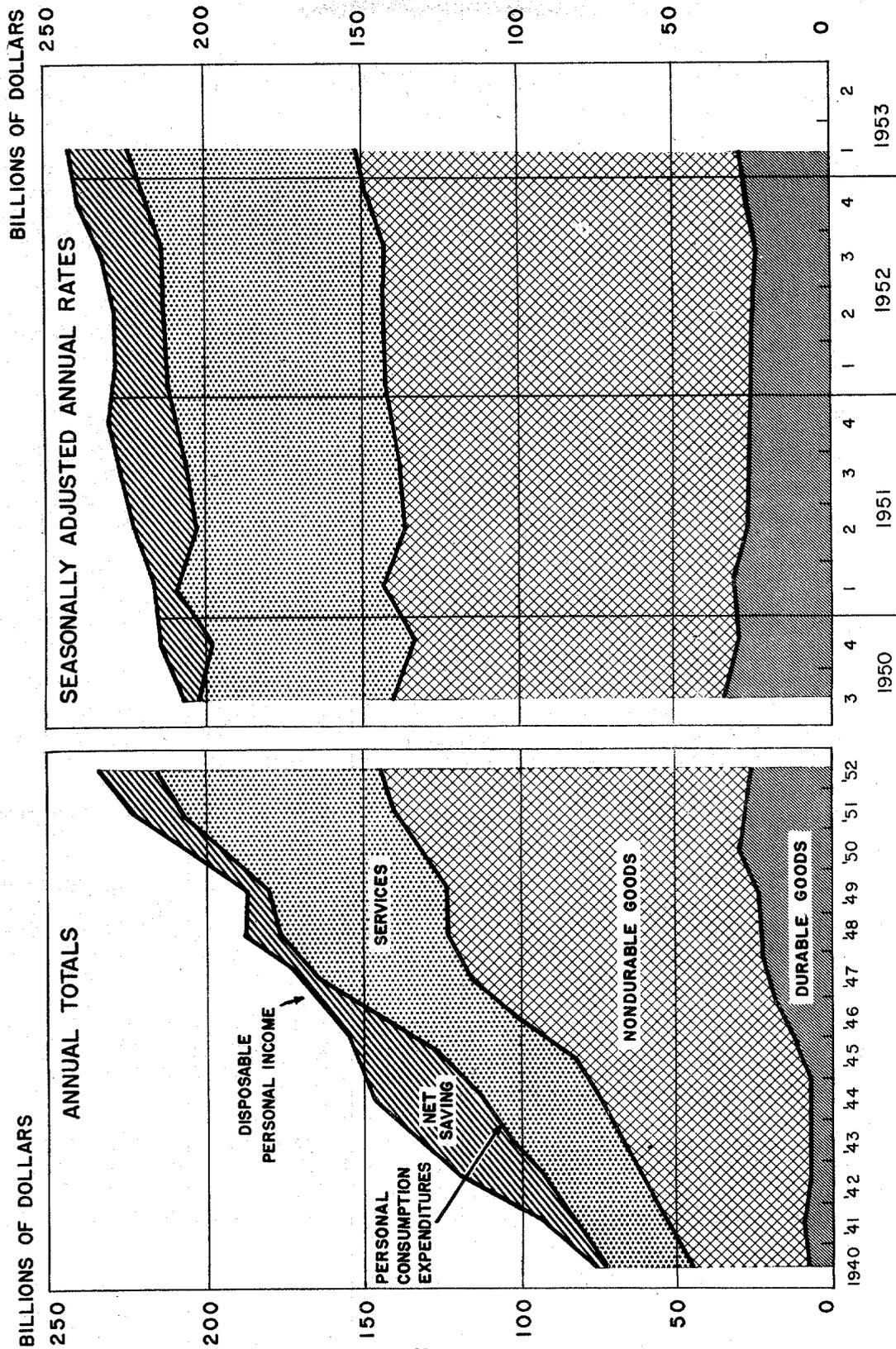
CHART 11

PERSONAL INCOME



SOURCE: DEPARTMENT OF COMMERCE, OFFICE OF THE ECONOMIC ADVISER TO THE PRESIDENT.

CHART 12
CONSUMER INCOME, SPENDING, AND SAVING



SOURCE: DEPARTMENT OF COMMERCE, OFFICE OF THE ECONOMIC ADVISER TO THE PRESIDENT.

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2. Current and foreseeable trends in the levels of employment, production, and purchasing power.
3. A review of the economic program of the Federal Government, a review of economic conditions affecting employment in the United States, or any considerable portion thereof, during the preceding year, and a review of their effect on employment, production, and purchasing power.
4. A program for carrying out the policy declared in the act, together with such recommendations for legislation as the President may deem necessary or desirable.

How does the President do this? He has a Council of Economic Advisers to help him with the report. His report is then received in the Congress by the Joint Committee on the Economic Report. This committee consists of 14 members, seven from each House. The Joint Committee has its own economic staff, housed in the Library of Congress. You will meet one of their most effective staff members here next Thursday, Dr. Piquet.

By May first, the Joint Congressional Committee must file its own report on the President's recommendations, as a further guide to legislation. Legislative attempts may be made to either augment or offset any indicated economic trend.

Each six months the Council of Economic Advisers works up a table called The Nation's Economic Account. It used to be called the Nation's Economic Budget. You will run across that title in your studies.

Chart 13, page 23.--This statistical series on the Nation's economic accounts is the product of the Council, as I have said. We have here an accounting of receipts and expenditures by economic groups. We have the consumers' groups: receipts, 234.3 billion dollars, expenditures 216.3 billion dollars--a plus of 18 billion dollars. The business groups: retained receipts from current production, 36.4 billion dollars, expenditures (even more), 52.1 billion dollars--a minus of 15.7 billion dollars.

Now, I do not need to rehearse this entire chart to you, except to point out that the totals of the two columns covering receipts and expenditures must match. When they do not, we put in a little item for "statistical discrepancy."

Each of these reports on the Nation's economic accounts is regarded as a photograph, a semiannual photograph, of the prevailing or current pattern. Each of these pictures is a "still," not a movie, and gives you a glimpse of the economy as it was on a certain day.

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CHART 13

THE NATION'S ECONOMIC ACCOUNTS, 1952

(Billions of dollars)

Economic group	Receipts	Expenditures
Consumers		
Disposable personal income	\$234.3	
Personal consumption expenditures (Personal savings (plus) \$18.0)		\$216.3
Business		
Retained receipts, current production	36.4	
Gross private domestic investments (Excess of investment (minus) -\$15.7)		52.1
International		
Net foreign investment \$.0		
Government (Federal, state, and local)		
Tax and nontax receipts or accruals less transfers, interest, and subsidies, (net receipts)	77.3	
Total Government expenditures, less transfers, interest and subsidies, (purchases of goods and services), (deficit on income and product account, minus \$-.1.4)		78.7
Statistical discrepancy (minus)	<u>-1.9</u>	<u>-1.0</u>
Gross national product:	\$346.1	\$346.1

Source: Midyear Economic Report of the President, January 1953, and the Department of Commerce.

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Over a period of years, if you acquire a series of economic photographs and study them carefully, you may be able to discern definite but different and perhaps recurring patterns. If a former pattern, followed by poor economic circumstances, is seen to be recurring, perhaps the Congress can do something about it in the way of legislation. You undoubtedly have already made up your own minds as to whether or not you believe it is possible to manage the economy, or desirable to manage it. I will not dwell any more on that, except to point out there is a law about it, the Employment Act of 1946.

I want to talk a little more now about the business group. These statistics are an indication of how business feels about the current prospects for the economy. If business men are optimistic as to the current outlook, they are expanding their plants and adding equipment; if they are pessimistic, they are not expanding. So these statistics are a good set of clues as to what the business man is thinking.

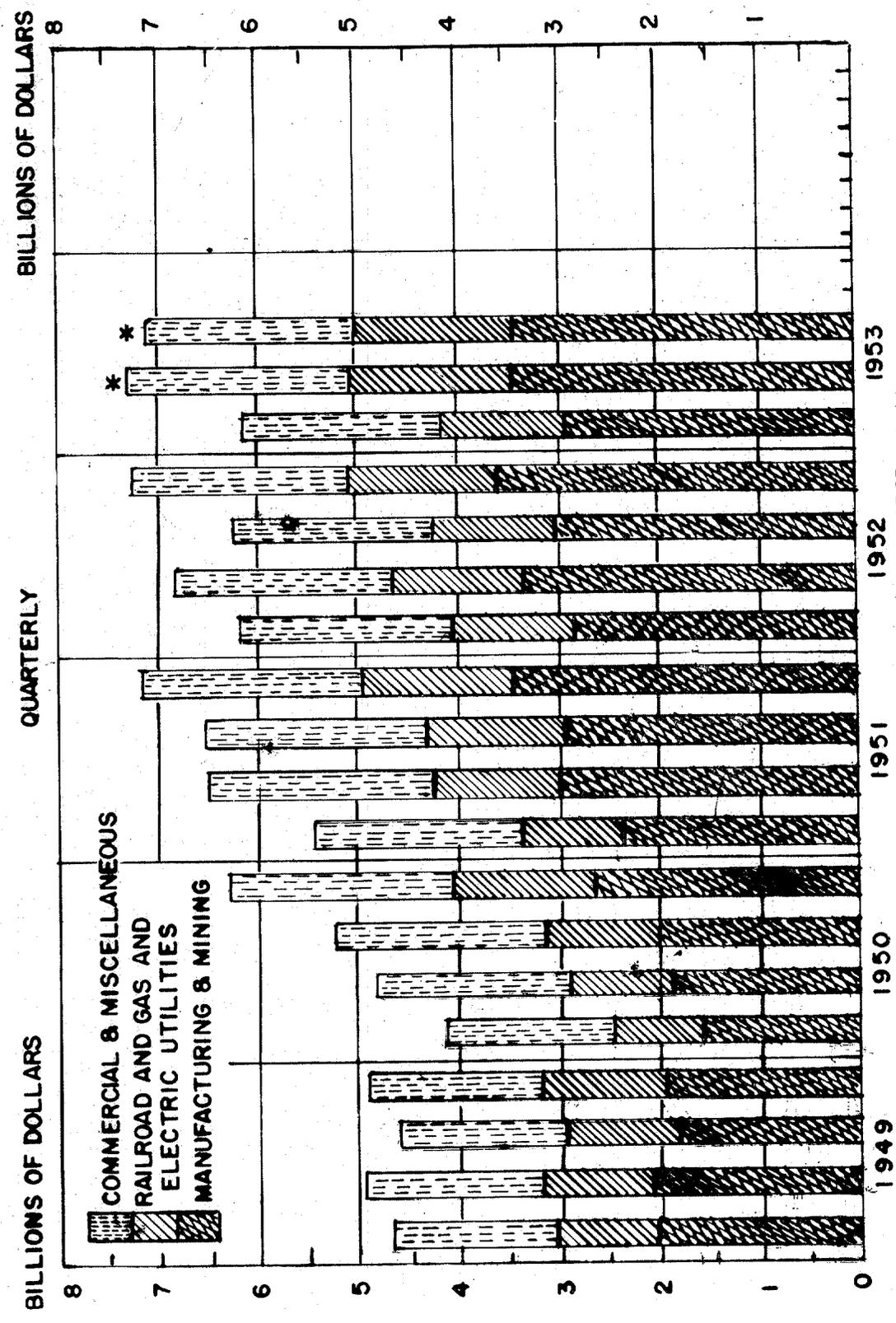
Retained receipts, under business accounts for 1952, totalled 36.4 billion dollars and were composed of undistributed corporation profits of 7.9 billion dollars, plus capital consumption allowances of 27.9 billion dollars, and an inventory valuation adjustment of .6 billion dollars. There was expended, just in 1952, on new construction (residential and other private construction) 23.5 billion dollars; on producers' durable equipment, 25.5 billion dollars; and 3.1 billion dollars was added by allowing for upward changes in inventory values due to a rise in current prices. The value of inventories was increased because the current price level had gone up and it would cost that much more to replace them.

Chart 14, page 25.--This chart shows, by quarters, the expenditures on new plant and equipment by commercial establishments; by railroad, gas, and electric utilities; and by manufacturing and mining groups. Dr. Paradiso showed you a chart with more items on it and with figures for the next quarter also.

I want to show you two colored charts. These are the "cream of the crop." They were designed by Dr. Arthur O. Dahlberg, Director of the Visual Economics Laboratory of Columbia University. They are especially constructed as "flow charts" to make economics easy for engineers. You have copies of these charts in black and white in your handout on this lecture, plus two additional ones, four in all. Your black and white charts have a full set of explanations on them.

BUSINESS EXPENDITURES ON NEW PLANT AND EQUIPMENT
SECURITIES AND EXCHANGE COMMISSION AND DEPARTMENT OF COMMERCE ESTIMATES

CHART 14



BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM
 LATEST FIGURES PLOTTED: 3rd QUARTER
 * ANTICIPATED BY BUSINESS

Topic VI:

NATIONAL INCOME ANALYSIS AS A TOOL IN ECONOMIC MOBILIZATION

The impact of war, of course, is felt in myriad ways. Manpower is diverted into the armed forces; there is a great increase in employment; labor is extensively retrained; large population movements occur; armament industries are expanded; raw material uses are curtailed in non-armament industries; new products are developed; synthetic materials supplement natural ones; and finally, war goods production is expanded, often at the expense of civilian goods.

Of what use, then, in time of mobilization are these huge masses of statistical data? They have at least seven use classifications:

1. They become the base on which we make production decisions. A great deal of CMP work (the control of uses to which strategic and critical materials can be put in time of mobilization) is based on these figures although much additional data direct from business itself are absolutely necessary.
2. They help to make possible computations by which business men can be compensated for cost changes. They help to make possible the adjustment of inequities brought about by price freezes and wage freezes.
3. The data are important in planning production, and of greater importance in planning decontrol and reconversion steps.
4. The disposable income data have some additional uses in furnishing clues as to how much more taxes you and I can pay. The rate of personal savings is known, and therefore the Treasury can determine the level at which it must pitch its voluntary bonds sales campaign to get you to buy bonds from savings.
5. The data on liquidity which accrue during an emergency period tell the decontrol planners the amount of financial backlog there is existing, and this information may help to direct postwar production.
6. Right now (mid-1953) all economists are watching all the indexes most carefully, seeking signs of inventory pile-ups, and watching trends in the manufacture of producer durables, the building of new plants, and the number of new housing starts.

So we have found some uses for national income data in time of emergency. Dr. Burns said the other day, "If we get a depression, it will be the best advertised one we ever had."

It only remains now to rehearse what you have been told here this morning.

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1. We have learned that the economist is interested in national income and product data as a series of photographs preserving the economic patterns which prevailed at stated intervals. He can compare these patterns with the currently unfolding pattern in an effort to detect indicated trends and to develop procedures and policies intended to augment or to offset incipient trends.

2. That the national wealth of the United States has now passed 1,000 billion dollars, even if the concept is somewhat sterile.

3. That an index number is a device for comparing data of various times and places, expressing the variables as percentages of some common base.

4. That the Employment Act of 1946 requires the President of the United States to recommend action to Congress, based in part on a study of national income and product data.

5. And, finally, that these data are useful in times of economic mobilization for planning wartime production, in fixing new tax rates, in indicating expected volume of voluntary bond sales, and in connection with reconversion and planning.

So you have another five cents' worth in your economic market basket.

DR. KRESS: The difficulty of question periods is that we might run out of information. Who is going to ask the first question?

QUESTION: I am bothered, Dr. Kress, by the spread between the net national product and the incomes. Is that taken up by government purchasing, or what happens--a differential?

DR. KRESS: No, the only thing taken out there was the business taxes--the indirect business taxes.

STUDENT: My point is, if I understand it, the net national product represents the cost of goods which are available or to be purchased, and income will not cover that pile.

DR. KRESS: Yes, but the government purchases are included in there, because wages were paid for them.

STUDENT: Why don't we pile up a surplus each year of unpurchasable goods and services?

DR. KRESS: Well, we do. That's the way we get the deficit--the difference in the economy between taxes--our personal taxes and

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corporation taxes, and what the cost of the government is. So we manage to deliver the goods, and instead of piling up surplus goods we pile up debts in paying for them. Maybe that's a way to balance the budget. Any time the military does not have the money--they're the ones that spend the most money--or any time anybody does not have the money, he can not have the goods. It might not be a good solution.

QUESTION: I notice that you have the inventory adjustments in the gross national product, to eliminate duplication.

DR. KRESS: The term is "statistical discrepancy." Inventory adjustment is simply to take whatever stocks you have on hand, and raw materials, and quote them in current market prices.

STUDENT: Where do you put any of the raw goods themselves? In the gross national product?

DR. KRESS: They're charged the first time they occur, as wheat is, in the farm illustration, or raw steel in the automobile illustration. They're counted the first time when they're delivered from the manufacturer or producer.

STUDENT: I don't think that is shown on the first chart. I didn't see anything about materials at all.

DR. KRESS: At the bottom, the broken line, purchases from other firms, deducted. Remember, I talked about it. That's where you get it out, right there.

COLONEL BARNES: Where you get it in.

STUDENT: You say you use the first set of costs?

DR. KRESS: It is the first set of costs in any product. It probably gets reported a thousand times, but the accounts have to take it out. They have to watch steel all the way through the manufacturing operations. They have to watch wheat all the way through, and a thousand other items, like cotton, and so on. It is their job in Commerce to get double-counting out. Just how accurately they are able to do that is something else.

QUESTION: Dr. Kress, I was somewhat disturbed by the statistics. I recall the figure in your chart of 55 or 56 billions of gross national product in 1933, and that was in 1933 dollars. In 1952 it is 346 billions of 1952 dollars. We have been hearing a figure of three percent increase in GNP per year. Even accounting for the difference in the value of the dollar between those two years, 1933 and 1953, it would seem to me that it is going much more than three percent during that

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twenty-year period. That would be a total of 60 percent, or maybe it's a cumulative figure. In any event, I don't quite see the relationship between this three percent increase per year and the difference between those two figures.

DR. KRESS: Well, I think Dr. Paradiso said it was two percent a year increase through technological improvement, and one percent by the use of additional workers. If you work it back from two percent, would that make your figure any better?

COLONEL BARNES: That's the over-all. In any two consecutive years you may lose 10 or 15 percent by comparing the current gross national product with the preceding year, or you may gain 15 percent; but this 15 percent is the over-all long-range change over a period of many years.

STUDENT: I was comparing the 1933 figure with the 1953 figure. It would strike me that in twenty years it would be a pretty good chance for the average to work out.

DR. KRESS: That varies by industries, too. At the end of World War II I talked to a textile man--I was interviewing him on a project for this school, as a matter of fact. He brought up an objection something of this same description. It was my chance to point out that technological improvement was increasing his position. He replied: "They have not improved a cotton spindle in fifty years!" So technological improvement does vary by industries. You see these figures put down as 2.5 to 3 percent--some years it's 3.5 percent. There is general acceptance of the statement that over a period of years there has been a technological improvement of about 3 percent annually.

COLONEL BARTLETT: Andy, I have forgotten the exact figure, but perhaps some of you bankers can tell us. If you start with a dollar capital and compound three percent annually, it is a surprisingly short number of years until you have two dollars. Isn't it in 27 years at three percent compounded that it will double your capital?

DR. KRESS: I think it is shorter than that. In the old days when you banked your savings at 3 percent, you doubled your money in about 10 years.

QUESTION: I believe one of your charts indicated that the per capita disposable income was about 1,500 dollars per year. My question is, for a family of four, does that mean the annual disposable income per year would be 6,000 dollars?

DR. KRESS: The 1952 figure for the District of Columbia is 2,129 dollars per capita. Only four states and the District averaged over 2,000 dollars per capita. It was down to 800 and 900 dollars for two states.

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QUESTION: In one of your charts showing the total foreign investment you had zero for 1952, I believe, and a negative number for the first quarter of 1953. What significance do you give to that?

DR. KRESS: It is a technical designation. It is exports and imports. It means goods actually moving out of this country, even though they were paid for by this country. In the last year or two the favorable balance we used to have was offset. Actually it means we are bringing into the country just what we put out; it is in balance. If there were plus or minus, it would be called net international investment. It just happened to balance out this year. This then has been a plus for most years. It's a queer kind of favorable balance, if you are not going to get paid for part of it, and many times we are not. They're grants, or goods purchased on long-term loans.

QUESTION: Doctor, I was wondering about this: In the national picture you mention statistics from the analysts in the United Nations. What do they use as a standard for those figures? Is there a special set of standards to compare one country against another?

DR. KRESS: In the beginning they just took figures given to them by the different nations. Each one had its own way of doing it. But slowly they're pushing all into a modern system that has the same pattern throughout. They're slowly pushing all statistics to a 1948 base year.

Among the really good things which the United Nations is doing is the compilation of these sets of statistical series. They come out once a month in French and English. That's one of the good things the old League of Nations did, too.

QUESTION: I am interested in how these figures are procured. Is this a sampling process or system of estimates, or is it a census process?

DR. KRESS: It is a combination of all of them. They get a lot of material from the census, but they also use sampling data; a regular set of suppliers send it.

COMMENT: The international statistics are very conspicuous by the omission of three countries: Belgium, Switzerland, and Sweden.

DR. KRESS: I wasn't aware they were not there.

STUDENT: It is my opinion, from a visit in those three countries, that their standard of living is quite high. They're three very different countries--Sweden with, I guess, 90 percent government control; Belgium quite similar to the United States as far as government control

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is concerned; and Switzerland with none. I think the information you would get from those countries would be educational, or at least helpful.

QUESTION: Doctor, I am interested in this economic mobilization as it relates to these statistical data, and the naivety with which, perhaps, we publish direct information and its relation to strategic intelligence, and a comparison, for example, with USSR and the data which they publish on their mobilization base.

Would you care to discuss the liability or adaptability of percentage data rather than statistical data, as we present it? For example, they say their gross national product increased 25 percent, which was three percent above the goals for that year.

DR. KRESS: You are thinking about Russia?

STUDENT: That is right.

DR. KRESS: When you get into the Economic Potential Course you will get a complete rehearsal of all those things. A man named Schwartz from the New York Times, who also teaches somewhere in New York City, and another from the University of Pennsylvania, Karl Scholz, have made a habit for years of studying and interpreting Russian statistics. They have whole sets of charts, and whenever they get any percentage-wise change, they quickly run it back to some base. We are pretty much dependent on them for interpretation.

I want to ask a question myself, because you haven't asked it. Some of you should have asked me: How do you account for life insurance payments? How do you account for some very fine points of obsolescence? How do you account for depreciation programs, and things of that sort?

The answer is that a technical formula is followed. You make an arbitrary decision. For these purposes, the method is so and so. It is entirely arbitrary. You can't entirely justify it under any system of accounting. Since everyone concerned accepts the formula and uses it in the same way over a series of years, you will not get into difficulty with comparisons; they're built up in the same way.

QUESTION: In connection with what you have just said, Doctor, in the concept of a gross national product as being a product or an output, how do you explain the inclusion of depreciation?

DR. KRESS: Well, because goods that wear out--capital goods that wear out--have to be replaced, and the only way they can be replaced is by substituting some of the product that has just been made.

QUESTION: You explained how we avoided duplication in actually accounting for the raw materials into the finished product. However, in the gross national product you include your taxes, and then in turn you also include services of government. It would appear to me to be either of two things: You could increase gross national product merely by increasing taxes, without actual production of anything more than you had before. Second, if you include taxes in gross national product, plus government expenditures, you actually have duplicated taxation in the government-expenditure field.

DR. KRESS: Well, you should not. You figure national income in two ways: First, the amount of money spent by various groups for the product. Second, the forms of compensation that were given for manufacturing the product. When they come into a rough balance, except for a statistical discrepancy, which may reach as high as three billion dollars in some years, you are pretty sure you have it tracked down.

Of course there was a great deal of objection in the early days, to trying out this system. We find over the years that it is proving very useful and it does give you these pictures of what the economy was doing--not is doing, but was doing, at a certain date. National income data have been found to have very many uses. I think Dr. Burns' book has the flat statement that the mathematical statistical approach is no longer the current approach to economics--currently it is an "allocated" approach. I think Burns is pioneering a little, but it is true we are pretty well through our preoccupation with the mathematical approach.

QUESTION: Doctor, in any statistical method like this, you have a lag of several months between the time something happens and it shows up. How much of a lag in actual fact is there?

DR. KRESS: They actually post a figure once a month, then adjust it later and mark it as adjusted.

STUDENT: I know they publish figures once a month, but the figure they publish in September is unlikely to say what happened on the first of September.

DR. KRESS: It will not. They adjust totals every 3 months and tell you it is an adjusted figure. They have not overcome that difficulty, although their original figures are not too wide of the mark.

QUESTION: Dr. Kress, our national wealth was quoted on those charts as a thousand billion dollars. There has been much argument lately about the coastline oil resources. Are they national wealth until they are actually drilled and pumped? In other words, if we find an oil well that has potentiality, but we don't know how much, is it added to our wealth?

DR. KRESS: The National Bureau of Economics did not include sub-soil assets.

QUESTION: I would like to refer to Topic IV, Uses of Indexes to Measure Trends. I noticed on one of your charts, when you considered personal income based on the year in which it was earned and spent, it showed a very sizable increase. Then when you considered it related to the 1952 dollar, for the last several years, it ran along fairly evenly. It is apparent that the selection of the basic years in which you make these comparisons is very important, and the trends could be made to vary, depending on these years.

What I wanted to ask is this: Within the profession, what years do the economists consider as basic, and why?

DR. KRESS: You heard Dr. Paradiso say he had certain sets of statistics which were not published. He had them--if anyone wanted to see them, he could. He has a lot of other series, too, that have never been published. What is the reason they are not published? I don't know. Economists as a group have no answer.

My only answer is, as an economist, get yourself a series in which you can average the things you wish to examine and compare. Samuelson did just that on prices since 1776. It is on page 304 in his book.

It is time to quit, gentlemen. Thank you very much.