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POST-WAR ECONOMIC GROWTH IN GREECE
1950–61

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INTRODUCTION

THE war in Greece ended in the latter part of 1949 and conse-
quently economic development dates from 1950. The twelve-
year period 1950–61 had one of the outstandingly high rates of
economic growth in Europe. The annual average rate of growth
of gross national product in real terms was not far short of that
for West Germany, which was the highest in western Europe.

Judging by the experience of the past decade, the Greek
economy may continue to grow as fast, if not more rapidly, if
certain factors in the situation improve. First of all, an important
condition of further growth in the agricultural sector is the
better exploitation of existing natural resources and extension
of new arable land by undertaking new land reclamation pro-
jects and irrigation works. Moreover, changes in the crop
structure and the implementation of the land consolidation pro-
gramme should stimulate further growth of agricultural produc-
tion.

A more intensive investment effort in manufacturing indus-
tries and particularly in heavy manufacturing industries should
bring a further growth of industrial production. Another
important factor in this connection would be the continuation
of public investment in electric power supplies, road and rail
transport, etc., in order to complete the infrastructure and im-
prove the country's external economies. The development of
educational and training facilities in line with the future needs
of the Greek economy should also contribute to a rapid long-
run rate of economic growth.

Analysis of the growth record requires data on changes in the
economy as a whole, as well as in the individual sectors, from
both output and productivity viewpoints. Estimates of changes
in output can be derived from national accounting data.[1] From
this source we can get what we need for measuring changes in

[1] Ministry of Co-ordination, *National Accounts of Greece 1958–1959*, and
National Accounts of Greece 1960, Athens, 1961 (English edition), and *National
Accounts of Greece 1961*, Athens, 1962 (Greek edition).

the real product of the Greek economy as a whole for the period 1950–61 and of the main sectors, i.e. agriculture, manufacturing, and services. However, only very limited inferences can be drawn concerning the growth of real product per man or per man hour. The existing data on employment are unsatisfactory and here we shall use estimates based on the 1951 and 1961 censuses of population. We shall estimate population for the intermediate years between the two censuses by interpolation.

I. RESULTS OF THE RATE OF GROWTH ESTIMATES

The rate of growth implications of the national income estimates for the years 1950–61 suggest a continuous increase in real terms, except for 1952, when there was a decrease. The 1952 fall was due to the decrease in farming and manufacturing output and a contraction of demand for capital goods. After 1953 the Greek economy appears to have grown again at a fluctuating annual rate due mainly to sharp fluctuations in agricultural output. In the last years of the period, i.e. 1958 and 1959, the gross domestic product continued to rise in spite of a lower agricultural output compared with 1957.

Tables I to VI which follow give the basic data from the national income accounts on the development of the economy.

TABLE I
Total and per capita product 1950–61

	Total gross domestic product		Per capita product		Population
	At constant 1954 prices in million drachmas	Annual changes of G.D.P. %	In drachmas at constant prices	Annual changes of per capita product	Mid-year estimates[1] 000
1950	40,738	—	5,384	—	7,566
1951	44,028	8·1	5,758	6·9	7,646
1952	43,691	—0·8	5,650	—1·9	7,733
1953	49,902	14·2	6,384	13·0	7,817
1954	51,611	3·4	6,539	2·4	7,893
1955	55,453	7·4	6,961	6·4	7,966
1956	58,470	5·4	7,280	4·6	8,031
1957	63,452	8·5	7,837	7·6	8,096
1958	65,369	3·0	7,998	2·0	8,173
1959	68,431	4·7	8,287	3·6	8,258
1960	70,881	3·6	8,512	2·7	8,327
1961	78,674	11·0	9,364	10·0	8,402

[1] Source of population estimates: *Statistical Yearbook of Greece* (1962), Athens, p. 13.

TABLE II
Average rates of growth in gross domestic product

	Total product	Per capita product
1950–5	6·35	5·25
1956–61	6·10	5·15
1950–61	6·15	5·15

TABLE III
Product per man year for the years 1950–61[1]

	Product per man year	
	In drachmas at constant prices	Annual changes in %
1950	13,065	—
1951	13,999	7·1
1952	13,765	—1·6
1953	15,585	13·2
1954	15,989	2·6
1955	17,021	6·5
1956	17,085	4·6
1957	19,158	7·5
1958	19,572	2·2
1959	20,318	3·9
1960	20,872	2·7
1961	22,977	10·1

[1] By using the formula $x_i = T_{xi} + (y_i - T_{yi})$ where x = active population and y = mid-year population we estimated the employed population for each of the years from 1950 to 1961 on the basis of data in the 1951 and 1961 censuses of population. For this formula see Milton Friedman, 'Interpolation of Time Series by Related Series' in *Journal of the American Statistical Association*, Vol. 57, No. 300, p. 732.

TABLE IV
Total gross domestic product by industrial sector 1950–61
At constant prices (in million drachmas)

	1 Agriculture	2 Industry	3 Services	Total
1950	13,165	9,123	18,450	48,738
1951	15,201	9,439	19,388	44,028
1952	14,332	9,363	19,996	43,691
1953	18,071	10,932	20,899	49,902
1954	17,729	12,415	21,467	51,611
1955	19,304	13,525	22,624	55,453
1956	19,483	14,784	24,203	58,470
1957	22,499	15,666	25,287	63,452
1958	20,812	17,524	27,033	65,369
1959	21,840	18,215	28,376	68,431
1960	20,435	20,316	30,130	70,881
1961	24,153	22,117	32,404	78,674

TABLE V

Growth by sectors and sub-periods

	1950–5		1956–61		1950–61	
	Change 1950=100	Annual per cent increase	Change 1956=100	Annual per cent increase	Change 1950=100	Annual per cent increase
Agriculture[1]	146·6	7·95	124·0	4·40	183·5	5·65
Industry[2]	148·2	8·20	149·6	8·40	242·4	8·40
Services[3]	122·6	4·15	133·9	6·00	175·6	5·25
G.D.P.	136·1	6·35	134·6	6·10	193·1	6·15

[1] Including agriculture, animal breeding, forestry, fishing.
[2] Mining, manufacturing, electricity, gas, water, construction.
[3] Including transport, trade, banking, dwellings, public administration and defence, health, education and other professional services.

Since 1950, the economy has grown very fast. To some extent this is due to the fact that the starting-point was abnormally low because of the wartime dislocation of the economy. In addition the rapid growth of the economy was enormously facilitated by capital transfers, e.g. Marshall plan, war reparations and other grants. Let us now look at the performance of the main sectors of the economy.

(a) Agriculture

Agriculture ranks second in the growth table, with an average percentage growth of 5·65 for the twelve years. The annual average rate of growth of the agricultural product was substantially higher during the first six-year period than during the second one. The main reason, of course, for this remarkable difference in the rate of growth was the fact that agricultural production in the beginning of 1950 was very low and therefore the margin for its increase was rather large. Then the introduction of new techniques such as mechanization, better seeds, fertilizers and insecticides, together with the bringing into use of new arable land, as a result of drainage and land-reclamation works, brought about this increase in the agricultural income during the period 1950–5. By the year 1955 the agricultural output had reached a level from which further increases were not easy.

(b) Industry

Industry is the first in rank with an average percentage rate of growth of 8·4 for the period under consideration. The rate of growth of industrial production was high during the whole period 1950–61 and it has shown no remarkable fluctuations. But the individual sectors of industry have not shown the same growth.

Table VI shows the rate of growth achieved by each of the sectors in the industry group.

TABLE VI

Growth by sectors of industry

	1950–5		1956–61		1950–61	
	Change 1950=100	Annual average rate of growth %	Change 1956=100	Annual average rate of growth %	Change 1950=100	Annual average rate of growth[1] %
1. Mining, etc.	240·3	19·20	149·0	8·30	403·4	13·50
2. Manu- facturing	146·3	7·90	138·9	6·80	216·8	7·30
3. Electricity, gas and waterworks	174·4	11·75	176·2	12·00	357·9	12·30
4. Con- struction	134·2	6·05	187·6	13·40	297·9	10·50
Industry	148·2	8·20	149·6	8·40	242·4	8·40

[1] In this paper the 'average annual rate of growth' always refers to the compound rate of growth.

From these figures one can see that every sector has grown over the period 1950–61, although the rate of growth is markedly different from sector to sector and fluctuations have occurred in the average rate of growth of each sector and especially in mining and construction.

Mining and quarrying. Output in this sector increased faster than in the other sectors of industry. The rate of growth of mining production during the whole period 1950–61 was the highest, and it showed a tremendous increase during the first period with an annual average rate of growth of 19·20 per cent. In

the second period a slowing of the rate of growth is apparent. It seems that these high increases in mining activity are due to the following reasons. Mining and quarrying output was quite low in the years before 1950. The low activity of these industries should be attributed to the abnormal conditions prevailing at that time in Greece which did not permit the replacement of war-damaged mining equipment. Also market conditions and especially the demand for some ores before 1950 did not encourage mining production. On the other hand, foreign demand for some ores, such as bauxite, was very high in the 1950s. In addition domestic demand for lignite used in power production by the new plant of the P.P.C. (Public Power Corporation) at Aliveri and Ptolemais gave a strong stimulus to a further increase of production and income of ore and lignite mines.

The increased output and income of the quarrying industry was, of course, due to the increased building activity in the country throughout the period in question.

Manufacturing. During the period under consideration manufacturing output increased by 117 per cent, which corresponds to an annual average increase of 7·3 per cent. This is a lower rate of growth than for any of the other three industrial sectors (see Table VI above). The annual absolute increases of output showed no significant fluctuations.

The comparatively low rate of growth of the manufacturing industries may be attributed on the one hand to the fact that Greek manufacturing produces only for the small and low-income domestic market, since the exports of manufactures are negligible, and on the other hand to the fact that light manufactures account for the bulk of total manufacturing production. The following Table VII shows the structure of the manufacturing section for the years 1950 and 1961 and the absolute and annual average rates of growth for the same years.

Electricity, gas, waterworks. The most important item in this sector is electricity. The output of this sector has tripled during the 1950–61 period. This high rate of growth is, of course, due to the expansion of the electric companies after the implementation of the electrification programme, and especially since 1953, when the P.P.C. network was effectively put into operation.

Construction. The rate of growth of this sector was also important, since it averaged 10·5 per cent for the whole period. The

TABLE VII

Structural changes in the manufacturing sector

At constant 1954 prices

| | 1950 | 1950–5 | | 1956–61 | | 1950–61 | | 1961 |
		Change 1950 = 100	Annual average rate of growth	Change 1956 = 100	Annual average rate of growth	Change 1950 = 100	Annual average rate of growth	
1. Food, drinks and tobacco	22·6	147·6	8·1	102·8	0·55	178·9	5·45	18·6
2. Textiles	18·6	120·8	3·85	126·7	4·85	158·9	4·30	13·6
3. Clothing	18·5	127·6	5·00	127·2	4·95	163·9	4·60	14·0
4. Wood	7·8	144·0	7·55	130·0	5·40	202·8	6·65	7·3
5. Paper	3·5	172·7	11·55	185·4	13·15	362·2	12·40	5·8
6. Chemicals	11·1	152·6	8·80	187·8	13·45	271·6	9·50	13·9
7. Stone-clay and glass	3·6	228·6	18·00	128·5	5·15	316·1	11·05	5·2
8. Basic metal industries	1·0	249·3	20·00	184·8	13·05	497·2	15·70	2·4
9. Metal manufacture, etc.	9·3	161·0	10·00	174·6	11·80	282·4	9·90	12·2
10. Transport equipment	0·8	428·8	33·80	218·4	16·90	1,117·3	24·50	3·9
11. Other	3·2	114·3	2·70	164·9	10·50	210·8	7·00	3·1
Total	100·0	146·3	7·90	138·9	6·80	216·8	7·30	100·0

rate of growth in the second half of the period was higher than in the first half. This is due to the higher public investment programme for the years 1956 and onwards.

(c) Services

The growth in the services sector was lower during 1950–5 and noticeably higher during the next period. It is interesting to separate trade and transport from the remaining services, such as public administration, health, education and other professional activities, because the former are closer to the real output of the economy, in the narrow sense of the term; while the latter are activities which might obscure the picture of the real growth of the economy, both because of their nature and because of the statistical difficulties in their measurement, *especially* in real terms. Table VIII makes this distinction.

TABLE VIII

Growth and change by main sector

	1950–1		1956–61		1950–61	
	Change 1950=100	Annual average rate of growth	Change 1956=100	Annual average rate of growth	Change 1950=100	Annual average rate of growth
Agriculture	146·6	7·95	124·0	4·40	183·5	5·65
Industry	148·2	8·20	149·6	8·40	242·4	8·40
Transport and trade	124·0	4·40	132·9	5·85	178·9	5·45
Other services	121·4	3·95	134·8	6·15	172·7	5·10
Total	136·1	6·35	134·6	6·10	193·1	6·15

It is significant that the structure of the Greek economy is changing as a consequence of the effort made towards industrialization of the country and therefore the percentage share of manufacturing in the G.D.P. has increased. Thus, industry accounted for 26·8 per cent of G.D.P. in the period 1956–61 compared with 22·7 per cent in the period 1950–5, while agriculture fell from 34·3 per cent to 31·9 per cent respectively. The following table compares the changes as between the two periods 1950–5 and 1956–61.

TABLE IX

Changing structure of the economy

(At 1954 prices, in million drachmas)

	1950–5		1956–61	
Agriculture	16,300	34·3	21·537	31·9
Industry	10,800	22·7	18,104	26·8
Transport and trade	9,644	20·3	13,450	19·9
Other services	10,827	22·7	14,455	21·4
Gross domestic product	47,571	100·0	67,546	100·0

II. CRITIQUE OF THE ESTIMATES

The construction of the Greek national accounts is principally based on the compilation of the following magnitudes.

1. National product by sectors of economic activity.
2. General Government transactions.
3. Transactions with the rest of the world.
4. Private consumption.
5. Fixed capital formation.
6. Changes in stocks.
7. Wages and salaries.

In this paper, however, we shall confine discussion to the estimates of gross national product, because it is on these estimates that the analysis in the previous section was based.

In what follows we shall state briefly the methods and sources upon which the measurement of the G.D.P. is based sector by sector.[1]

The National Accounts Division did its best to cover the various statistical gaps and to improve already available statistics. It is worth noticing that in 1961, when the revision of the national accounts for the period 1948–61 was made, every effort was made to use the same sources and methods for the whole series of years involved. However, more difficulties were faced in finding the appropriate data for the years 1948–9 and the early 1950s; while the data available for later years and particularly for the period 1958–61 made possible a significant improvement

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[1] A detailed analysis of methods and sources used in Greece is stated in the publication (in Greek) *National Accounts of Greece 1946–1953*, Athens, 1955, and *National Accounts of Greece 1948–1959* (in English), Athens, 1961.

in the corresponding national income estimates, particularly the estimates for the agricultural and industrial sectors.

Agriculture. The measurement of agricultural income is made by the so-called production approach. This means that the value added is derived from statistics of gross production minus inputs.

The Ministry of Agriculture makes annual estimates of total quantities and prices of crops, dairy and forest production. Data concerning quantities and prices of important cash crops such as cotton, tobacco, currants and sultana raisins are obtained from organizations[1] which collect such data, since they are responsible for the promotion and the regular functioning of the production and marketing of these products.

Regional data on forestry production are obtained from the Ministry of Agriculture. Output is valued on the basis of prices at the place of production which are reported quarterly to the National Accounts Division by the regional forest inspectors. The forestry production inputs are estimated on the basis of a special survey.

Fishing output data are obtained from the Ministry of Industry, Directorate of Fishery. Data on the value of the gross output of the sponge fishery are received from the Agricultural Bank of Greece, Department of Fishery Credit. Data on inputs are compiled by annual special survey.

Mining, lignite production and salt-works. Data are compiled by means of questionnaires from mining and lignite enterprises. Thus total output, input and value added figures are fairly satisfactory and reliable.

Quarrying production. The total value of the gross output of this industry is estimated as a percentage of the value of investment in buildings and certain other constructions. This percentage is determined on the basis of special technological surveys of the cost composition of such investments. A certain allowance is then made for the inputs which should be deducted to arrive at value added for this sector. These estimates are of low reliability.

Manufacturing, handicrafts (including cottage industry). The problem of estimating the incomes of these sectors was a major difficulty from the very beginning. Here it is essential to refer

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[1] They are: the Greek Cotton Office, the National Tobacco Board, the Autonomous Currants Organization, the Co-operative Association.

first to the period before annual industrial surveys were undertaken by the N.S.S.G.[1] and second to the period afterwards, that is 1958 onwards.

During the former period data on the quantities and value of manufacturing output were received from the Ministry of Industry. Then a certain percentage of the value of the gross output of each specific branch of manufacturing was regarded as being the value added of the branch concerned. These percentages were calculated on the basis of special surveys made either previously by other investigators, e.g. U.N.R.R.A. Committee of Reconstruction, or by the N.A.D., which has continuously tried to improve the reliability both of the data on gross output and on the value added of the various manufacturing industries.

During the latter period, that is after 1958, estimates of incomes earned in manufacturing are largely based on the annual industrial surveys made by the N.S.S.G. The figures provided by these surveys are, however, adjusted according to certain other surveys made by the National Accounts Division in order to increase the coverage of the data, since the annual industrial surveys exclude establishments employing less than ten persons.

In 1961 the income data for the whole period 1948–60 have been revised on the basis of new findings derived from the 1958 census of non-agricultural establishments and the 1958 industrial survey made by the N.S.S.G. The discrepancies between these revised figures and the figures based on the old procedure were not very important in general, except for a few branches (e.g. textiles and metallurgical industries). Finally the estimated discrepancies have been used as adjusting factors throughout the whole period 1948–60.

The estimates for small establishments employing less than ten persons and cottage industry are based on employment figures derived from various censuses (mainly from the 1958 census of non-agricultural establishments) and average wages and other personal earnings as they can be estimated from special surveys and other *ad hoc* information. Inevitably, of course, the reliability of the figures involved is poor for handicrafts and cottage industry and substantially better for manufacturing activity in establishments employing ten or more persons.

Construction. In the absence of other more suitable data on

[1] National Statistical Service of Greece.

income from construction, it is assumed that it can be estimated as a percentage of the value of capital formation in buildings and other private and public constructions. Special care has been taken to apply specific percentages to each category of construction. These percentages have been determined on the basis of surveys made by experts of the Ministries of Co-ordination and Public Works. Obviously, the accuracy of the figures depends on the correctness of the data on capital formation in various kinds of construction and the reliability of the percentage used for each category of construction. It seems that the reliability of the resulting income figures is low.

Banking, insurance and real estate. For banking, data are obtained directly from the banks and financial funds on the basis of a special yearly questionnaire. Since they derive from bank accounts, they are presumed to be accurate.

Insurance income is estimated on the basis of tax data and other information which the relevant companies have to submit to the Ministry of Commerce. These data are good. The income accruing to real-estate business is accepted as being a certain percentage of the total value of real estate subject to transactions during the year concerned. The information required comes from the Ministry of Finance (Directorate of Taxation and Real Estate). The data are fairly reliable.

Wholesale and retail trade. Special surveys have been made by the National Accounts Division aiming at the determination of trade margins by kind of trade activities (e.g. export trade, import trade, internal market by kind of goods). Then an assessment of the value of completed transactions is made and the appropriate percentage is used to estimate the gross value of trade services. Finally an allowance is made for inputs in the industry in question. The procedure gives figures of low reliability.

Transport and telecommunications. The calculation is divided into the following categories:

(*a*) Government, semi-Government and private enterprise, i.e. railways, post office, telecommunications, tramways and buses. Data are available yearly from the accounts of the above-mentioned enterprises and they are very good.

(*b*) Shipping. Data are available yearly from the enterprises operating coastal shipping, Mediterranean and transatlantic liners, and they are very good. For cargo ships figures are com-

piled from the balance of payments calculations of the Bank of Greece.

(c) Other transport. The income generated by the 'other transport' sector is estimated on the basis of data on the number of vehicles and on employment and average wages provided by the Ministry of Transport. Profits are estimated only for buses and trucks. In order to determine the amount of profits from the estimated gross receipts any kind of operating costs (including wages actually paid or imputed) are subtracted.

Finally, estimates of income from air transport are made on the basis of quarterly and annual returns obtained from Greek airline companies.

Dwellings. Information is available from the tax statistics. Rents of owner-occupied houses are estimated on the basis of tax statistics and the number of houses.

Government services. Data are compiled from the Government accounts and are reliable.

Other services. A part of these estimates is based on the census figures, part on the tax statistics and part on special surveys.

It is clear from what has already been said that the degree of reliability of the major components varies substantially from one industry to another. A numerical assessment of reliability, showing the actual margins of error, would be impossible in view of the nature of the compilations involved. However, in order to give a summary picture of our feelings on the matter we present the following table.

Characterization of the degree of reliability

Good a	Fair b	Poor c
Forestry	Agriculture	Fishing
Mining	Manufacturing	Quarrying
Public utilities	Insurance and real estate	Handicrafts
Banking	Other transport	Construction
Transport		Trade
Telecommunications		Dwellings
Government services		Health (private)
(including health and		Education (private)
education services)		Other services

It should be noted that the sectors recorded in the column

'Good' account for 14·5 per cent of the G.D.P.[1] The sectors in the column 'Fair' account for 57·5 per cent, and those in the column 'Poor' for 28 per cent of the G.D.P.[1]

Estimation of G.D.P. at constant prices 1954

As is well known, estimates of the national accounting magnitudes at constant prices are useful for many purposes. The comparison of figures over time is of more interest when the effects of changes in prices are eliminated. In practice, however, the elimination of these effects gives rise to a number of conceptual and practical problems.

There are two basic methods of arriving at a constant price series: either using the data available on physical outputs for the years concerned and applying base-year prices or deflating the current price estimates by using specific price indices.

Briefly the method applied for each of the main industry or group of industries making up G.D.P. is as follows:

(*a*) The quantitative data on output and inputs for each year have been valued at base-year prices for agriculture, forestry and fishing, mining, manufacturing, electricity.

(*b*) Quantity indices of the number of kilometre passengers or goods transported have been used for the following industries: Sea transport, railways and motor-cars. For telecommunications, quantity indices of letters and parcels distributed and telegrams sent have been used.

(*c*) For distribution the percentages regarded as trade margins have been valued at 1954 prices.

(*d*) For banking, insurance and real estate first the index of the number of persons employed each year is used with reference to wages and salaries and second the profits have been deflated by the cost-of-living price index.

(*e*) For dwellings, quantitative data on the existing volume of houses have been used.

(*f*) The number of people employed, e.g. civil servants, officers, etc., doctors, teachers, etc., each year is used for the following activities: public administration and defence, health and education.

(*g*) Finally for other services, because of lack of other more suitable data, the incomes estimated at current prices, which are

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[1] Annual average share for the five-year period 1956–60 – a + b + c = 65,079 million drachmas at constant prices.

based on employment and average wages data, have been de-
flated according to the changes in the cost-of-living price index
during the period concerned, taking as base-year 1954.

The main methods used to convert the estimates to constant
prices with the industries treated by each method are sum-
marized in the following table:

a	b	c	d
1. Agriculture, etc.	1. Construction	1. Banking (profits)	1. Banking (labour income)
2. Mining and quarrying	2. Water transport	2. Insurance	2. Public administration and defence
3. Manufacturing	3. Railways	3. Real estate	3. Education (public)
4. Electricity, gas and water	4. Other transport	4. Health	
	5. Communications	5. Education (private)	
	6. Dwellings	6. Other services	
	7. Trade		

For the sectors listed in column a, quantitative data for each
year are used for inputs and outputs and prices of the base year
1954. For the sectors listed in column b, special indices are
estimated on the base of the work carried out, as kilometre
passengers and commodities and so on. In column c the con-
sumer price index and in column d the number of employees
form the basis. Numerous difficulties were faced in constructing
special indices for the services.

In the manufacturing sector many additional difficulties arose
in the estimation of value added year by year, i.e. to estimate
separately the inputs and subtract them from the outputs. So
we assumed that the ratio of input to output for the year 1958
(for which more information was available) was constant for
the whole series of the years.

The Laspeyres index number formula was used and all
these methods of estimation have the well-known disadvantages
of index numbers.

III. THE CAUSES OF GREEK ECONOMIC GROWTH

During the past twelve years the Greek economy has experi-
enced a rapid rate of growth both in terms of total output and
in terms of real income per head. An increase in real income per

head implies an increase in productivity. In view of the lack of reliable data on manhours worked it is difficult to estimate changes in productivity for the main sectors. Roughly, however, they have been estimated as shown in Table X.

TABLE X
Changes in productivity 1951–61

	Employment %	Product per man year %
Agriculture	4·1	4·3
Industry	22·2	6·7
Services	11·1	4·1
Total	9·0	5·1

Agriculture. The overall increase in agricultural output can be attributed to a number of factors:

(i) The agricultural sector had a large share of about 18 per cent of total Government investment during the period 1950–61 and most of this was expenditure on irrigation and drainage projects.

(ii) The outstanding increase in the amount of fertilizers and agricultural insecticides used. This increase was greatly facilitated by Government price subsidies.

(iii) The increase in domestic demand for agricultural products in general, as well as the increase in the external demand for some products such as citrons (i.e. lemons, oranges, etc.). An additional factor encouraging both domestic and foreign demand was the remarkable expansion of fruit and vegetable processing factories.

(iv) Guaranteed prices for some important products such as wheat, olive oil, tobacco, cotton, raisins, etc.

(v) The introduction of new cultivating techniques, the use of better seeds and the use of better irrigation systems, etc.

The increase in Greek agricultural output might be considered as a dual process. Although it is difficult to separate the agricultural sector into two parts, calling the one 'modern' and the other 'traditional', one can distinguish certain important products the output of which has soared and others the output of which has shown a normal increase or has remained steady. In the former products one can include cotton, rice,

TABLE XI

Growth in revenue for different crops

	Harvested area (hectares)				Gross value (million drachmas at constant prices)				Gross revenue per hectare (drachmas)		Increase 1950 = 100	
	1950	%	1961	%	1950	%	1961	%	1950	1961	Hectares	Revenue per hectare
Wheat	867,000	59·2	1,066,650	39·6	2,159	22·3	4,048	24·3	2,490	3,795	123	152
Corn	248,300	11·2	194,800	7·2	427	4·4	592	3·6	1,720	3,039	78	177
Rice	9,700	0·4	21,700	0·8	89	0·9	237	1·4	9,175	10,922	224	119
Barley	206,300	9·3	183,700	6·8	414	4·3	486	2·9	2,007	2,646	89	132
Other cereals	249,800	11·3	174,500	6·5	415	4·3	387	2·3	1,661	2,218	70	134
Vegetables	92,500	4·2	139,500	5·2	1,543	15·9	2,548	15·4	16,681	18,265	151	109
Potatoes	34,400	1·6	40,800	1·5	462	4·8	620	3·7	13,430	15,196	119	113
Tomatoes	17,600	0·8	29,050	1·1	358	3·7	654	3·9	20,341	22,513	165	111
Other vegetables	40,500	1·8	69,700	2·6	723	7·5	1,274	7·6	17,852	18,278	172	102
Tobacco	103,400	4·7	102,500	3·8	1,482	15·2	1,819	10·9	14,333	17,746	99	124
Cotton	77,300	3·5	206,400	7·7	561	5·8	2,097	12·6	7,257	10,160	267	140
Other industrial crops	44,900	2·1	37,900	1·4	124	1·3	119	0·7	2,762	3,140	84	114
Animal feeding stuffs	192,800	8·7	395,000	14·7	602	6·2	1,409	8·5	3,122	3,567	205	114
Melons and strawberries	26,400	1·2	29,350	1·1	328]	3·4	372	2·2	12,124	12,675	111	102
Total	2,210,900	100·0	2,691,550	100·0	9,687	100.0	16,662	100·0	4,381	6,190	122	141

animal feeding-stuffs, vegetables, while the latter include wheat and other cereals and tobacco.

The revenue per hectare between 1950 and 1961 is shown in Table XI.

Further, the increase of fruit and olive-oil production for the same period was stimulated by the rise in domestic and foreign demand. To satisfy this demand new fruit trees were planted and are estimated to number 25 million since 1953.[1] Thus the total fruit and olive production increased between 1950 and 1961 by 44 per cent as shown in the following table.

TABLE XII

Growth in fruit and olive production

	Production in thousand tons		Change (1950 = 100)
	1950	1961	
Olives[1]	42	54	128
Olive oil[1]	89	153	172
Raisins and currants	117	144	123
Other viticulture products	565	500	88
Citrus fruits	121	318	263
Fresh fruits	113	326	288
Dried fruits	74	118	159
Total	1,121	1,613	144

[1] Because of the biennial production cycle we took into account the average production of the years 1950-1 and 1960-1.

Most of this large increase in citrus fruits, i.e. oranges and the like, and other fresh fruits was exported.

Thus the increase in the real product of the agricultural sector comes from the development of the traditional crops rather than from modern ones. A modern product cultivated in Greece is sugar beet, but this was introduced after the period under consideration.

Mining and quarrying. The growth of other sectors like chemicals, cement, electricity, buildings and other construction as well as the increase of exports produced the rise in the output of this sector.

Manufacturing industries. It is, of course, difficult to distinguish clearly the modern and the traditional sector with

[1] Before 1953 there are no data.

reference to total manufacturing activities. What one can do is to examine the rate of growth branch by branch and see which of them have shown outstanding increases during the period concerned. Then we shall try to examine the growth achieved and see whether this growth, branch by branch, arises in the so-called modern sector or in the traditional activities of Greek manufacturing.

TABLE XIII

Percentage growth in manufacturing by 1961
1950 = 100

Food, drink, tobacco	179	Basic metal industries	497
Textiles	159	Metal manufactures, engineer-	
Clothing	164	ing and electric goods	282
Wood	202	Transport equipment	1,117
Paper	362	Other	211
Chemicals	272	Total manufacturing	217
Stone, clay and glass	316	Public utilities	358

From the above table it is clear that paper, chemical, stone, etc., basic metal industries, metal manufacturing, etc., transport equipment and power production have shown a much higher rate of growth than the rest. They have also shown marked productivity increases.

TABLE XIV

Growth of productivity in certain manufacturing industries
In drachmas at constant 1954 prices

	Value added per person employed		Index 1961
	1951	1961	1951 = 100
1. Paper	21,519	52,609	244
2. Chemicals	52,456	101,933	194
3. Building materials	19,339	28,904	149
4. Metallurgical industry	43,226	116,694	270
5. Mechanical engineering	12,178	32,361	266
6. Transport equipment	12,516	21,541	172
7. Power	55,536	115,157	207

These are the branches of industry which might be regarded as making up the modern sector of Greek manufacturing

while all the other manufacturing activities should be considered
as the traditional sector. Among the factors which have con-
tributed to the outstanding development of the so-called modern
sector we may mention the following.

(a) *Paper.* The increase in output here has been achieved
by modernization of the existing factories. In particular the
production of writing and printing paper increased from 9,000
tons in 1950 to 29,000 tons in 1961, i.e. by 222 per cent. Also
the production of packing paper increased from 11,000 tons in
1950 to 27,500 in 1961, i.e. by 148 per cent.

(b) *Chemicals.* The increase in activity is mainly due to the
establishment of the new oil refinery in 1958 which produced
an income of 310 million current drachmas in 1961. Certain
other new factories were also established, such as LIPTOL
(production of coal bricks) and VELPEX (matches industry).

(c) *Building materials.* The increases in this branch could be
attributed mainly to the expanded market for cement. Cement
production increased from 395,000 tons in 1950 to 1,843,000
tons in 1961, i.e. by 366 per cent.

(d) *Metallurgical industry.* Here the increase in activity is
due to the modernization and expansion of existing factories
rather than to the establishment of new factories in new fields of
production. The production of iron used for concrete construc-
tion increased from 23,000 tons in 1950 to 130,000 tons in 1961.

(e) *Mechanical engineering* (including electrical engineering
in general). A number of new factories have been established
and the existing ones have been modernized and expanded. In
particular, the production of electric appliances and electric
household durable goods has increased notably, as can be seen
from the following figures:

TABLE XV

Growth in production of electric appliances

	1950 numbers	1961 numbers
Electric motors	7,520	32,000
Electric cookers	3,386	29,000
Electric boilers	—	40,000
Electric refrigerators for households	24	34,000
Electric refrigerators for grocery and other shops	—	8,400

(*f*) *Transport equipment.* The spectacular increase of income accruing to this branch is primarily due to the establishment of the Greek shipbuilding industry and to the expansion of the factories doing carriage-work on imported chassis (mostly buses and lorries).

(*g*) *Power production.* The growth of production and income in this sector is due firstly to the gradual development of the power production plant by using water resources as well as coal (mainly lignite) resources. The exploitation of lignite deposits at Aliveri was an important factor in this.

The growth in the active labour force

The increase in the labour force over the 1950–61 period was much less than the increase of output per man year. However this kind of measurement of productivity does not give a clear picture, because the labour force figures refer to the number of people employed and not to the manhours worked, for which there are no data available.

The rise in the number of employed people was greater in manufacturing industry and services than in agriculture. This shift of labour from primary production to secondary and tertiary production suggests, of course, that the economy is industrializing.

Table XVI shows rate of growth of employment in the three main sectors of economy.

TABLE XVI

Rate of growth of employment by sector

	Employment[1] in thousands		Index 1961	Average rate of increase in %	
	1951	1961	1951 = 100	of employment	of product
Agriculture	1,842[2]	1,919	104·1	0·40	5·65
Industry	518	633	122·2	2·00	8·40
Services	785	872	111·1	1·05	5·25
Total	3,145	3,424	108·9	0·90	6·15

[1] Censuses 1951 and 1961.
[2] The figures of the 1951 census for the agricultural sector have been re-adjusted according to the definitions of the 1961 census.

From the movement of employment in the various sectors one can see that the faster rate of growth of real product in industry is accompanied by parallel faster movement in employment in the same sector.

Since 1951 there has been a very rapid population movement from rural to urban areas. The increase in urban population for the period 1951–61 is about 22 per cent, while the total increase in population for the same period is about 10·5 per cent. It is evident that this increase in the urban population should have been an additional factor in promoting economic development in Greece during this period.

Capital formation

The rise in income and productivity was made possible by the investment which took place during the period 1950–61. The rate of capital formation expressed as a percentage of G.N.P. was high compared with levels in some other underdeveloped countries. In the following table we present the amount of gross fixed capital formation as a percentage of G.N.P. in each of the three four-year periods making up the period 1950–61.

TABLE XVII

Growth in capital formation 1950–61

At constant prices 1954 (in million drachmas)

	G.N.P. at market prices	Gross fixed capital formation	Share of G.C.F. in G.N.P. %
1950–3	200,483	30,471	15·2
1954–7	263,675	40,240	15·3
1958–61	331,450	82,395	25·2[1]

[1] Excluding investment in ships the average share is 18·2.

These proportions are not unsatisfactory, although the absolute figures involved are, of course, inadequate. It should be noted, however, that this investment was financed to a considerable extent by foreign resources, especially during the first four-year period. This can be seen in the following table.

TABLE XVIII

The financing of gross capital formation

	1950–3	1954–7	1958–61[2]
(a) Domestic savings[1]	48·1	77·3	86·0
(b) Rest of the world of which:	51·9	22·7	14·0
(i) Net lending to the nation	5·4	9·4	5·2
(ii) Net capital transfers to the nation	46·5	13·3	8·8
Total	100·0	100·0	100·0

[1] Including depreciation allowances.
[2] Excluding investment in ships.

During the period 1950–3 the 'rest of the world' has accounted for 51·9 per cent of total investment, of which about 90 per cent were net capital transfers. This, of course, includes the American aid and other grants to the nation, war reparations, etc. Without this help from abroad it would have been impossible for the Greek economy to undertake the amount of investment it did.

From 1954 onwards the contribution of domestic savings has substantially been increased. This, of course, is the result of both the gradual increase in domestic savings, as a proportion of G.N.P., and the drastic cut in foreign aid from 1953 onwards.

The breakdown of fixed capital formation into private and public sectors is shown below:

	1950–3	1954–7	1958–61[1]
Private	63·4	73·7	66·9
Public	36·6	26·3	33·1
Total	100·0	100·0	100·0

[1] Excluding ships.

From these figures one can see the importance of the public sector during the whole period and especially during the first and third four-year period. Of course, public investment expenditure was mostly on infra-structure works in the broad sense of the term.

The association of Greece with the European Common Market calls for a rapid modernization of the economy in order to increase productivity in as many industries as possible. Greece has decided to join the Common Market because

she believes that during the transition period the Greek economy will be readjusted and adapted, so that by the end of this period it will be able to face competition from the Six, and that the level of living of the Greek people will then be better than it would otherwise have been.

Although it is beyond the scope of this paper to discuss the complicated problems of readjustment, the crucial question is the need to develop the production of exportable agricultural and manufactured products. It is essential therefore that efforts should be made to produce a number of products which are internationally competitive. This specialization, of course, calls for a more rapid adoption of modern technological methods, improvement in external economies and so on, which together means more expenditure on capital formation.

In view, therefore, of the immense amount of investment required, we believe that difficulties in their financing will arise. Domestic savings might be insufficient to meet the requirements. However, shortages of foreign capital and exchange will certainly emerge in the years to come. Accordingly it seems that free capital or at least low-interest loans from abroad are or will be indispensable if economic stability and growth in Greece is to be maintained.