TELECOMMUNICATION IN CYPRUS

An Economic and Financial Analysis

By

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PREFACE

Telecommunication is an essential part of modern life and a major element of a country's infra-structure. In Cyprus, today, telephone and telegraph services are of great importance to the entire country but are particularly important to the social life of the rural population.

The purpose of the present work is to study and analyze the major factors involved in the development of telecommunication services in Cyprus. The study emphasizes, however, the economic and financial aspects of operations and development. Finally, the study attempts to evaluate the performance of the Cyprus Telecommunications Authority and suggests possible improvements.

The present study would have been impossible without the help and cooperation of many people. In this respect, the writer wishes to acknowledge the cooperation of Mr. Hagop H. Palamoudian, M.B.E., for his assistance in collecting the required data. Thanks are also due to the Chairman, Managers, Section Heads, employees and particularly to the General Manager, Mr. A.N. Stylianides, who provided the required data concerning telecommunication in Cyprus.

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CHAPTER I

CYPRUS--BACKGROUND SURVEY

Geography

Cyprus, a large island but a small country, has an area of 3,572 square miles. It is, after Sicily and Sardenia, the largest island in the Mediterranean Sea. Its width is 40 miles while its greatest length, from east to west, is around 140 miles. At 34° east, the island sends out a very narrow strip of land which ends in Cape Andreas.[1]

The northern part of the island has a narrow belt of limestone mountains, the Kyrenia range, rising more than 3,000 ft. In the south-west, there is the massive mountain range of Mount Olympus, better known as Mount Troodos, whose highest peak is 6,400 ft. above sea level. Mount Troodos is covered with pine, small oak trees, cypress and cedar. Between these two mountain ranges lies the fertile plain of Mesaoria.[2] Mesaoria, with the shoulders of the mountain ranges, provides "Cyprus its agricultural land--for citrus plantings along the sea, grapes

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[1] Great Britain, Colonial Office, Cyprus--Report for the Year 1957, p. 88.

[2] Great Britain, Colonial Office, Cyprus--Report for the Year 1956, p. 90.

and olive, carob, and deciduous fruit trees on the terraced hillsides, cereals on the flat expanses of the plain."[1]

During the winter the weather is mild but variable due to travelling cyclones which cross the island in an easterly direction. Even during winter, sunshine is prevalent. In fact, the little rainfall Cyprus has is erratic and falls between October and March, mainly in the form of showers.[2] During the summer there is virtually no rainfall and the weather is hot and dry on the plains, and humid and hot on the coastlines. On the mountains, especially at Troodos and around, the summer climate is mild and pleasant. Thus, this area has been a summer resort for Cypriots as well as foreigners.[3]

Shortage of water is a perennial problem. Not only does the island receive little rain, but a small amount only of whatever rain falls is retained by the subsoil. "The igneous and limestone formations of subsoil are porous, faulted, and seemingly perniciously designed by nature to assist the eroded topsoil in depositing far too much of the island's annual rainfall into the sea."[4]

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[1] A.J. Meyer, and S. Vassiliou, The Economy of Cyprus (Cambridge: Harvard University Press, 1962), pp. 1-2.

[2] Cyprus has an average annual rainfall of 19.4 inches with a wide range of fluctuation. See W.L.Thorp, Cyprus--Suggestions for a Development Programme (New York: The United Nations, 1961), p. 6.

[3] Colonial Office, Cyprus--Report for the Year 1956, op. cit., p. 90.

[4] Meyer and Vassilou, op. cit., p. 3.

Because of its geographic location, Cyprus has been strategically very important to the Western Powers. The two British sovereign bases on the island testify to the strategic significance of the island. "The evacuation of British forces from Suez made Cyprus the obvious headquarters for commando forces to combat disturbances on the Middle East mainland."[1]

According to the latest available official estimates Cyprus had in 1963 a population of 589,000.[2] With an "average" annual rate of growth[3] of 1.75 per cent,[4] the population at present (1966) can be estimated at around 610,000 inhabitants. Of this 80 per cent is Greek while the remaining 20 per cent consists mainly of Turks. Other minorities include Armenians, Maronites, and Britons. Greeks are Orthodox Christians and "Greek Cypriots are members of the Autocephalous Church of Cyprus, an independent Greek Orthodox Church."[5] The Turkish Cypriots, on the other hand, are Sunni Moslems.

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[1] Meyer and Vassiliou, op. cit., p. 5.

[2] Cyprus, Ministry of Finance, Department of Statistics and Research, Statistical Abstract, (1963), p. 13.

[3] "The average annual rate of growth of population is based on the formula $Pn=Po(1+r)^t$ where Po is the population at the beginning of the period, t is the period of time in years, r is the average annual rate of increase, and Pn is the population at the end of the period." Ibid., p. 16. Thus, the "average" growth, in fact, is the compound rate of growth.

[4] Meyer and Vassiliou, op. cit., p. 6.

[5] Demetrios Christodoulou, "Cyprus," Encyclopaedia Britannica, VI (1963), 953.

History

"That history and geography are interrelated sciences is nowhere more clearly shown than in the history of Cyprus whose whole past, present, and future is intimately bound up with her geographical position. . ."[1] Cyprus is a place where many races, religions and nationalities have fought. It has been a battlefield between Aryans and Semites, East and West, Egypt and Asia, Christians and Moslems and finally Greeks and Turks. For centuries Cyprus has been possessed or administered by various great powers. Thus the Romans, Byzantines, Lusignians, Venetians, Turks and British have appeared on the political scene only to later disappear. Throughout the centuries the great powers have found it necessary to occupy Cyprus for strategic and economic reasons.

The last power to occupy Cyprus was Great Britain, which took over the administration of the country from the Ottoman Sultan in 1878. The island was annexed outright in 1914, when Turkey entered the War. After having been ruled by the British for 82 years, Cyprus received its independence in 1960, following the London and Zurich agreements, whereby Great Britain, Turkey and Greece became the guarantors of her constitution and independence.

Since independence the country has enjoyed but little stability. There has been much unrest, particularly

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[1] Philip Newman, A Short History of Cyprus (London: Longmans, Green and Co., 1953), p. vii.

during 1963-1964 when communal disturbances occured on a large scale. This is mainly due to the to the different political interests of the two major communities: the Cypriot Greeks demand Enosis (union with Greece) while Cypriot Turks oppose any such plan and counter it with offers of partition. The situation is complicated by two other factors. First, the two communities have little in common; they have different languages, religions and cultural heritage.[1] Second, there have been conflicting foreign political interests.

Economy

According to official estimates,[2] Cyprus has the highest per capita national income in the Easter Mediterranean after Israel. Table 1 presents the per capita national income of Cyprus and of other countries in the same region for 1958 and 1962.

The analysis of the table reveals that Israel (who had a per capita national income equal to that of Cyprus in 1958) has achieved a much faster rate of economic growth. The communal distrubances in 1964 with their adverse repurcussions on economic activity have decreased the per capita income thus increasing the gap between the per capita national income of Cyprus and Israel.

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[1] Zahi Khuri, "Cyprus--A Background to the Crisis," Middle East Forum, XL (January, 1964), 30-32.

[2] Cyprus, Statistical Abstract, (1963), op. cit., p. 254.

TABLE 1

PER CAPITA NATIONAL INCOME
(IN CYPRUS POUNDS)

Country	1958	1962
Cyprus	162	187
Greece	107	138
Israel	162	254
Turkey	51	72
U.A.R.	40	n.a.
Lebanon	n.a.	n.a.

Source: Cyprus, Statistical Abstract, (1963), op. cit., p. 254.

Economic activity, measured in terms of Gross National Product (GNP), experienced an upward trend from 1958 to 1963. However, as mentioned above, political disturbances in 1964 adversely affected the pace of economic growth. "Preliminary estimates show that in 1964 the GNP declined by about 12 per cent."[1] Table 2 presents the GNP both at current market prices and at constant market prices of 1958.

The annual compound rate of growth of GNP between 1958 and 1963 at current market prices is 4.89 per cent, and at constant market prices of 1958, 4.46 per cent.[2]

[1] Cyprus, Central Bank of Cyprus, Economic Research Department, Bulletin, (June, 1965), p. 1.

[2] Calculated from Table 2, with the use of the formula $S=P(1+i)^n$, where S is the value in 1963, P, the value in 1958, i, the rate of growth, and n, the number of years.

TABLE 2

GROSS NATIONAL PRODUCT
(MILLIONS OF CYPRUS POUNDS)

Year	At Current Market Prices	At Constant Market Prices
1958	102.4	102.4
1959	106.4	105.8
1960	105.8	104.6
1961	113.0	114.6
1962	122.5	120.0
1963	130.0	127.4

Source: Cyprus, Ministry of Finance, Department of Statistics and Research, Economic Report, (1963), pp. 19, 26.

Figures for 1964 have not been included because of the abnormal political and economic conditions ruling the country then.

Compared to 1.75 per cent annual increase in population, Cyprus has experienced a net growth in per capita income of 3.14 per cent measured in terms of current market prices, and of 2.71 per cent, measured in terms of constant market prices.

Table 3 presents the sectoral classification of industrial origin of Gross Domestic Product (GDP) at current factor cost for 1958-1963. Table 4 shows the share of each sector in GDP at current factor cost for 1958 and 1963. Table 5 presents the economically active population in 1963.

TABLE 3

INDUSTRIAL ORIGIN OF GROSS DOMESTIC PRODUCT AT CURRENT FACTOR COST
(MILLIONS OF CYPRUS POUNDS)

Sectors	1958	1959	1960	1961	1962	1963
Agriculture, forestry fishing and hunting	17.9	16.8	15.5	19.2	21.8	21.1
Mining and quarring	7.6	7.6	8.1	6.9	6.1	6.3
Manufacturing	10.7	11.3	11.8	13.0	13.4	14.4
Construction	7.9	6.6	6.2	7.4	8.4	10.2
Electricity, gas and water	1.5	1.6	1.7	1.9	2.0	2.2
Transportation, storage and communication	9.8	10.2	9.8	11.2	12.5	14.3
Wholesale and retail trade	10.3	10.9	10.6	11.6	13.2	14.0
Banking, insurance and real estate	1.7	1.7	2.1	2.2	2.6	3.2
Ownership of dwellings	8.6	9.5	9.2	9.3	9.5	9.9
Public administration and defence	7.7	9.2	7.2	5.7	6.5	6.9
Services	9.4	10.2	10.9	11.4	12.1	12.6
Gross domestic Product at Factor Cost	93.1	95.6	93.1	99.8	108.1	115.1

Source: Cyprus, Economic Report, (1963), op. cit., p. 15.

TABLE 4

SHARE OF EACH SECTOR IN GROSS DOMESTIC PRODUCT AT CURRENT FACTOR COST

Sectors	1958 (%)	1963 (%)
Agriculture, forestry fishing and hunting	19.2	18.3
Mining and quarrying	8.2	5.5
Manufacturing	11.5	12.5
Construction	8.5	8.9
Electricity, gas and water	1.6	1.9
Transport, storage and communication	10.5	12.4
Wholesale and retail trade	11.1	12.2
Banking, insurance and real estate	1.8	2.8
Ownership of dwellings	9.2	8.6
Public administration and defence	8.3	6.0
Services	10.1	10.9
TOTAL	100.0	100.0

Source: Cyprus, Economic Report, (1963), op. cit., p. 30.

TABLE 5

ECONOMICALLY ACTIVE POPULATION[a]

Activity	1963[b]	
	Thousands	Percentage
Agriculture, forestry and fishing	98.0	40.2
Mining and quarrying	5.3	2.2
Manufacturing, electricity, gas, water and sanitary services	34.1	14.0
Construction	21.5	8.8
Commerce	17.5	7.2
Transport and communication	10.1	4.1
Government authorities (Labor Force)	8.2	3.3
Entertainment and recreation	5.7	2.3
Other	22.2	9.1
TOTAL	244.0	100.0

Source: Cyprus, Statistical Abstract, (1963), op. cit., p. 110.

a "The economically active population comprises all persons who participate in the production of economic goods and services." Ibid.

b "Estimates, based on the 1960 Census of Population." Ibid.

Cyprus is mainly an agricultural country and agriculture is the backbone of its economy. Income arising in this sector was £21.1 million in 1963 or 18.3 per cent of the GDP. While 18.3 per cent of the GDP arises in this sector, it accounts for around 40.2 per cent of the economically active population.

Mining is diminishing in importance. Its contribution to GDP, both in absolute terms and in terms of percentage has shown a noticeable decrease. This is largely due to the exhaustion of already existing mineral resources and the difficulty of finding new ones. Thus its percentage contribution to GDP has declined from 8.2 per cent in 1958 to 5.5 per cent in 1963. However, while 5.5 per cent of GDP arises in this sector (1963), it accounts for 2.2 per cent of the economically active population.

Cyprus is not developed industrially. "Industrial development in Cyprus is of very recent origin and due to private enterprise."[1] The reasons for the industrial underdevelopment are market limitations, lack of enterprising initiative and technical skill, and the preference for foreign products.[2] Nevertheless, the industrial sector (manufacturing) has increased its contribution to the GDP in absolute terms as well as in terms of percentage. Its contribution to GDP has increased from £10.7 million in 1958 to £14.4 million in 1963. While 12.5 per cent of GDP arises

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[1] Cyprus, Five-Year Programme of Economic Development, (1961), p. 10.

[2] Ibid.

in this sector, it accounts for 14 per cent of the economically active population.

The contribution of construction business to GDP has increased from £7.9 million in 1958 to £10.2 million in 1963, but its percentage share since 1958 has not changed significantly. This sector accounts for 8.8 per cent of the economically active population.

Public utilities have shown a significant increase in their contribution to GDP. Thus, electricity, water and gas have increased their contribution to GDP from £1.5 million in 1958 to £2.2 million in 1963; a percentage increase from 1.6 per cent in 1958 to 1.9 per cent in 1963. On the other hand, transportation, storage and communication have increased their contribution to GDP from £9.8 million to £14.3 million; a percentage increase from 10.5 per cent in 1958 to 12.4 per cent in 1963.

Wholesale and retail trade, which is an important sector in Cyprus, has increased its contribution to GDP from £10.3 million in 1958 to £14.0 million in 1963. The percentage increase in its contribution to GDP is not very significant, merely from 11.1 per cent in 1958 to 12.2 per cent in 1963.

The banking, insurance and real estate sector has improved its contribution to GDP very significantly. From £1.7 million in 1958, its contribution to GDP has increased to £3.2 million in 1963; thus the percentage increase from 1.8 per cent in 1958 to 2.8 per cent in 1963.

Ownership of dwellings has increased its contribution to GDP from £8.6 million in 1958 to £9.9 million in 1963; in terms of per cent, however, it decreased noticeably from 9.2 in 1958 to 8.6 in 1963.

The public administration and defence sector decreased its contribution to GDP from £7.7 million in 1958 to £6.9 million in 1963; a drop from 8.3 per cent in 1958 to 6.0 per cent in 1963. Contrary to most other countries, its contribution to GDP is quite low. However, due to political disturbances, the ensuing uncertainty, and the creation of the Cyprus National Guard, it is believed that its contribution has significantly increased (due to extra defence allotments).

The service sector has increased its contribution to GDP from £9.4 million in 1958 to 12.6 million in 1963; a per cent increase from 10.1 in 1958 to 10.9 in 1963.

From further analysis of tables 3, 4 and 5, it could be seen that per capita income resulting from agriculture is less than that of mining, manufacturing and construction business combined. Thus, while agriculture contributes 18.3 per cent to GDP, it employs 40.2 per cent of the economically active population. The latter, accounts for 26.9 per cent of GDP and employs 25 per cent of the economically active population. The result might be due to the fact that agriculture is less mechanized and productivity per worker is low. On the other hand, the mining, manufacturing and construction sectors are more mechanized and productivity per worker is higher.

Since comparable figures for the economically active population are not available for other sectors, it is not possible to see what percentage of the economically active population is employed in these sectors; neither is it possible to compare the per capita income level.

Even though a period of six years is rather short for economic analysis, yet it is possible to depict major economic structural changes. From the preceding analysis it does not seem that there have been any major structural changes in the economy of Cyprus. For example, the important sectors, such as agriculture, manufacturing, transport, storage and communication, wholesale and retail trade and services have not changed their percentage contribution to GDP considerably over the period under consideration. It is possible, however, that public administration and defence sector (due to larger defence allotments), as mentioned previously, has increased its contribution to GDP significantly.

Table 6 presents the index of industrial origin of GDP at current factor cost. Having 1958 as the base year, it could be seen that the banking, insurance and real estate sector has developed faster than any other sector. Public utilities have also been developed at a quite significant rate.

When the Republic was set up in 1960, the government adopted measures to secure a stable growth. Accordingly, a Five-Year Programme of Economic Development was set up and put into effect in 1961. The primary goals of economic

TABLE 6

INDEX OF INDUSTRIAL ORIGIN OF GROSS DOMESTIC PRODUCT AT CURRENT FACTOR COST

Sectors	1958 (100)	1963
Agriculture, forestry, fishing and hunting	100	117.9
Mining and quarrying	100	82.9
Manufacturing	100	134.6
Construction	100	129.1
Electricity, gas and water	100	146.7
Transportation, storage and communication	100	145.9
Wholesale and retail trade	100	135.9
Banking, insurance and real estate	100	188.2
Ownership of dwellings	100	115.1
Public administration and defence	100	89.6
Services	100	134.0
Gross Domestic Product at factor cost	100	123.6

Source: Cyprus, Economic Report, (1963), op. cit., p. 16.

development were a stable growth and a sound balance of payments position. ". . .The five-year development programme. . .envisaged an average annual increase of the Gross National Product of about 5.7 %".[1] During the first three years of the plan, a 7.3 per cent of average real growth was achieved.[2] However, as previously mentioned, communal disturbances hampered economic growth in later years.

Table 7 presents the Cyprus balance of payments for 1960-1964. The trade sector shows a significant and continuous deficit during the last five years. The growing deficit in the first four years is due to growing imports accompanied by growth in GNP. One of the primary goals of the first five-year development programme was to achieve a sound balance of payments position. In this respect, among other things, it was decided to take measures to reduce the trade deficit by increasing exports and reducing imports. However, it was not possible to achieve this during 1960-1963. In 1964, because of political disturbances and the ensuing anomalous situation, investors and consumers alike preferred liquidity. These factors and the general fall in incomes were responsible for the fall of imports by £8.1 million.

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[1] Cyprus, Economic Report, (1963), op. cit., p. 5.

[2] Ibid.

TABLE 7

CYPRUS BALANCE OF PAYMENTS
(MILLIONS OF CYPRUS POUNDS)

	1960	1961	1962	1963	1964 (Prov.)
CURRENT ACCOUNT					
Exports (fob)	17.2	15.9	18.4	19.7	18.3
Imports (fob)	-32.2	-33.6	-38.6	-40.9	-32.8
TRADE BALANCE	-15.0	-17.7	-20.2	-21.2	-14.5
Freight and Insurance	- 3.1	- 3.2	- 3.7	- 3.9	- 3.1
Other transpt.	- 1.0	- 0.9	- 1.2	- 1.4	- 1.1
Travel: Crdt.	1.8	2.8	3.5	4.5	1.0
Debit	- 2.4	- 2.4	- 2.7	- 2.9	- 2.4
Investment Inc.	- 3.5	- 2.7	- 2.3	- 1.7	- 1.3
Government(nie)	15.0	16.9	16.9	16.1	17.0
Other services	1.0	0.9	0.9	1.1	0.8
Transfer payments: Privt.	2.8	3.0	3.6	3.5	4.0
Officl.	4.3	4.9	4.2	3.0	0.2
CURRENT A/C Bal.	- 0.1	1.6	- 1.0	- 2.9	0.6
*					
CAPITAL ACCOUNT					
Direct Invst.	- 0.5	1.3	1.8	2.0	...
Long-term loans	0.2	1.9	...	1.4	1.1
Government investmnt. [1]	0.2	- 0.5	- 0.5	- 1.3	- 0.9
Other	...	- 0.1	- 0.1	0.2	0.3
NET CAPITAL MOVEMENT	- 0.1	2.6	1.2	2.3	0.5
Net errors and omissions [2]	2.0	4.7	6.6	5.5	0.9
MONETARY MOVEMENTS *					
I.M.F. position	...	- 0.7	...	...	0.7
Govt. reserves [3]	- 1.7	- 4.8	- 1.2	- 3.3	2.4
Central Bank reserves	- 0.4	- 1.4	- 0.6	- 0.8	- 2.9
Commercial Bank reserves:					
Assets	- 0.8	- 0.7	- 5.1	- 0.8	- 1.2
Liablt.	1.1	- 1.3	- 0.3	0.3	- 1.0
Bilateral balnc.	...	...	0.4	- 0.3	...
NET MONETARY MOVEMENTS	- 1.8	- 8.9	- 6.8	- 4.9	- 2.0

Source: Cyprus, Central Bank of Cyprus, First Annual Report of the Board of Directors, (1963-1964), p. 18.

* (+) Decrease of assets or increase of liabilities.
(-) Increase of assets or decrease of liabilities.

(1) Government sinking funds and other special funds held abroad.
(2) Includes private miscellaneous capital.
(3) Holdings of short-term securities and balances abroad.

Cyprus is still in the sterling area and a member of the Commonwealth of Nations. Table 8 presents the imports and exports by currency area for 1960 and 1963, respectively. It reveals that a significant part of all imports were from countries in the sterling area. The sterling area accounted for around 40 per cent of all imports in 1960 and 1963. In this group, the United Kingdom alone accounted for around one-third of the total in 1960 and 1963.

It is worth mentioning that the sterling area's share of total world imports and exports in 1958 was 21.1 per cent and 19.2 per cent respectively, versus 19.3 per cent and 18.2 per cent in 1963 (see tables 9-10). This may suggest that Cyprus membership to the sterling area may have influenced its direction of trade. However, no definite conclusions can be drawn from these facts. A detailed analysis of the composition of Cyprus and sterling area trade is necessary before such a conclusion can be drawn, and this is beyond the scope of this thesis.

Imports from non sterling areas accounted for around 60 per cent of the total in 1960 and 1963. In this group, O.E.C.D.[1] countries are very significant. They accounted for more than 40 per cent of all imports in 1960 and 1963. Imports from countries in the dollar area have not been significant. As it seems, therefore, the direction of import trade by currency area has remained more or less constant.

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[1] Organization for Economic Co-operation and Development.

TABLE 8

IMPORTS AND EXPORTS BY CURRENCY AREA

All Currency areas	Imports (%) *		Exports (%)	
	1960	1963	1960	1963
Sterling Area	39.6	39.5	38.1	44.8
United Kingdom	34.6	33.3	34.5	41.5
Rest of Sterling Area	5.0	6.2	3.6	3.3
Non Sterling	60.4	60.5	61.9	55.2
O.E.C.D.[1]	43.7	42.3	45.8	40.8
Dollar Area	6.2	4.8	3.2	2.2
Other non Sterling	10.3	13.4	12.9	12.2
TOTAL	100.0	100.0	100.0	100.0

Source: Cyprus, Statistical Abstract, (1963), op. cit., p. 158.

* Excluding N.A.A.F.I. (Imports by the British sovereign base areas).

1 "Excluding the United Kingdom which is shown separately, the Irish Republic and Iceland which are included in the rest of Sterling Area and U.S.A. and Canada which are included in the Dollar Area." Ibid.

TABLE 9

WORLD TRADE
MOVEMENT OF IMPORTS

	1958 Millions of U.S. Dollars	%	1963 Millions of U.S. Dollars	%
Sterling Area	24,010		31,100	
Total	113,800		161,100	
Per cent of Sterling Area to total world imports		21.1		19.3

Source: United Nations, Statistical Yearbook, (1964), pp. 464-465.

TABLE 10

WORLD TRADE
MOVEMENT OF EXPORTS

	1958 Millions of U.S. Dollars	%	1963 Millions of U.S. Dollars	%
Sterling Area	20,740		27,940	
Total	107,900		153,500	
Per cent of Sterling Area total world exports		19.2		18.2

Source: Ibid.

Table 8 further reveals that exports to the sterling area have increased from 38.1 per cent in 1960 to 44.8 per cent in 1963. Of these figures, United Kingdom alone accounted for 34.5 per cent in 1960 and 41.5 per cent in 1963.

Exports to the non sterling areas accounted for 61.9 per cent and 55.2 per cent of the total in 1960 and 1963, respectively. In this group, O.E.C.D. countries accounted for 45.8 per cent and 40.8 per cent of exports in 1960 and 1963, respectively. Exports to the dollar area have been insignificant. It could /be seen that O.E,C.D. countries have decreased their share of total exports. On the other hand, exports to United Kingdom have increased.

Table 11 presents imports by economic destination for 1958 and 1963. Consumer goods accounted for the greatest share of such imports. From £15.2 million in 1958, they increased to £19.2 million in 1963; a per cent decrease from 41.5 in 1958 to 40.7 in 1963. Imports of producers goods increased from £6.7 million in 1958 to £10.8 million in 1963; a per cent increase from 18.4 in 1958 to 22.9 in 1963. Investment goods have accounted for around 28 per cent of imports in 1958 and 1963.

Table 12 presents the 1958 and 1963 exports by value. Food products and crude materials comprise the largest share. Food products have increased their share to exports very considerably from 28.6 per cent in 1958 to 43.8 per cent in 1963. Crude materials, however, have decreased their share

TABLE 11

IMPORTS[1] BY ECONOMIC DESTINATION

Economic Destination	Value (CIF) £000,000		Percentage (%)	
	1958	1963	1958	1963
Consumer goods	15.2	19.2	41.5	40.7
Producers goods[2]	6.7	10.8	18.4	22.9
Investment goods[3]	10.6	13.3	28.9	28.1
Fuel and lubricant	4.1	3.9	11.2	8.3
Totals	36.6	47.2	100.0	100.0

Source: Cyprus, Economic Report, (1963), op. cit., p. 50.

1 Excluding N.A.A.F.I.
2 Industrial and agricultural raw materials.
3 Industrial and agricultural equipment, buildings and communications materials and equipment.

TABLE 12

EXPORTS[1] BY VALUE

	Value (FOB) £000,000		Percentage (%)	
	1958	1963	1958	1963
Food	5.0	9.6	28.6	43.8
Beverages and Tobacco	1.3	1.4	7.6	6.4
Crude materials	9.6	8.2	54.5	37.4
Mineral fuels	0.1	0.1	0.6	0.5
Animal & Vegt. oils	0.04	0.1	0.2	0.5
Chemicals	0.02	0.1	0.1	0.5
Manufactured goods	0.1	0.2	0.7	0.9
Machinery and Transp. equipment	0.8	1.3	4.4	5.9
Others	0.6	0.9	3.3	4.1
Totals	17.56	21.9	100.0	100.0

Source: Cyprus, Economic Report, (1963), op. cit., pp. 51-52.

1 Including Re-exports and shipstores.

to exports significantly; a per cent decrease from 54.5 in 1958 to 37.4 in 1963. Nevertheless, they have accounted for four-fifths of exports in 1958 and 1963.

Cyprus earns a considerable part of its foreign exchange from transfer payments, tourism and government transactions. Due to the existing political conditions, the tourist industry (booming until the end of 1963) suffered a major setback. Foreign exchange income from this source fell from £4.5 million in 1963 to £1.0 million in 1964.

The current account balance showed an "improvement." The deficit of £2.9 million in 1963 became a surplus of £0.6 million in 1964--an increase of £3.5 million. This "improvement" is largely due to the decrease in imports. From £40.9 million in 1963, it fell to £32.8 million or by £8.1 million in 1964. This figure more than offsets the loss in export receipts of £1.4 million, in tourist income of £3.5 million and in foreign grants of £3.0 million.

The existing condition also affected the inflow of foreign capital. During 1960-1963, direct investments in Cyprus increased steadily. However, there was no inflow of foreign capital in 1964.

Net monetary assets held by the government, the Central Bank and the commercial banks increased by £2.0 million (a surplus). Thus, the net foreign monetary position of the country was improved by the same amount. This figure, however, excludes the private holdings of foreign exchange balances which are difficult to estimate.

CHAPTER II

DEVELOPMENT OF TELECOMMUNICATION IN CYPRUS

The word "telecommunication" was coined in 1932, at the communications conference in Madrid, Spain. It was officially defined as "any telegraph or telephone communications of signs, signals, writings, images, and sounds of any nature, by wire, radio, or other system or process of electrical or visual (semaphore) signalling."[1]

Telecommunication services were introduced to Cyprus in 1936 by Cable and Wireless Ltd., a British firm operating in Cyprus. This company was solely responsible for external and internal telecommunication. The present Cyprus Telecommunications Authority is the successor of Cable and Wireless Ltd. It took over the responsibility of inland and of overseas telecommunication in Cyprus on January 1, 1955 and April 1, 1961, respectively.[2]

No information is available concerning the activities of Cable and Wireless Ltd. for the first decade (1936-1945) of its operations. However, in 1947 a development plan was inaugurated to meet the ever increasing demand for telephone service, both for commercial and residential use. The plan

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[1] C.W. Thompson, and W.R. Smith, Public Utility Economics (New York: McGraw-Hill Book Company, Inc., 1941) p. 26.

[2] Ninth Annual Report and Accounts of Cyprus Telecommunications Authority for the Year Ending December 31, 1964 (Nicosia: 1965), p. 1. (Mimeographed.)

provided also for the "installation of modern automatic exchanges and new trunk circuits. . ."[1]

Until 1950, the manual telephone system was in use all over the country. At the end of that year the Nicosia telephone exchange became automatic. By 1953 all major towns in Cyprus had automatic telephone exchanges. At present all exchanges operating in Cyprus are automatic. However, there is no Straight Trunk Dialling System (S.T.D.) available in Cyprus except between Nicosia and Morphou, and this is at an experimental stage. It is planned that by 1975 all of Cyprus will be provided with such a system.

As far as rural development of telecommunication is concerned, none of the 620 villages in Cyprus were provided with telephone service till 1956. Such development was started by Cyprus Inland Telecommunications Authority (C.I.T,A.)[2] in 1957. In less than ten years 362 villages (around 60 per cent)[3] were provided with telephone service. It is expected that by the end of 1967 all villages in Cyprus will be provided with such services. In partial implementation of this plan, 75 additional villages were provided with such facilities in 1965. Such development will have great social value in the rural community.

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[1] First Annual Report and Accounts of Cyprus Inland Telecommunications Authority for the Year Ending December 31, 1955 (Nicosia: 1956), p. 3.

[2] Renamed Cyprus Telecommunications Authority in 1961.

[3] Cyprus Telecommunications Authority (CY.T.A.) press and radio release, 1965. Translation from Greek by Mr. Andreas Ch. Polemitis.

As for the telegraph service, the Morse Telegraph System was in use until 1947 and all messages were sent by wires, either underground, overhead or submarine. To develop telegraph communications, Cable and Wireless Ltd. acquired in 1947 wireless apparatus and replaced the Morse Telegraph System. The wireless apparatus was used for both inland and overseas communications. The telegraph system was further modernized with the installation of teleprinters in 1959.[1]

Table 13 presents the development of the telephone system in Cyprus for the years 1945, 1954, 1955 and 1964. It distinguishes direct exchange lines from working telephones (all telephones that could be connected to a public exchange) and shows, moreover, the number of extensions and increases therein for the years mentioned.

Table 14 shows the growth of telephone lines, both direct exchange lines and extensions. The first item in the table presents the last decade of the operations of Cable and Wireless Ltd. During this period (when a development plan was inaugurated by the company) direct exchange lines increased 1.67 times, while extensions, about 9 times. Hence, it could be seen that the development of extensions were overemphasized at the expense of direct exchange lines.

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[1] Fifth Annual Report and Accounts of Cyprus Inland Telecommunications Authority for the Year Ending December 31, 1959 (Nicosia: 1960), p. 3.

TABLE 13

DEVELOPMENT OF TELEPHONE SYSTEM IN CYPRUS

Year	Direct Exchange Lines		Working Telephones	Extensions	
	Number	Increase	Number	Number	Increase
1945	3,003[1]	----	3,400[2]	397	----
1954	5,000[6]	1,997	8,601[3]	3,601	3,204
1955	5,664[4]	----	10,001[3]	4,337	----
1964	19,665[5]	14,001	26,500[6]	6,835	2,498

Sources: 1 From Semaphore to Satellite: 1865-1965 (Geneva: International Telecommunications Union, 1965), p. 263.
2 Estimated by the author (see Appendix A at the end of this chapter).
3 Cyprus, Statistical Abstract, (1963), op, cit., p. 200.
4 Seventh Annual Report and Accounts of Cyprus Telecommunications Authority for the Year Ended December 31, 1962 (Nicosia: 1963), p. 5. (Mimeographed.)
5 CY.T.A. Press and Radio Release, op. cit.
6 Ninth Annual Report and Accounts, op. cit., pp.3-4.

TABLE 14

GROWTH[a] OF TELEPHONE SYSTEM[b]

Time Period	Direct Exchange Lines	Extensions
1945-1954	1.67	9.07
1955-1964[c]	3.47	1.58
1945-1964	6.55	17.22

Source: Derived from figures in table 13.
a Growth expressed in number of times.
b See appendix B for an illustration of the present (June 17, 1965) telephone system in Cyprus.
c See appendix C (one and two) for a detailed presentation of expansion of telephone lines.

Development of direct exchange lines requires substantial capital outlay, while the capital expenditure required for the provision of extra extensions is not significant.

During the decade 1955-1964, direct exchange lines increased 3.47 times over their 1955 level. This suggests a significant capital outlay made by CY.T.A. Extensions, on the other hand, increased only 1.58 times. Therefore, most of the additional lines installed were direct exchange lines.

A comparison of the two decades shows that direct exchange lines have increased 1.67 times in the first decade and 3.47 times in the second. Extensions, on the other hand, have increased 9 times in the first decade and 1.58 times in the second.

The Cyprus Telecommunications Authority has prepared a Twenty-Year Development Programme, which has not yet been approved by the government. However, according to estimates prepared by the Authority, by 1984 Cyprus will have around 90,000 working telephones. If it could be assumed that extensions by then will increase to 15,000 (about double the number of the present extensions) then there would be around 75,000 direct exchange lines. This would suggest an increase in direct exchange lines of 3.3 times compared to the 6.55 times of the past two decades. Extensions, on the other hand, will increase only by 2.19 times compared to the 17.22 times of the last two decades.

Recently, (August, 1965) CY.T.A. installed a V.H.F System,[1] designed to offer both telephone and telegraph channels of high quality. This development was in line with CY.T.A.'s plans for making Cyprus the telecommunication switching center of the Middle East,[2] as recommended by International Telecommunications Union (I.T.U.) in 1962. At present all overseas and around 20 per cent of the inland telegraph and telephone communications are carried by wireless or radiotelephone. It is expected that Cyprus will be provided with a telex system in the very near future. In this

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[1] Radio waves of a very high frequency spectrum, e.g., 30 mc/s to 300 mc/s per second.

[2] Cyprus Mail, August 12, 1965, p. 2.

respect, tenders have already been invited for the purchase and the installation of the necessary equipment. The manufacturing and the installation of the telex system might take around two years. It is estimated that around 300 subscribers will be connected to such a system. Through such a system, subscribers in Cyprus will be connected with all the countries in the world through the stations in the following centers: Athens, London, Geneva, Ankara, Beirut and Tel-Aviv. Undoubtedly, the development of such a system will greatly increase the speed of transmission and reception of messages.

To give a further picture of the telephone development, it is necessary to make a brief comparison of the telephone development in Cyprus with that of neighbouring countries. The number of persons per telephone, which is the basis of comparison, is derived from population figures and the number of working telephones for each country.

As shown in table 15, the figure for Cyprus compares very well with that of neighbouring countries. In 1964, Cyprus had 23 persons per telephone and it is expected that by 1975 Cyprus will have a telephone for every 12 persons.

There has been significant growth of radiotelephone communication since 1960. Table 16 presents the weekly hours of operation of radiotelephone communication. It can be seen that telephone communication with Athens increased six-fold, with Ankara and Beirut four-fold, with Tel-Aviv, around four and half times, and finally with London, three-fold.

TABLE 15

POPULATION, WORKING TELEPHONES
AND PERSONS PER TELEPHONE
FOR 1963

Country	Population[a]	Working Telephones	Persons Per Telephone
Greece	8,480,000	356,378	24
Turkey	30,256,000	286,450	106
Syria	5,251,000	67,718[b]	78
Lebanon	2,200,000	95,000	23
Israel	2,376,000	186,476	13
U.A.R.	27,963,000	264,400[b]	106
Cyprus	589,000	24,141	24

Source: Figures for the population and working telephones are taken from United Nations, Statistical Yearbook, (1964), pp. 23-51, and 451-453, respectively.

a Mid-year estimates.

b Estimates.

TABLE 16

WEEKLY HOURS OF OPERATION OF RADIOTELEPHONE COMMUNICATION

	1960	1961	1962	1963	1964
Athens	39	60	114	161	246
London	45	45	60	98	190
Beirut	15	21	60	60	60
Tel-Aviv	9	18	36	39	39
Ankara	3	12	12	12	12
Cairo	---	n.a.	n.a.	n.a.	n.a.
Damascus	---	n.a.	n.a.	n.a.	6
Radiotelephone services with ships at sea	---	n.a.	n.a.	n.a.	70

Sources: Ninth Annual Report and Accounts of Cyprus Telecommunications Authority, op. cit., p. 9, and CY.T.A. Radio and Press Release, op. cit.

It is also significant that Cyprus at present has direct links with both Cairo and Damascus with six hours of weekly operations with each.

Telegraph development could be measured in terms of type of equipment in use and quality of service rendered. The type of equipment used or to be used was discussed previously. No information is available concerning the quality of telegraph service rendered; However, the Authority reports that internal telegraph circuits have operated smoothly.

Telegraph development might also be measured in terms of telegrams sent or received. Such a measure has serious limitations because of the complexity of factors involved. However, with all its limitations, it might be a crude indicator of the degree of telegraph development. For example, in 1937 (the second year of Cable and Wireless Ltd. in Cyprus), 56,406[1] messages were sent from Cyprus. The highest figure between 1954 and 1961 was in 1956[2] (329,000).[3] After 1961, the highest figure recorded for the number of messages sent was in 1964[4] (158,000).[5]

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[1] Cyprus, The Cyprus Blue Book--1938 (Nicosia: The Government Printing Office, 1939), p. 488.

[2] Year of E.O.K.A. (National Organization of Cypriot Fighters) struggles for independence.

[3] Cyprus, Statistical Abstract, (1963), op. cit., p. 200.

[4] Cyprus received international attention because of the communal disturbances in 1964.

[5] Ninth Annual Report and Accounts of Cyprus Telecommunications Authority, op. cit., p. 12.

APPENDIX A

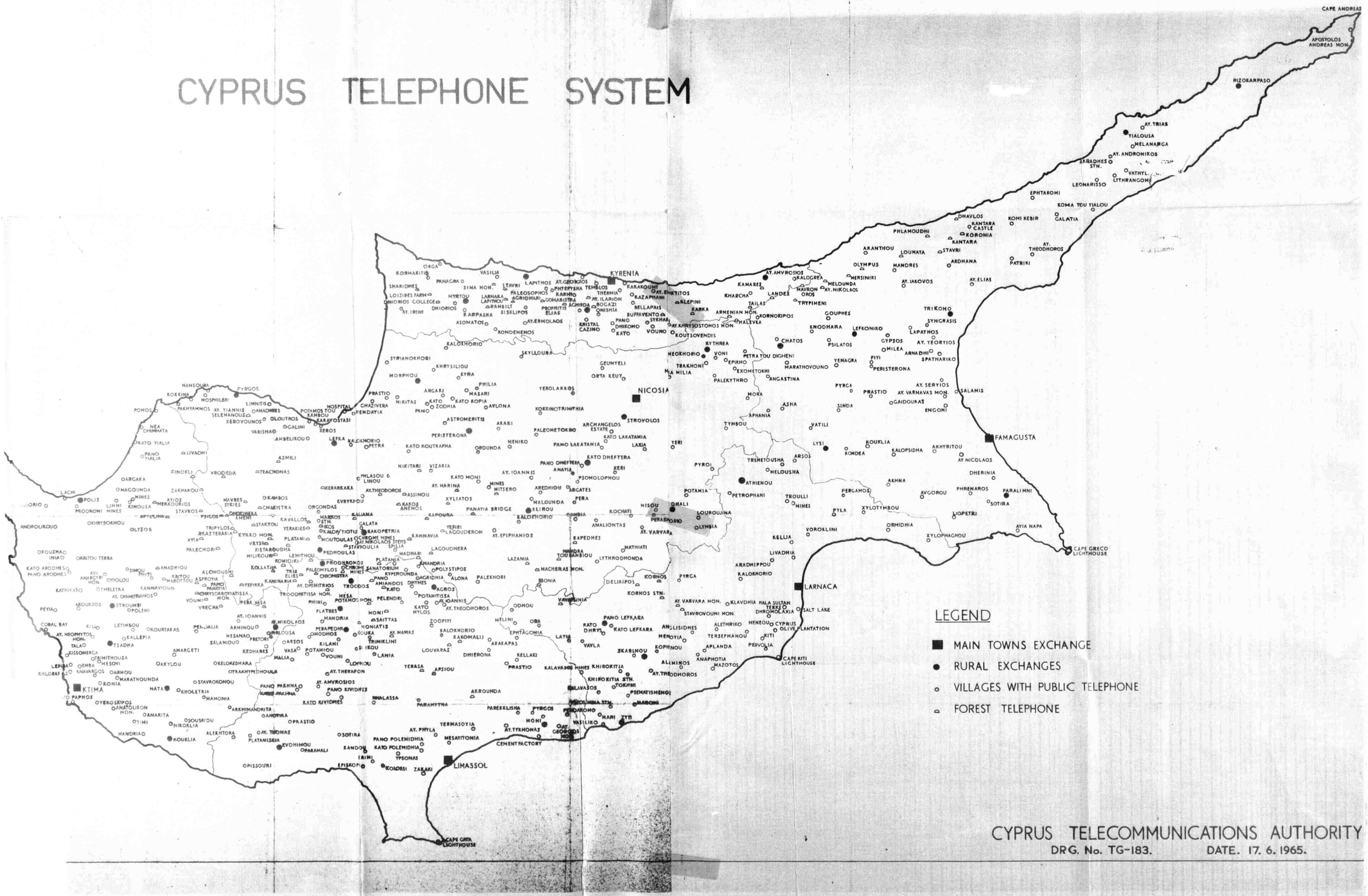
Year	Direct Exchange Lines	Extension Lines	Working Telephones
1945	3,003	397[b]	3,400[b]
1948	3,500[b]	890[b]	4,390[a]
1954	5,000	3,601	8,601
1955	5,664	4,337	10,001
1964	19,665	6,835	26,500

Sources: Derived from figures in table 13. (a) has been obtained from United Nations, Statistical Yearbook, (1964), op. cit., p. 452.
[b] Estimates.

In 1947 a development program was inaugurated to meet the ever increasing demand for direct exchange telephone lines. This most probably indicates that there was no excess capacity available for such exchange lines. Moreover, the acquisition and installation of exchanges, and the provision of direct exchange lines to subscribers are lengthy processes. Thus, it seems very likely that there may have been around 500 additions to direct exchange lines (mostly in 1948). The number of working telephones in 1948 was 4,390. There should have been, therefore, around 890 extensions (4,390-3,500).

By the most liberal estimates, the number of extensions in 1945 should have been around 400. Therefore, the estimated number of working telephones in 1945 should have been around 3,400 (3,003 + 397).

CYPRUS TELEPHONE SYSTEM



LEGEND

- ■ MAIN TOWNS EXCHANGE
- ● RURAL EXCHANGES
- ○ VILLAGES WITH PUBLIC TELEPHONE
- ▵ FOREST TELEPHONE

CYPRUS TELECOMMUNICATIONS AUTHORITY

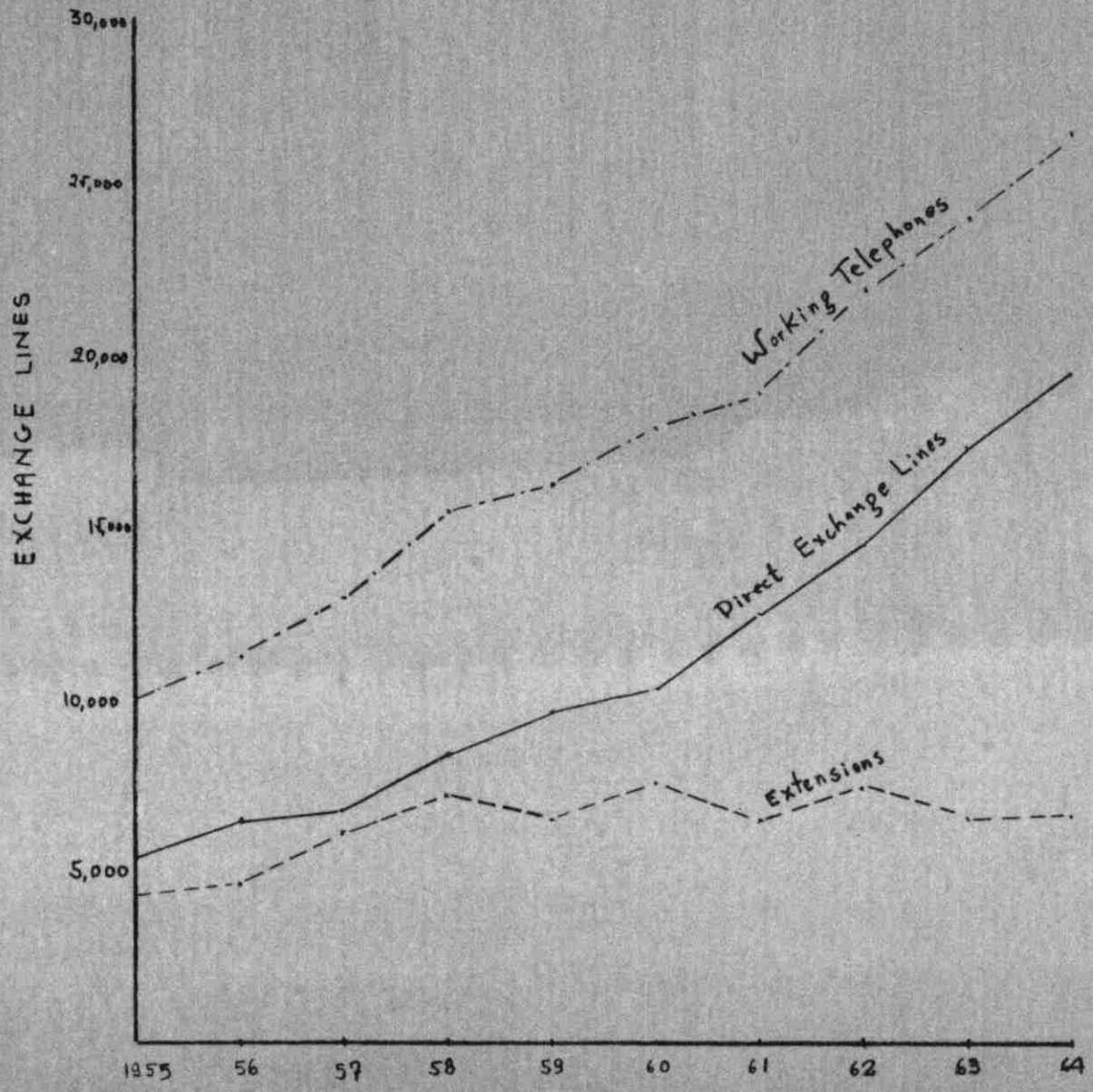
DRG. No. TG-183. DATE. 17. 6. 1965.

APPENDIX C-1

TELEPHONE LINES

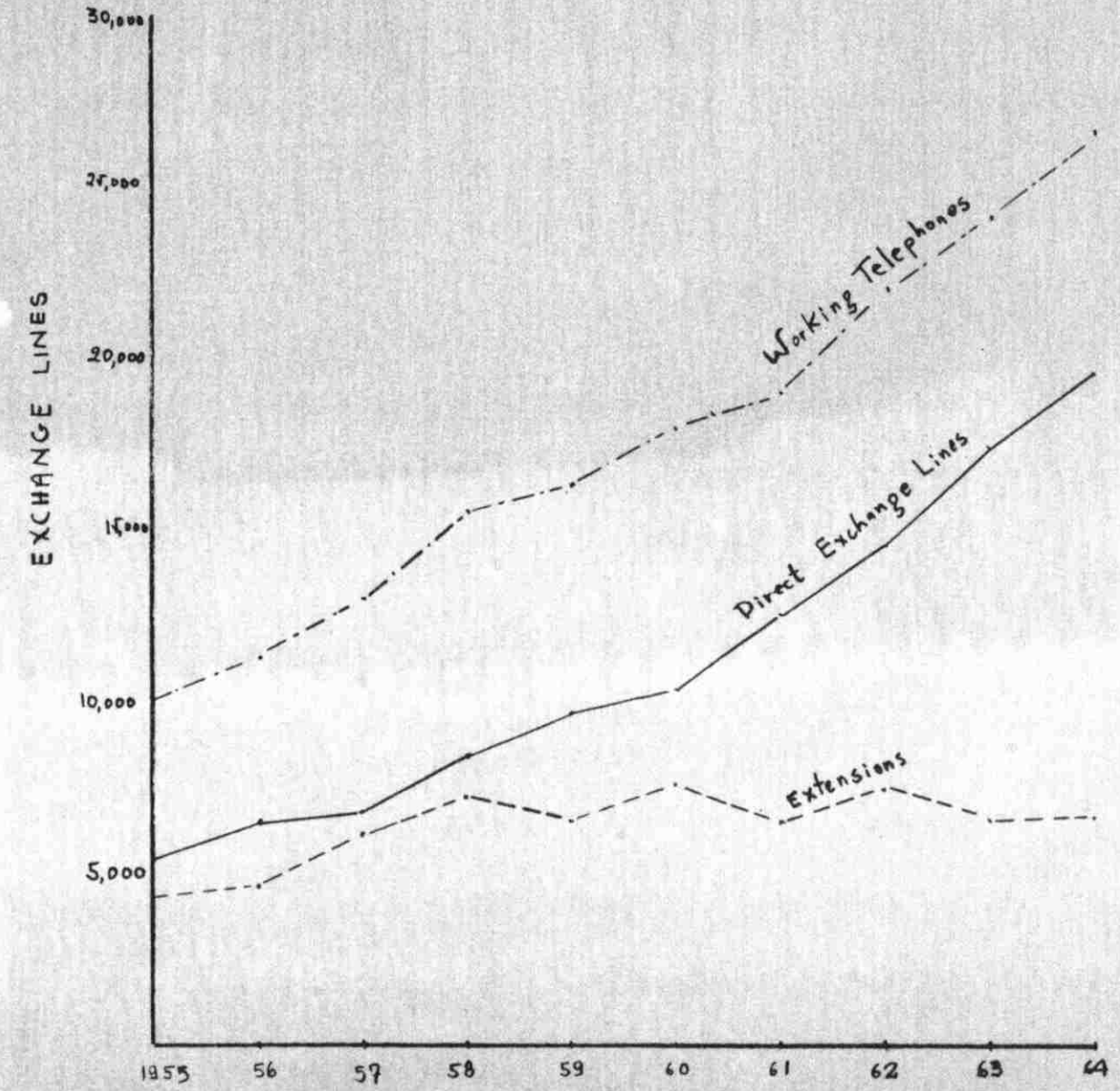
Year	Direct Exchange Lines	Extensions	Working Telephones
1955	5,664	4,337	10,001
1956	6,648	4,769	11,417
1957	6,964	6,118	13,082
1958	8,436	7,315	15,751
1959	9,707	6,738	16,445
1960	10,218	7,881	18,099
1961	12,643	6,500	19,143
1962	14,571	7,521	22,092
1963	17,500	6,641	24,141
1964	19,665	6,835	26,500

Sources: Figures for the direct exchange lines are derived from Annual Reports and Accounts of Cyprus Telecommunications Authority, 1955-1964, op. cit. Figures for the working telephones are obtained from Cyprus, Statistical Abstract, (1963), op, cit., p. 200.



Appendix C-2.--Telephone Lines.

Source: Appendix C-1.



Appendix C-2.--Telephone Lines.

Source: Appendix C-1.

CHAPTER III

CYPRUS TELECOMMUNICATIONS AUTHORITY

It was seen previously that Cable and Wireless Ltd. was solely responsible for external and internal telecommunication. The company has a world-wide telecommunication system and operated on a profit basis. Because of its commitments in the sphere of world-wide telecommunication, the company felt that it cannot make continuous and heavy capital outlay for the development of an inland telephone system. Thus, it asked the government to acquire the Cyprus inland system.

After protracted negotiations, the internal telecommunication system was transferred to Public Ownership on January 1, 1955. A body corporate, Cyprus Inland Telecommunications Authority (C.I.T.A.) was formed and empowered to acquire the inland telecommunication system of Cable and Wireless Ltd. In accordance with agency arrangements, Cable and Wireless Ltd. operated the inland telecommunication system on behalf of the Authority. The agency arrangements were terminated on June 30, 1956[1] when the Authority appointed its senior personnel and set up its own management.

On April 1961, after taking over the responsibility for external telecommunication from Cable and Wireless Ltd.,

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[1] The agency agreement for the handling of telegraph traffic in the town of Nicosia, however, was in force until October 31, 1957.

Cyprus Inland Telecommunications Authority was renamed Cyprus Telecommunications Authority (CY.T.A.). The Authority, however, is not responsible for the provision of telecommunication facilities for the British sovereign base areas. Nevertheless, "the Authorities of the Republic of Cyprus and the United Kingdom authorities shall consult and co-operate to ensure an effective operation of telecommunications in the island of Cyprus."[1] During the same year (1961), Cyprus became a member of the International Telecommunications Union (I.T.U.) and the Commonwealth Telecommunications Board (C.T.B.). These two telecommunication organizations with their different committees or boards try to harmonize and develop world telecommunication.

The internal and external telecommunication systems were acquired at a total cost of £922,027 which was financed from loans by the government, as will be explained later (chapter V).

Legal Provisions

The board of directors of CY.T.A. areappointed by the Council of Ministers, which in turn are appointed by the President of the Republic, the chief executive in Cyprus. They are responsible and answerable to the Minister of Communications and Works, and through him, to the Council of Ministers. Their number should not be more than seven.

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[1] Great Britain, Cyprus--Presented to Parliament by the Secretary of State for Foreign Affairs and the Minister of Defence by Command of Her Majesty, Appendix A, Annex B, Part II, Section 6, 1960, 24.

Members appointed should be persons whose full time services need not be required. One of the appointed members shall be designated as chairman and another as vice-chairman.

Members of the Authority cannot hold office for more than five years. However, the government may remove any member "from office without assigning any reason therefor."[1] Moreover, the government may at any time accept the resignation of any member.

It is not known on what basis the Council of Ministers appoints the members of the Authority. However, a person is disqualified from becoming a member of the Authority as long as he is a member of the Council of Ministers. If, moreover, any of the members is interested in any company or undertaking "with which the Authority has or proposes to make any contract, /he/ shall disclose to the Authority the fact and nature of his interest and shall not take part in any deliberation or decision of the Authority relating to such contract. . ."[2]

Remuneration or allowances for expenses to members of the Authority will be provided out of the funds of the Authority. All such expenditure must be determined by the Council of Ministers.

CY.T.A. is a public corporation and public utility enterprise. Like a private enterprise, it has an independent organization with separate legal entity and personality,

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[1] Cyprus, The Statute Laws of Cyprus, (1959), p. 6.

[2] Ibid.

which could "sue and be sued in its said name. . ."[1] It is liable in law, and in its day to day operations it resembles private business enterprises. Because it is liable in law, it does not enjoy any of the immunities or privileges of the government.

To carry out its functions, the Authority may borrow money by way of overdraft or in any other manner and subject to certain conditions which the Council of Ministers may deem fit to impose.[2]

To raise money, the Authority may issue stock debentures (bonds) or other securities. All securities created by the Authority should "be issued, transferred, dealt with and redeemed according to. . ."[3] regulations made by the Council of Ministers. Moreover, the Council of Ministers "may guarantee in such manner and upon such terms as. . ./it/ may think fit the payment of the interest and principal or either of them, of any loan proposed to be raised by the Authority."[4]

The Authority is required to keep proper accounts and prepare annual financial statements. All such statements must be audited by independent public auditors. The auditors' reports with the audited financial statements must immediately be presented to the Council of Ministers. The Authority has to publish the audited financial statements in such manner as may be directed by the Council of Ministers.

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[1] Cyprus, The Statute Laws of Cyprus, op. cit., p. 5.
[2] Ibid., p. 8.
[3] Ibid.
[4] Ibid.

CY.T.A. prepares budgets annualy which are subject to approval by the government. However, such budgets are not incorporated in the annual ordinary budget of the government. Development budgets of the Authority, on the other hand, are incorporated with the overall development budget of the government after approval.

Subject to the provision of the Law (which established the Authority) CY.T.A. must look for the efficient provision and development of sufficient telecommunication in Cyprus. It is not allowed to make a profit (over a period of years). If profits are made, they must be used for developmental purposes.

The Authority is empowered to make regulations in accordance with the provisions of the Law governing the telecommunication services, which are consistent with other laws effective in Cyprus and subject to approval by the Council of Ministers. All regulations should be published in the Official Gazette of the Republic of Cyprus after approval.

The Authority may make regulations (subject to approval) concerning any one or all of the following matters:

The Authority may suggest changes in internal tariffs for telecommunication services.[1] Moreover, it may, if deemed necessary, propose changes in respect to telecommunication equipment sold or hired, "and the fees payable in respect of

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[1] External rates for telecommunication services are administered by I.T.U. and C.T.B.

the inspection, testing, maintenance of the subscriber's installation and of any other services properly rendered on account of the subscriber."[1]

Second, it may propose changes in terms and conditions for telecommunication services.

Third, it may prescribe methods to be adopted for the operation of telecommunication services and for the security to be furnished by the subscribers.

Finally, the Authority may preseribe necessary changes so that the performance of all acts necessary for the proper management of the telecommunication services is made possible.[2]

Chart 1 presents the way CY.T.A. is contrdled. Straight lines indicate the flow of authority downward. The dotted lines indicate the flow of staff (advisory) authority flowing upward. The Authority is required, as often as necessary, to advise the government on all matters relating to the telecommunication services. These include proposed changes in any one or all of the regulations, or any policy to be adopted in regard to development program.

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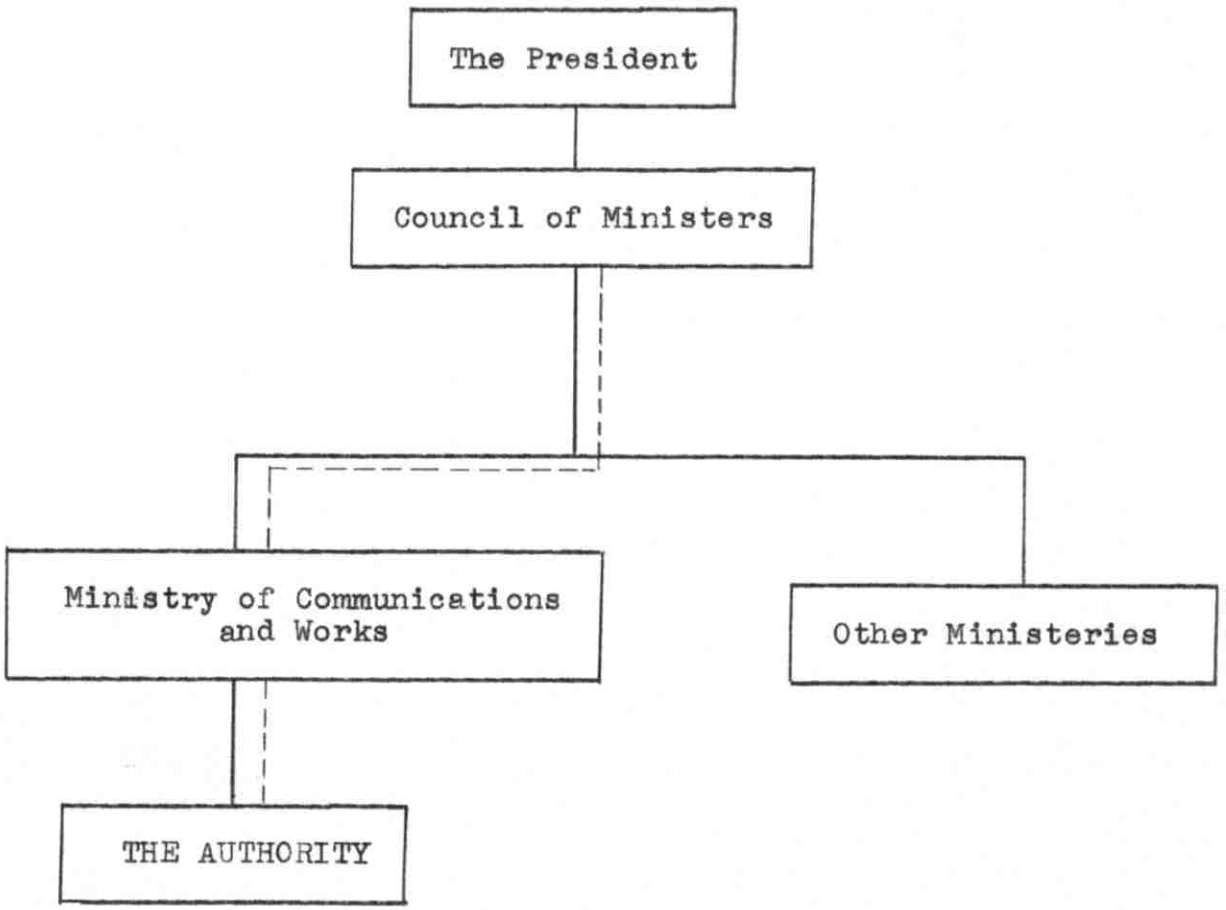
[1] Cyprus, The Statute Laws of Cyprus, op. cit., p. 10.

[2] Ibid.

CHART 1

CONTROL OF CYPRUS TELECOMMUNICATIONS AUTHORITY



Organization Structure

Chart 2 presents the organization chart of CY.T.A. It was effective until February, 1966. Chart 3 presents the revised organization chart, which is effective at present (starting March 1, 1966).

A comparison of the charts would reveal that the span of control of the General Manager has increased from three to seven. Thus, each division head in the old chart reported directly to the General Manager. Each division, moreover, had a certain number of departments. According to the new organization chart, however, seven managers report directly to the General Manager. This implies that the General Manager excercises more direct control than before. At present he directly controls the work of all the departments. Such a process seems to be justifiable. Reorganization has always been the main administrative and organizational problem of CY.T.A. Twice between 1961 and 1966 the organization setup was revised. It seems that there has been confusion as to where one stands in the organizational hierarchy and what one's position is in regard to others. This was complicated by the presence of division heads who apparently hindered proper communications. The new organization setup, providing direct control by the General Manager, intends to remove communication barriers. Moreover, the new organization chart, which is believed to have been distributed to all departments, will help officers concerned to have an overall idea of the organization and to find out, if necessary, where, exactly, they stand.

CHART 2

ORGANIZATION CHART

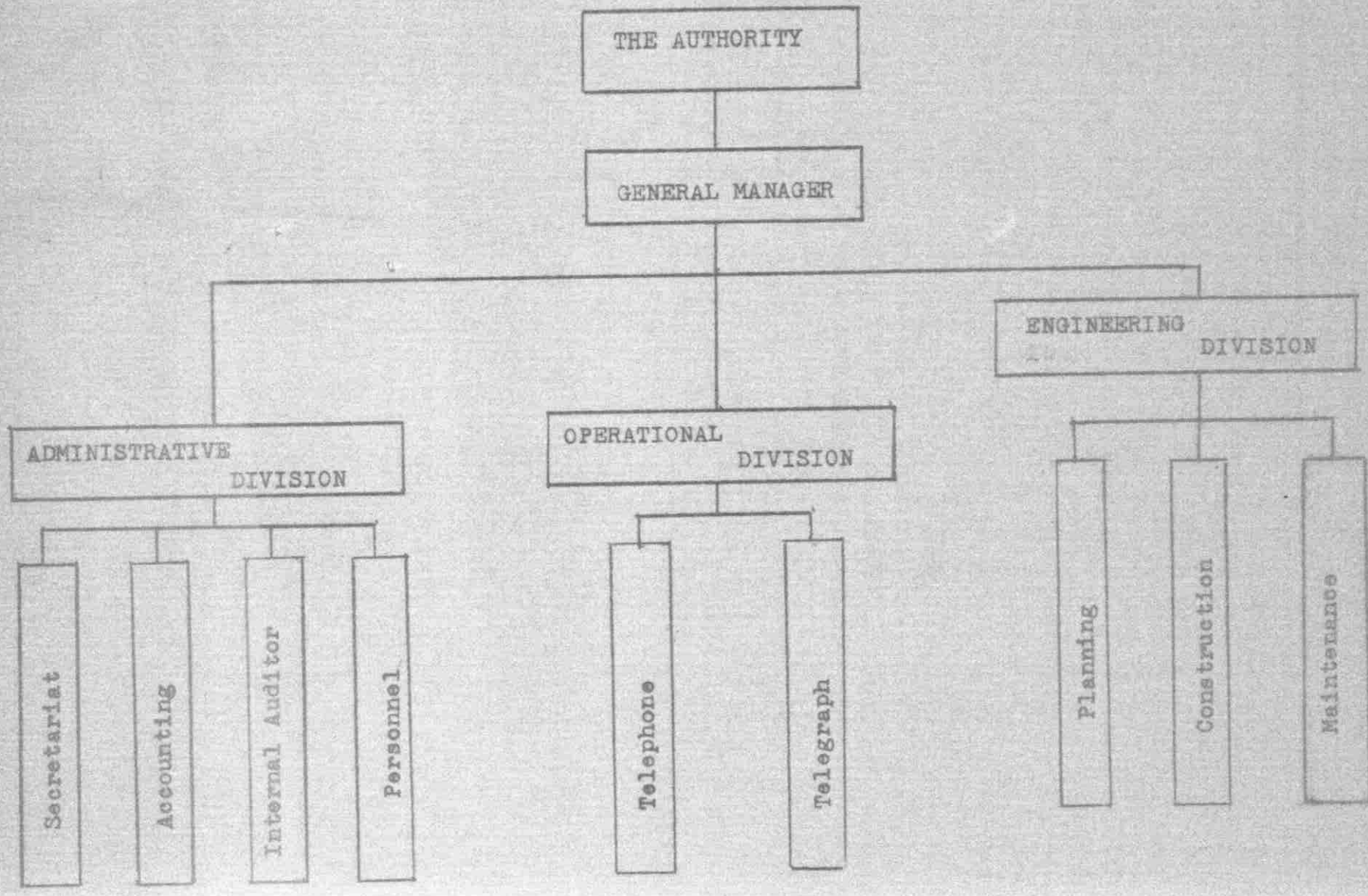


CHART 2

ORGANIZATION CHART

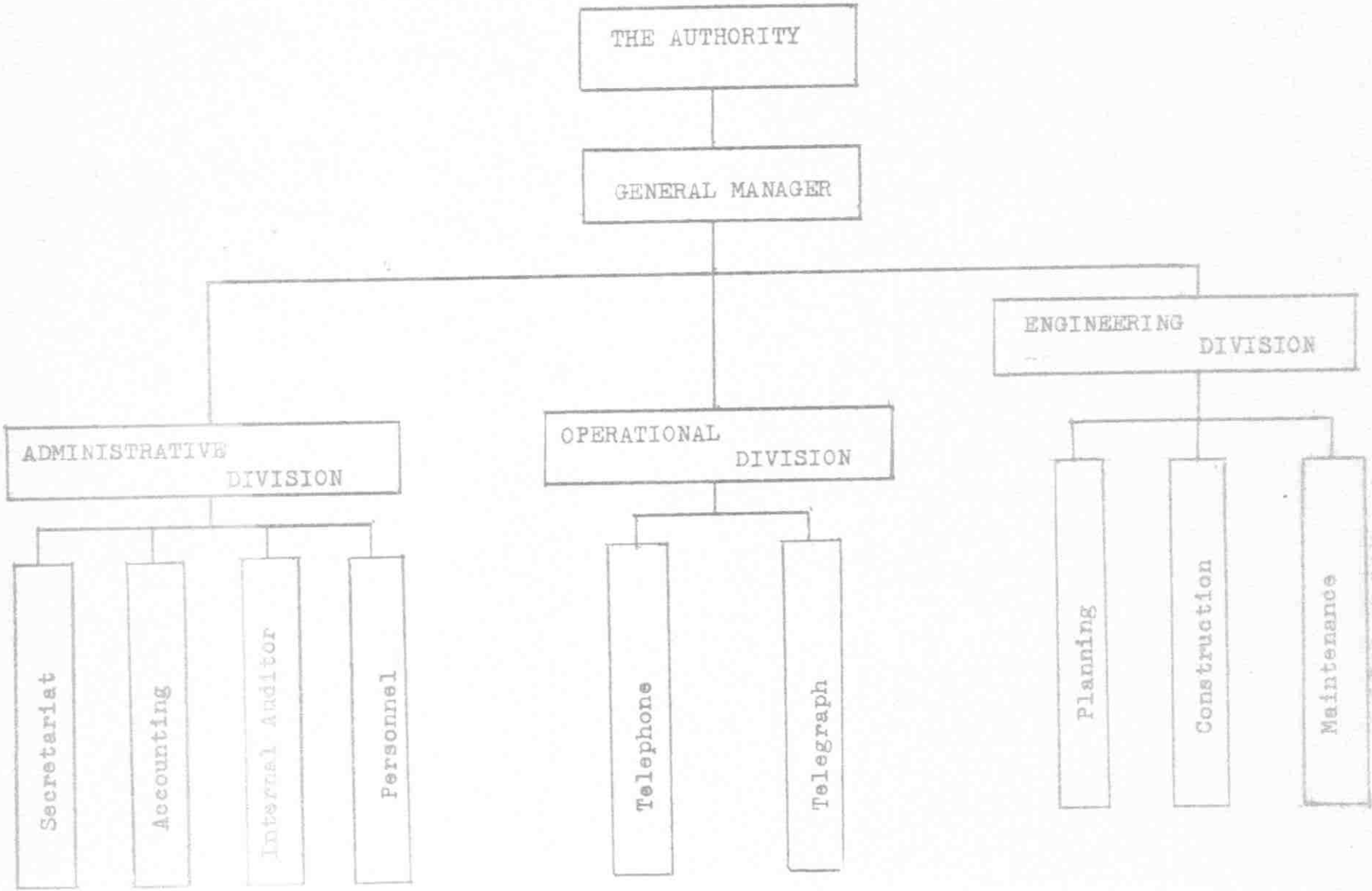


CHART 3

REVISED ORGANIZATION CHART

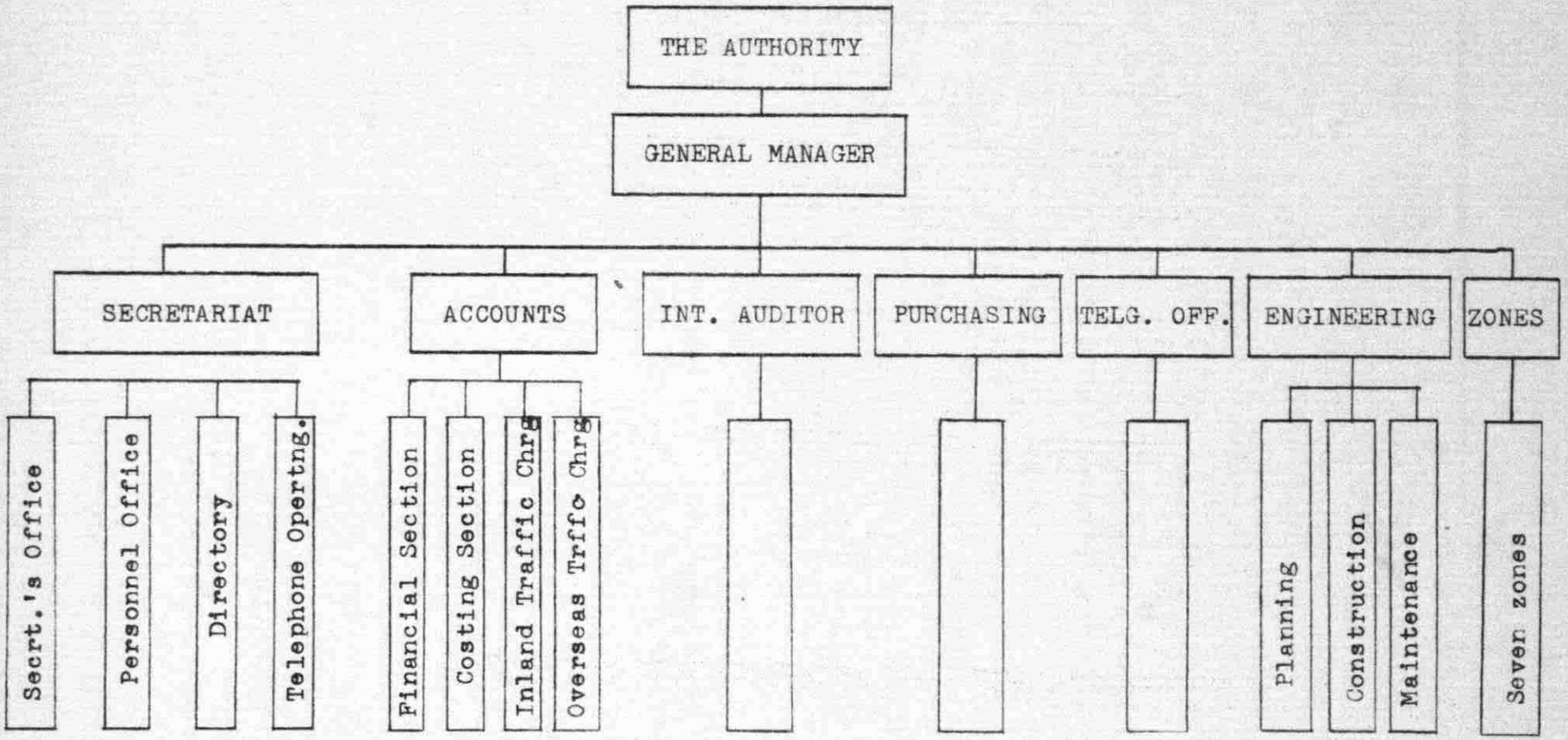
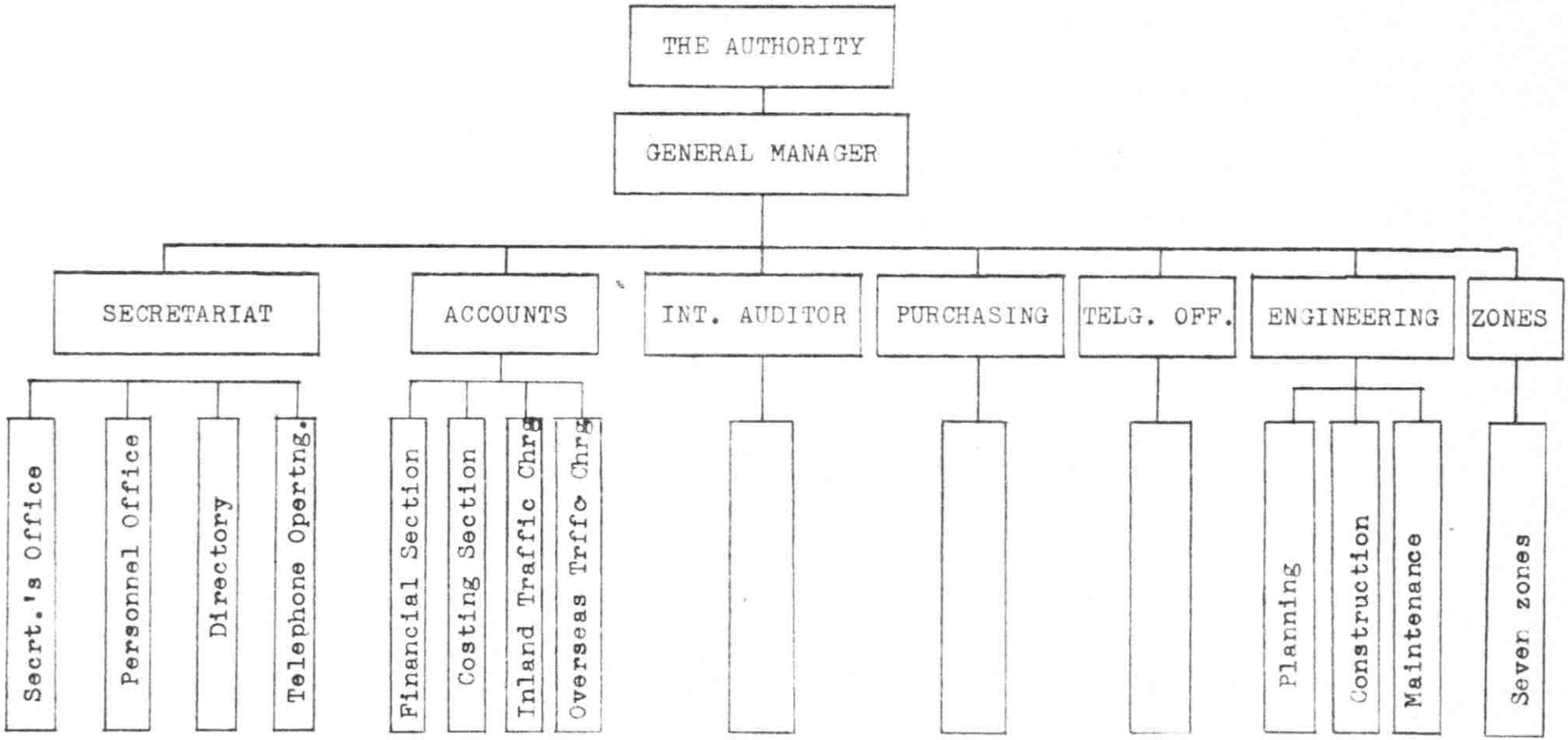


CHART 3

REVISED ORGANIZATION CHART



Analysis of the charts reveals, moreover, that CY.T.A. has had a pure line organization, No use of staff has been made. However, as will be shown in the last chapter, staff could be very useful indeed.

A further analysis of the charts would reveal that there is a tendency to change the orientation of the organization. Thus, as chart 2 reveals, CY.T.A. has been production oriented; to put it in different terms, its orientation has merely been directed towards the provision and development of telecommunication services. This orientation may have been due to the fact that CY.T.A. is not allowed to make profits[a] (over a number of years). If profits are made, they must be used for developmental purposes. Other factors influencing the managerial orientation and philosophy are the background of the senior officers and the stage of development of telecommunication services in Cyprus.

Most of the influential officers of the Authority have been engineers, who naturally tend to be production minded. Furthermore, as one can see in chart 2, the Engineering Division had a higher status in the organizational hierarchy of the enterprise. In the revised organization chart, all departments are ranked equally. This might mean that the Authority is trying to emphasize also functions other than production.

As will be pointed out in subsequent chapters, CY.T.A. has been a growing enterprise. Hence, it could be expected

that the Authority, being faced more with technical aspects of production and development, would develop a production orientation.

A change in managerial orientation will bring about new ways and means for measuring managerial efficiency. For an organization that is production oriented, the best measure of managerial efficiency would be in terms of physical units. As the orientation changes, the yardstick might also change. As development of telecommunication reaches or approaches a level of maturity, other factors such as efficiency of operations and the level of internal tariffs, might be better indicators of the efficiency of management and the Authority as a whole. Of course, employee satisfaction and favourable public relations are always good indices for managerial efficiency.

Because the Authority is not allowed to make a profit, there might always exist the possibility of the dominance of the Engineering Department; hence, there would always be a tendency to measure efficiency in terms of physical units of development. In such a case, it would not be possible to change the present orientation. However, due to the balanced grouping of functions of the Authority, the dominance of the Engineering Department becomes less likely. For example, in the old organization chart, there were only three persons reporting to the General Manager, the Chief Engineer having more authority than the rest. In the new organization chart, the Engineering Department is ranked equally with six other departments. This balance of grouping (which, as previously mentioned, resulted in an increase in the span of control

of the General Manager) would ensure that other functions are not neglected. Thus, it becomes possible to adopt a new orientation.

As chart 3 revealed, CY.T.A. at present has seven departments, run by department heads or managers. The Secretary (in charge of the Secretariat) is closely associated to the General Manager. He is his administrative assistant. As such, he coordinates the work of different departments. Most of the communications to and from the General Manager are directed through him. The Secretary, moreover, is required to attend to all the meetings of the Authority.

The Secretariat has four sections. The Secretariat's office deals with all the correspondence and clerical work of the Authority and the General Manager.

The position of the Personnel Officer in the organizational hierarchy seems to be objectionable. Favourable public relations and employee satisfaction are very important and often measure managerial efficiency. CY.T.A. has often been faced with labor disputes and threat of strikes. It seems advisable, therefore, to attach more importance to such matters and accordingly, give more authority to the Personnel Officer. In such a case, the Personnel Officer would be reporting directly to the General Manager.

The function of the Personnel Officer (as suggested above) is to deal with all labor and labor relations problems.

He tries, among other things, to resolve labor disputes.[1] If he fails to reach to an acceptable solution, he has to transfer the matter through the Secretary to the General Manager. In case the General Manager fails to reach to an acceptable solution, the case is further referred to the Board of Directors and finally to the Public Service Commission for arbitration.

Because of their positions, the Personnel Officer, the Secretary and the General Manager are not allowed to be members of any labor union. All other officers and rank-and-file employees are free to join labor unions.

The Directory section (of the Secretariat) deals with the prepartion of telephone directories. Such directories are prepared in three languages, namely, Greek, Turkish and English. It is planned to issue annual telephone directories. This has become possible with the introduction of a new system of telephone directories by the use of photo-list equipment.

The last section in the Secretariat Department is the Telephone Operating, which deals with the administrative aspects of telephone communications. It is the responsibility of this section to handle applications for telephone lines. It deals, moreover, with public complaints and tries to meet such in a prompt manner.

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[1] In this respect, it could be mentioned that CY.T.A. employees have two labor unions, of which only one has strong bargaining power. The other, which accounts for around 10 per cent of all the employees and the officers, has no bargaining power.

The Accounting Department, like the Secretariat Department, has four sections. The Financial Section deals with the recording of transactions and preparation of financial statements. The costing section assesses costs of projects completed. It deals with cost accounting. With the help of a new accounting chart (effective January 1, 1966), it would be possible to find the cost per unit of service rendered. The two other sections deal with inland and overseas traffic charges. The function of these sections is to bill different customers for services rendered by CY.T.A.

The Internal Auditor has the full responsibility for the internal audit of all the financial transactions and the recording thereof. He has to prepare and submit audit reports as directed generally or specifically by the Authority or the General Manager. He deals, moreover, with the vouching of the entries in the books of accounts, verification of salaries and wages and the payment thereof, and the verification of receipts and payments according to existing contracts, agreements or rules and regulations of the Authority in force.

The Purchasing Department is directed to make all the purchases of the Authority. All telecommunication equipment in Cyprus is imported by the Authority, such imports being free from all import duties. Most of the imports come from England and Purchasing is usually directed by the General Manager in selecting the suppliers. The

/the /Department

Authority often tries to deal directly with the suppliers thus eliminating intermediary charges and commissions. Moreover, the Authority invites for tenders for the purchase of equipment.

The Authority, like many other administrations in other countries, incurs continuous losses from inland telegraph operations. Because of this fact, it seems it was preferable to give the General Manager direct control over the activities of Telegraph Operations. Chart 2 shows that both Telephone and Telegraph Operations were departments of equal rank. However, chart 3 shows that Telephone Operations is a section in the Secretariat Department. This might be due to the fact that telephone operations were conducted satisfactorily, contrasted to the telegraph operations.

The Engineering Department has been a very important department. Around one half of all the employees of CY.T.A. work in this department. The Chief Engineer (the manager) is in charge of all aspects of the provision of telecommunication services.

The Engineering Department has three sections. The first deals with the planning of the installations of machines, equipment, lines, cables and other related materials. To carry out its functions, it has a drawing subsection. The planning section does not deal with overall planning of projects. It deals more with technical details. It is not

/(Planning)

the function of this section, for example, to study what sort of equipment to use, or to anticipate and forecast future needs. Such matters are carried out at the top level. The other /(Construction) section deals with the installation of equipment, lines, and the construction of telecommunication facilities. Construction of buildings, however, is offered for a tender. The last /(Maintenance) section deals with the efficient maintenance of facilities.

For administrative purposes, Cyprus Telecommunications System is divided into seven zones, each city and its surroundings being a zone. Nicosia is the largest and the most important one. It is the center for telecommunication control in Cyprus. The other zones are those of Limassol, Famagusta, Larnaca, Paphos, Kyrenia and Morphou. There are certain subzones of lesser importance, like those of Platres, Laphithos, Polis, Pedhoulas and Lefka.

Discussion of CY.T.A. and its operations indicate that it has a dual nature. As far as commercial and managerial aspects of operations are concerned, it resembles private commercial enterprises. But, on the other hand, it is a public authority when it fulfils certain public tasks on behalf of the government and, as such, it is controlled by it.

CHAPTER IV

DEMAND FOR TELECOMMUNICATION SERVICES

The present chapter deals with demand for telecommunication services. In the first place, various measurements of demand for telecommunication services are studied. In the second part of this chapter, demand is analyzed and correlated with National Income (NNP). Lastly, demand expressed in terms of gross annual receipts is forecast; moreover, projected installations are studied and analyzed.

Measurements

The demand for telecommunication services can be measured in terms of physical units or gross annual receipts. Demand measured in terms of various physical units is presented in table 17.

Graph 1[a] presents the demand for direct exchange lines for 1955-64. It indicates an increasing trend for direct exchange lines demanded.

As a result of the noticeable development of telephone services in Cyprus, the number of persons per telephone has shown a significant decrease as depicted in graph 2. The

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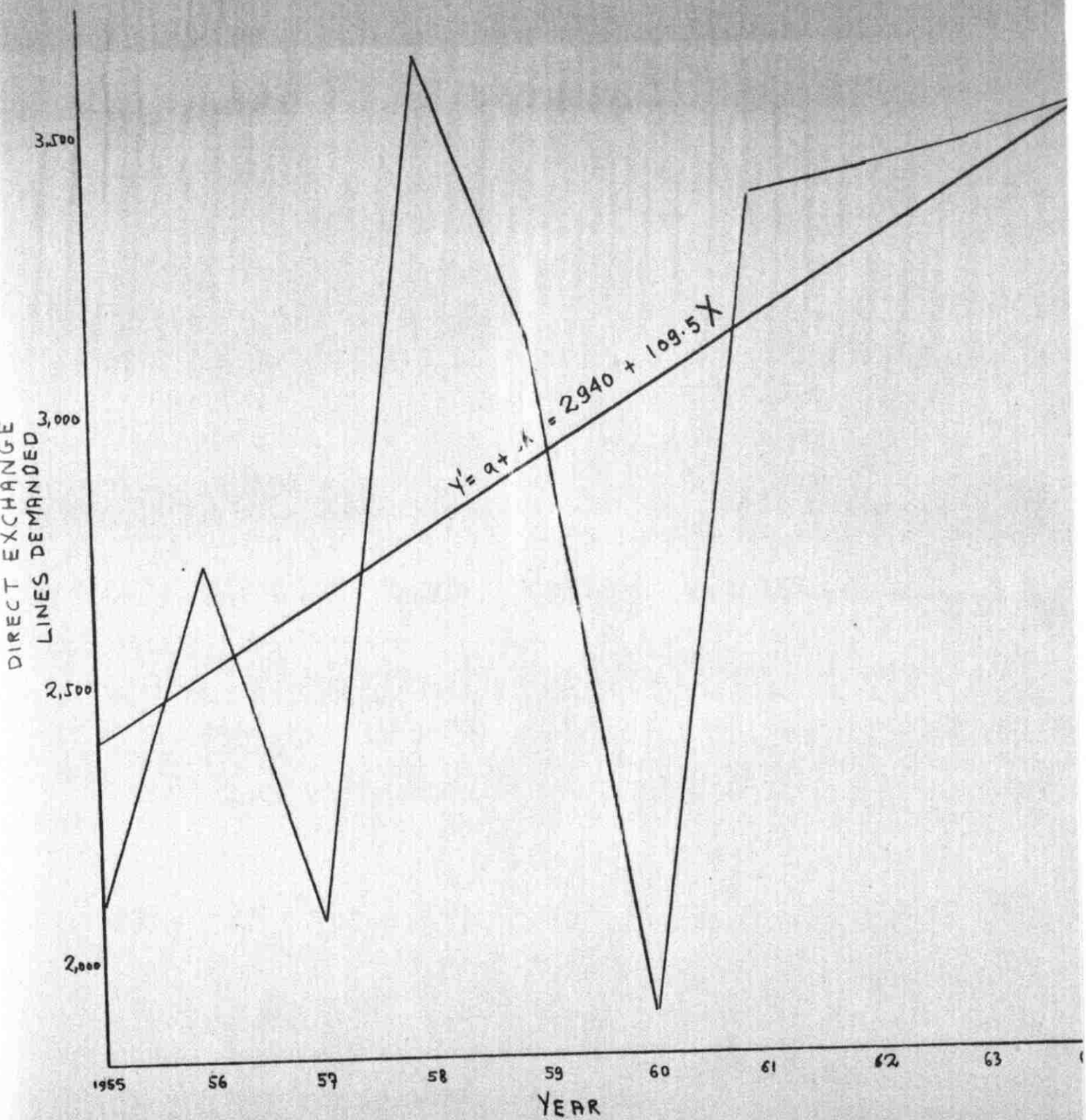
[a]Graphs 1-5 are based on figures in table 17.

TABLE 17

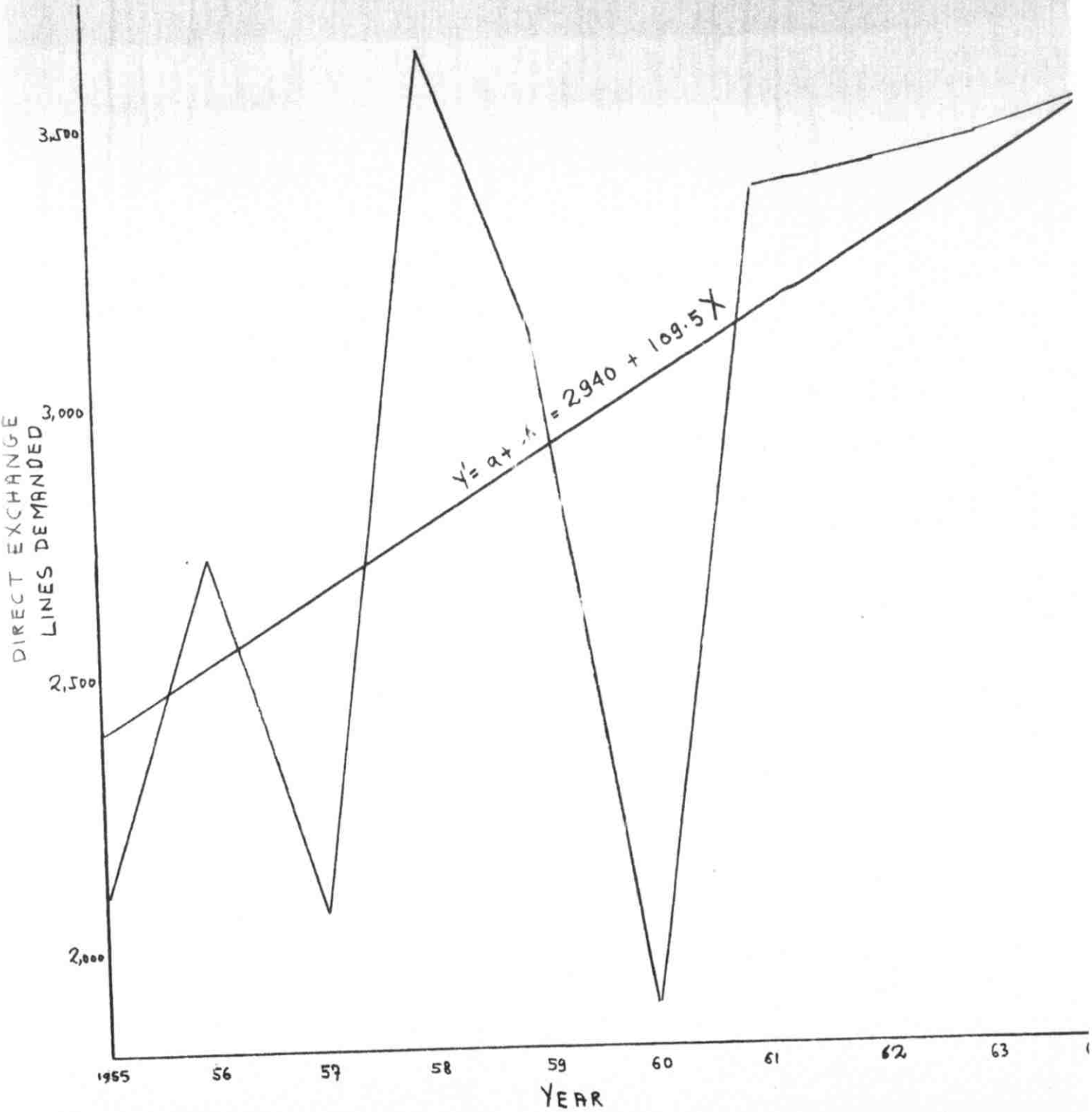
MEASURES FOR TELEPHONE DEMAND

Year	Direct exchange lines	Number of persons per telephone				Total calls in 000's	Calls per urban head of population	Calls per telephone set	
		Direct Exchange Lines		Working Telephones				Direct Exchange Lines	Working Telephones
		Tot.	Urb.	Tot.	Urb.				
1955	2,070	94	33	53	19	11,595	61	2,047	1,159
1956	2,715	81	29	47	17	13,576	71	2,042	1,189
1957	2,179	78	28	42	15	14,885	76	2,137	1,137
1958	3,629	66	24	35	13	14,814	74	1,764	940
1959	3,173	58	21	34	12	16,354	81	1,685	994
1960	1,881	56	20	32	11	17,060	83	1,670	942
1961	3,365	46	17	30	11	21,428	102	1,776	1,119
1962	3,400	40	15	26	10	24,762	116	1,699	1,121
1963	3,478	34	12	24	9	29,678	136	1,696	1,229
1964	3,509	30	11	23	8	30,675	140	1,560	1,157

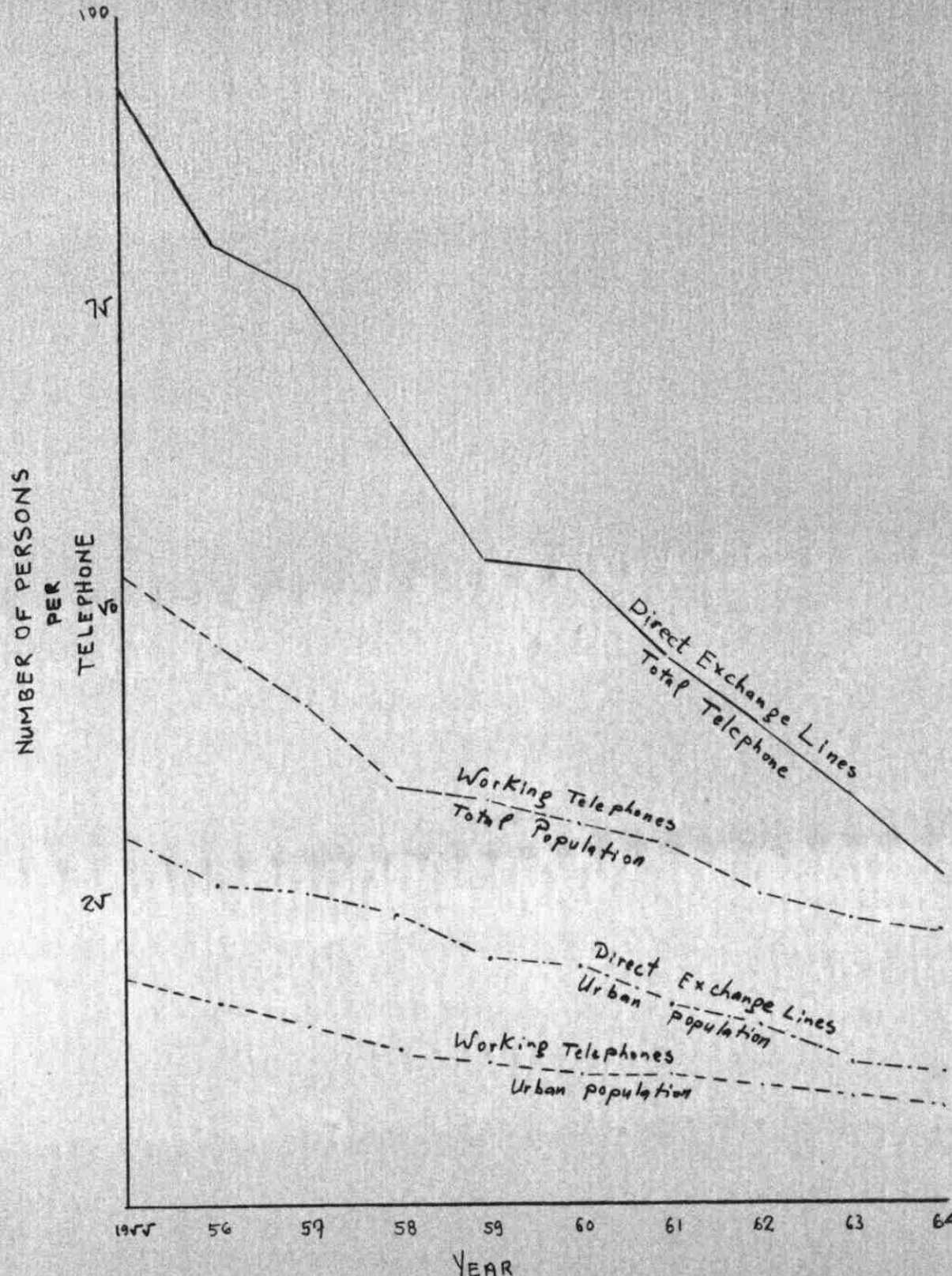
Sources: Appendix D-1 to D-6.



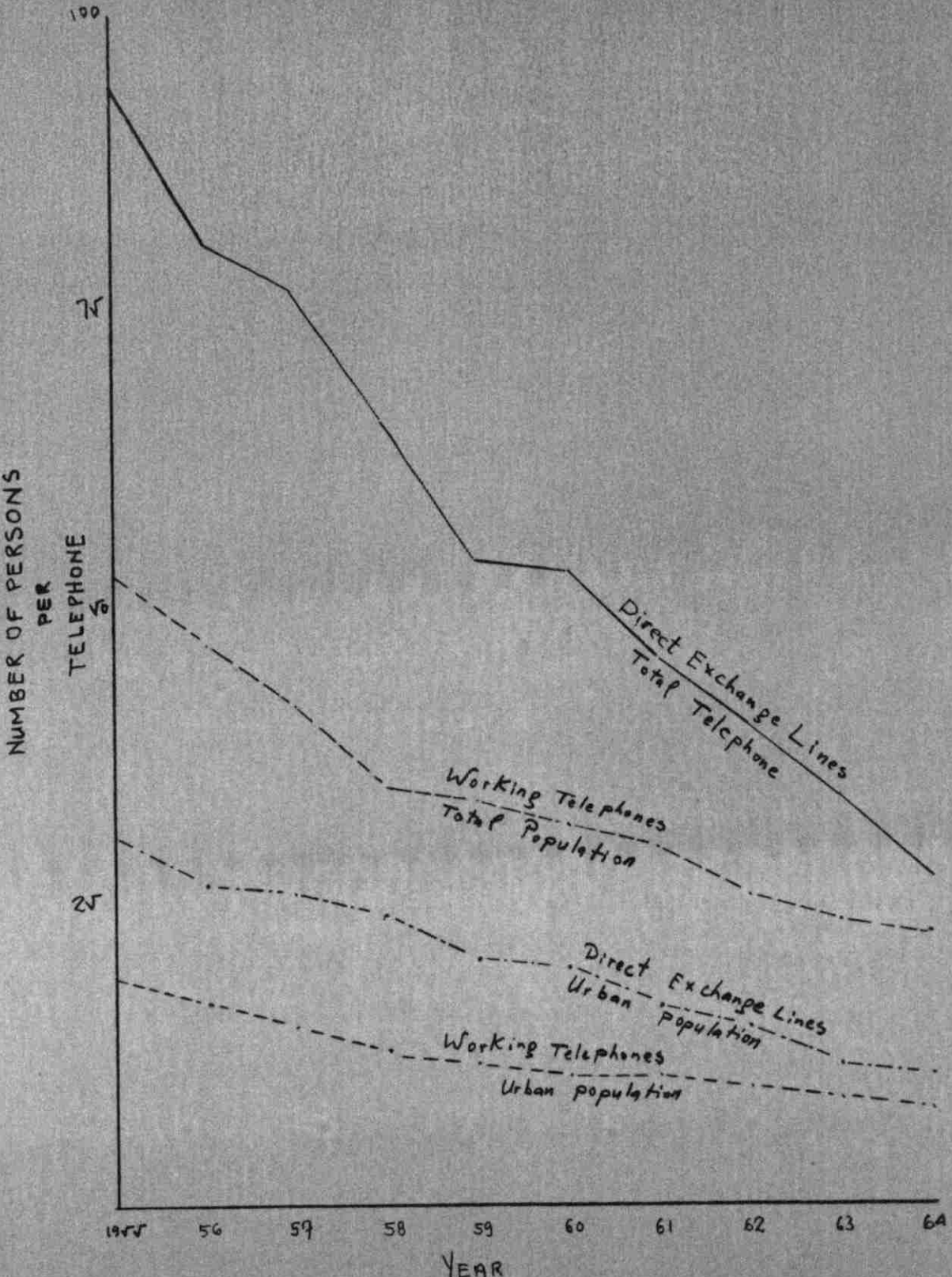
Graph 1.--Demand for direct exchange lines.



Graph 1.--Demand for direct exchange lines.



Graph 2.--Number of Persons per Telephone.

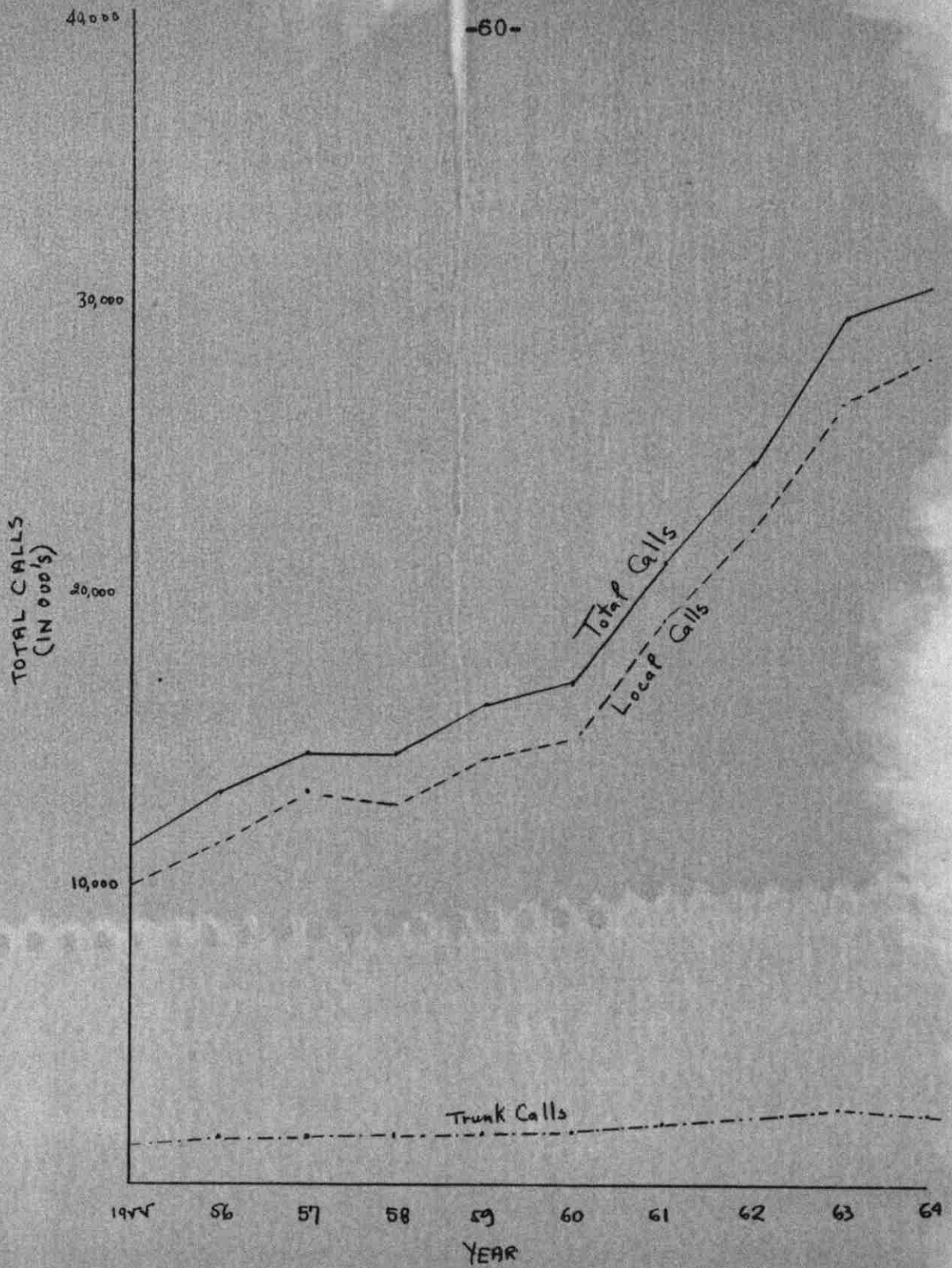


Graph 2.--Number of Persons per Telephone.

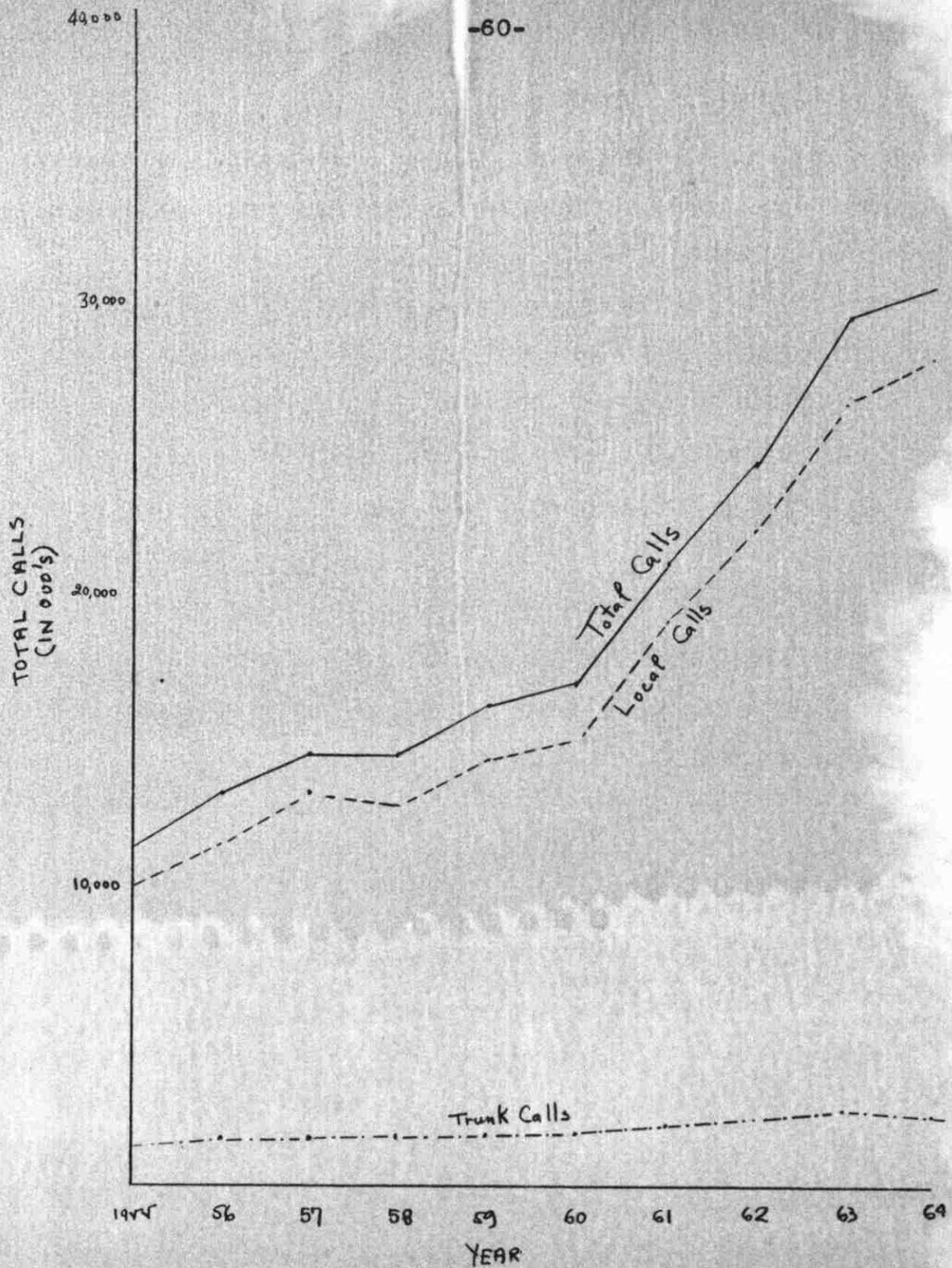
graph differentiates between development in terms of total population and in terms of urban population. It is natural to expect that the urban population results present a better picture since most of the telephones are needed and installed in urban centers. In many Western countries non-urban centers or areas have also been developed, as a result of the distances and isolation involved. However, as far as Cyprus is concerned, there are no vast distances and villages, as yet, have not felt the need or have not been able to translate their need for extensive telephone services into actual demand. The reasons for such a state of affairs seem to be geographic, economic, and social.

Graph 2, moreover, differentiates between direct exchange lines and working telephones. Working telephones comprise all telephone instruments that could be connected to a central public exchange. Because the number of working telephones is greater than that of direct exchange lines, it is natural to expect a lesser number of persons per telephone than that of direct exchange lines.

The demand for telephones might be expressed not only in terms of direct exchange lines, but also in terms of calls made. Graph 3 presents telephone calls made for 1955-64. It shows, furthermore, the total calls made with a breakdown showing local and trunk calls. Since 1955, local calls have increased three-fold. During 1960-1963, local calls increased very significantly. This could be associated with the significant rate of economic growth achieved during these years.



Graph 3.--Telephone Calls.



Graph 3.--Telephone Calls.

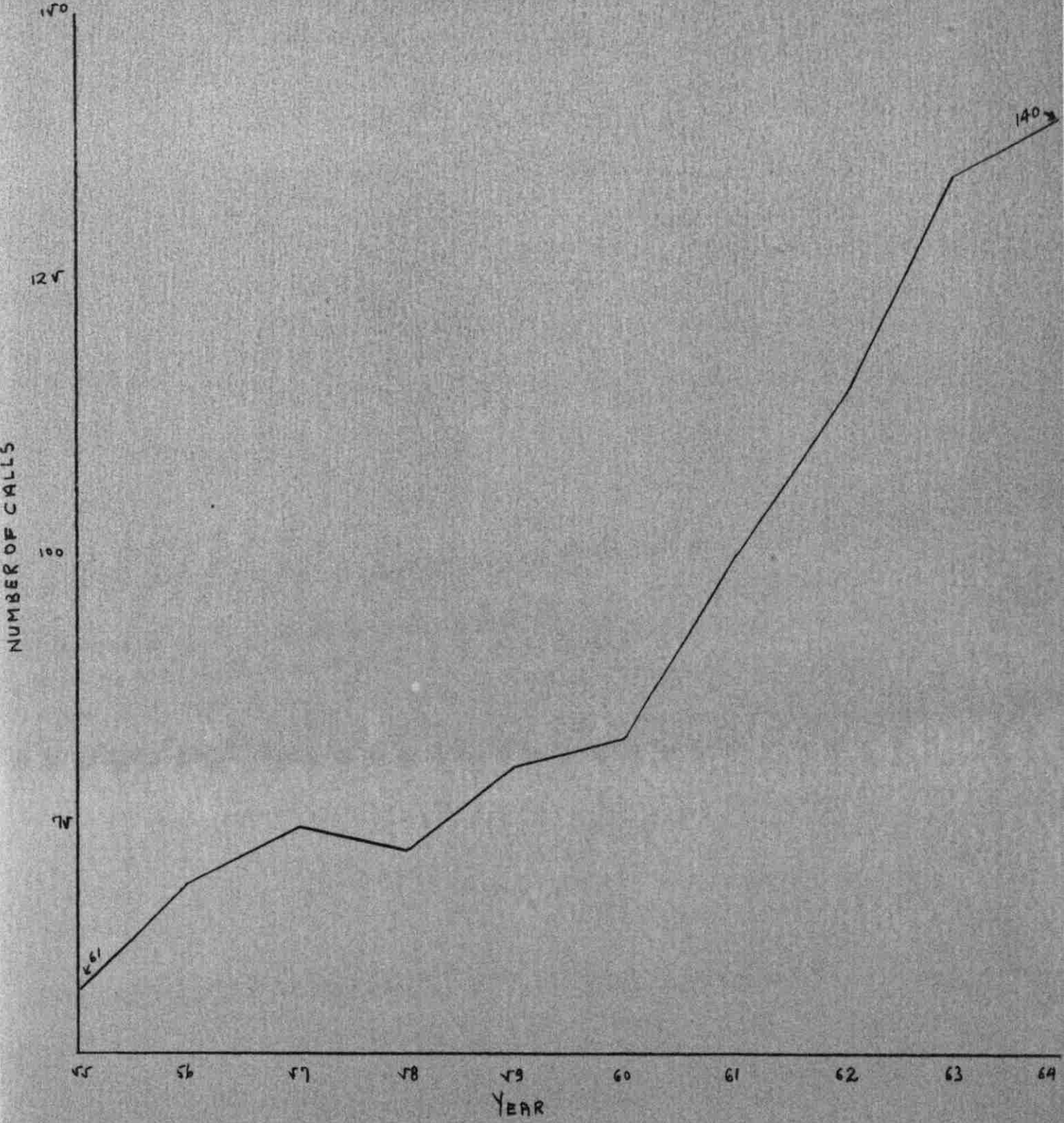
However, during 1964, with the outbreak of communal disturbances and the ensuing anomalous situation, associated with a decreased GNP, the rate of increase of local calls declined.

As with the local calls, there was also an increase in trunk calls until 1963. Trunk calls, however, seem to be more susceptible to general business conditions. Moreover, it could be assumed that a significant portion of trunk calls made are for business use. Thus, it could be seen that the rate of decrease in trunk calls was greater than that of local calls.

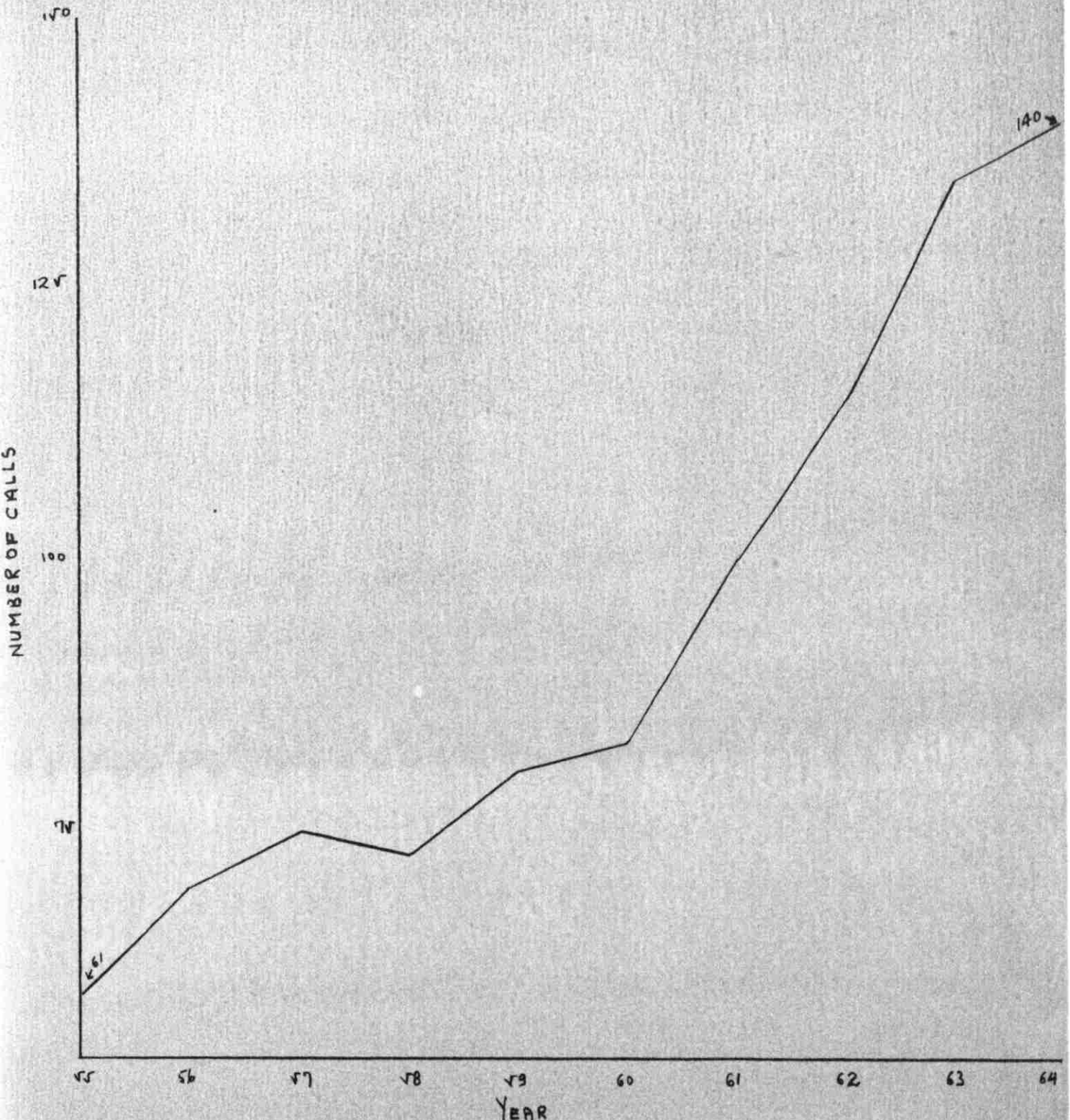
Of the total yearly calls made, local calls account for around 90 per cent. Thus, graph 3 shows that the total calls have closely followed the pattern of local calls.

Graph 4 presents the total calls made per urban population. Since most of the telephones are in urban areas, it would be more appropriate to use calls made per urban population. The graph shows that the rate of increase in demand for calls has been much higher than the increase in urban population. As indicated earlier, 1960-1963 has been very significant. In this period the calls made increased at a very rapid rate. The rate of growth decreased in 1964 for reasons previously mentioned.

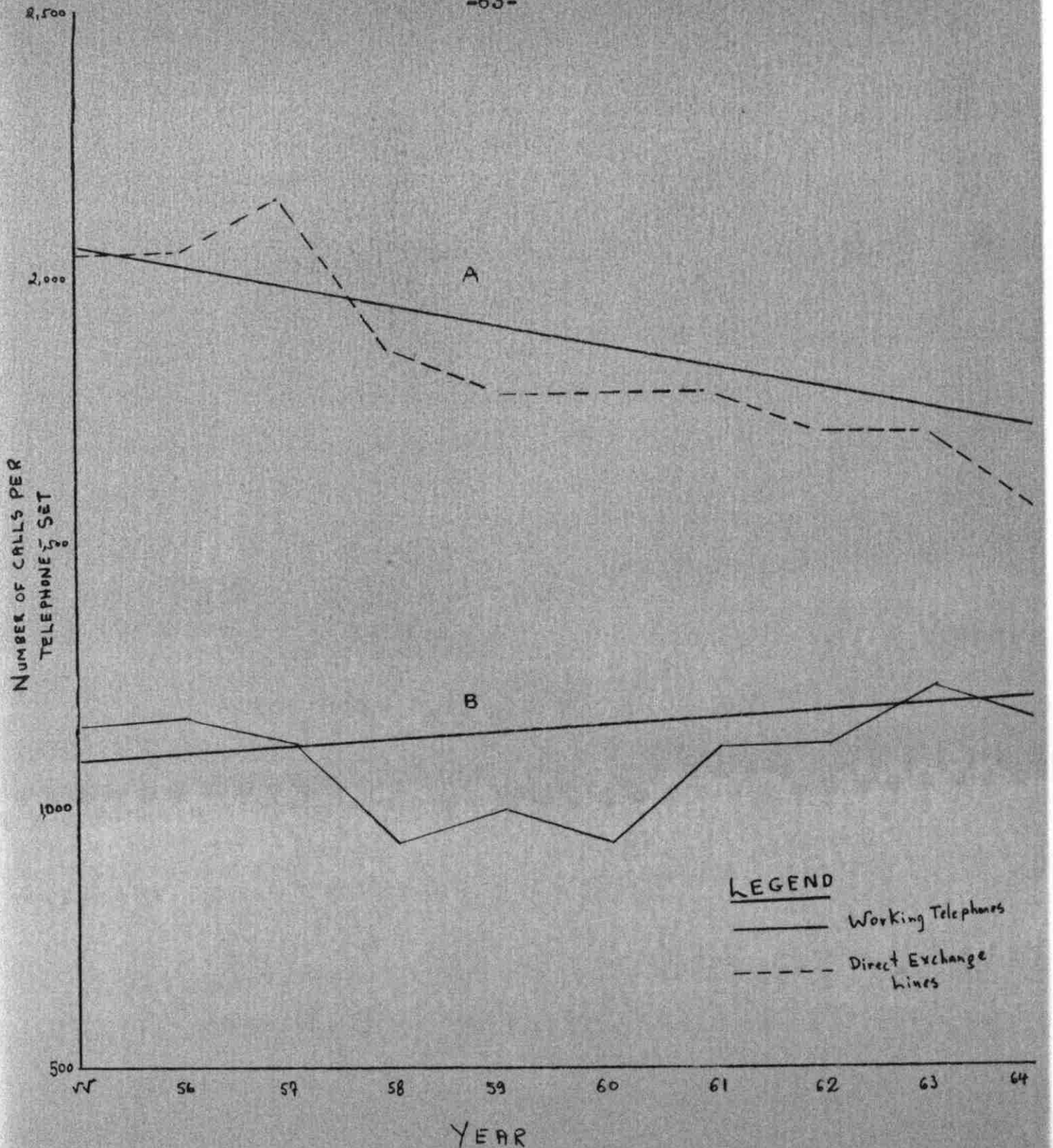
Graph 5 presents the number of calls made per telephone set. The upper part (A) of the graph presents the number of calls made per direct exchange line. It could be seen that the number of calls made per direct telephone exchange has been declining. This seemingly



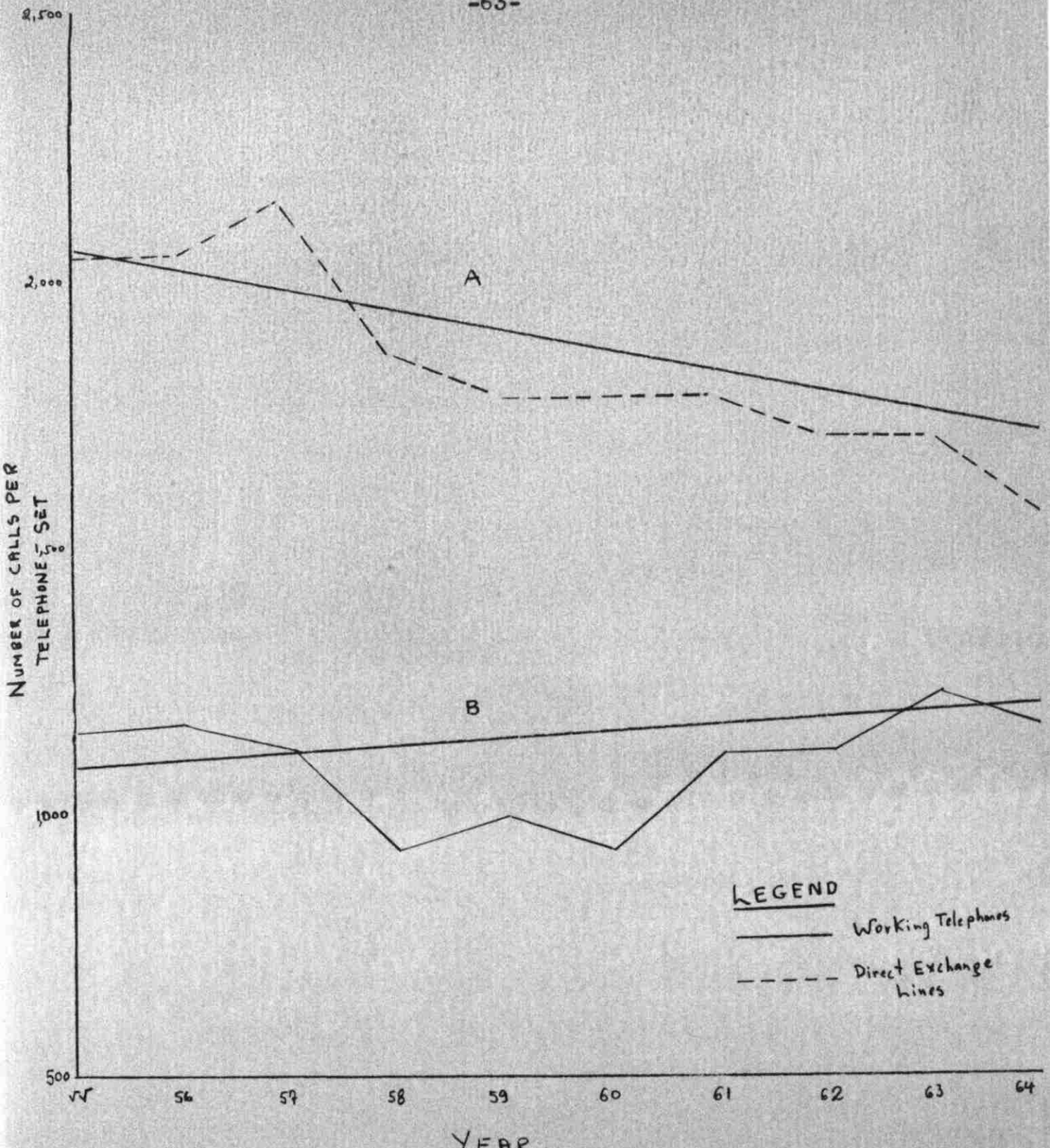
Graph 4.--Calls per head of urban population.



Graph 4.--Calls per head of urban population.



Graph 5.--Number of calls per telephone set.



Graph 5.--Number of calls per telephone set.

paradoxical result might be attributed to the fact that the total calls made have not kept pace with such telephone development; moreover, calls that used to be made from other stations, are now made from newly installed stations.

The lower part (B) of the same graph presents the number of calls made per working telephone. Since the number of working telephones is greater than that of direct exchange lines, it is natural to expect fewer calls per station, and accordingly a lower trend. The slightly rising trend (which in both cases is fitted by the semi-average method) might be due to the fact that the rate of increase in calls made has been more than the rate of increase of working telephones.

Table 18 presents the total amount of radiotelephone traffic for the Authority's five main links for 1961-1964. There has been significant growth in total radiotelephone traffic. For example, traffic with London and Beirut increased around three-fold. The increase of traffic with Tel-Aviv has not been very significant (1.4 times). Communications with Ankara has grown very significantly (9.2 times). It is important to note that there has been a very significant increase in traffic in 1964 with Athens and Ankara. This could be explained by the political turmoil then existing in the country. Table 18 shows, moreover, that Athens and London together account for around 80 per cent of all radiotelephone traffic. The total of all circuits operating increased from 100,698 minutes in 1961, to 255,419 minutes in 1964, or 2.54 times.

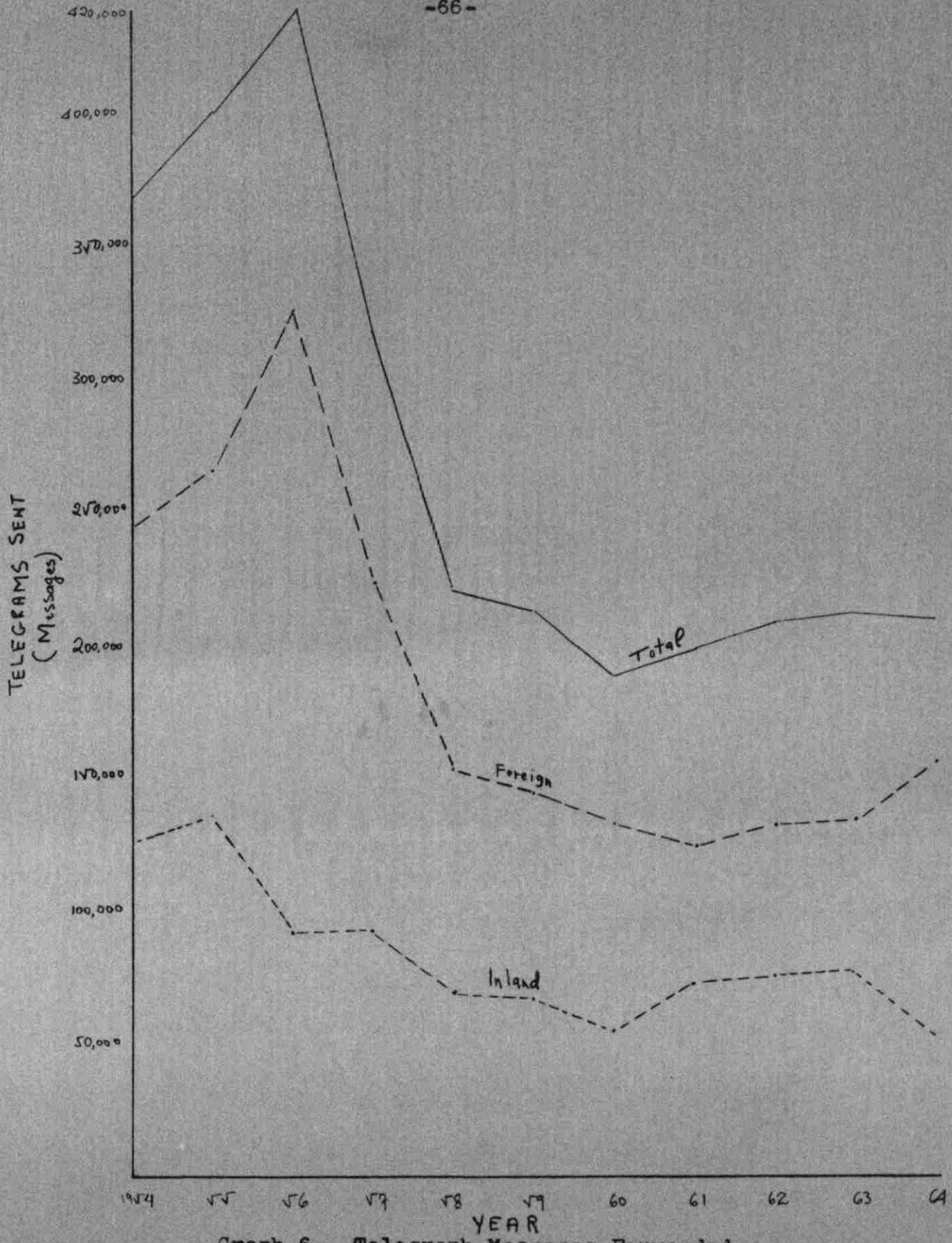
TABLE 18

TOTAL AMOUNT OF RADIOTELEPHONE TRAFFIC IN MINUTES

	1961	1962	1963	1964
Athens	44,704	52,900	59,868	104,335
London	34,346	44,670	56,176	95,199
Beirut	10,753	17,375	31,400	29,794
Ankara	1,558	2,352	5,812	14,325
Tel-Aviv	6,573	10,000	17,659	8,891

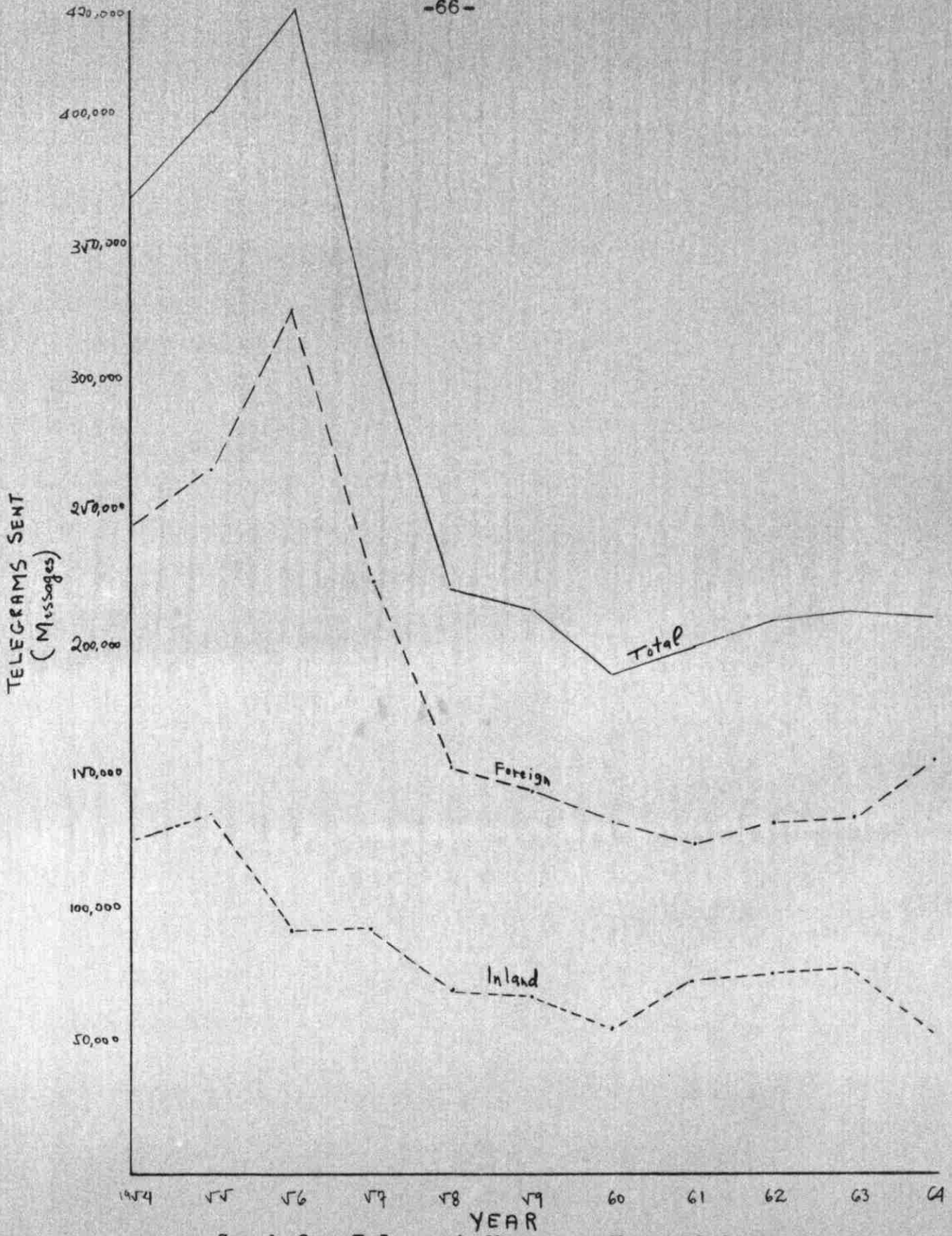
Source: Ninth Annual Report and Accounts of Cyprus Telecommunications Authority, 1964, op. cit., p. 9.

Graph 6 presents telegraph messages sent. It is seen that overseas and inland telegraph traffic has drastically declined since 1956. The inland telegraph traffic has declined from 135,000 messages in 1955, to 53,000 messages in 1964. The decline could be explained by the fact that the telephone, with its development, has been a serious competitor to telegraph. While local and trunk calls have shown a remarkable increase since 1955, the contrary is true for telegraph traffic. It might be assumed that trunk calls especially have expanded at the expense of the telegraph. Nevertheless, with the economic growth achieved during 1960-1963, and the internal stability enjoyed, inland telegraph traffic showed a noticeable increase. However, as a result of the restrictions imposed on the movement of the public,



Graph 6.--Telegraph Messages Forwarded.

Source: App. D-7.



Graph 6.--Telegraph Messages Forwarded.

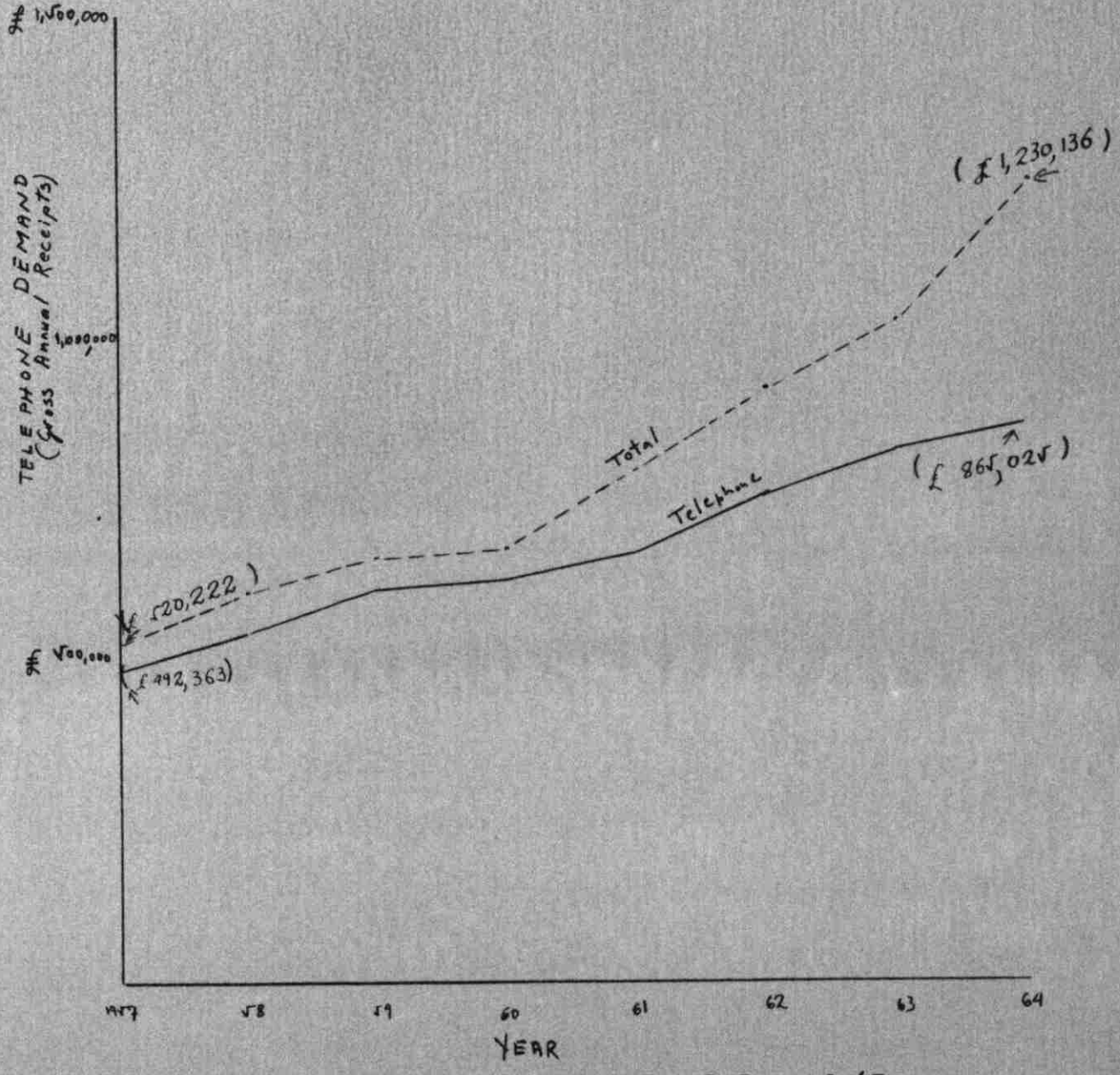
Source: App. D-7.

and the decline of the business activity, it reached its lowest level in 1964.

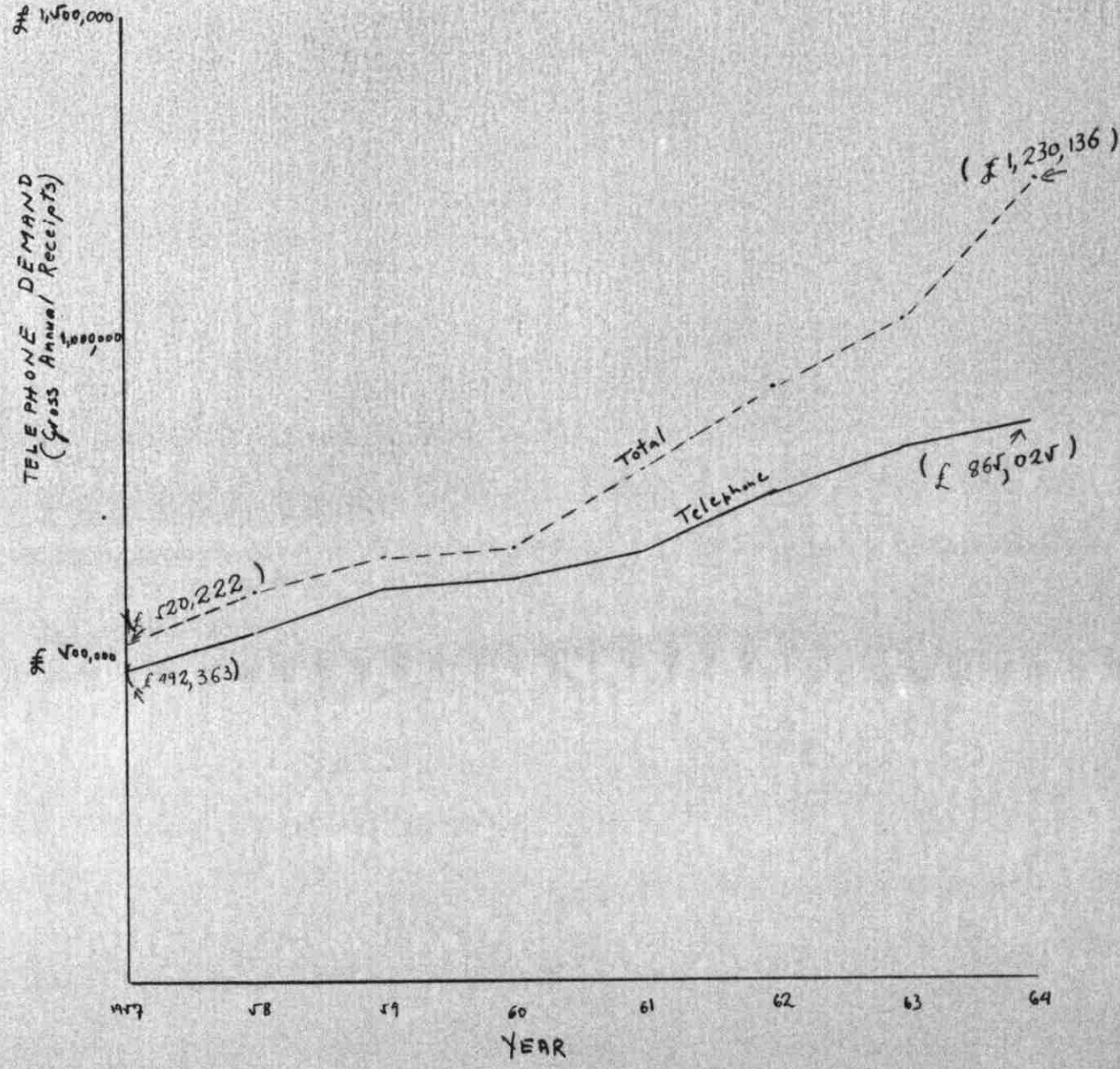
Overseas telegraph traffic decreased drastically from 329,000 messages in 1955 to 127,000 messages in 1961. This drastic decrease might have probably been due to the drastic cut in the number of telegraphic instruments operating in Cyprus. Thus, while by the end of 1957 there were 168 telegraphic instruments available and operating in Cyprus, the number fell to 43 in 1958 and stayed at that level until the end of 1961. Since then the number of telegraphic instruments has increased to more than a hundred.[1] It was previously mentioned that Cable and Wireless Ltd. was in charge of overseas communications until 1961. Thus, anticipating the end of its operations in Cyprus, it withdrew its equipment from the island. The noticeable increase in the overseas telegraph traffic in 1964 was mainly due to t he foreign correspondents who had been dispatching daily news to the outside world.

Demand for telephone and telecommunication services could also be measured in terms of gross annual receipts. Graph 7 presents telephone and total demand expressed in terms of gross annual receipts. Total telephone demand measured in terms of gross receipts include receipts from rentals, trunk calls, local calls and radiotelephone. Receipts from radiotelephone are not very significant; they range from 4 to 8 per cent of total telephone receipts. The graph shows that annual receipts increased from £492,363 in 1957 to £865,025 in 1964. The rate of increase for 1960-1963 has been significant due to the

[1]Cyprus, Statistical Abstract, (1963), op. cit., p.200.



Graph 7.--Telephone and Total Demand (In Gross Annual Receipts).



Graph 7.--Telephone and Total Demand (In Gross Annual Receipts).

economic growth then enjoyed. During 1964, however, it showed a slight decline.

Total demand for telecommunication services expressed in terms of gross receipts includes receipts from total telephone operations, telegrams, teleprinter rentals and leased circuits. The graph indicates that gross annual telephone receipts account for a significant portion of the total annual receipts. It shows, moreover, that the gap existing between the two curves has been increasing, reaching its maximum in 1964. This could be explained by the increase in telegraph traffic since 1961 and the significant increase in 1964 in foreign telegraph traffic (previously mentioned).

It was seen that the demand for telephone or telecommunication services could be measured in terms of physical units or gross annual receipts. However, the latter seems to be more pertinent and useful for demand analysis and especially for revenue forecasts. The first involves too many items like trunk calls, local calls, international radiotelephone calls, local and foreign telegraph traffic, leased circuits and other items. Since money is the only common denominator for all these, it seems more appropriate to analyze and forecast demand measured in terms of gross annual receipts. Moreover, the revenue figures forecast will later be used for preparing projected cash flow statements (cash budget) and for studying future financing needs.

Analysis

Demand for telecommunication services is influenced by a great many factors. Some of its most important determinants are the income of the country involved, prices or rates, social and institutional factors and sales promotional activities. In Cyprus, at present, no sales promotional activities are undertaken. Since there always has been quite a significant number of outstanding applications, the Authority has found it unwise to spend any money to further a demand that already exists. It should be borne in mind that the demand for telephone is not only represented in terms of physical direct exchange lines but also in terms of calls made per telephone station. Even though the Authority always had to cope with outstanding demands in each year, yet the demand measured in terms of calls made per station does not show any significant increase, as was shown in graph 5. Attempts might be made to encourage people to make more calls provided that such calls come during non-peak hours. However, having in mind that the public at large has an immediate and indispensible demand for telephone and telecommunication services, sales promotional activities may not be very useful in making the demand even greater or in increasing the total calls.

Another factors which might be considered as a demand determinant for telecommunication services in general and for telephone services in particular, are the

social and institutional factors. For the business sector telephone services are as essential as buildings, fixtures or plant. A business could not operate efficiently without the use of telecommunication services. The more developed the business sector, the more the need for such services. However, neither institutional nor social factors could easily be quantified. Hence, their effect on demand could not be quantitavely measured.

Therefore, the two most important demand determinants for telecommunication services still to be considered are prices or rates and the general income level. Internal prices are regulated by the government, and can only be changed with its consent and approval. External rates for all telecommunication services are administered through International Telecommunications Union (I.T.U.) and Commonwealth Telecommunications Board (C.T.B.).

Internal telegraph rates have not been changed since 1952. As for telephone tariffs, no major revision has taken place since April 1, 1957. There have been, however, some adjustments in December 31, 1957, and January 1, 1961. On December 31, 1957, the free call allowance was reduced from 300 calls per quarter to 100 calls per quarter. On January 1, 1961, the normal area (rental £11 per annum) was extended in towns from one and a half miles to three miles as a result of the growth of the suburban areas. At the same time, a new system of billing subscribers was introduced whereby bills were to be presented and settled monthly in arrear as opposed to quarterly settlement. Hence the free call allowance was

set at 35. The reduction of the free call allowance constituted an indirect raise in rates, while the extension of normal radius in 1961 indirectly decreased the rates or tariffs.

To simplify the analysis, it could be assumed that prices have remained constant. Therefore, of the demand determinants only the national income is left for consideration. Thus demand (expressed in terms of gross annual receipts) is correlated with national income (NNP).

Table 19 shows the yearly demand for telephone services expressed in terms of annual receipts and the Net National Products. To measure the degree of relationship existing between these two variables, the following correlation formula has been used: $r = \frac{\Sigma x.y}{N.sY.sX}$ where r is the coefficient of correlation, x and y (X-mean) and (Y-mean), N, the number of years considered, while sY and sX the standard deviations for demand and N.N.P.

$$\text{Then } r = \frac{\Sigma x.y}{N.sY.sX} = \frac{7,157,477,000,000}{8 \times 123,225 \times 8,792,000}$$

$$= \frac{7,157,477,000,000}{8,667,153,600,000}$$

$$= \underline{0.83} = \text{coefficient of correlation}$$

Thus it can be seen that there is quite a significant degree of correlation between demand for telephone services and NNP. However, even though the degree of relationship between the two variables seems to be quite significant, yet a much higher degree of relationship ($r = 0.965$) is obtainable if the year 1964 is excluded

TABLE 19

DEMAND FOR TELEPHONE
SERVICES AND NET NATIONAL PRODUCT
(IN CYPRUS POUNDS)

Year	Gross Annual Receipts Y	N.N.P. X
1957	492,363	88,000,000
1958	546,255	90,500,000
1959	612,836	92,000,000
1960	625,523	92,000,000
1961	668,307	100,000,000
1962	753,440	108,200,000
1963	826,456	114,800,000
1964	865,025	100,000,000[a]

Sources: Figures for the demand (gross annual receipts) have been derived from Annual Reports and Accounts of Cyprus Telecommunications Authority, 1957-1964, op. cit. Figures for the N.N.P. have been obtained from Cyprus, Economic Report, (1963), op. cit., p. 19.

a The N.N.P. in 1964, as seen previously, had declined by around 12 per cent.

from the analysis. This is justifiable because 1964 was a special year due to political disturbances and their impact upon the general business activity. This would mean that the development and demand for telephone service would, to a very great extent, depend on the level of national income or NNP.

By the use of a regression equation it is possible to forecast demand for telephones expressed in terms of gross annual receipts. The regression equation $Y_i = a + bX$ could be solved, where $\underline{b} = \frac{r \cdot sY}{sX}$, and $\underline{a} = \overline{Y} - b\overline{X}$. "Technically, $\underline{a}$ is the value of $\underline{Y}$ when $\underline{X}$ is zero. The value of $\underline{b}$ represents the average amount by which the $\underline{Y}$ values increase. . .for every unit increase in $\underline{X}$."[1]

$$\text{Then, } b = \frac{r.sY}{sX} = \frac{.97 \times 106,700}{9,400,000}$$

$$= \frac{103,499}{9,400,000} = 0.0110105$$

$$\text{Then, } a = \overline{Y} - b\overline{X} = 646,454 - (0.0110105 \times 97,928,000)$$

$$= 646,454 - 1,078,236$$

$$= -431,782.$$

The negative result obtained shows that there would be no demand for telephone service when NNP is zero. The regression /equation would be $Y_i = a + bX = -431,782 + 0.0110105xX$.

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[1] D.W. Paden, and E.F. Lindquist, Statistics for Economics and Business (New York: McGraw-Hill Book Company, Inc., 1956), p. 271.

At different levels of NNP, £80 million, £100 million and £120 million, the following estimates are obtained:

$Y_i = a+bX = -431,782 + 0.0110105 \times 80,000,000 = £449,058$

$Y_i = a+bX = -431,782 + 0.0110105 \times 100,000,000 = £669,268$

$Y_i = a+bx = -431,782 + 0.0110105 \times 120,000,000 = £889,478$

The above results are presented in graph 8, where the straight line represents the regression equation.[1] Since a high correlation was obtained (0,97), the actual results plotted on the graph closely fall in with the regression estimate.

The same line of analysis could be followed for total demand analysis and forecast. Table 20 presents the yearly total demand (total gross receipts) and NNP. If the year 1964 is included in the analysis, a coefficient of correlation of 0.74 is obtained. However, for reasons previously mentioned, the year 1964 is omitted from the analysis. In such a case, the coefficient of correlation would be 0.9868 computed by using the formula

$$r = \frac{\sum x.y}{N.\ sY.\ sX}$$

$$= \frac{10,759,474,592,000}{7 \times 165,700 \times 9,400,000}$$

$$= \frac{10,759,474,592,000}{10,903,060,000,000}$$

$$= 0.9868 = \text{coefficient of correlation}$$

A regression equation or estimate could be prepared to show the expected total demand at different NNP levels.

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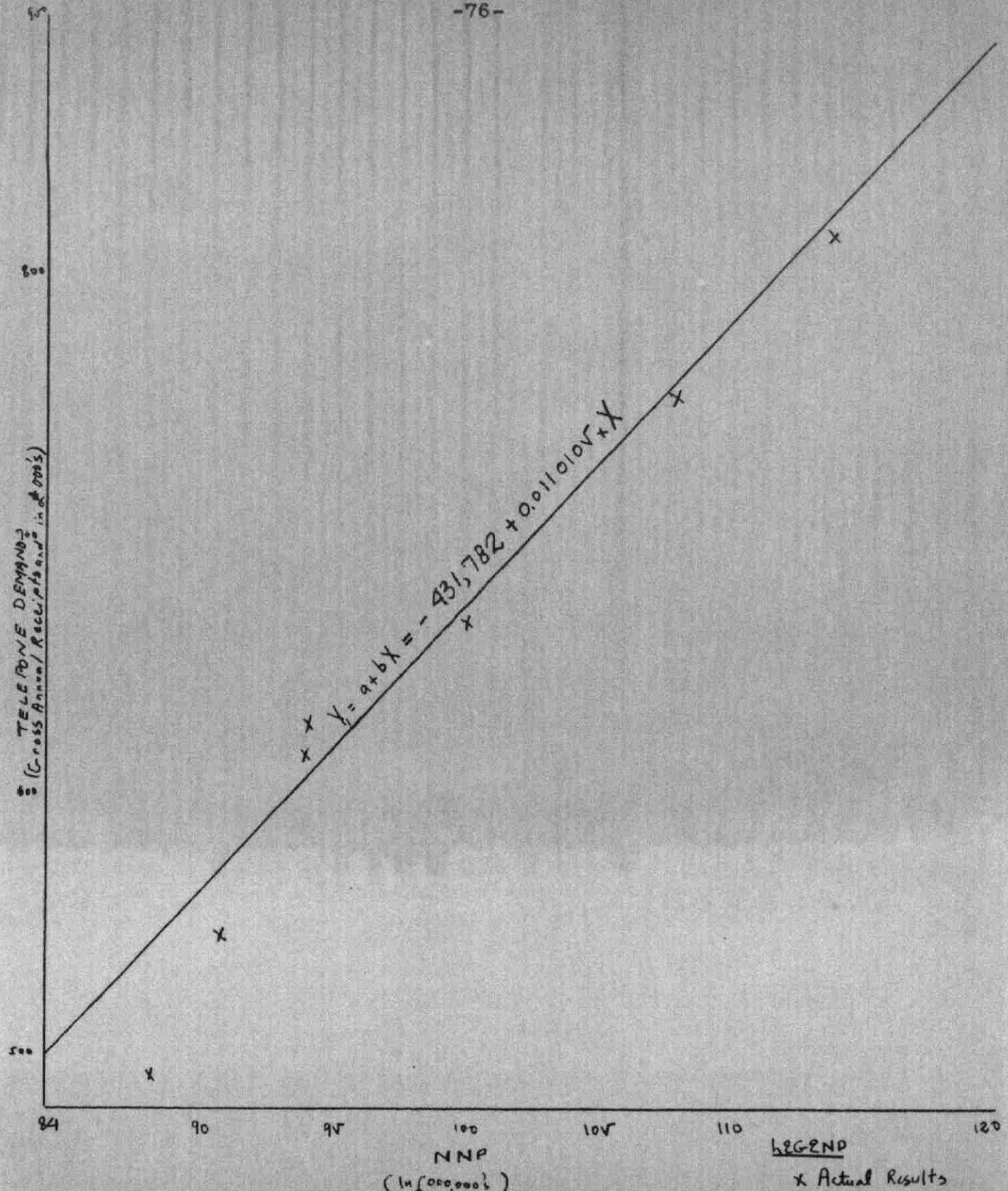
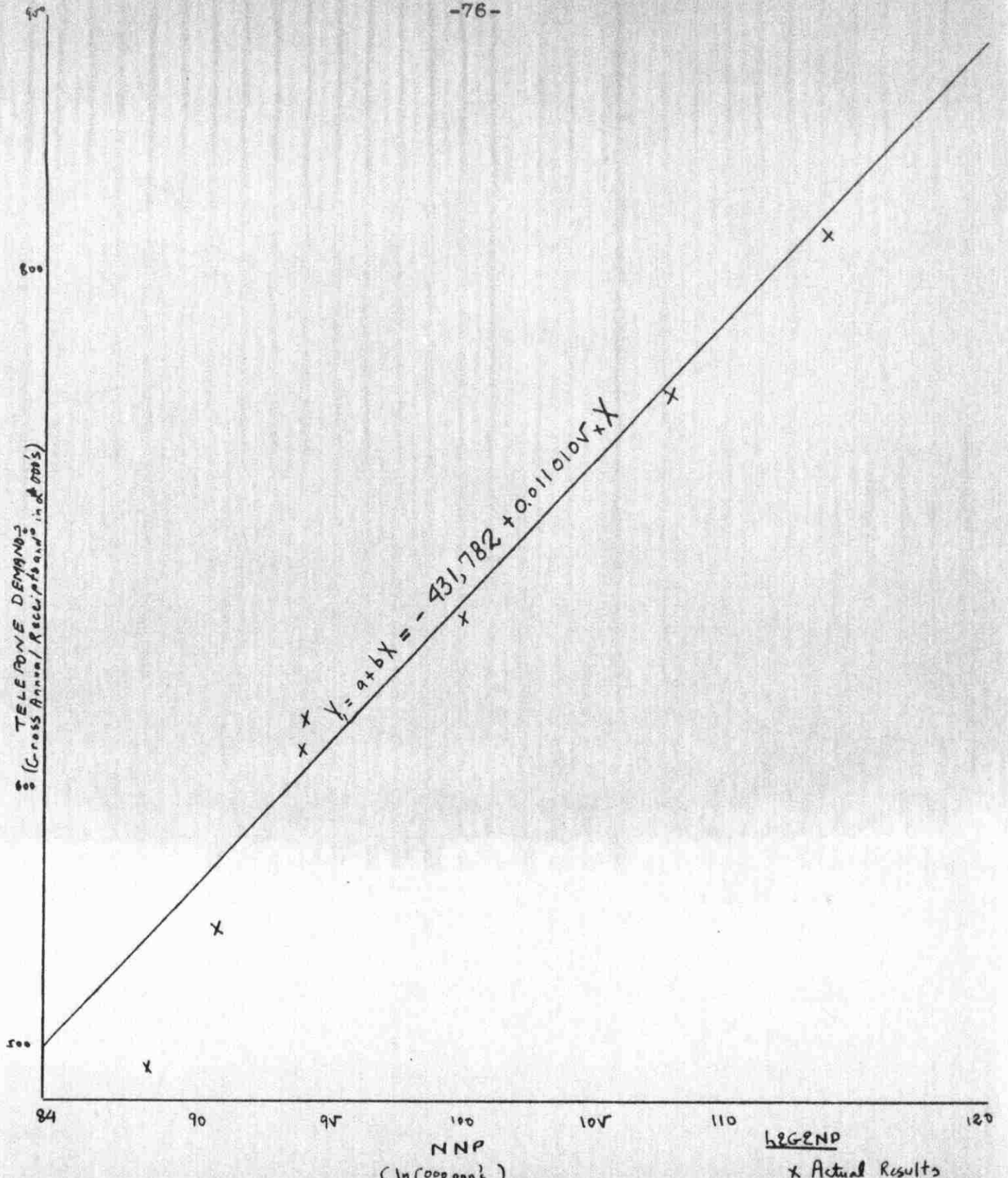
[1] Because of the limited number of observations, it is not possible to see whether a curvilinear relationship exists. Thus, it was assumed that the relationship was linear.



Graph 8.--Telephone Demand (Regression Estimate).



Graph 8.--Telephone Demand (Regression Estimate).

TABLE 20

TOTAL DEMAND AND NNP
(IN CYPRUS POUNDS)

Year	Gross Annual Receipts Y	NNP X
1957	520,222	88,000,000
1958	603,379	90,500,000
1959	665,946	92,000,000
1960	675,284	92,000,000
1961	795,465	100,000,000
1962	921,120	108,200,000
1963	1,022,406	114,800,000
1964	1,230,136	100,000,000

Sources: See table 19.

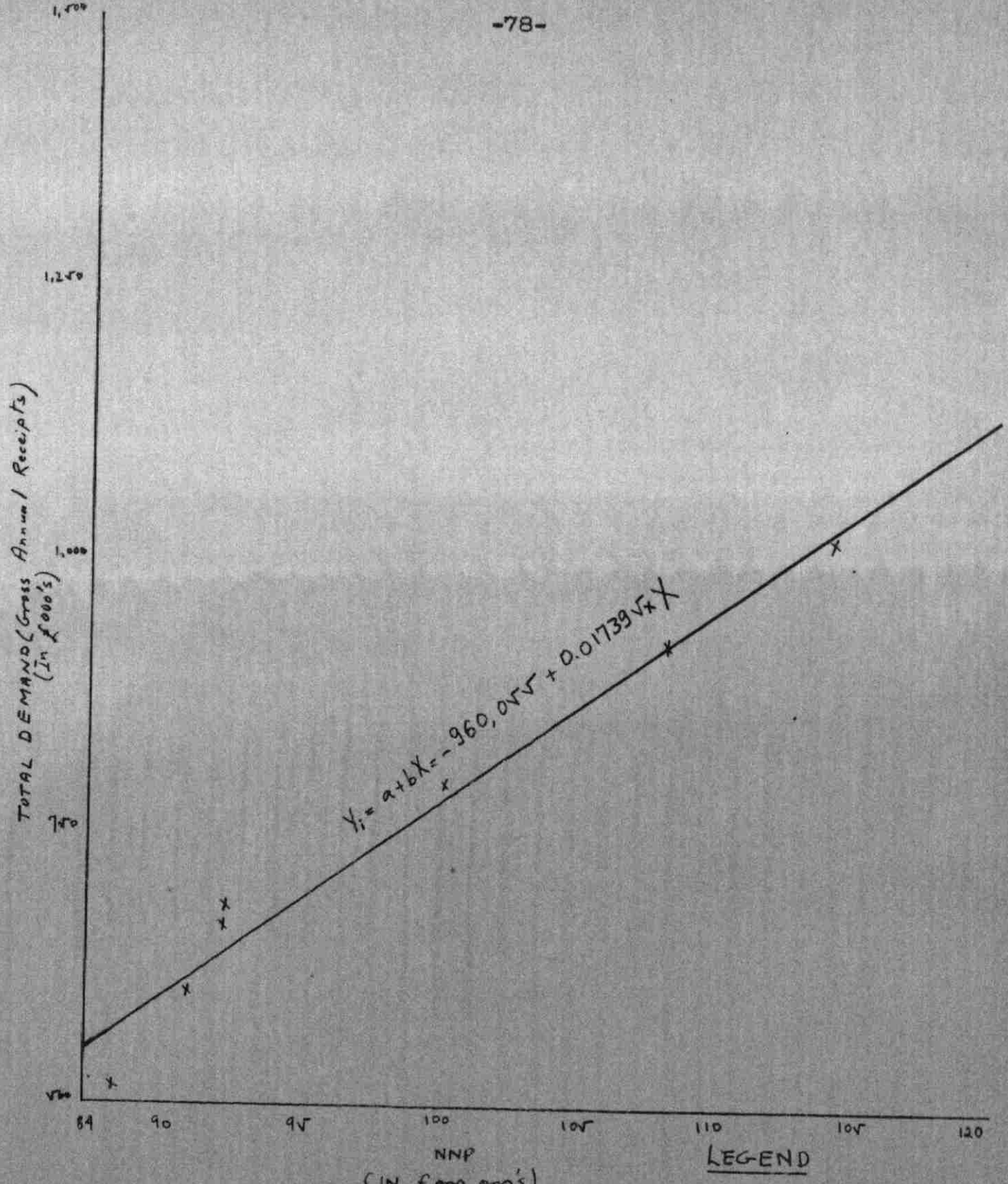
To find the values of the regression equation $Y_i = a + bX$, the values of a and b are derived.

$$b = \frac{r \cdot sY}{sX} = .9868 \times \frac{165,700}{9,400,000} = 0.017395$$

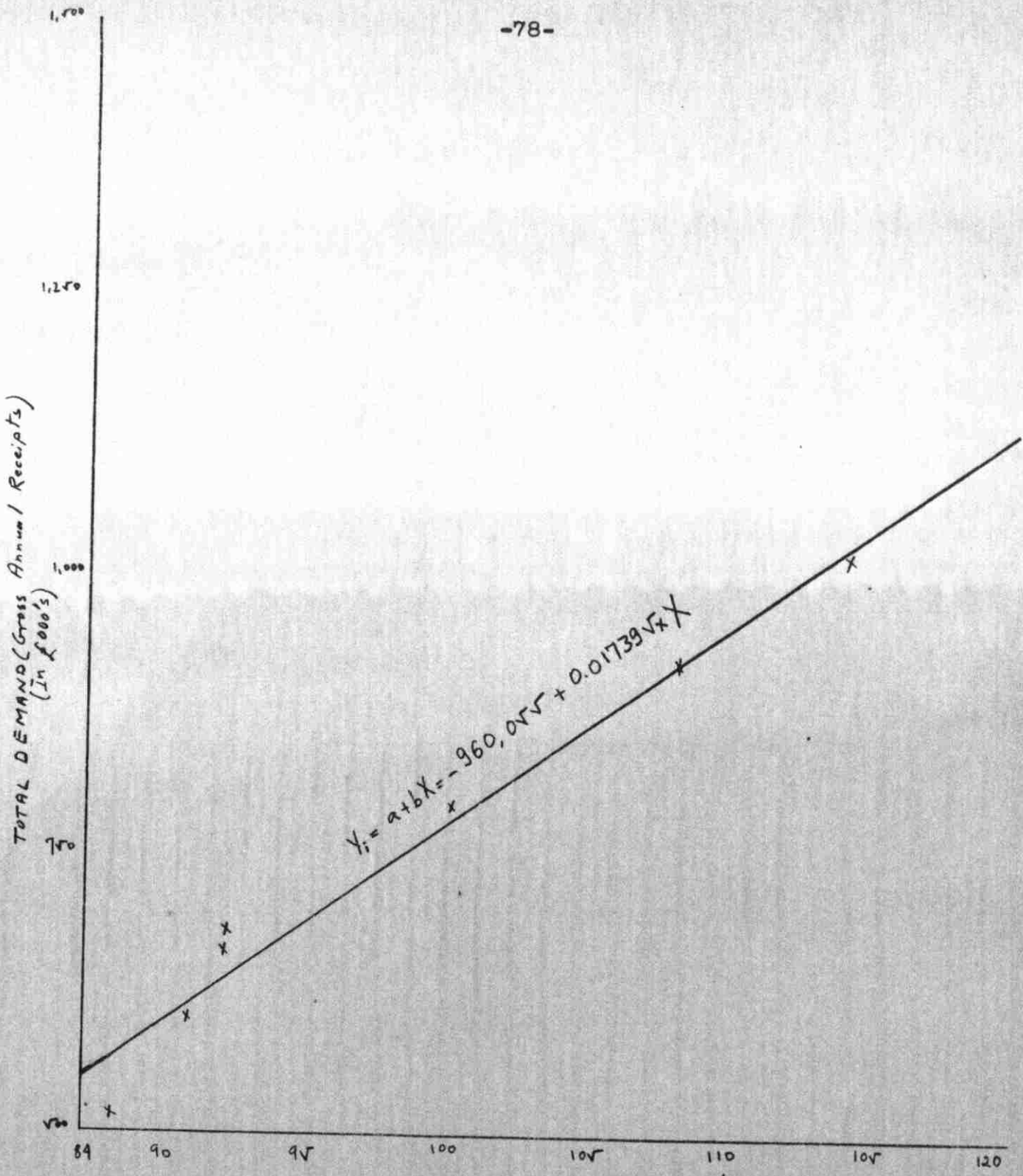
$$a = \bar{Y} - b\bar{X} = 743,403 - (0.017395 \times 97,928,000)$$

$$= 743,403 - 1,703,458 = -960,055.$$

Then, $Y_i = a + bX = -960,055 + 0.017395 \times X$. The total demand estimates (derived by solving the above equation) at NNP levels of £80 million, £100 million and £120 million will be £431,545, £779,445 and £1,127,345, respectively. These results are plotted in graph 9; the straight line represents the regression equation. Actual results plotted on the same graph, as previously, closely fall in with the regression estimate.



Graph 9.--Total Demand (Regression Estimate)



Graph 9.--Total Demand (Regression Estimate)

The above analysis reveals two interesting things. In the first place, the value of b shows that demand for telecommunication services is highly elastic at the 1963 level; one per cent change in income would result in 1.59 per cent change in total demand expressed in Cyprus pounds.

In the second place, it could be seen that even though the NNP declined by more than 10 per cent in 1964, yet demand for such services measured in terms of gross annual receipts increased. Gross annual receipts in 1964 increased from £1,022,406 in 1963 to £1,230,136 in 1964, or by £207,730. This increase was largely due to the extra receipts from radiotelephone (£30,063), telegrams (£135,162, of which a negligible part is from local telegrams) and leased circuits (£29,822). This increase (£195,047) in receipts might be considered to be mainly due to the abnormal situation into which the country was involved then. Thus, it could be seen that the gross annual receipts (net of the adjustments made above) has remained more or less constant, even though the NNP has fallen by more than 10 per cent in 1964.

While no definite conclusion can be drawn from any one year, it is possible that we may have here a situation similar to that explained by Duesenberry's "relative income" hypothesis,[1] namely, people accustomed to a certain level of use of telecommunication services, will try to defend that by maintaining their consumption level, even though their incomes have fallen.

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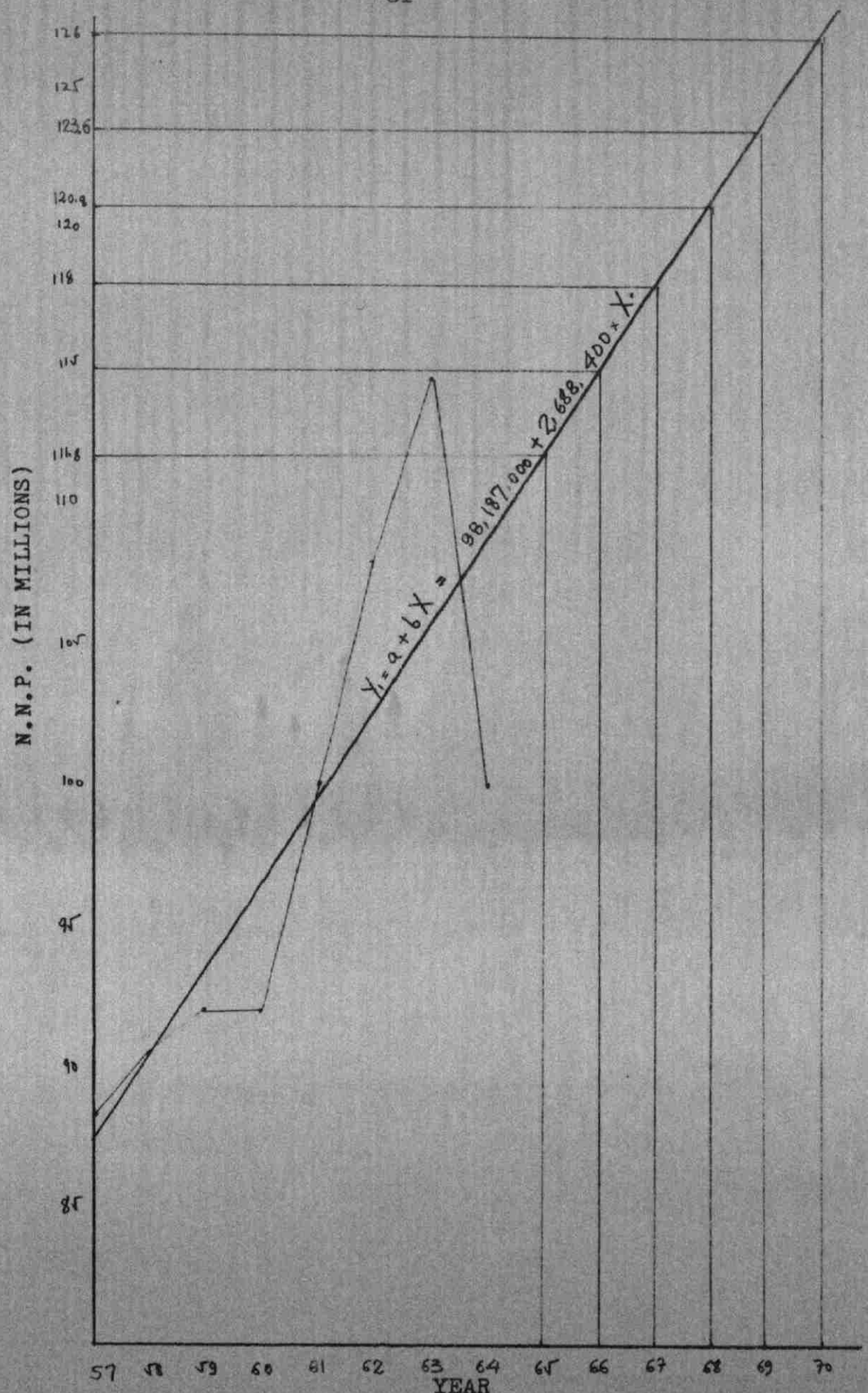
[1] J.S. Duesenberry's "relative income" hypothesis is used to explain the behavior of short-run consumption functions. See, for example, T.F. Dernburg, and D.M. McDougall, Macro-Economics (New York: McGraw-Hill Book Company, Inc., 1960), p. 80.

Probably, if income continues to fall, demand for telecommunication services will eventually fall also. But, as we said earlier, no definite conclusion can be drawn. A more definite conclusion would require statistics covering a longer period of time and a more sophisticated statistical analysis.

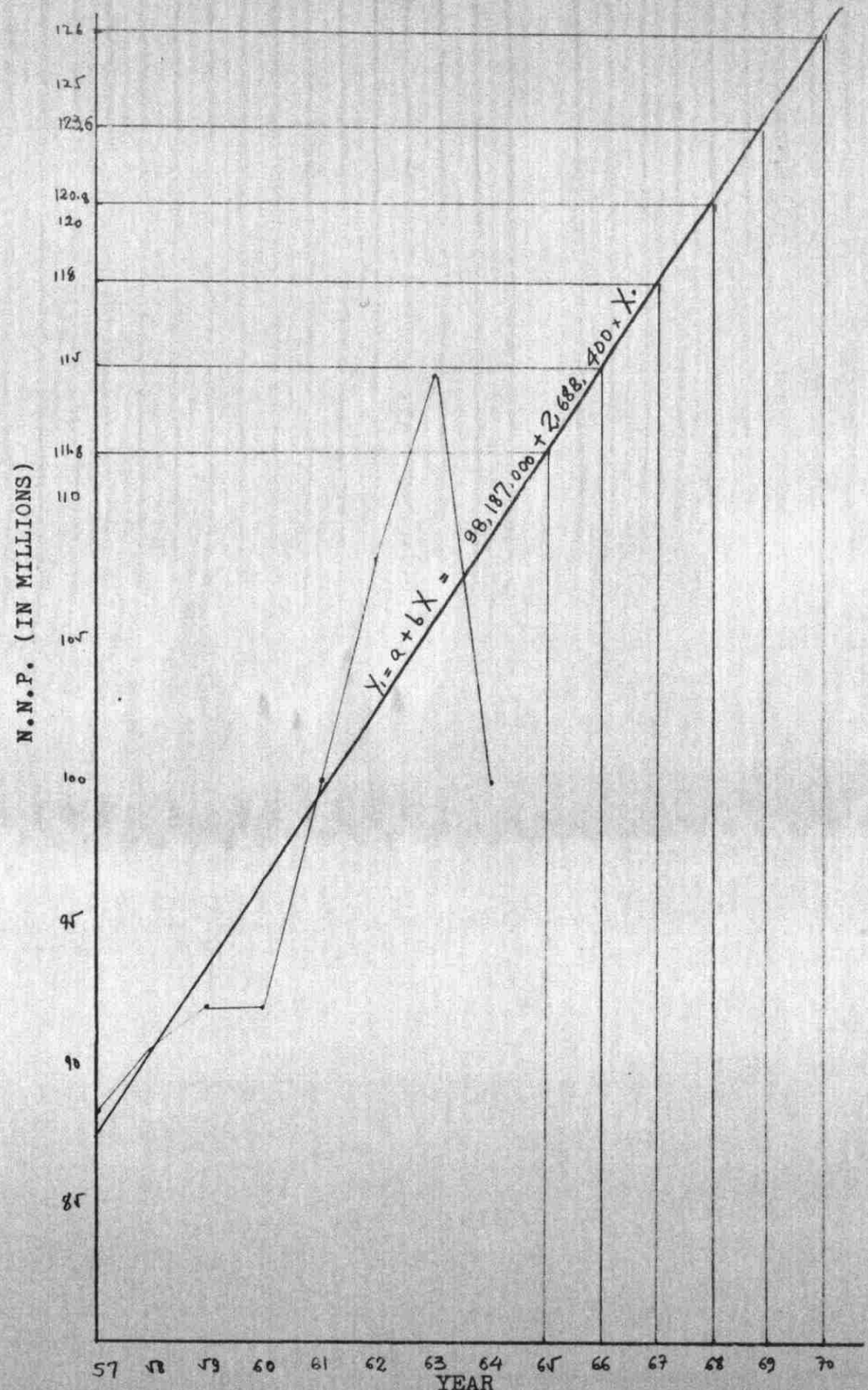
Forecast

The preceding analysis could be useful in demand forecasting only if the independent variable, namely the NNP could be forecast or projected. Graph 10 presents the projected NNP s for 1965-1970. The trend is derived by solving the equation $Y_i = a + bX = 98,187,000 + 2,688,400xX$. One would notice that though the year 1964 was excluded from demand analysis, it is included in NNP projections. If the year 1964 is omitted, a very high NNP trend would be obtained, which would render all projections meaningless.

There are certain important limitations that should be noted. In the first place, the number of observations is limited. As a result of this, it is not possible to forecast for more than a small number of years, say six (until 1970), neither is it possible to say if a curvilinear relationship exists. Moreover, because of the same limited number of observations it is not possible to adjust the projected NNP s (and in fact the demand for telecommunication services expressed in gross annual receipts) for cyclical variations, if any.



Graph 10.--Projected N.N.P. s.



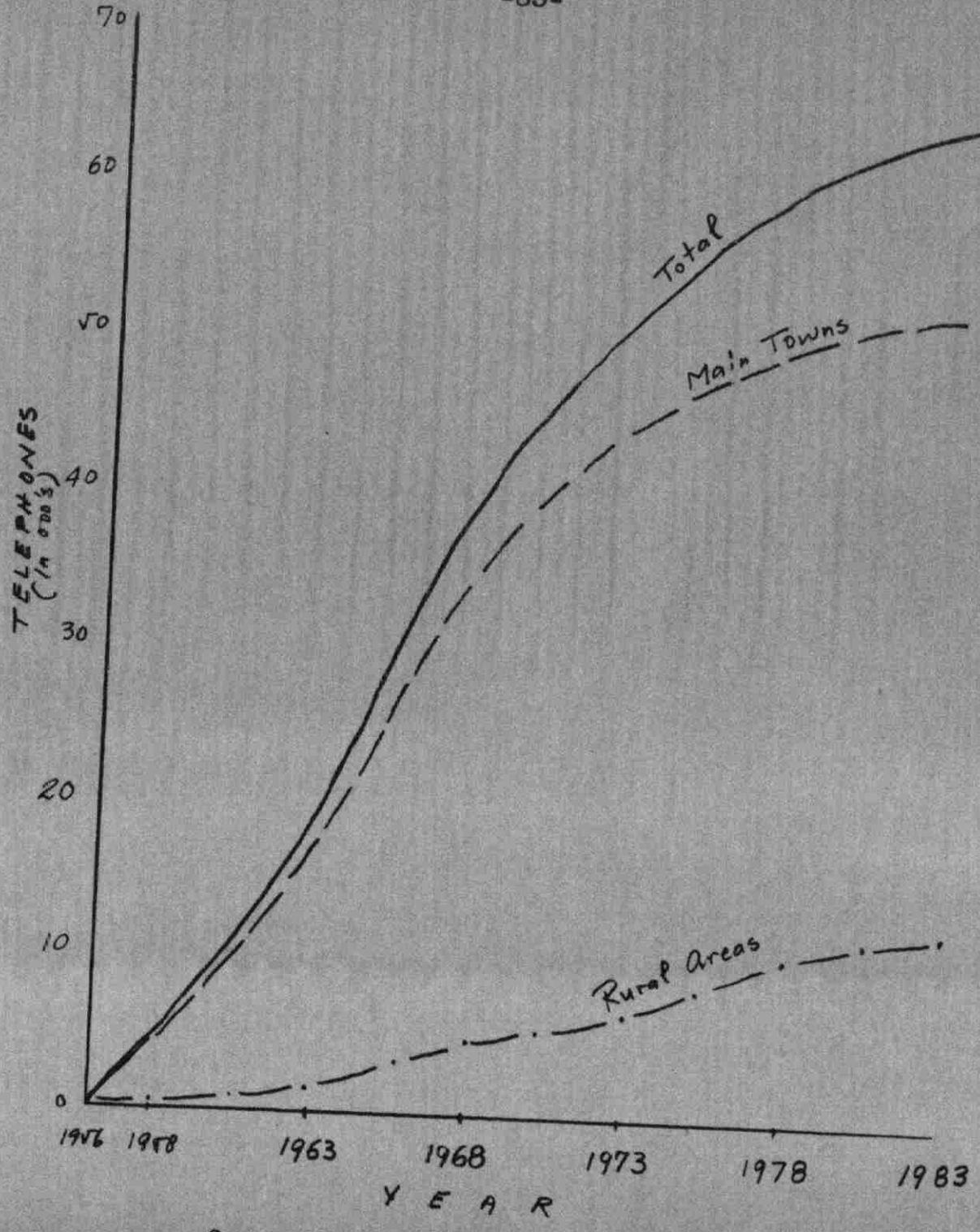
Graph 10.--Projected N.N.P. s.

Thus, having the regression equation $Y_i = a + bX$ = -960,055 + 0.017395 x X and the projected (though rough) estimates of NNP (see graph 10), it is possible to forecast demand by solving the above equation. Thus, demand expressed in gross annual receipts would equal to the following during 1965-1970:

1965	£ 984,706
1966	1,040,370
1967	1,092,555
1968	1,141,261
1969	1,189,967
1970	1,231,715

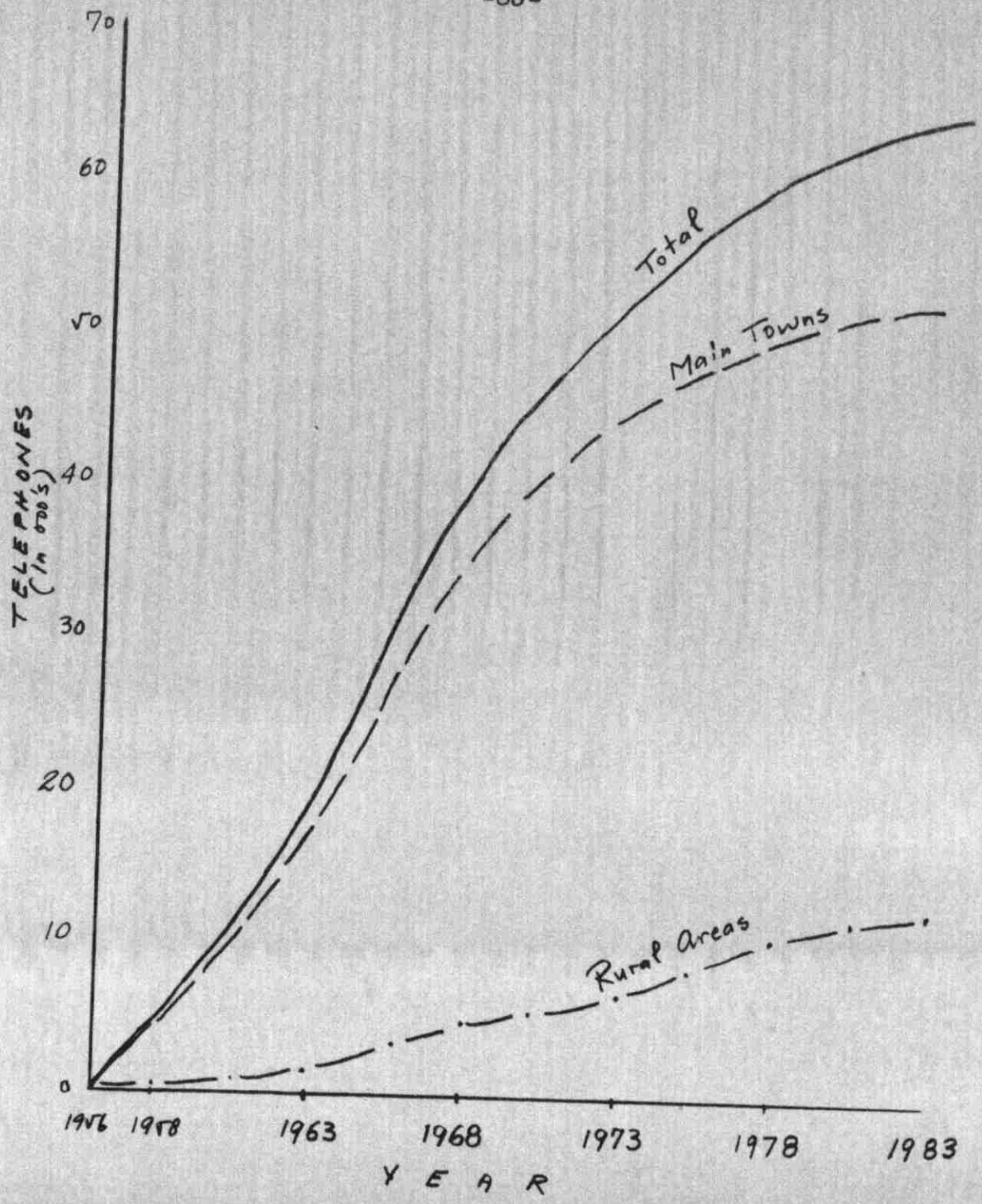
One could see that by the end of 1966 it would be possible to exceed the old demand level (of 1963). The year 1964 is not compared with because of the abnormal receipts resulting from the abnormal situation ruling the country then.

Before concluding this part, it is worthwhile to consider the Twenty-Year Development Programme for telephone installations in Cyprus, which is presented in graph 11. No special formula has been used to derive the graph of the planned installations. The plan has considered, however, the demand for additional lines which will be required to supply during the next two decades, taking into consideration certain restraints, such as staff capabilities and future deliveries of telephone equipment.



Graph 11.--Planned Telephone Installations.*

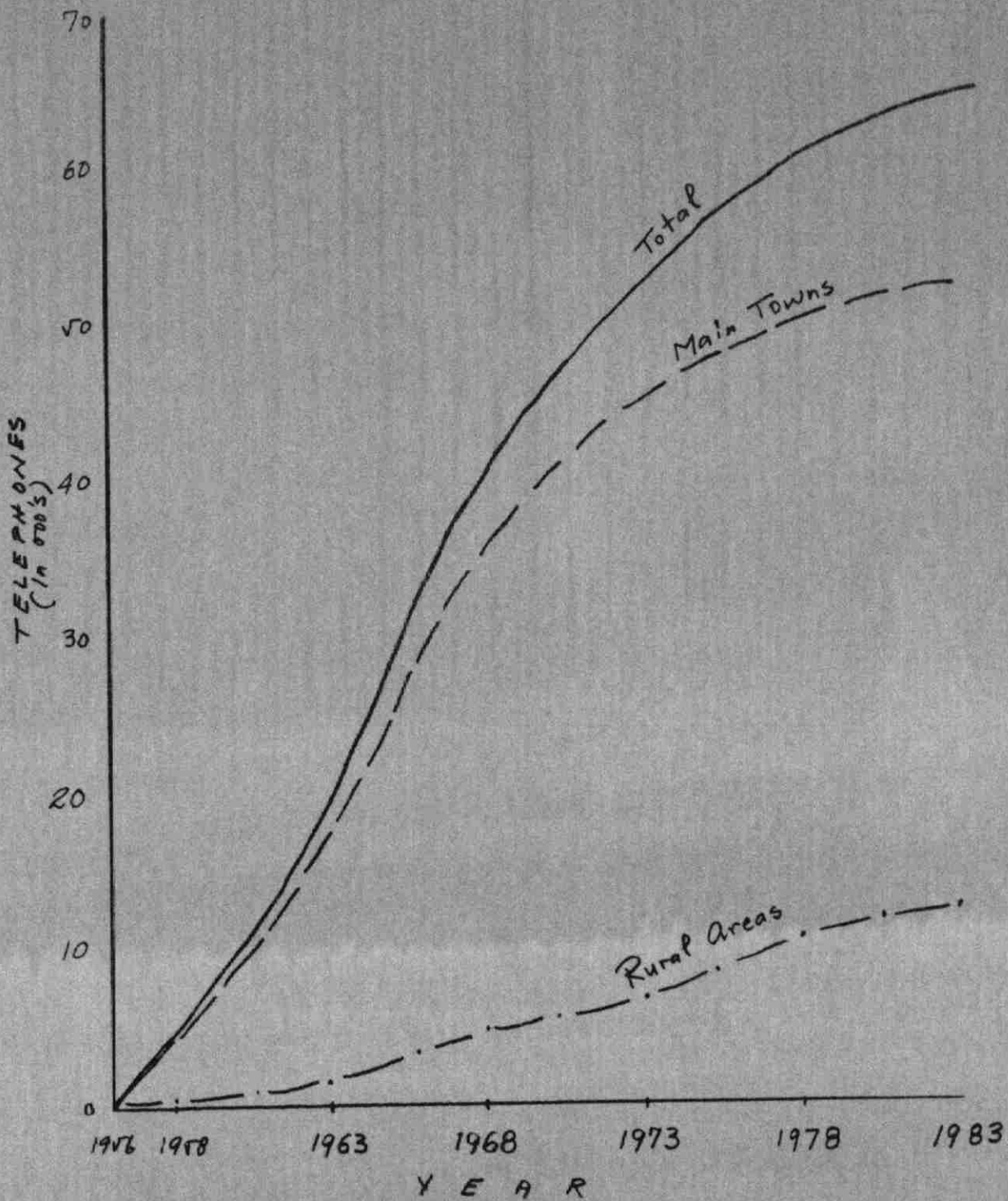
*1956 to December 1964, Actual. Source: CY.T.A., 1964.



Graph 11.--Planned Telephone Installations.*

*1956 to December 1964, Actual.

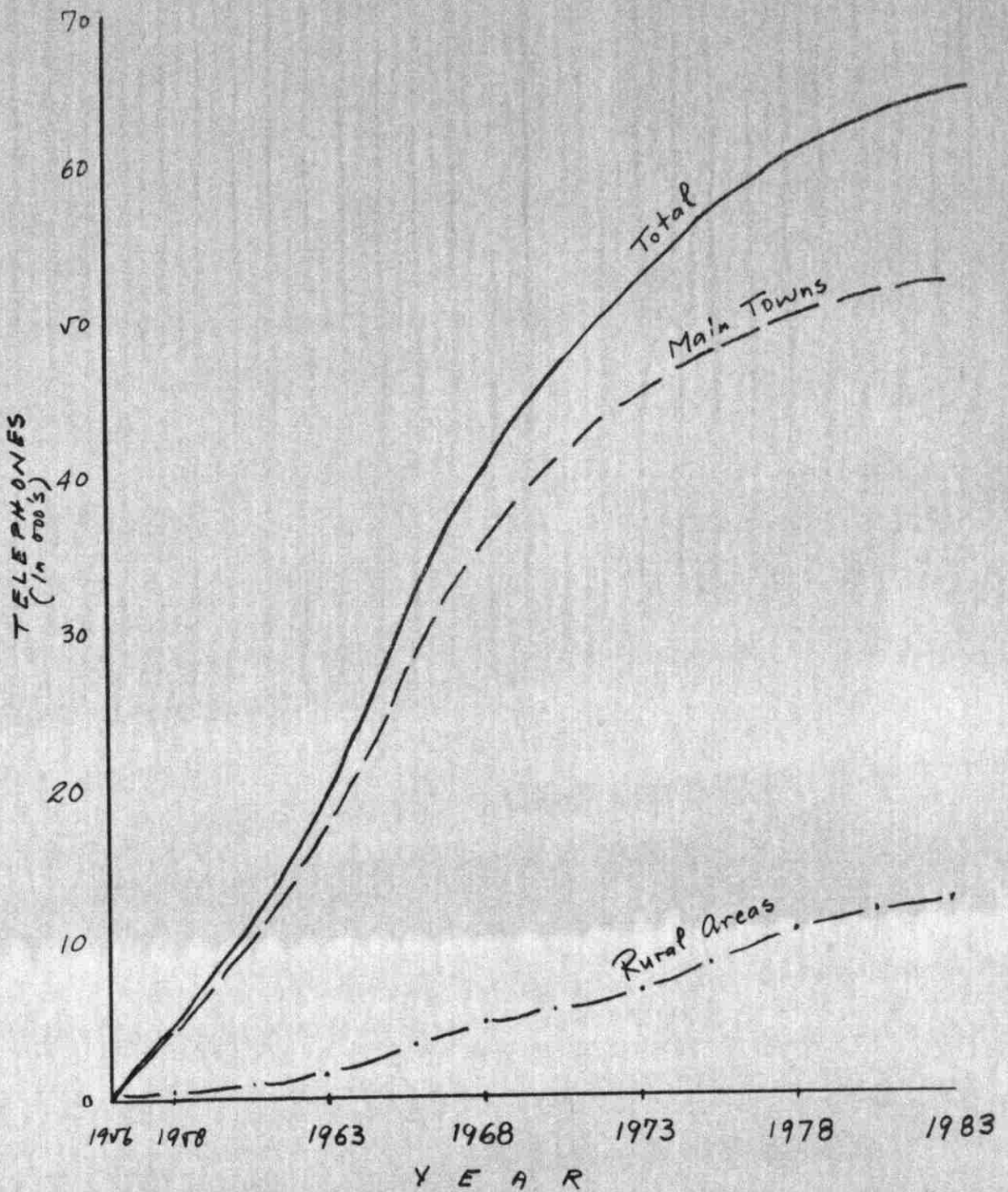
Source: CY.T.A., 1964.



Graph 11.--Planned Telephone Installations. *

Source: CY.T.A., 1964.

* 1956 to December 1964, Actual.



Graph 11.--Planned Telephone Installations. *

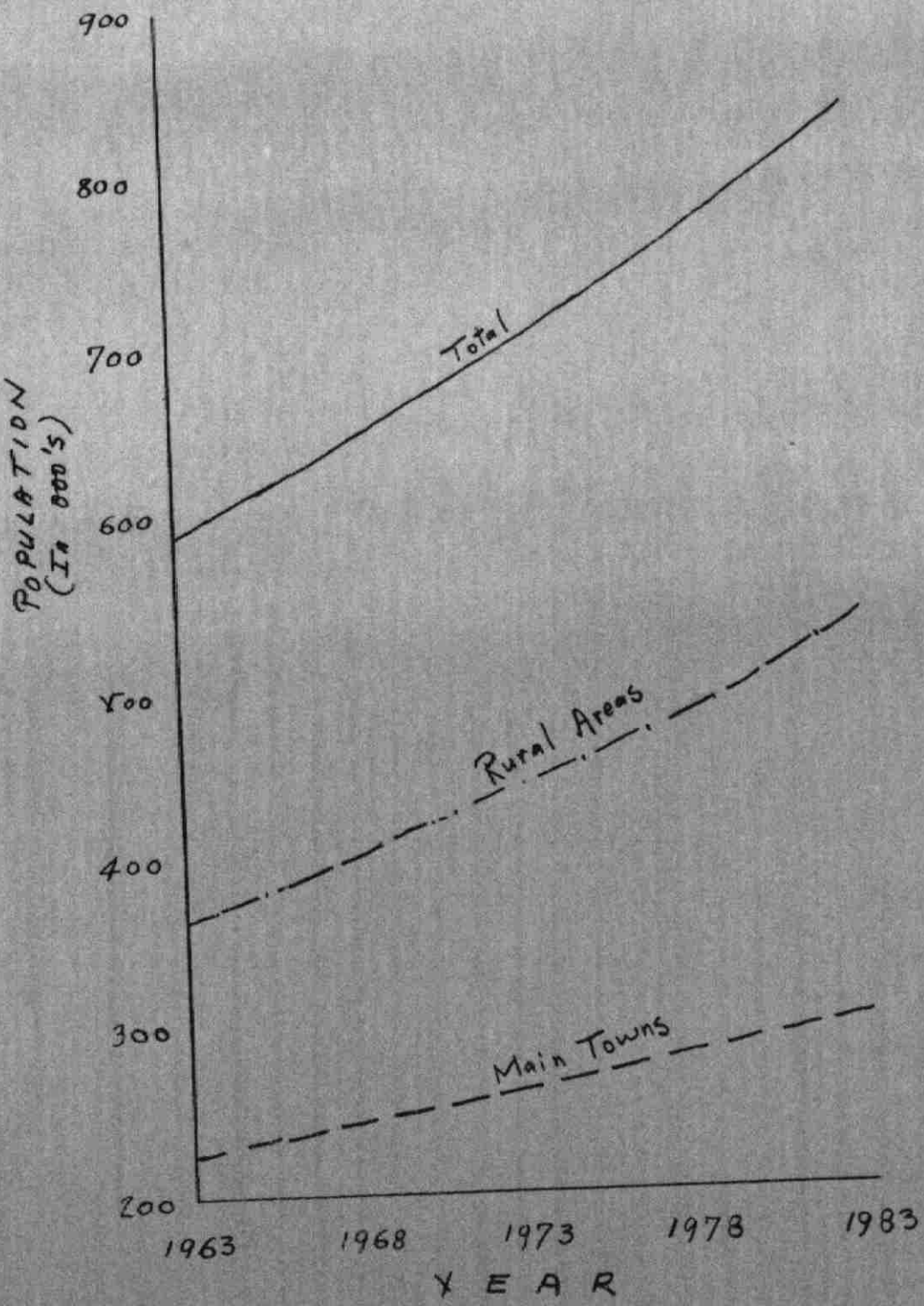
Source: CY.T.A., 1964.

* 1956 to December 1964, Actual.

As the graph indicates, it was planned to have by 1984 around 90,000 working telephones. It was seen previously, however, that Cyprus had in 1964 more than 26,000 working telephones. During the last two decades (1945-1964), working telephones (see table 13) increased by 23,100 lines or 7.8 times. According to the development plan, working telephones during the next two decades will increase by around 64,000 lines or 2.5 times. The significant rate of increase achieved during the last two decades (even though the number of lines installed is far less than the expected additional installations) was due to the low level of telephone development.

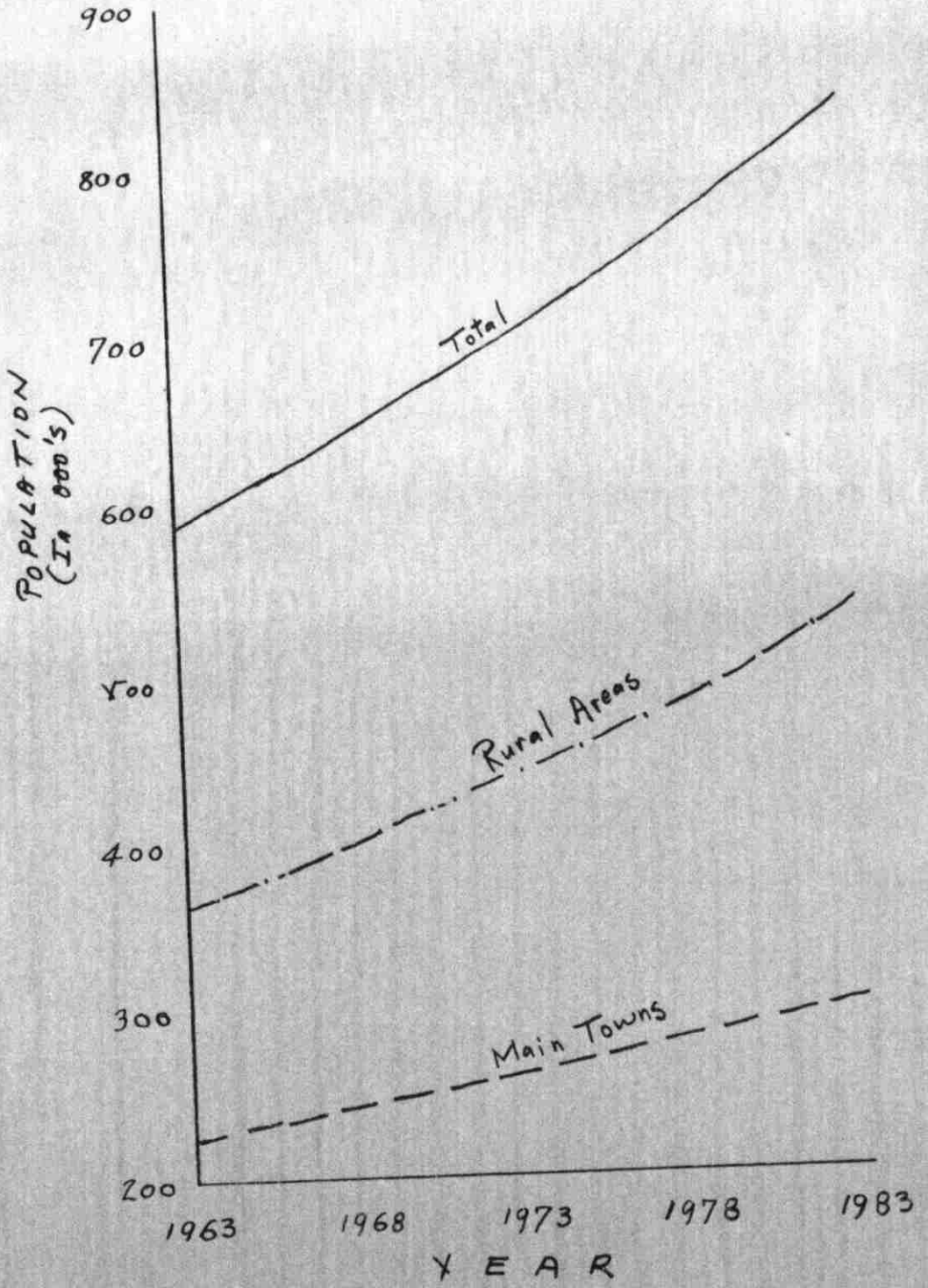
Graph 11, moreover, shows that the rate of development of telephone installations is to increase at a decreasing rate until the saturation level in 1983. If such a rate of development is achieved, by 1983 Cyprus would have eight telephones per hundred people or twelve persons per telephone (see graph 13, derived from graphs 11 and 12). Thus, it could be seen that future telephone development will reduce the number of persons per telephone from 24 to 12.

Graph 13 indicates that by 1983 the urban centers will have 19 telephones per hundred people or around five persons per telephone. It was seen in the first part of this chapter that in 1964 the urban centers had 8 persons per telephone.



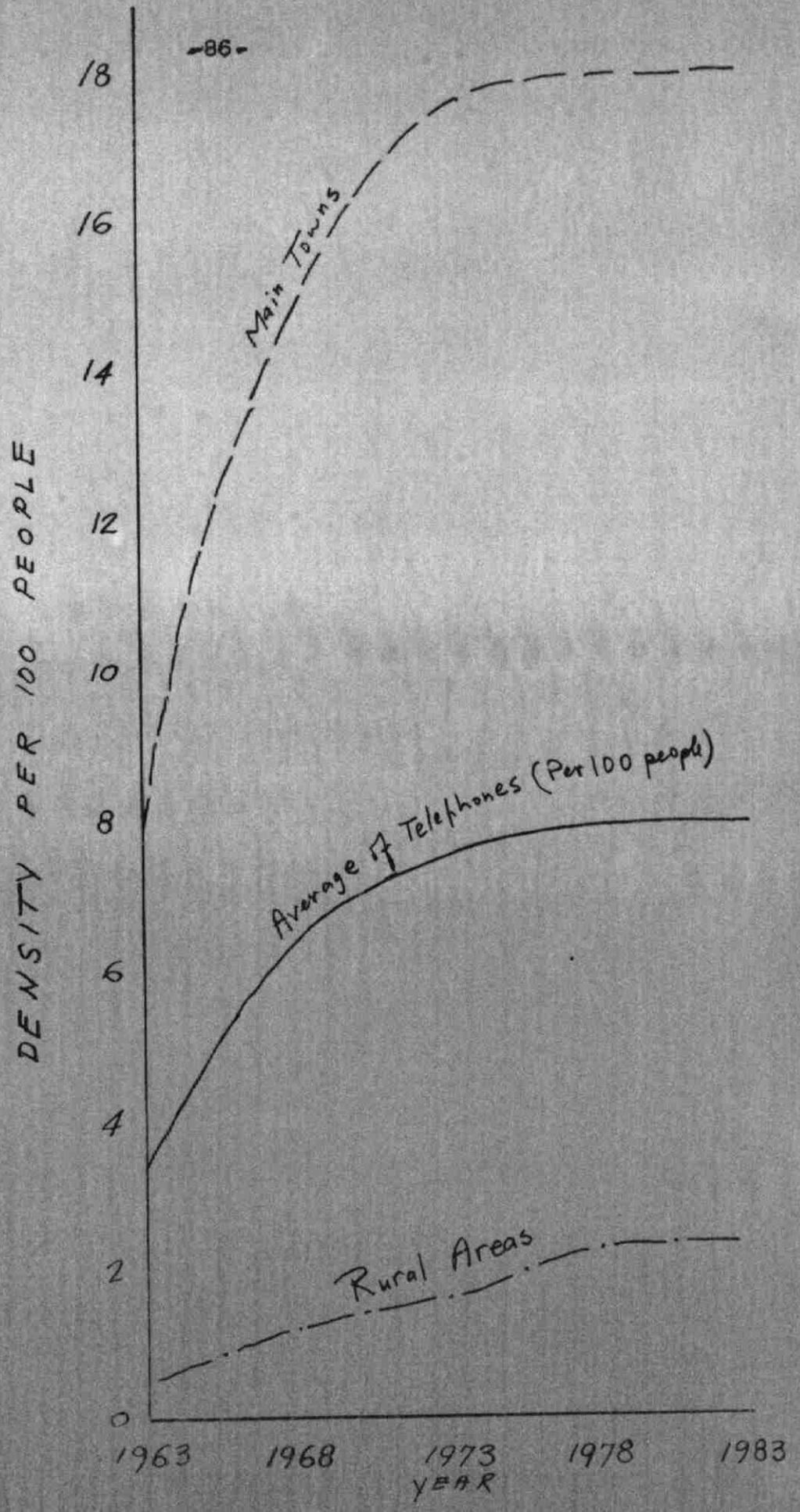
Graph 12 .--Population Trends.

Source: CY.T.A., 1964.

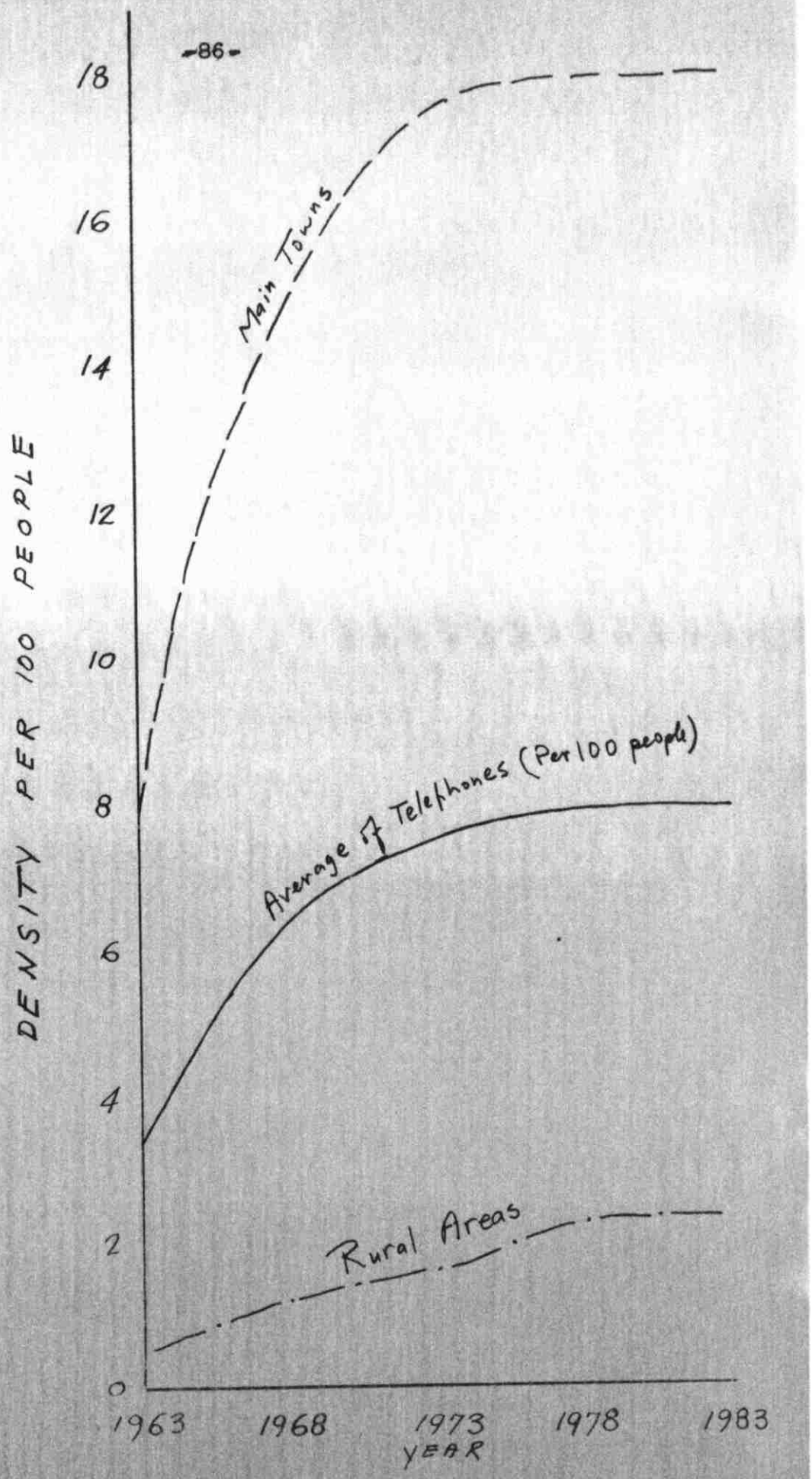


Graph 12 .--Population Trends.

Source: CY.T.A., 1964.



Graph 13.-Telephone Density. Source: CY.T.A. 1964.



Graph 13.-Telephone Density. Source: CY.T.A. 1964.

APPENDIX D-1

DEMAND FOR DIRECT EXCHANGE LINES

Year	Direct exchange lines installed	Year end outstanding balance	Total yearly demand
1955	550	1,520	2,070
1956	984	1,731	2,715
1957	916	1,863	2,179
1958	1,472	2,157	3,629
1959	1,271	1,902	3,173
1960	511	1,370	1,881
1961	2,425	940	3,365
1962	1,928	1,472	3,400
1963	2,659	819	3,478
1964	2,435	1,074	3,509

Source: Columns two and three are obtained from the Annual Reports and Accounts of Cyprus Telecommunications Authority, 1955-1964, op. cit.

APPENDIX D-2

NUMBER OF PERSONS PER TELEPHONE
(DIRECT EXCHANGE LINES)

Year	Population		Direct exchange lines	Persons per telephone	
	Total	Urban		Total	Urban
1955	530,000	188,868	5,664	94	33
1956	536,000	192,173	6,648	81	29
1957	546,000	195,536	6,964	78	28
1958	558,000	198,958	8,436	66	24
1959	567,000	202,440	9,707	58	21
1960	573,000	205,983	10,218	56	20
1961	577,000	209,588	12,643	46	17
1962	580,000	213,256	14,571	40	15
1963	589,000	216,988	17,500	34	12
1964	599,307	220,785	19,665	30	11

Sources: Total population figures are obtained from Cyprus, Statistical Abstract, (1963), op.cit., p. 13. In the census year (1960) urban areas had 205,983 persons. See ibid., p. 14. Figures for the urban areas have been derived on the assumption that the yearly rate of population growth is 1.75 per cent. See Meyer and Vassiliou, The Cyprus Economy, op. cit., p. 6. Telephone figures are taken from Annual Reports and Accounts of Cyprus Telecommunications Authority., 1955-1964, op. cit., and Cyprus, Statistical Abstract, (1963), op. cit., p. 200.

APPENDIX D-3

NUMBER OF PERSONS PER TELEPHONE
(WORKING TELEPHONES)

Year	Population		Working Telephones	Persons per telephone	
	Total	Urban		Total	Urban
1955	530,000	188,868	10,001	53	19
1956	536,000	192,173	11,417	47	17
1957	546,000	195,536	13,082	42	15
1958	558,000	198,958	15,751	35	13
1959	567,000	202,440	16,445	34	12
1960	573,000	205,983	18,099	32	11
1961	577,000	209,588	19,143	30	11
1962	580,000	213,256	22,092	26	10
1963	589,000	216,988	24,141	24	9
1964	599,307	220,785	26,500	23	8

Source: Ibid.

APPENDIX D-4

TELEPHONE CALLS
(IN THOUSANDS)

Year	Local calls	Trunk calls	Total
1955	10,288	1,307	11,595
1956	11,748	1,628	13,576
1957	13,201	1,685	14,885
1958	13,092	1,722	14,814
1959	14,552	1,802	16,354
1960	15,242	1,818	17,060
1961	19,336	2,092	21,428
1962	22,377	2,385	24,762
1963	26,897	2,781	29,678
1964	28,145	2,530	30,675

Source: Annual Reports and Accounts of Cyprus Telecommunications Authority, 1955-1964, op. cit.

APPENDIX D-5

CALLS PER HEAD OF URBAN POPULATION

Year	Number of calls in 000's	Urban population	Calls per population
1955	11,595	188,868	61
1956	13,575	192,173	71
1957	14,885	195,536	76
1958	14,814	198,958	74
1959	16,354	202,440	81
1960	17,060	205,983	83
1961	21,428	209,588	102
1962	24,762	213,256	116
1963	29,678	216,988	136
1964	30,675	220,785	140

Sources: For number of calls, see Appendix D-4.
For urban population, see Appendix D-2.

APPENDIX D-6

NUMBER OF CALLS PER TELEPHONE SET

Year	Number of call's in 000's	Direct exchange lines	Working Telephones	Calls per telephone set	
				Direct exchange lines	Working telp.
1955	11,595	5,664	10,001	2,047	1,159
1956	13,575	6,648	11,417	2,042	1,189
1957	14,885	6,964	13,082	2,137	1,137
1958	14,814	8,436	15,751	1,764	940
1959	16,354	9,707	16,445	1,685	994
1960	17,060	10,218	18,099	1,670	942
1961	21,428	12,643	19,143	1,776	1,119
1962	24,762	14,571	22,092	1,699	1,121
1963	29,678	17,500	24,141	1,696	1,229
1964	30,675	19,665	26,500	1,560	1,157

Sources: For number of calls, see Appendix D-4.
For number of direct exchange lines and working telephones, see Appendix D-2.

APPENDIX D-7

TELEGRAPH MESSAGES FORWARDED
(IN THOUSANDS)

Year	Inland	Foreign	Total	Year	Inland	Foreign	Total
1954	125	246	371	1960	56	134	190
1955	135	268	403	1961	73	127	200
1956	92	329	421	1962	77	133	210
1957	93	225	318	1963	78	136	213
1958	70	154	224	1964	53	158	211
1959	68	146	214				

Sources: Cyprus, Statistical Abstract, (1963), op. cit., p. 200, and Annual Reports and Accounts of Cyprus Telecommunications Authority, 1961-1964, op.cit.

CHAPTER V

FINANCIAL ANALYSIS

It was seen previously that the objective of CY.T.A. has been the efficient provision and development of sufficient telecommunication services in Cyprus. In an effort to reach its objective, the Authority has been faced with three major decisions that are simultaneous and continuous.[1]

First, the Authority should decide how large a volume of assets to hold. This is the expansion problem. Expansion depends on demand. As was revealed in the previous chapter, demand for telephone services in particular and for telecommunication services in general has been increasing throughout the last ten years (1955-1964). To meet demand, CY.T.A. had to expand its assets from £1,538,316 in 1955 to £3,753,839 in 1964, or by 2.44 times.

Second, the Authority should decide what type of assets to hold. This is the composition problem. To provide telecommunication services, CY.T.A. has to make relatively large investments in fixed assets. The Authority should decide, furthermore, what type of fixed assets to hold, and in what proportion. If the Authority decides to add new direct exchange lines, it may have to acquire new telephone exchanges. On the other hand, if it decides to

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[1] See Ezra Solomon, The Theory of Financial Management (New York: Columbia University Press, 1963), pp. ix.

add new extensions, the investment in fixed assets would be relatively much lower. The Authority should also decide whether to invest in telephonic equipment or telegraphic equipment.

Lastly, the Authority should decide how to finance the expansion of its assets. This is the financial problem. This chapter, in the first place, will study and analyze the way CY.T.A. has coped with these problems or decisions. The analysis of financial statements will show, among other things, the way CY.T.A. has coped with the expansion, composition and financial problems.

It was also mentioned previously that CY.T.A., a public corporation, has an independent organization and a separate legal entity. As such it could "sue and be sued in its said name"[1] without enjoying the immunities or privileges of the government. It was mentioned, moreover, that CY.T.A., in its day to day operations, resembles private business organizations.

Among other things, the present chapter will study and analyze the extent by which CY.T.A. has actually behaved like an independent organization in meeting its financial obligations. This analysis seems to be essential even though the government is the main supplier of capital and the guarantor of capital borrowings. Without such an analysis, it would not be possible to see to what extent has CY.T.A. actually behaved like an independent organization.

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[1]Cyprus, The Statute Laws of Cyprus, loc. cit.

In certain cases, apparently, CY.T.A. has not behaved like an independent organization. For example, it has not paid most of the interest due on capital borrowings; neither has it been able to make any loan repayments. This has been so because CY.T.A. has been required to meet the increasing demand for telecommunication services. Since demand for telecommunication facilities had been increasing, it had to expand. But expansion requires substantial capital outlays. Thus, it seems to be rather impossible for CY.T.A. to meet its financial obligations to the government and at the same time make substantial capital outlays for expansion. The government, probably realizing this, has practically extended the time of interest payments and loan repayments. In this connection, it should be added that as long as operations do not provide the necessary funds for expansion and replacement, and as long as CY.T.A. is required to expand, it would be impossible for CY.T.A. to meet its financial obligations to the government without increasing the present level of internal rates for telecommunication services, or jeopardizing the expansion programme.

Balance Sheet Analysis

It was seen previously that CY.T.A. assumed responsibility for internal and external telecommunication services in 1955 and 1961, respectively. To acquire from Cable and Wireless Ltd. the internal telecommunication system, the government made short-term advances to the

Authority, totalling £1,211,379. Part of the short-term loan was used to pay for the fixed assets that were acquired from Cable and Wireless Ltd. at £817,799 which represents original cost to Cable and Wireless Ltd. less depreciation up to December 31, 1954. The remaining part of the loan (£393,580) was to provide the necessary working capital for CY.T.A.

On November 22, 1955, the Cyprus Government floated a loan in London, amounting to £3,608,000. Around half of the net proceeds (£1,499,914) was allocated to CY.T.A. to replace the short-term advances made by the Cyprus Government. The effective rate of interest payable by the Authority was 5.213 per cent per annum.[1]

In 1961, the external telecommunication system was acquired from Cable and Wireless Ltd. at a cost of £104,248 which was financed by a long-term capital borrowing from the government. Thus, the internal and external telecommunication systems were acquired at a total cost of £922,027, as seen previously.

Table 21 presents the condensed balance sheet of Cyprus Telecommunications Authority for 1955-1964, which consists of three major groups, namely, working capital, fixed assets and other liabilities.

In this part, these three balance sheet groups will

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[1] First Annual Report and Accounts of Cyprus Telecommunications Authority, 1955, op. cit., p. 6.

be studied and analyzed. As far as other liabilities are concerned, one should always bear in mind that CY.T.A. has no capital and all of its external financing is met by capital borrowings.

Working capital is the excess of current assets over current liabilities. It contains the liquid portion of assets employed by the Authority. As such it is of interest mainly to short-term creditors.

Table 21 shows, moreover, that with the exception of 1963, CY.T.A. had a positive working capital. A positive working capital would mean that it would be possible to settle current debts without resorting to external borrowing or fixed assets liquidation. Furthermore, it could be seen that there is a trend towards a lower working capital requirement. This is justifiable, because utilities, unlike other business organizations, need a relatively small investment in inventories and experience a steady and regular inflow of funds. Hence, working capital requirements are limited, compared with the heavy capital expenditure needed for plant and other fixed assets. Therefore, as it seems, working capital funds have been utilized for fixed assets acquisition and replacement.

The current ratio (current assets over current liabilities) though a crude measure, is a good index of financial strength. It is a quantitative measure indicating the ability to meet immediate solvency. The current ratio has fluctuated between 1955 and 1964. However, there has

been a trend towards a lower ratio. In certain years (1955, 1959 and 1960) CY.T.A. had a very high current ratio. This might indicate that funds acquired for expansion and investment were not promptly utilized, or that they were not acquired at the right time. In later years (since 1960), CY.T.A. has been able to reduce its current ratio. In 1963, however, the current ratio was a negative value (0.93:1). This meant that for every pound of current obligation, the borrower had only £0.93 of current assets to meet that obligation. Because CY.T.A. experiences a steady inflow of funds from operations and has a relatively low working capital requirements, a low current ratio say between 1:5:1 and 2:1 may be acceptable.

The "acid test" ratio, like the current ratio, measures the ability to meet immediate solvency. However, it is a severe and a strict test of financial ability to meet current obligations. It is computed by dividing current assets (net of inventories) by the current liabilities. Such a measure would include cash and receivables as current assets and all current liabilities. "Acid test" ratio trend is similar to that of current ratio. However, because it excludes inventories from current assets, it results in a lower ratio. Furthermore, because stocks at hand and in transit comprise a significant portion of current assets (table 23) the "acid test" ratios are significantly lower than current ratios.

Current assets in the calculation of "acid test" ratio are supposed to include items with immediate purchasing power.

TABLE 21

CYPRUS TELECOMMUNICATIONS AUTHORITY
CONDENSED BALANCED SHEET
1955-1964
(IN CYPRUS POUNDS)

	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
CURRENT ASSETS										
Stocks in hand and in transit at cost	146,313	166,969	214,090	237,695	175,266	202,472	313,625	431,986	380,086	414,377
Debtors, Prepayments, and deferred Revenue expenditure less provision	99,505	165,893	165,754	220,814	199,195	212,457	195,138	206,406	234,021	426,716
Cash on Short and Medium Term Deposits										100,207
Cash on Fixed Deposit					420,000	420,000	200,000			
Cash at Bank, in Hand and in Transit	344,810	27,283	164,781	258,499	183,164	110,819	70,292	62,693	6,342	104,113
Total Current Assets	590,628	360,145	544,625	717,009	977,825	945,748	779,055	701,085	620,449	1045,413
CURRENT LIABILITIES AND PROVISIONS										
Creditors, Accrued Charges, and Provisions	43,530	74,651	138,612	142,998	141,348	110,967	234,691	550,261	293,378	316,305
Interest due on Capital Borrowings									372,674	499,725
Total Current Liabilities and Provisions	43,530	74,651	138,612	142,998	141,348	110,967	234,691	550,261	666,052	816,030
WORKING CAPITAL	547,098	285,494	406,013	574,011	836,277	834,781	544,364	150,824	(45,603)	229,383
OTHER LIABILITIES										
CAPITAL BORROWINGS	1499,914	1499,914	1749,914	1999,914	2299,914	2299,914	2429,914	2429,914	2429,914	2479,914
RESERVES AND NET REVENUE ACCOUNTS	(5,128)	(46,564)	(46,560)	(13,408)	47,634	91,426	178,492	201,089	212,614	457,895
	1494,786	1453,350	1703,354	1986,506	2347,548	2391,340	2608,406	2631,003	2642,528	2937,809
Fixed Assets	947,688	1167,856	1297,341	1412,495	1511,271	1556,271	2064,042	2480,179	2688,131	2708,426
	547,098	285,494	406,013	574,011	836,277	834,781	544,364	150,824	(45,603)	229,383
CURRENT RATIO *	13.57:1	4.8:1	3.9:1	5:1	6.9:1	8.5:1	3.3:1	1.3:1	0.93:1	1.28:1
ACID TEST RATIO **	10.2:1	2.58:1	2.38:1	3.35:1	5.68:1	6.7:1	1.98:1	0.49:1	0.36:1	0.77:1

Source: Derived from Annual Reports and Accounts of Cyprus Telecommunications Authority, 1955-1964, op. cit.

* Current assets divided by current liabilities.

** Current assets (net of inventories) divided by current liabilities.

TABLE 21

CYPRUS TELECOMMUNICATIONS AUTHORITY
CONDENSED BALANCED SHEET
1955-1964
(IN CYPRUS POUNDS)

	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
CURRENT ASSETS										
Stocks in hand and in transit at cost	146,313	166,969	214,090	237,696	175,266	202,472	313,625	431,986	380,086	414,377
Debtors, Prepayments, and deferred Revenue expenditure less provision	99,505	165,893	165,754	220,814	199,195	212,457	195,138	206,406	234,021	426,716
Cash on Short and Medium Term Deposits										100,207
Cash on Fixed Deposit					420,000	420,000	200,000			
Cash at Bank, in Hand and in Transit	344,810	27,283	164,781	258,499	183,164	110,819	70,292	62,693	6,342	104,113
Total Current Assets	590,628	360,145	544,625	717,009	977,625	945,748	779,055	701,085	620,449	1045,413
CURRENT LIABILITIES AND PROVISIONS										
Creditors, Accrued Charges, and Provisions	43,530	74,651	138,612	142,998	141,348	110,967	234,691	550,261	293,378	316,305
Interest due on Capital Borrowings									372,674	499,725
Total Current Liabilities and Provisions	43,530	74,651	138,612	142,998	141,348	110,967	234,691	550,261	666,052	816,030
WORKING CAPITAL	547,098	285,494	406,013	574,011	836,277	834,781	544,364	150,824	(45,603)	229,383
OTHER LIABILITIES										
CAPITAL BORROWINGS	1499,914	1499,914	1749,914	1999,914	2299,914	2299,914	2429,914	2429,914	2429,914	2479,914
RESERVES AND NET REVENUE ACCOUNTS	(5,128)	(46,564)	(46,560)	(13,408)	47,634	91,426	178,492	201,089	212,614	457,895
	1494,786	1453,350	1703,354	1986,506	2347,548	2391,340	2608,406	2631,003	2642,528	2937,809
Fixed Assets	947,688	1167,856	1297,341	1412,495	1511,271	1556,271	2064,042	2480,179	2688,131	2708,426
	547,098	285,494	406,013	574,011	836,277	834,781	544,364	150,824	(45,603)	229,383
CURRENT RATIO *	13.57:1	4.8:1	3.9:1	5:1	6.9:1	8.5:1	3.3:1	1.3:1	0.93:1	1.28:1
ACID TEST RATIO **	10.2:1	2.58:1	2.38:1	3.35:1	5.68:1	6.7:1	1.98:1	0.49:1	0.36:1	0.77:1

Source: Derived from Annual Reports and Accounts of Cyprus Telecommunications Authority, 1955-1964, op. cit.

* Current assets divided by current liabilities.

** Current assets (net of inventories) divided by current liabilities.

However, Debtors, prepayments, and deferred revenue expenditure less provision account consists of parts that will not provide immediate funds, and in fact are not marketable. Such parts, if possible, should be segregated and omitted from calculations of current assets. This will result in lower ratios.

As mentioned previously, ratio analysis is quantitative and as such suffers from certain shortcomings. It does not offer qualitiative tests of current assets. "It does not directly take account of the effect of probable cash receipts and disbursements and liability increases or decreases in the near future."[1]

Table 22 presents the index of working capital items, having 1955 as the base year. Stocks in hand and in transit at cost have increased more or less steadily. The increase was from £146,313 in 1955 to £414,377 in 1964 or 2.83 times.

Debtors and related items have increased very significantly (4.29 times). It is believed, however, that accounts due from subscribers is a small portion of the above account. This could be explained by the fact that CY.T.A. collects its (telephone) bills monthly in arrear. Further analysis of this account, as suggested above, is not possible because no information is available concerning its composition.

The cash balances have fluctuated year after year, This seems to have been influenced mainly by the pattern of borrowings and the periodicity of investment. Cash balances are often accumulated in anticipation of capital outlays. Cash

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[1] W.A. Paton, and W.A. Paton, Corporation Accounts and Statements (New York: The Macmillan Company, 1955), p. 486.

TABLE 22

CYPRUS TELE COMMUNICATIONS AUTHORITY
INDEX OF WORKING CAPITAL ITEMS
1955-1964

CURRENT ASSETS	1955 £	1955 (100)	56	57	58	59	60	61	62	63	64	1964 £
Stocks in hand and in transit at cost	146,313	100	114	146	162	120	138	214	295	260	283	414,377
Debtors, Prepayments and Deffered expenditure less provision	99,505	100	167	166	222	200	213	196	207	235	429	426,716
Cash on short and medium term deposit											100	100,207
Cash on fixed deposit						100	100	48				
Cash at Bank, in hand and in transit	344,810	100	8	48	75	53	32	20	18	2	30	104,113
Total	590,628	100	61	92	121	165	160	132	119	105	177	1,045,413
CURRENT LIABILITIES AND PROVISIONS												
Creditors, accrued charges and provisions	43,530	100	171	318	328	325	255	539	1,264	674	727	316,305
Interest due on capital borrowings										100	134	499,725
Total	43,530	100	171	318	328	325	255	539	1,264	1,530	1,875	816,030
WORKING CAPITAL	547,098	100	52	74	105	153	152	99	28	(8	42	229,383

Source: Derived from figures in table 21.

not required immediately is often invested on a short-term, medium- or long-term basis.

Total current assets have fluctuated year after year (mainly as a result of fluctuations in cash balances). Since 1955 current assets have increased 1.77 times.

Current liabilities and provisions are composed of Creditors, accrued charges and provisions, and Interest due on capital borrowings. Until 1963 all interest due on capital borrowings was incorporated with Creditors, accrued charges and provisions account.

Total current liabilities have shown a significant increase during 1955-1964. The increase has been from £43,530 in 1955 to £816,030 in 1964 or 18.75 times. The rate of increase was especially significant during 1961. This was due to CY.T.A.'s share of the working expenses for C.T.B. and especially the interest due on capital borrowings. So far the Authority has not been able or has not paid most of its interest charges due on capital borrowings. The whole subject of interest payments is under discussion with the government since 1961.

Table 23 shows the composition of working capital items. Cash items have experienced a severe fluctuation due to reasons mentioned earlier. They have been as low as 1.02 per cent of current assets in 1963 and as high as 61.70 per cent in 1959.

TABLE 23

CYPRUS TELECOMMUNICATIONS AUTHORITY
COMPOSITION OF WORKING CAPITAL
1955-1964

	1955	56	57	58	59	60	61	62	63	64
CURRENT ASSETS										
Stocks in hand and in transit at cost	24.77	46.36	39.31	33.15	17.93	21,41	40.26	61.62	61.26	39.64
Debtors, Prepayments, and Deferred Revenue expenditure less provisions	16.85	46.06	30.43	30.80	20.37	22.46	25.05	29.44	37.72	40.82
Cash on Short and Medium Term Deposits										9.58
Cash on Fixed Deposit					42.96	44.41	25.67			
Cash at Bank, in hand, and in transit	58.38	7.58	30.26	36.05	18.74	11.72	9.02	8.94	1.02	9.96
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
CURRENT LIABILITIES										
Creditors, Accrued Charges and Provisions	100	100	100	100	100	100	100	100	44.05	38.76
Interest due on Capital Borrowings									55.95	61.24
Total	100	100	100	100	100	100	100	100	100.00	100.00

Source: Derived from figures in table 21.

Debtors and related items have also fluctuated. They have accounted for as low as 16.85 per cent of all current assets in 1955 and as high as 46.06 per cent in 1956.

Stocks in hand and in transit at cost account for around 40 per cent of all current assets. The turnover ratio is useful in determining inventory requirements.[1] A high ratio would indicate that the Authority has been able to manage its inventory requirements with a smaller tied up fund; however, it might also mean inventory shortages. A low ratio, on the other hand, would mean that excessive funds are tied up with inventories. Such a ratio for CY.T.A. might be computed by dividing the cost of inventory utilized for additions to fixed assets or replacements by the average inventory.

Table 32, among other things, presents additions to fixed assets and replacements. Such additions and replacements include labor costs capitalized, inventory utilized and equipment directly acquired and debited to fixed assets. Due to lack of pertinent information, it is not possible to compute the inventory turnover. However, for certain years, it seems evident that there has been excess inventory. For example, Stocks account in 1963 and 1964 showed a balance of £380,086 and £414,377, respectively. Acquisition of fixed assets and replacements have been £374,190 and £190,424, respectively. The latter

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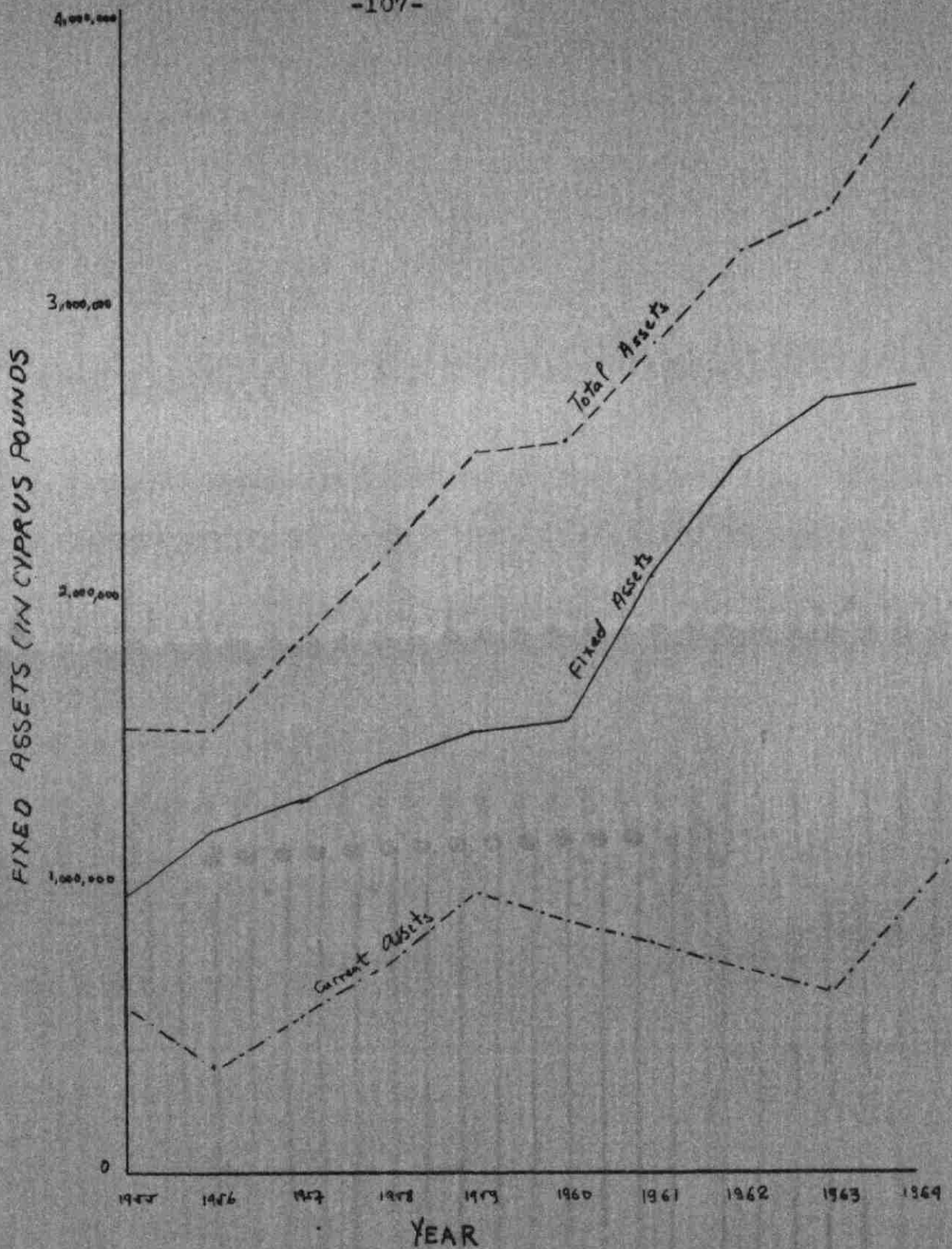
[1] W.A. Paton, and W.A. Paton, Asset Accounting (New York: The Macmillan Company, 1952), p. 48.

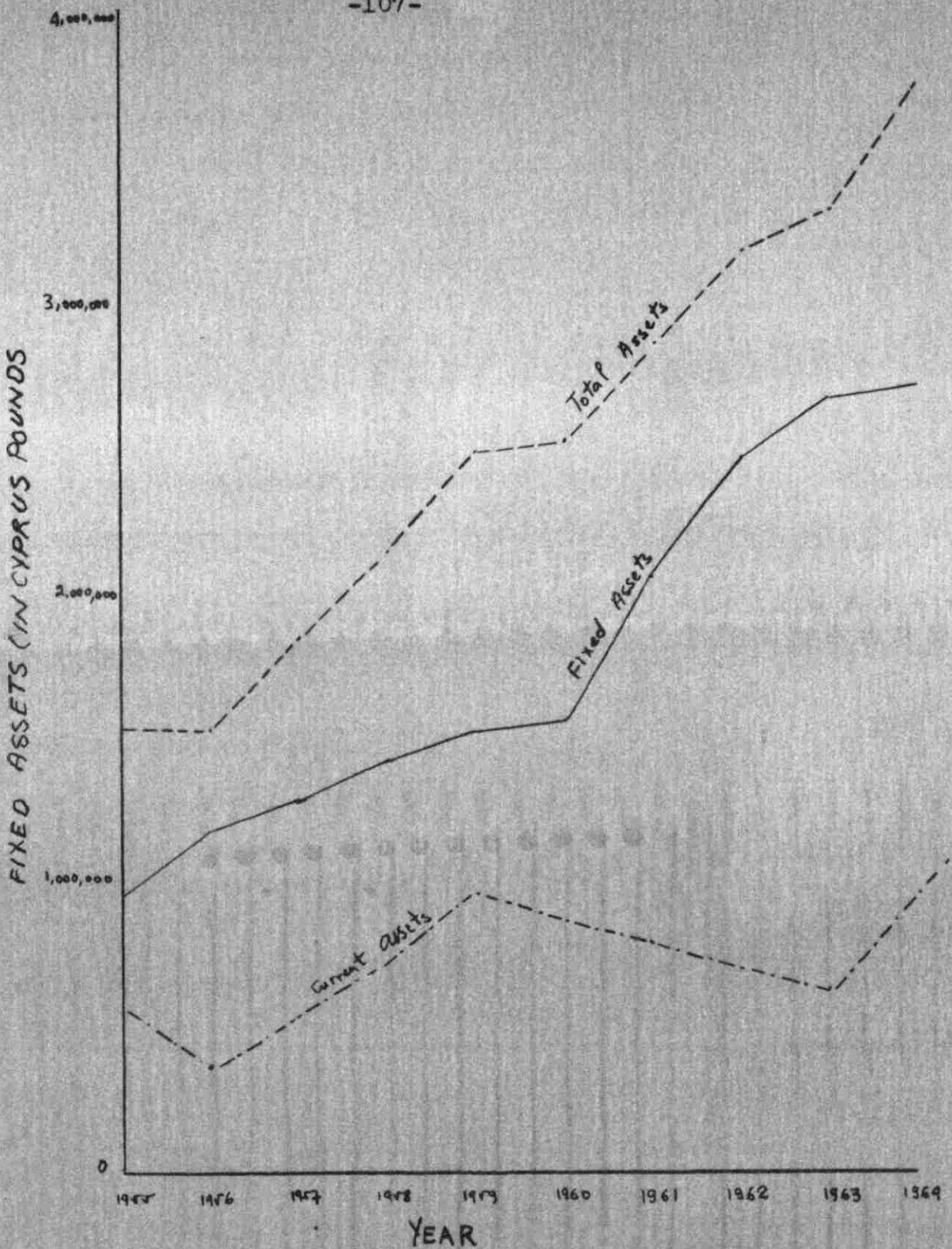
figures include, as mentioned earlier, labor costs capitalized, fixed assets directly acquired with a direct debit to fixed assets and inventory utilized. Therefore, to be able to calculate the inventory turnover, labor costs capitalized and fixed assets directly acquired and debited to fixed assets should be omitted. This would mean that during 1963 and especially in 1964 the inventory was excessive. Nevertheless, it is probable that such a measure might have been adopted by the Authority in connection with expansion or replacement programmes. It might also seem possible that the Authority may have adopted such a measure to defer loan repayments or stock redemptions.

Graph 14 presents the growth of fixed assets over the last ten years. Moreover, it shows the composition of total assets. Thus, it could be seen that most of the assets of the Authority are fixed assets. This has been due to the special nature of utility operations. Huge amounts of capital outlays are required for plant, cables and other facilities before any service could be rendered. Thus, it could be seen that most of the capital funds of the Authority are directed or will be directed for the acquisition and replacement of fixed assets. The working capital requirements, as seen previously, constitute only a small portion of capital funds needed for fixed plant acquisition and replacement.



Graph 14.--Assets.

Source: Tables 21, and 24.



Graph 14.--Assets.

Source: Tables 21, and 24.

Fixed assets comprise on the average around 70 per cent of all assets (table 24). Fixed assets have experienced a constant growth since 1955. They have increased 2.86 times during 1955-1964. The growth is specially significant after 1960.

Fixed assets are recorded at cost less depreciation. Depreciation is provided on a straight line basis and is considered as an allocation of cost over the useful life of the equipment under consideration. It is not known whether group depreciation is adopted or not.

The Authority is well aware of price-level changes and distortions it introduces into financial statements. However, the adoption of price-level adjustments seems to be very impractical due to the many different types of equipment involved of varying useful lifes.

Valuation (unlike utilities operating in U.S.) is not a major problem for CY.T.A. In U.S.A., for example, utilities are allowed and supposed to make a fair return on their investments. This requires periodic valuation of assets in general and of fixed assets in particular. However, because (by Statutory Law) CY.T.A. is not allowed to make a profit, valuation does not assume special importance. Nevertheless, some adjustments have been made in order to present more meaningful statements.

Table 25 presents a detailed picture of year-end balances of other liabilities included in the condensed balance sheet for 1955-1964. Table 26 presents the annual capital borrowings by CY.T.A. during the same period.

TABLE 24

FIXED ASSETS
(IN CYPRUS POUNDS)

Year	Fixed Assets	Total Assets	% of fixed Assets	Index of Growth for Fixed Assets
1955	947,688	1,538,316	62	100
1956	1,167,856	1,528,001	76	123
1957	1,297,341	1,841,966	70	136
1958	1,412,495	2,129,504	66	149
1959	1,511,271	2,488,896	61	159
1960	1,556,559	2,502,307	62	164
1961	2,064,042	2,843,097	73	218
1962	2,480,179	3,181,264	77	262
1963	2,688,131	3,308,580	81	284
1964	2,708,426	3,753,839	72	286

Source: Annual Reports and Accounts of Cyprus Telecommunications Authority, 1955-1964, op. cit.

TABLE 25

OTHER LIABILITIES
(IN CYPRUS POUNDS)

	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
CAPITAL BORROWINGS										
Government Loan	1,499,914	1,499,914	1,749,914	1,899,914	2,099,914	2,099,914	2,229,914	2,229,914	2,229,914	2,279,914
6 % Telecommunict.				100,000	100,000	100,000	100,000	100,000	100,000	100,000
3 % Tele communict.					100,000	100,000	100,000	100,000	100,000	100,000
Total	1,499,914	1,499,914	1,749,914	1,999,914	2,299,914	2,299,914	2,429,914	2,429,914	2,429,914	2,479,914
RESERVE & NET REVENUE ACCOUNT										
Capital Reserve							52,752	52,752	64,304	64,304
Revenue Reserve					33,000	66,000	66,000	66,000	66,000	66,000
Net Revenue Account	(5,128)	(46,564)	(46,560)	(13,408)	14,634	25,426	59,740	82,337	82,310	327,591
Total	(5,128)	(46,564)	(46,560)	(13,408)	47,634	91,426	178,492	201,089	212,614	457,895

Source: Annual Reports and Accounts of Cyprus Telecommunications Authority, 1955-1964, op. cit.

TABLE 26

CAPITAL BORROWINGS
(IN CYPRUS POUNDS)

Year	Payable	Amount
	Long-term Borrowings	
1955	1967-1971	1,499,914
1957	1973-1975	250,000
1958	1973-1975	150,000
1959	1973-1975	200,000
1961	1961-1976	130,000
1964	1965-1976	50,000
Total Government Borrowings		2,279,914
	Short-term Borrowings	
1958	6 % Telecommunications First Issue 1964-68	100,000
1959	3 % Telecommunications Second Issue 1963	100,000
Total Outstanding capital borrowings as of December 31, 1964		2,479,914

Source: Derived from Annual Reports and Accounts of Cyprus Telecommunications Authority, 1955-1964, op. cit.

It could be seen that over the last decade £2,279,914 was borrowed from the Cyprus Government on a long-term basis. The long-term capital borrowings in 1957, 1958 and 1959 were for internal telecommunication development purposes. The capital borrowing in 1961, as seen previously, was used to acquire the external telecommunication system. The capital borrowing in 1964 was used for the acquisition and installation of a V.H.F. System.

As table 26 reveals, short-term capital borrowings were obtained by two note issues; one in 1958 and the other in 1959, each amounting to £100,000. Table 26 reveals, moreover, that a very significant part of capital borrowings (91.94 per cent) were obtained from the Cyprus Government. The rest, 8.06 per cent, were obtained from short-term note issues. Such short-term sources of financing were resorted to as a result of the then existing unsettled political situation.[1]

During 1955-1964 capital borrowings increased by 1.65 times. Other liabilities include Reserves and Net Revenue Account, composed of Capital Reserve, Revenue Reserve and Net Revenue Account.

Capital Reserve, created in 1961, "represents the excess of the valuation, as made by the Authority's Officials, (based on the current market values and the valuation as made by the Officials of Cable and Wireless Limited), over

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[1] Due to the E.O.K.A. struggles against the British rule in Cyprus.

the amount paid by the Authority for the assets taken over from Cable and Wireless Limited in April, 1961."[1] In 1963, Capital Reserve Account increased by £11,552 due to another similar adjustment for certain assets acquired in 1962.

The nature of Revenue Reserve Account is ambiguous. The account has changed three names since 1959. At that time, it was called Provision for Redemption of Stock. It was renamed as General Reserve in 1960. In 1962, finally, it was called Revenue Reserve.

It should be mentioned that so far no provision for the repayment of loans from the Government of Cyprus or the redemption of stocks has been made. The note issues required the setting up of sinking-fund reserves, which seemingly discontinued after starting in 1959. Finally, "the whole subject of the Authority's Capital Borrowings are still under discussion with the Government."[2]

Net Revenue Account (Retained Earnings) has shown a very significant improvement since 1955. In its first years of operations, the Authority experienced continuous deficits. Gradually, the situation improved. The take over of the responsibility for external telecommunication and the abnormal overseas telegraph traffic in 1964 improved the Net Revenue Account.

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[1] Annual Report and Account of Cyprus Telecommunications Authority, 1961, op. cit., p. 69.

[2] Annual Report and Account of Cyprus Telecommunications Authority, 1964, op. cit., p. 26.

Income Statement Analysis

Tables 27 and 28 present a condensed income statement for 1955-1964. All revenue items and especially revenue deductions have been grouped together. The Authority's practice of calculating and presenting intermediate balances such as "operating surplus," with "additions" and "deductions" does not seem necessary and in fact might be misleading. "In their basic relation to revenue all costs are homogeneous; in other words, expenses are not recovered through revenue in preferential order."[1]

Graph 15 presents net revenues for 1955-1964. Net telegraph revenue accounted for a very small share of total net revenues until 1960. Since 1961, however, it showed a significant improvement, mainly due to the take over of the responsibility for external telecommunication in that year. It showed a further improvement in 1964 due to heavy demand for external telegraph traffic by foreign correspondents.

Net telephone receipts have increased more or less steadily since 1955. Their relative contribution to total net receipts, however, have started to decline since 1960. This was due (as mentioned above) to the take over by CY.T.A. of external telecommunication in 1961. The difference between total net receipts and telephone receipts was at its maximum in 1964 due to record net telegraph receipts in 1964.

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[1] Paton and Paton, Corporation Accounts and Statements, op. cit., p. 330.

TABLE 27

CYPRUS TELECOMMUNICATIONS AUTHORITY
CONDENSED INCOME STATEMENT
1955-1960
(IN CYPRUS POUNDS)

Revenues:	1955	1956	1957	1958	1959	1960
Gross telephone receipts						625,523
Less: Provision for doubtful debts						1,211
Net telephone receipts	297,067	393,538	492,363	546,255	612,836	624,312
Net telegraph receipts	19,571	23,050	27,859	57,124	53,110	49,761
	316,638	416,588	520,222	603,379	665,946	674,073
Other revenues	1,814	8,416	19,684	24,523	23,848	31,660
Total Revenues	318,452	425,004	539,906	627,902	689,794	705,733
Revenue deductions:						
Net staff costs	131,157	219,886	258,256	266,324	275,348	301,045
System operating expns.	75,268	75,247	103,594	135,692	103,373	118,908
Establishment expenses					22,291	18,884
Administrative expenses					9,300	12,378
Interest and financing charges on capital borrowings	32,330	79,589	84,506	95,527	113,630	121,641
Depreciation on fixed assets	58,462	72,392	86,886	92,929	102,062	109,125
Other deductions	26,363*	19,326*	6,660*	4,278	2,748	12,398
Total Deductions	323,580	466,440	539,902	594,750	628,752	694,379
Net Income (Loss)	(5,128)	(41,436)	4	33,152	61,042	11,354
Net revenue account January 1.		(5,128)	(46,564)	(46,560)	(13,408)	14,634
Transfer to Provision for Redemption of Stock (Bond					(33,000)	
Transfer to General Reserve						(562)
Net Revenue Account December 31.	(5,128)	(46,564)	(46,560)	(13,408)	14,634	25,426

Source: Derived from Annual Reports and Accounts of Cyprus Telecommunications Authority, 1955-1960, op. cit.

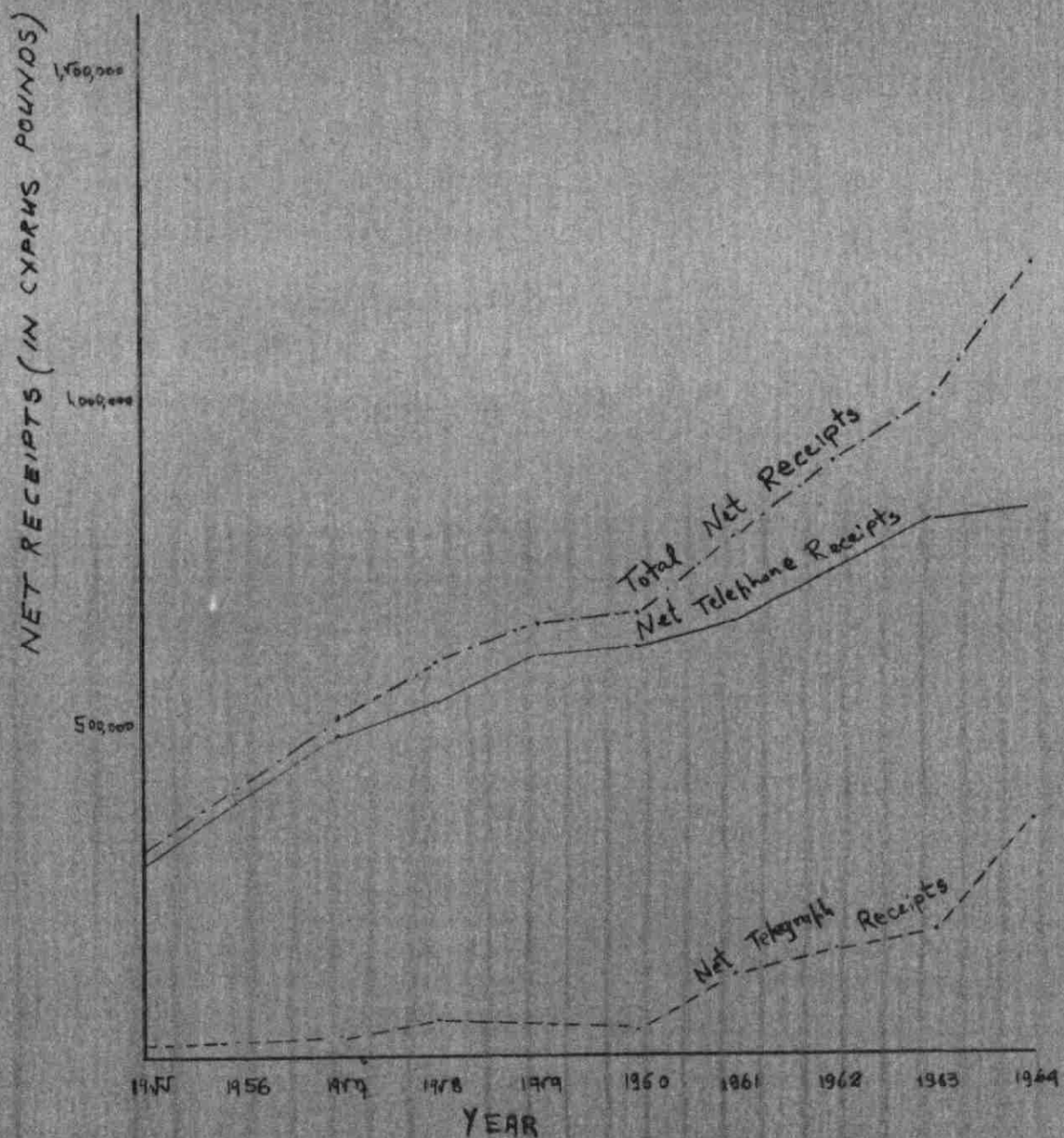
* Include Agency Costs.

TABLE 28

CYPRUS TELECOMMUNICATIONS AUTHORITY
CONDENSED INCOME STATEMENT
1961-1964
(IN CYPRUS POUNDS)

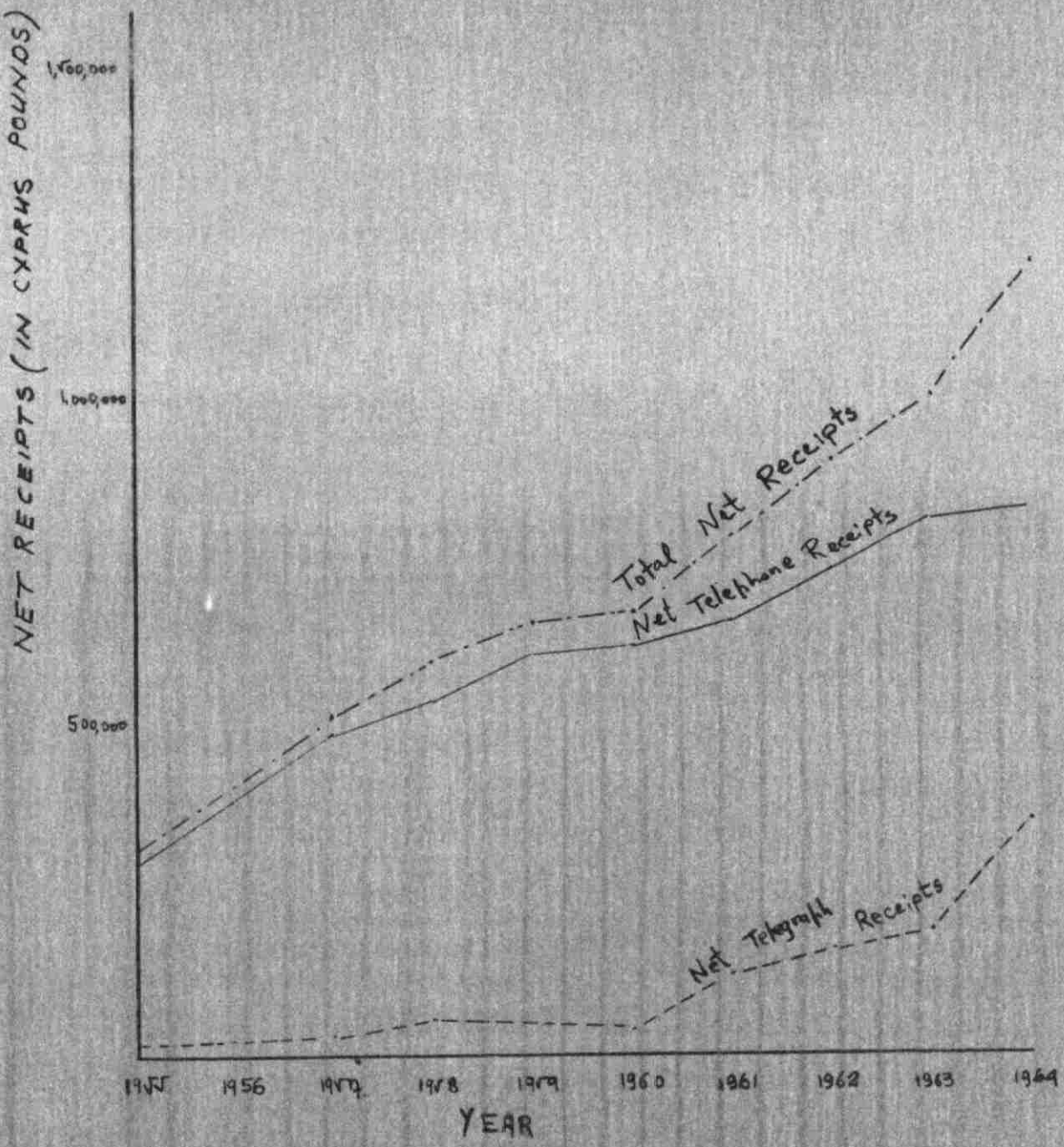
	1961	1962	1963	1964
Revenues:				
Gross telephone receipts	668,307	753,440	826,456	865,025
Less: Provision for doubtful debts	1,071	5,267	2,678	18,942
Net telephone receipts	667,236	748,173	823,778	846,083
Net telegraph receipts	126,671	167,227	195,950	365,111
	793,907	915,400	1,019,728	1,211,194
Other revenues	26,714	15,119	2,603	33,823
Total Revenues	820,621	930,519	1,022,331	1,245,017
Revenue deductions:				
Net staff costs	364,955	435,739	488,050	442,042
System operating expenses	122,585	135,867	170,030	164,124
Establishment expenses	27,876	22,787	23,023	28,119
Administrative expenses	19,245	22,045	21,586	23,259
Interest and financing charges on capital borrowings	124,276	137,008	141,176	150,478
Depreciation on fixed assets	123,180	148,176	166,238	170,129
Other deductions	4,190	6,300	12,255	21,585
Total Deductions	786,307	907,922	1,022,358	999,736
Net Income (Loss)	34,314	22,597	(27)	245,281
Net Revenue Account, January 1.	25,426	59,740	82,337	82,310
Net Revenue Account, Dec.31.	59,740	82,337	82,310	327,591

Source: Derived from Annual Reports and Accounts of Cyprus Telecommunications Authority, 1961-1964, op. cit.



Graph 15.-- Net Revenues.

Source: Tables 27 and 28.



Graph 15.-- Net Revenues.

Source: Tables 27 and 28.

Table 29 presents the index of revenue deductions for 1955-1964. Net staff costs have rather steadily and constantly increased during the decade under consideration. This had been due to advances in labor costs and recruitment of additional employees. The decrease in 1964 was due to the fact that certain workers and employees (mostly Turkish Cypriots) did not report for work.

System operating expenses (maintenance expense) have increased more or less steadily. During 1955-1964 they have more than doubled. This is explained by the expanding system of operations.

Interest charges and depreciation expenses have also increased. The increase in interest charges is especially significant (4.65 times). This has been due to growing capital borrowings necessitated by the expansion in the system of operations.

Interest paid on capital borrowings is considered as a cost of revenue, and as such included under revenue deductions. For enterprises with a profit objective, it might have been advisable to deduct interest charges on capital borrowings from the net income figure.[1] Such a procedure would have meant that interest paid or accrued is a distribution of income (profit). However, such a treatment in the case of CY.T.A. does not seem advisable. First, the law which established CY.T.A. clearly specifies that such amounts paid or accrued be considered as an expense.[2]

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[1]Paton and Paton, Corporation Accounts and Statements, op. cit., pp. 357, 382.

[2]Cyprus, Statute Laws of Cyprus, op. cit., p. 8.

TABLE 29

CYPRUS TELECOMMUNICATIONS AUTHORITY
INDEX OF REVENUE DEDUCTIONS
1955-1964

	1955 £	1955 (100)	56	57	58	59	60	61	62	63	64	1964 £
Net staff costs	131,157	100	168	196	203	210	230	279	333	373	337	442,042
System operating expenses	75,268	100	100	139	181	137	158	163	181	225	217	164,124
Establishment expenses						100	85	125	102	104	126	28,119
Administrative expenses						100	133	207	237	232	250	23,259
Interest and financing charges on capital borrowings	32,330	100	246	261	295	351	376	384	424	437	465	150,478
Depreciation on fixed assets	58,462	100	124	149	159	175	187	210	253	284	290	170,129
Other deductions	26,363	100	73	25	17	10	47	16	239	46	82	21,585
Total Deductions	323,580	100	144	167	184	194	214	243	280	316	310	999,736

Source: Derived from figures in tables 27-28.

Second, CY.T.A. is not allowed to make a profit and does not have any shareholders. In such a case distribution of profits or income would not be very meaningful.

Depreciation expense has increased 2.9 times. This increase has been constant and steady. Total deductions have almost tripled during 1955-1964. From £323,580 in 1955, they have increased to £999,736 in 1964.

Table 30 presents the composition of revenue deductions. The major revenue deductions are net staff costs, system operating expenses, interest charges on capital borrowings and depreciation expense. Net staff costs account for more than two-fifths of revenue deductions. System operating expenses account for around 16-18 per cent of total revenue deductions. Interest charges and depreciation expenses, on the other hand, each account for around 16 per cent of revenue deductions.

CY.T.A., as revealed from the condensed financial statements, does not pay any sort of taxes. This is so, because it is a government statutory body, and the government is its main creditor and supplier of funds as will be seen in the next part.

Sources and Uses of Funds

The study and analysis of financial statements in the previous parts has shown, among other things, the way CY.T.A. has coped with its expansion and composition problems. A further study and analysis would be necessary to

TABLE 30

CYPRUS TELECOMMUNICATIONS AUTHORITY
COMPOSITION OF REVENUE DEDUCTIONS
1955-1964

	1955	56	57	58	59	60	61	62	63	64
Net staff costs	41	47	48	45	44	43	46	48	48	44
System operating expenses	23	16	19	23	16	17	15.5	15	17	16.5
Establishment expenses					3.5	3	3.5	2.5	2	3
Administrative expenses					1.5	2	2.5	2.5	2	2.5
Interest and financing charges on capital borrowings	10	17	16	16	18	17	16	15	14	15
Depreciation on fixed assets	18	16	16	15	16	16	16	16	16	17
Other deductions	8	4	1	1	1	2	0.5	1	1	2
Total Deductions	100	100	100	100	100	100	100.0	100.0	100.0	100.0

Source: Derived from figures in tables 27-28.

see how CY.T.A. has coped with its financial problem; what sources have contributed the required funds, and what use has been made of these funds.

The term "fund" has many meanings. In a very restricted usage, only actual cash items are considered as funds. "Funds" could also be viewed as all the components of the working capital.

> All current assets and current liabilities. . .are regarded as fund factors, and the movement of funds for a period of time, accordingly, is considered to be reflected in the financial streams passing through the working capital area.[1]

Subsequent analysis will study and analyze "funds" viewed as cash and as movement of working capital items. "Funds" viewed as cash is studied by cash flow statements. A cash flow statement, as the name suggests, is a complete record of all receipts and disbursements made during a given period.

Table 31 presents a cash flow summary for 1956-1964. It shows the sources and uses for cash receipts and disbursements. Operations, capital borrowings and transfer to reserves constitute the three sources for cash receipts. As might be expected, operations account for about two-thirds (64.97 per cent) of cash receipts. Capital borrowings, on the other hand, account for around 30 per cent of cash receipts, and transfer to reserves accounts for only 3.15 per cent of cash receipts.

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[1] Paton and Paton, Corporation Accounts and Statements, op. cit., p. 441.

TABLE 31

CYPRUS TELECOMMUNICATIONS AUTHORITY
CASH FLOW SUMMARY
1956-1964
(IN CYPRUS POUNDS)

Year	Sources				Uses			
	From Operations	Capital Borrowings	Transfer To Reserves	Total	Acquisition of fixed asst.	Replace-ment	Inventory	Total
1956	(4,311)	----	---	(4,311)	220,168	72,392	20,656	313,216
1957	150,990	250,000	---	400,990	129,485	86,886	47,121	263,492
1958	75,407	250,000	---	325,407	115,154	92,929	23,606	231,689
1959	245,503	300,000	---	545,503	98,776	102,062	---	200,838
1960	76,836	---	32,438	109,274	45,288	109,125	27,206	181,619
1961	298,537	130,000	52,752	481,289	507,483	123,180	111,153	741,816
1962	475,075	---	---	475,075	416,137	148,176	118,361	682,674
1963	306,287	---	11,552	317,839	207,952	166,238	---	374,190
1964	372,693	50,000	---	422,693	20,295	170,129	34,291	224,715
Total	1,997,017	980,000	96,742	3,073,759	1,760,738	1,071,117	382,394	3,214,249
Per Cent	64.97	31.88	3.15	100.0	54.78	33.32	11.90	100.0

Sources: Appendix E-2 to E-10.

Cash has been used for additions to fixed assets, replacement and inventory increases. More than half of cash outlays has been made for additions to fixed assets. One-third of cash outlays has been for replacement purposes. As far as inventories are concerned, they have accounted for around 10 per cent of total cash outlays.

Viewed as a whole, there has been a net cash outflow of £140,490 (£3,214,249 - 3,073,759) during 1956-1964. This means that the 1956 beginning cash balance has decreased by the same amount.

"Funds" viewed as working capital components could be studied by funds statements. A funds statement shows sources and uses of funds or sources and uses of working capital items.

Table 32 presents a funds flow summary for 1956-1964. It shows the aggregate sources and uses of funds. Operations, capital borrowings and transfer to reserves are the three sources of funds. Flow of funds from operations have accounted for 57.17 per cent of total sources. Capital borrowings have accounted for 38.98 per cent of total fund sources. Transfer to reserves have been insignificant (3.85 per cent).

Around three-fifths of all funds have been used for acquisition of fixed assets; the remaining two-fifths have been used for replacement purposes. Viewed as a whole, funds used have exceeded their sources by £317,715 (£2,831,855 - 2,514,140). This means that working capital on January 1, 1956 has decreased by the same amount.

TABLE 32

CYPRUS TELECOMMUNICATIONS AUTHORITY
FUNDS FLOW SUMMARY
1956-1964
(IN CYPRUS POUNDS)

Year	Sources				Uses		
	From Operations	Capital Borrowings	Transfer to Reserves	Total	Acquisition of fixed asst.	Replace-ment	Total
1956	30,956	---	---	30,956	220,168	72,392	292,560
1957	86,890	250,000	---	336,890	129,485	86,886	216,371
1958	126,081	250,000	---	376,081	115,154	92,929	208,083
1959	163,104	300,000	---	463,104	98,776	102,062	200,838
1960	120,479	---	32,438	152,917	45,288	109,125	154,413
1961	157,494	130,000	52,752	340,246	507,483	123,180	630,663
1962	170,773	---	---	170,773	416,137	148,176	564,313
1963	166,211	---	11,552	177,763	207,952	166,238	374,190
1964	415,410	50,000	---	465,410	20,295	170,129	190,424
Total	1,437,398	980,000	96,742	2,514,140	1,760,738	1,071,117	2,831,855
Per Cent	57.17	38.98	3.85	100.0	62.18	37.82	100.0

Sources: Appendix F-3 to F-11.

An ex post cash flow analysis is essential in understanding how things have developed over time. However, cash flow analysis should not be limited to the past alone. An ex ante cash flow analysis is very significant, in the sense that it helps management in formulating appropriate financial policies for the coming years. A cash flow analysis, through a cash budget, helps management in finding out the time suited for stock redemptions, loan repayments, interest payments or external financing.

Table 33 presents the forecast cash budgets for 1965-1970. At this point it is essential to have in mind that a cash budget is an estimate based on estimates. Therefore, any variation in any of the estimated values, will affect the cash estimate.

A cash budget consolidates all cash receipts and cash disbursements over a specified period of time. In a very real sense, a cash budget is the cash account of the future.[1]

The two main parts of the cash budget are cash receipts and cash disbursements. In the demand forecast, the gross annual receipts from telecommunication services were projected until 1970. It could reasonably be assumed that all such receipts were in cash. This is due to the fact that telegraph services operate on a strict cash basis, while telephone service charges are collected monthly in arrear;

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[1]Robert H. Wessel, Principles of Financial Analysis--A Study of Financial Management (New York: The Macmillan Company, 1961), p. 75.

TABLE 33

CYPRUS TELECOMMUNICATIONS AUTHORITY
CASH BUDGET
1965-1970
(IN CYPRUS POUNDS

	1965	1966	1967	1968	1969	1970
Beginning cash balance *	204,320	60,026	68,396	70,049	46,690	79,343
Cash Receipts	984,706	1,040,370	1,092,555	1,141,261	1,189,967	1,231,715
	1,189,026	1,100,396	1,160,951	1,211,310	1,236,657	1,311,058
Cash Disbursements (see Appendix G-1)	1,129,000	1,032,000	1,191,000	1,218,000	1,276,000	1,333,500
Cash balance December 31.	60,026	68,396	(30,049)	(6,690)	(39,343)	(22,442)
Minimum cash balance.	40,000	40,000	40,000	40,000	40,000	40,000
Financing required	---	---	70,049	46,690	79,343	62,442

Source: Derived by the author.
* See page 82.

in case of default by any subscriber, the Authority is empowered to discontinue all telecommunication services offered to such subscribers.

Moreover, because CY.T.A. operates on a cash basis, bad debts are very small compared to the total gross annual receipts. Therefore, they are omitted from the cash budget. The relatively high bad debts in 1964 are abnormal in the sense that some Turkish Cypriots could not pay their fees to the Authority. Furthermore, net recoveries relating to prior years are negligible and therefore, are omitted from the cash budget.

Cash disbursements in table 33 have been obtained from figures in appendix G-1. Appendix G-1 presents the projected cash disbursements for 1965-1970. Net staff costs have been assumed to increase by £30,000 per year. This increase seems to be justifiable due to the expanding system of operations and probable cost of living adjustment. If the Turkish Cypriot workers return to work, it is probable that staff costs will further increase. However, because of the uncertainty still prevailing, no such additional staff costs were taken into consideration.

System operating expenses areassumed to grow each year by around £20,000. An expanding system would necessarily require more maintenance. Establishment and administrative expenses are assumed to remain constant at the £30,000 and £25,000 level, respectively.

For reasons mentioned earlier, it seems unlikely that CY.T.A. will make or will suggest to make any loan repayments or interest payments. Therefore, there would be no cash disbursement for such purposes until 1970. In fact, it was informally reported that CY.T.A. does not intend to make any loan repayments or substantial interest payments before 1981. It is expected that by then there would be no need for additional expansion and hence the Authority will be in a position to meet its financial obligations.

Capital outlays in appendix G-1 are obtained from appendix G-2. Appendix G-2 presents the projected capital outlays for CY.T.A. It was seen before that Cyprus will have a telex system after two years. In this respect, it is assumed that the installation for such a system will start in early 1967. It is further assumed that CY.T.A. (as before) will be able to make installments with its suppliers and will be required to settle its debt not later than 1971. It was estimated that £500,000 would be needed for such a system. It is finally assumed that CY.T.A. will be required to settle its debt on an equal yearly installment basis of £100,000.

In partial fulfillment of its Twenty-Year Development Programme, the Authority expects to spend around £500,000 for the further development of external and internal telecommunication services during 1965-1974. In this respect, it might be assumed that £50,000 will be spent each year.

As far as village telecommunication development is concerned, it was previously mentioned that by 1967 all villages in Cyprus will be provided with telecommunication

facilities (especially telephone). It was expected to complete this development programme at an additional cost of £90,000. It might be assumed, therefore, that £30,000 will be spent during each of the three years to complete the development of village telecommunication.

From cash flow and funds flow analysis, it was revealed that the Authority has had the policy of replacing all depreciated equipment. In other words, depreciation charges and replacement needs have remained equal and constant. This could be due to the fact that CY.T.A. was always expanding and fixed assets acquired were first used, in a sense, to replace the old depreciated equipment. In this respect, it could be assumed that replacement needs would continue to be identical with depreciation charges because CY.T.A. is expected to grow further. It can be further be assumed that all new fixed assets acquired will have an expected useful life of 20 years or that depreciation charges (and therefore replacement needs) will be 5 per cent of the total acquired.

Along these lines, the value for replacement needs was estimated, as could be seen in the lower part of appendix G-2.

The last item in appendix G-2 presents the capital commitments outstanding in December 31, 1964. This amount (£151,000) is assumed to have been paid during 1965. The respective totals for 1965-1970 represent the total capital outlays anticipated.

Other deductionsin appendix G-1 are assumed to remain at the level of £15,000 during 1965-1970. The relatively high (£21,585 in 1964 compared to £12,255 in 1963) figure for other deductions in 1964 is not representative because of the abnormal recoveries in that year.

The cash disbursements are deducted from cash receipts (refer to table 33), the result being the year-end cash balances. Assuming a minimum cash balance of £40,000, it is found that the Authority has to resort to external financing after 1967. In this respect, it seems advisable to borrow the respective amounts at the beginning of the respective years, so that the Authority may not face any liquidity problems.

APPENDIX E-1

CYPRUS TELECOMMUNICATIONS AUTHORITY
CHANGES IN CASH BALANCES
(SUPPORTING SCHEDULE FOR CASH FLOW STATEMENTS)
1956-1964
(IN CYPRUS POUNDS)

	1956	1957	1958	1959	1960	1961	1962	1963	1964
Cash Balance December 31	27,283	164,781	258,499	603,164	530,819	270,292	62,693	6,342	204,320
Cash Balance January 1	344,810	27,283	164,781	258,499	603,164	530,819	270,292	62,693	6,342
Increase (decrease) in cash balance	(317,527)	137,498	93,718	344,665	(72,345)	(260,527)	(207,599)	(56,351)	197,978

Source: Derived from the Annual Reports and Accounts of Cyprus Telecommunications Authority, 1955-1964, op. cit.

APPENDIX E-2

CYPRUS TELECOMMUNICATIONS AUTHORITY
CASH FLOW STATEMENT
1956

Cash Receipts:		
From current operations	£416,588	
Less: Increase in A/cs Receivable	66,388	
	350,200	
Other income	8,416	£358,616
Cash Outlays:		
For operations	313,120	
Less: Increase in A/cs Payable	31,121	
	281,999	
Interest charges on government borrowings	79,589	
Other (excluding depreciation)	1,339	362,927
Net Cash Outlays from operations		(4,311)
Expansion and Investment:		
Acquisition of fixed assets	220,168	
Replacement	72,392	
Increase in inventory	20,656	313,216
Decrease in cash		£(317,527)

Source: Ibid.

APPENDIX E-3

CYPRUS TELECOMMUNICATIONS AUTHORITY
CASH FLOW STATEMENT
1957

Cash Receipts:		
From current operations	£520,222	
Add: Decrease in A/cs Receivable	139	
	520,361	
Other income	4,639	
Net recoveries relating to prior years	15,045	£540,045
Cash Outlays:		
For operations	366,431	
Less: Increase in A/cs Payable	63,961	
	302,470	
Interest charges on government borrowings	84,506	
Other (excluding depreciation)	2,079	389,055
Cash available from operations		150,990
Financing:		
Government borrowings		250,000
Cash available for expansion and investment		400,990
Acquisition of fixed assets	129,485	
Replacement	86,886	
Increase in inventory	47,121	263,492
Increase in cash		£ 137,498

Source: Ibid.

APPENDIX E-4

CYPRUS TELECOMMUNICATIONS AUTHORITY
CASH FLOW STATEMENT
1958

Cash Receipts:		
From operations	£603,379	
Less: Increase in A/cs Receivable	55,060	
	548,319	
Other income	9,085	
Net recoveries relating to prior years	15,438	£572,842
Cash Outlays:		
For operations	402,016	
Less: Increase in A/cs Payable	4,386	
	397,630	
Interest charges on government borrowings	95,527	
Other (excluding depreciation)	4,278	497,435
Cash available from operations		75,407
Financing:		
Government borrowings	150,000	
6 % Telecommunications First Issue	100,000	250,000
Cash available for expansion and investment		325,407
Acquisition of fixed assets	115,154	
Replacement	92,929	
Increase in inventory	23,606	231,689
Increase in cash		£ 93,718

Source: Ibid.

APPENDIX E-5

CYPRUS TELECOMMUNICATIONS AUTHORITY
CASH FLOW STATEMENT
1959

Cash Receipts:		
From operations	£665,946	
Add: Decrease in A/cs Receivable	21,619	
	687,565	
Other income	15,248	
Net recoveries relating to prior years	8,600	£711,413
Add: Cash released from reduction of inventory		62,430
		773,843
Cash Outlays:		
For operations	410,312	
Add: Decrease in A/cs Payable	1,650	
	411,962	
Interest charges on government borrowings	113,630	
Other (excluding depreciation)	2,748	
		528,340
Cash available from operations		245,503
Financing:		
Government borrowings	200,000	
3 % Telecommunications Second issue	100,000	300,000
Cash available for expansion and investment		545,503
Acquisition of fixed assets	98,776	
Replacement	102,062	200,838
Increase in Cash		£ 344,665

Source: Ibid.

APPENDIX E-6

CYPRUS TELECOMMUNICATIONS AUTHORITY
CASH FLOW STATEMENT
1960

Cash Receipts:		
From operations	£674,073	
Less: Increase in A/cs Receivable	13,262	
	660,811	
Other income	31,409	
Net recoveries relating to prior years	251	£692,471
Cash Outlays:		
For operations	451,215	
Add: Decrease in A/cs Payable	30,381	
Interest charges on government borrowings	121,641	
Other (excluding depreciation)	12,398	615,635
Cash available from operations		76,836
Financing:		
Transfer to general reserve		32,438
Cash available for expansion and investment		109,274
Acquisition of fixed assets	45,288	
Replacement	109,125	
Increase in inventory	27,206	181,619
Decrease in cash		£ (72,345)

Source: Ibid.

APPENDIX E-7

CYPRUS TELECOMMUNICATIONS AUTHORITY
CASH FLOW STATEMENT
1961

Cash Receipts:		
From operations	£793,907	
Add: Decrease in A/cs Receivable	17,319	
	811,226	
Other income	21,461	
Net recoveries relating to prior years	5,253	£837,940
Cash Outlays:		
For operations	534,661	
Less: Increase in A/cs Payable	123,724	
	410,937	
Interest and financing charges on capital borrowings	124,276	
Other charges (excluding depreciation)	4,190	539,403
Cash available from operations		298,537
Financing:		
Government borrowings	130,000	
Transfer to capital reserve	52,752	182,752
Cash available for expansion and investment		481,289
Acquisition of fixed assets	507,483	
Replacement	123,180	
Increase in inventory	111,153	741,816
Decrease in cash		£(260,527)

Source: Ibid.

APPENDIX E-8

CYPRUS TELECOMMUNICATIONS AUTHORITY
CASH FLOW STATEMENT
1962

Cash Receipts:		
From operations	£915,400	
Less: Increase in A/cs Receivable	11,268	
	904,132	
Other income	6,825	
Net recoveries relating to prior years	8,294	£919,251
Cash Outlays:		
For operations	616,438	
Less: Increase in A/cs Payable	315,570	
	300,868	
Interest and financing charges on capital borrowings	137,008	
Other charges (excluding depreciation)	6,300	444,176
Cash available from operations for expansion and investment		475,075
Acquisition of fixed assets	416,137	
Replacement	148,176	
Increase in inventory	118,361	682,674
Decrease in cash		£(207,599)

Source: Ibid.

APPENDIX E-9

CYPRUS TELECOMMUNICATIONS AUTHORITY
CASH FLOW STATEMENT
1963

Cash Receipts:			
From operations	£1,019,728		
Less: Increase in A/cs Receivable	27,615		
	992,113		
Other income	2,603		
	994,716		
Less: Net expanses relating to prior years	2,123		
	992,593		
Add: Cash released from reduction of inventory	51,900		£1,044,493
Cash Outlays:			
For operations	702,689		
Add: Increase in A/cs Payable	256,883	959,572	
Interest charges on capital borrowings	141,176		
Less: Interest due on capital borrowings	372,674	(231,498)	
Other charges (excluding depreciation)		10,132	738,206
			306,287
Financing:			
Transfer to capital reserve			11,552
			317,839
Cash available for expansion and investment			
Acquisition of fixed assets		207,952	
Replacement		166,238	374,190
Decrease in Cash			£ (57,351)

Source: Ibid.

APPENDIX E-10

CYPRUS TELECOMMUNICATIONS AUTHORITY
CASH FLOW STATEMENT
1964

Cash Receipts:			
From operations		£1,211,194	
Less: Increase in A/cs Receivable		192,695	
		1,018,499	
Other income		4,084	
Net recoveries relating to prior years		29,739	£1,052,322
Cash Outlays:			
For operations	657,544		
Less: Increase in A/cs Payable	22,927	634,617	
Interest and financing charges on capital borrowings	150,478		
Less: Increase in interest due on capital borrowings	127,051	23,427	
Other charges (excluding depreciation)		21,585	679,629
Cash available from operations			372,693
Financing:			
Government borrowings			50,000
Cash available for expansion and investment			422,693
Acquisition of fixed assets		£0,295	
Replacement		170,129	
Increase in inventory		34,291	224,715
Increase in cash			£ 197,978

Source: Ibid.

APPENDIX F-1

CYPRUS TELECOMMUNICATIONS AUTHORITY
EFFECT OF CHANGES OF NON-CURRENT ACCOUNT BALANCES ON WORKING CAPITAL
(SUPPORTING SCHEDULE FOR FUNDS STATEMENTS)
1956-1960
(IN CYPRUS POUNDS)

	1956		1957		1958		1959		1960	
	Increase	Decrease	Increase	Decrease	Increase	Decrease	Increase	Decrease	Increase	Decrease
Additional investment		220,168		129,485		115,154		98,776		45,288
Capital borrowings			250,000		250,000		300,000			
Transfer to reserve									33,000	
Provision for redemption of stock							33,000			
Net Income		41,436*		4**		33,152**	28,042		10,792	
Totals		261,604	250,004	129,485	283,152	115,154	361,042	98,776	43,792	45,288
Increase (or decrease in working capital	(261,604)			120,519		167,998		262,266	(1,496)	
Totals	261,604	261,604	250,004	250,004	283,152	283,152	361,042	361,042	45,288	45,288

Source: Derived from Annual Reports and Accounts of Cyprus Telecommunications Authority, 1955-1960, op. cit.

* Deficit.

** Decrease in deficit.

APPENDIX F-2

CYPRUS TELECOMMUNICATIONS AUTHORITY
EFFECT OF CHANGES OF NON-CURRENT ACCOUNT BALANCES ON WORKING CAPITAL
(SUPPORTING SCHEDULE FOR FUNDS STATEMENTS)
1961-1964
(IN CYPRUS POUNDS)

	1961		1962		1963		1964	
	Increase	Decrease	Increase	Decrease	Increase	Decrease	Increase	Decrease
Additional investment		507,483		416,137		207,952		20,295
Capital borrowings	130,000						50,000	
Transfer to reserve	52,752							
Net Income	34,314		22,597		11,525		245,281	
Totals	217,066	507,483	22,597	416,137	11,525	207,952	295,281	20,295
Increase (or decrease) in Working Capital	(290,417)	507,4	(393,540)		(196,427)			274,986
Totals	507,483	507,483	416,137	416,137	207,952	207,952	295,281	295,281

Source: Derived from Annual Reports and Accounts of Cyprus Telecommunications Authority, 1960-1964, op. cit.

APPENDIX F-3

CYPRUS TELECOMMUNICATIONS AUTHORITY
FUNDS STATEMENT
Year ended December 31, 1956

Receipts:		
From operations	£416,588	
Other income	8,416	425,004
Current Outlays:		
For operations	313,120	
Interest charges on government borrowings	79,589	
Other (excluding depreciation)	1,339	394,048
Funds available for expansion and investment		30,956
Acquisition of fixed assets	220,168	
Replacement	72,392	292,560
Decrease in working capital		£(261,604)

Source: Derived from Annual Reports and Accounts of Cyprus Telecommunications Authority, 1955-64, op. cit.

APPENDIX F-4

CYPRUS TELECOMMUNICATIONS AUTHORITY
FUNDS STATEMENT
Year ended December 31, 1957

Receipts:		
From operations	£520,222	
Other income	4,639	
Net recoveries relating to prior years	15,045	539,906
Current Outlays:		
For operations	366,431	
Interest on government borrowings	84,506	
Other (excluding depreciation)	2,079	453,016
Funds available from operations		86,890
Financing:		
Government borrowings		250,000
Funds available for expansion and investment		336,890
Acquisition of fixed assets	129,485	
Replacement	86,886	216,371
Increase in working capital		£ 120,519

Source: Ibid.

APPENDIX F-5

CYPRUS TELECOMMUNICATIONS AUTHORITY
FUNDS STATEMENT
Year ended December 31, 1958

Receipts:		
From operations	£603,379	
Other income	9,085	
Net recoveries relating to prior years	15,438	627,902
Current Outlays:		
For operations	402,016	
Interest on government borrowings	95,527	
Other (excluding depreciation)	4,278	501,821
Funds available from operations		126,081
Financing:		
Government borrowings	150,000	
6% Telecommunications First issue	100,000	250,000
Funds available for expansion and investment		376,081
Acquisition of fixed assets	115,154	
Replacement	92,929	208,083
Increase in Working Capital		£ 167,998)

Source: Ibid.

APPENDIX F-6

CYPRUS TELECOMMUNICATIONS AUTHORITY
FUNDS STATEMENT
Year ended December 31, 1959

Receipts:		
From operations	£665,946	
Other income	15,248	
Net recoveries relating to prior periods	8,600	689,794
Current Outlays:		
For operations	410,312	
Interest charges on government borrowings	113,630	
Other (excluding depreciation)	2,748	526,690
Funds available from operations		163,104
Financing:		
Government borrowings	200,000	
3% Telecommunications Second issue	100,000	300,000
Funds available for expansion and investment		463,104
Acquisition of fixed assets	98,776	
Replacement	102,062	200,838
Increase in Working Capital		£ 262,266

Source: Ibid.

APPENDIX F-7

CYPRUS TELECOMMUNICATIONS AUTHORITY
FUNDS STATEMENT
Year ended December 31, 1960

Receipts:		
From operations	£674,073	
Other income	31,409	
Net recoveries relating to prior years	251	705,733
Current Outlays:		
For operations	451,215	
Interest charges on government borrowing	121,641	
Other (excluding depreciation)	12,398	585,254
Funds available from operations		120,479
Financing:		
Transfer to general reserve		32,438
Funds available for expansion and investment		152,917
Acquisition of fixed assets	45,288	
Replacement	109,125	154,413
Decrease in working capital		£ (1,496)

Source: Ibid.

APPENDIX F-8

CYPRUS TELECOMMUNICATIONS AUTHORITY
FUNDS STATEMENT
Year ended December 31, 1961

Receipts:		
From operations	£793,907	
Other income	21,461	
Net recoveries relating to prior years	5,253	820,621
Current Outlays:		
For operations	534,661	
Interest and financing charges on capital borrowings	124,276	
Other charges (excluding depreciation)	4,190	663,127
Funds available from operations		157,494
Financing:		
Government borrowings	130,000	
Transfer to capital reserve	52,752	182,752
Funds available for expansion and investment		340,246
Acquisition of fixed assets	507,483	
Replacement	123,180	630,663
Decrease in working capital		£(290,417)

Source: Ibid.

APPENDIX F-9

CYPRUS TELECOMMUNICATIONS AUTHORITY
FUNDS STATEMENT
Year ended December 31, 1962

Receipts:		
From operations	£915,400	
Other income	6,825	
Net recoveries relating to prior years	8,294	930,519
Current Outlays:		
For operations	616,438	
Interest and financing charges on capital borrowings	137,008	
Other charges (excluding depreciation)	6,300	759,746
Funds available from operations for expansion and investment		170,773
Acquisition of fixed assets	416,137	
Replacement	148,176	564,313
Decrease in working capital		£(393,540)

Source: Ibid.

APPENDIX F-10

CYPRUS TELECOMMUNICATIONS AUTHORITY
FUNDS STATEMENT
Year ended December 31, 1963

Receipts:		
From operations	£1,019,728	
Other income	2,603	
	1,022,331	
Less: Net expanses relating to prior years	2,123	1,020,208
Current Outlays:		
For operations	702,689	
Interest and financing charges on capital borrowings	141,176	
Other charges (excluding depreciation)	10,132	853,997
Funds available from operations		166,211
Financing:		
Transfer to capital reserve		11,552
Funds available for expansion and investment		177,763
Acquisition of fixed assets	207,952	
Replacement	166,238	374,190
Decrease in working capital		£(196,427)

Source: Ibid.

APPENDIX F-11

CYPRUS TELECOMMUNICATIONS AUTHORITY
FUNDS STATEMENT
Year ended December 31, 1964

Receipts:		
From operations	£1,211,194	
Other income	4,084	
Net recoveries relating to prior years	29,739	1,245,017
Current Outlays:		
For operations	657,544	
Interest and financing charges on capital borrowings	150,478	
Other charges (excluding depreciation)	21,585	829,607
Funds available from operations		415,410
Financing:		
Government borrowings		50,000
Funds available for expansion and investment		465,410
Acquisition of fixed assets	20,295	
Replacement	170,129	190,424
Increase in working capital		£ 274,986

Source: Ibid.

APPENDIX G-1

CYPRUS TELECOMMUNICATIONS AUTHORITY
SCHEDULE FOR PROJECTED CASH DISBURSEMENTS
1965-1970
(IN CYPRUS POUNDS)

	1965	1966	1967	1968	1969	1970
Net staff costs	470,000	500,000	530,000	560,000	590,000	620,000
System operating expenses	184,000	204,000	224,000	244,000	264,000	284,000
Establishment expenses	30,000	30,000	30,000	30,000	30,000	30,000
Administrative expenses	25,000	25,000	25,000	25,000	25,000	25,000
Capital outlays (see appendix G-2)	405,000	258,000	367,000	344,000	352,000	359,500
Other deductions	15,000	15,000	15,000	15,000	15,000	15,000
Totals	1,129,000	1,032,000	1,191,000	1,218,000	1,276,000	1,333,500

Source: Derived by the author (on the basis of previous performance and future expectations).

APPENDIX G-2

CYPRUS TELECOMMUNICATIONS AUTHORITY
PROJECTED CAPITAL OUTLAYS
1965-1970
(IN CYPRUS POUNDS)

	1965	1966	1967	1968	1969	1970
Telex			100,000	100,000	100,000	100,000
Development of external and internal telecommunications	50,000	50,000	50,000	50,000	50,000	50,000
Village telecommunication development	30,000	30,000	30,000			
Replacement (see below*)	174,000	178,000	187,000	194,000	202,000	209,500
Capital commitment outstanding on Dec. 31, 1964.	151,000					
* Totals	405,000	258,000	367,000	344,000	352,000	359,500
Previous replacement (depreciation) level	170,000	174,000	178,000	187,000	194,500	202,000
Additional replacement needs (or depreciation charges)	4,000	4,000	9,000	7,500	7,500	7,500
	174,000	178,000	187,000	194,500	202,000	209,500

Source: Derived by the author.

CHAPTER VI

EVALUATION AND SUGGESTIONS

The performance of Cyprus Telecommunications Authority could be evaluated by studying and analyzing the extent by which it has been able to coordinate, in an efficient manner, human faculties with physical facilities for the provision and development of telecommunication facilities in Cyprus. This chapter will study and analyze the three most important aspects of managerial performance, namely, coordination, efficiency and growth.

The first element of proper coordination requires "a plan of organization which provides appropriate segregation of functional responsibilities. . ."[1] It was seen in chapter III that CY.T.A. revised its organization setup on March 1, 1966. According to the old organization chart, CY.T.A. had three divisions,[2] each with a certain number of departments. As a result of its reorganization, CY.T.A. has, at present, seven departments[3] under the direct control of the General Manager.

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[1] Committee on Auditing Procedure, Internal Control (New York: The American Institute of Accountants, 1949), p. 6.

[2] The three divisions were that of Administration, Operations and Engineering.

[3] The seven departments are that of Secretariat, Accounting, Internal Auditing, Purchasing, Telegraph Operations, Engineering and the Zones.

The aim of the revised organization chart, among other things, was to improve the segregation of functional responsibilities. Thus, the revised organization chart reveals that at present CY.T.A. has an appropriate segregation of functional responsibilities so that organizational independence could be maintained. For example, the Accounting and the Internal Auditing Departments were under one head (in Administrative Division). By making these two sections independent units (of equal rank at a departmental level), their activities have become widespread, covering all departments. Due to such a plan of organization, it is possible for the Accounting and the Internal Auditing Departments to conduct their operations independently, free from any departmental influence or bias. Moreover, as a result of having the seven departments with segregated functional responsibilities, it seems that no one person could complete all the phases of a single transaction without the knowledge and intervention of other persons.

As will be seen shortly, the place of the Personnel Officer in the revised organization chart seems to be objectionable. In this respect, it should be borne in mind that the activities of the Personnel Department are widespread, covering all departments. Hence, it seems advisable to have a Personnel Department equal in rank with other departments, so that organizational independence could be maintained and, as will be seen later, labor and labor relations problems could be coped with more effectively.

The second element of proper coordination requires "a system of authorization and record procedure adequate to provide reasonable accounting control over assets, liabilities, revenues and expenses. . ."[1] In this respect, it appears that CY.T.A. has a well-defined system of authorization and record procedure and it is one of the chief functions of the Internal Auditor to verify that they have been followed properly. The new accounting chart (effective January 1, 1966) and the installation of a cost accounting system, among other things, will improve authorization and record procedures so that a better control on transactions can be achieved.

The third element of proper coordination requires "sound practices to be followed in performance of duties and functions of each of the organizational departments. . ."[2] In this respect, "if the development of a plan of organization and the design of the flow of procedures be likened to a strategical plan, the adoption of sound practices may be called the tactical measures for the effectuation of the plan."[3]

It is believed that the Authority has adopted sound procedures that will safeguard the interests of the Authority, whereby the integrity of authorization and recording of transactions are reasonable assured. Moreover, it is further believed that measures are taken to prevent abuses of property and misappropriation of funds.

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[1] Committee on Auditing Procedure, Internal Control, op. cit., p. 6.

[2] Ibid.

[3] Ibid., p. 12.

The last element of proper coordination requires "a degree of quality of personnel commensurate with responsibilities."[1] In this respect, it is believed that most of the senior officers of CY.T.A. are well-qualified, in the sense that after completing their secondary education (usually at the English School or the American Academy, which rank first in Cyprus) they have received special training in England and have had ample experience. The Authority, to increase the efficiency of its personnel, sends some of its employees abroad for training and specialization. Moreover, it conducts special training programmes. Such measures definitely improve the quality of personnel so that more efficient coordination becomes possible.

On the whole, therefore, it seems that coordination of different functions has been or could be made properly. However, whether they are efficiently coordinated remains to be seen. There are certain shortcomings that might prove otherwise. First, the Authority is not free to hire or fire its employees. The labor union and especially the Public Service Commission must be notified and their consent secured. Moreover, it was reported that promotion and selection are based on ability, experience and education. However, it is doubtful whether any of the officers or employees will be motivated to be efficient. This might be due to the fact that /their jobs are secure (more so than they should be) and as it seems, no direct benefit will accrue to any employee for exerting more effort to be more efficient or productive.

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[1]Committee on Auditing Procedure, Internal Control, op. cit., p. 6.

Recently, when the troubles in Cyprus started, the Authority could carry on all of its operations using only around three-fourths of its usual labor force. Not only that, the rate of development of physical facilities grew at a considerable rate. These might be due to certain factors. For example, in 1964, 285 persons did not report for work. Of these, 15 were Greek Cypriots who joined the National Guard; the rest (270) were Turkish Cypriots.

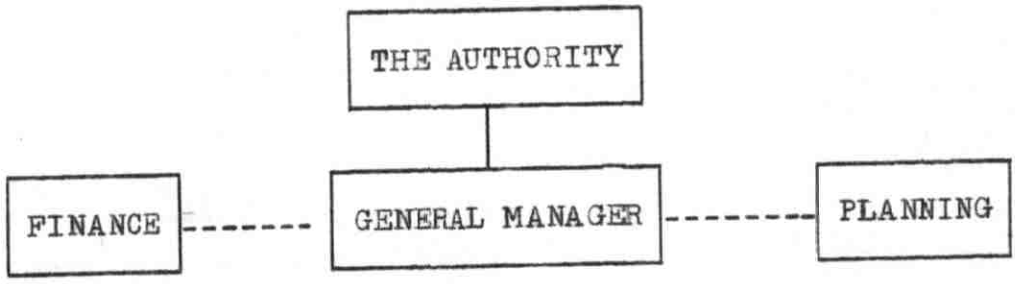
It seems that there have been too many workers or that these were not efficiently coordinated to achieve the objective of the Authority. Patriotic feelings have motivated each Greek Cypriot working with CY.T.A. Thus, they have succeeded not only in maintaining the telecommunication services but in developing it. It is doubtful whether such feelings will always be present to motivate workers to be efficient.

There are certain prospects for improving the efficiency of coordination of factors involved in the provision and development of telecommunication services.

In the first place, it was seen before that the position of the Personnel Officer (who reported to the Secretary) was objectionable. Due to the importance of public and labor relations (which often measure managerial efficiency), it seems advisable to give more authority to the Personnel Officer. Such an authority would mean that the Personnel Officer will not report through the Secretary but directly to the General Manager. As was mentioned earlier, in recent years there have been propensities to

strike. Therefore, labor and labor relations problems need closer attention.

In the second place, it was seen before that CY.T.A. has had a pure line organization. However, staff, especially at the higher levels of organization hierarchy, could be very useful. For example, two advisory staff positions may be attached to the General Manager as indicated in the simplified chart below.



The chart reveals that the staff positions suggested will be available only to the General Manager. This is personal staff contrasted to specialized staff whose services are available to many.[1] The General Manager has to coordinate all the different departments himself. His span of control has increased. Thus, it seems that it will not be possible for him to study and formulate plans concerning the development of future projects. A planning position attached to him might do the job, a job that hitherto was done by the General Manager himself. Related to planning is the financial position which might equally well be attached

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[1]Louis A. Allen, Management and Organization (New York: McGraw-Hill Book Company, Inc., 1958), p. 216.

to him. The responsibility for such a position will be the preparation of cash flow and funds flow statements and the determination of future needs for financing. Financial planning was also hitherto done by the General Manager.

It was seen before that the Authority installed a new accounting system. The new accounting chart included a cost accounting system which the Authority did not have before. Such a (cost accounting) system, among other things, will help management in controlling costs of projects undertaken and costs of operations. In this respect, it could be suggested that the Authority should study the feasibility of using a standard cost accounting system whereby actual costs are compared with, so to say, "ideal" costs. Such a standard cost accounting system seems to have many advantages. It indicates cost trends and is a yardstick by which achievement could be measured. Its most important advantage is that "it puts into effective operation the fundamental law of management: it directs attention forcibly to the exception, to the item of cost that is out of line, to the things that need attention most."[1]

CY.T.A., as seen before, has been production oriented. It was also seen that it was trying to be less production oriented by emphasizing also functions other than production. The balance of groupings of departments and their equal ranking seem to be the right steps in that

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[1] Charles F. Schlatter, and William J. Schlatter, Cost Accounting (New York: John Wiley and Sons, Inc., 1962), p. 514.

direction. It is also believed that direct control of CY.T.A. by the General Manager may improve the efficiency of operations.

In certain cases, efficiency may not seem to be very important. For example, village telephone development is not based on cost considerations. If CY.T.A. had been a private business enterprise, it is highly unlikely that it would have undertaken any such development. However, even in village telecommunication development, efficiency could be a useful criterion. In such cases, efficiency could be used (through cost accounting, for example) to control costs of projects approved.

Finally, due to the favorable public image and satisfactory labor and employee relations, the efficiency criterion may be given a lesser importance. This would be true in certain cases which might involve employee morale.

Chapter IV revealed that demand expressed in terms of gross annual receipts was highly dependent on national income. It was seen, moreover, that demand elasticity of income in 1963 was highly elastic; one per cent change income would result in 1.59 per cent change in total demand expressed in Cyprus pounds. As a result of the growth of National Income during 1957-1963, demand for telecommunication services developed at a fast rate.

During 1964 demand for telecommunication services did not fall even though NNP declined by more than 10 per cent. In this respect, Duesenberry's "relative income" hypothesis was forwarded to explain this short-run consumption function behavior.

Thus, it could be seen that the main factor influencing growth was the increasing demand for telecommunication services, resulting from increasing National Income. To meet the increasing demand[1] for telecommunication services, CY.T.A. had to expand. Thus, it was seen that CY.T.A. achieved a significant growth of telecommunication facilities during 1955-1964 to meet the increasing demand for telecommunication services. In this period, direct exchange lines increased 3.47 times and working telephones, 2.65 times, Telegraph equipment increased from 55 in 1961 to more than a hundred by the end of 1964. Moreover, CY.T.A. installed a V.H.F. System and provided by the end of 1965,70 per cent of all villages in Cyprus with telecommunication facilities. As a result of this growth, total assets increased 2.44 times and fixed assets, 2.86 times.

Cable and Wireless Limited, as was often seen previously, was in charge of internal and external telecommunication facilities in Cyprus until 1955 and 1961, respectively. The company was after profit and was mainly interested in international telecommunication. Probably for these reasons, development of telecommunication

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[1]As will be seen shortly, it is believed that village telecommunication development has been undertaken by CY.T.A. not because of existing adequate demand, but for social reasons.

facilities in Cyprus were not emphasized. Thus, during 1945-1955, direct exchange lines, as seen before (table 14), grew 1.67 times while extensions (which need relatively very little capital investment) increased around 9 times. Moreover, until 1956 not a single village in Cyprus was provided with telecommunication facilities. This could be explained, as suggested above, by the fact that the company was after profit. Even though pertinent statistical cost information is lacking, it seems very likely that such a development would not have been profitable. This might have been due to the fact that there was no adequate demand for such services. Moreover, the company has had international commitments and interests which it has emphasized.

In this respect, the reader should be reminded that CY.T.A. started the village telecommunication development not because of existing demand for such services, but seemingly for purely social reasons. However, it is possible that CY.T.A. may succeed in creating demand for such services in later years.

Thus, it was seen that demand for telecommunication services was the main factor for the growth of CY.T.A. However, there seems to be other factors which seem to have contributed or facilitated growth.

In the first place, as seen before, CY.T.A. is solely responsibile for the provision of telecommunication facilities in Cyprus. Thus, it enjoys a monopoly status. As a result of its status, CY.T.A. is not faced with destructive competition which might have retarded or hampered growth.

CY.T.A. was able to reinvest all of its earnings during 1955-1964. In this respect, it should be mentioned, that CY.T.A. does not have to pay any dividends to shareholders or taxes to the government. This, as was seen before, is due to the fact that CY.T.A. is a government statutory body and a public corporation.

Moreover, it was seen that CY.T.A. acquired its long-term borrowings from the Cyprus Government. It was able, furthermore, to defer the repayment of loans and the payment of interests. Thus, such sources were used for further development and growth.

It was seen in chapter III that CY.T.A. has had a production orientation. In other words, its basic philosophy was the rendering of services to the public. No doubt, such an orientation has contributed significantly to the fast growth of telecommunication facilities in Cyprus.

In chapter IV, National Income was forecast from the trend line. It was expected that NNP will grow during 1965-1970. As a result of this growth, demand for telecommunication services will grow also. In chapter V, a cash budget was prepared to forecast future needs for financing, to meet the increasing demand for telecommunication services during 1965-1970.

The question could be raised as to whether CY.T.A. will be able to cope with the demand for telecommunication services during 1965-1970. To cope with such a demand, CY.T.A. would need additional borrowings. The cash budget

in the last chapter revealed that CY.T.A. would need around £250,000 for further development of telecommunication facilities in Cyprus. It was seen that the Authority has been planning to install a telex system, complete village telecommunication and continue internal and external telecommunication development.

It seems very probable that CY.T.A. will approach the government for financing its development projects. In this respect, it seems that the ability of the Authority to cope with the demand and develop telecommunication facilities would depend on the government's ability to provide the needed capital.

It was seen previously that during 1955-1964, CY.T.A. borrowed from the government around £2.3 million on a long-term basis. Of this amount, £180,000 was borrowed from the present Cyprus Government during 1961-1964. In this respect, it seems that the £250,000 needed would not be a very significant amount for the government and thus it will be able to supply the needed capital for the further development of telecommunication facilities in Cyprus.

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