1960

ECONOMIC REPORT TO THE GOVERNOR

Part II

ECONOMIC OUTLOOK For THE DECADE 1960-70

COMMONWEALTH OF PUERTO RICO
OFFICE OF THE GOVERNOR
PUERTO RICO PLANNING BOARD
BUREAU OF ECONOMICS AND STATISTICS

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P R E F A C E

The projections which cover the next decade form part of a more detailed model of economic development for Puerto Rico which will be published in the near future by the Bureau of Economics and Statistics for the period 1960 to 1975. This model will examine in greater detail the expected developments in the individual sectors of the economy in terms of production as well as employment and productivity.

It should be pointed out that these estimates are subject to possible change as the result of revisions of statistics on net income, investment and other social accounts. In addition it may be necessary to make revisions of population projections especially with respect to age and sex when final information is available from the 1960 Census.

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THE ECONOMIC GROWTH DURING THE DECADE 1950-60

During the decade of the 1950's the rate of growth of the Puerto Rican economy measured in terms of net Commonwealth income (current dollars) was 7.9 per cent per year. Adjusting for population and the increase in prices, the rate of growth was 4.7 per cent per capita. This relatively high rate of growth occurred despite the adverse developments in two different sectors of the economy which were largely out of control of the local economy. The developments in the two sectors, however, were of a temporary character and, in fact, before the end of the decade seem to have lost their negative influence. Decisions made in the U. S. Department of Defense following the Korean emergency had the effect of reducing rather drastically the purchase of goods and services in Puerto Rico between 1953 and 1957. Secondly, sudden reductions in the quota alloted to Puerto Rico, followed by a hurricane and droughts, curtailed net income generated by the cane sugar cultivation during the same period.

It is convenient to divide the decade into three periods in order to indicate the change in character of development during the period. The first phase covers the years from 1949-50 to 1952-53. In this period the production of Puerto Rico rose spectacularly. Net income registered an average annual rate of increase of about 13 per cent. The reason, in large part, was due to the creation of considerable investment in the two preceding years. Undoubtedly the rapid increase in prices also explained the high and unusual rate of increase. But even after taking account of the increase in prices, the average annual rate of growth in real terms was 8.5 per cent per year.

TABLE I - ANNUAL RATE OF INCREASE OF NET INCOME

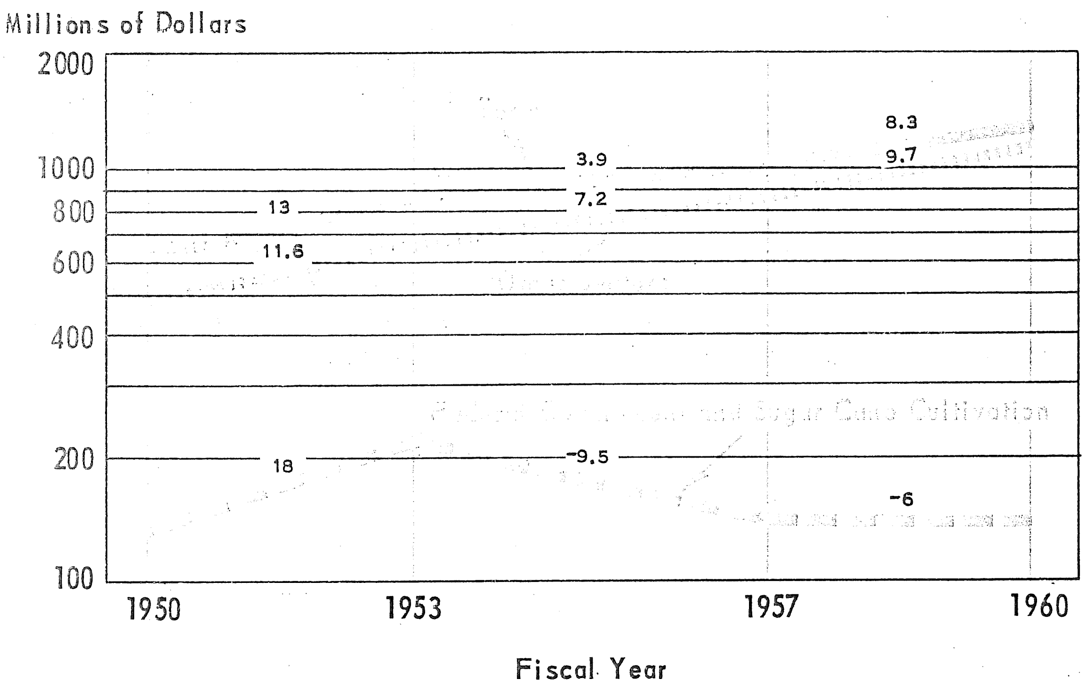
(Per cent)

Period	Total		Income per capita (constant prices) (1)
	Current prices	Constant prices (1)	
1950 - 60..............	7.9	5.3	4.7
1950 - 53..............	13.0	8.5	8.4
1953 - 57..............	3.9	2.3	1.9
1957 - 60..............	8.3	6.1	4.9

(1) Deflated by the implicit price deflator for Gross Product.

The second period extended from 1952-53 to 1956-57. In this period the two developments referred to above were in operation. The first was the great reduction in the military expenditures by the Federal Government in Puerto Rico and the second was the contraction of sugar cane cultivation. Both causes were basically non-economic. The impact of reduced activities in these two sectors was to curtail net income generated by the Federal Government and sugar cane cultivation from a total of $216 million in 1952-53 to $145 million in 1956-57. This would have caused a major decline in total net income of Puerto Rico if it had not been for the dynamic character of the rest of the economy, for despite the decrease in these two sectors the average income of Puerto Rico rose by 3.9 per cent per year in current prices and 2.3 per cent annually after deflation.

Chart 1
NET INCOME AND ANNUAL RATE OF GROWTH:
1950-53, 1953-57 AND 1957-60.



It was not until 1956-57 that Federal expenditures stabilized and the cane sugar industry initiated a slight recovery. Thus, during the zafra of 1959, 1,087,000 tons of sugar were produced representing an increase of 97,000 tons in relation to the zafra of 1957, and the activities of the Federal government stabilized. The result was that during the last three years there were relatively few downward pressures on the economy and the average rate of increase of net income reached 8.3 per cent. Even after taking account of prices the average rate of increase was 6.1 per cent per year. This growth occurred despite the development of an economic recession in the United States during 1958. The increase in the last year, for example, amounted to 9.4 per cent in current prices and 7.3 per cent after deflation.

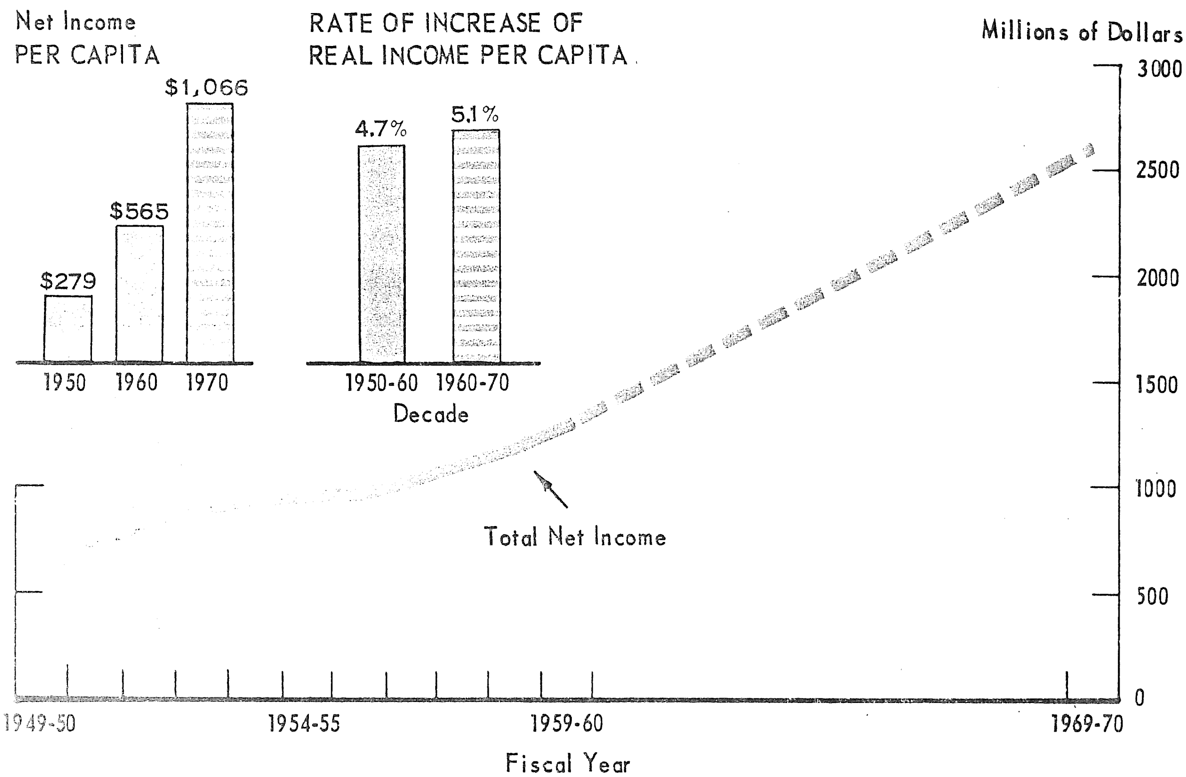
OUTLOOK FOR THE DECADE 1960-70

In the following sections an analysis of the possible developments in the principal sectors of the Puerto Rican economy is presented. The results of this analysis indicate that there is every reason to expect a continuation of at least the same rate of growth in net Commonwealth income as that achieved during the decade of the 1950's. The projections presented in this report are not based on goals or desires to be achieved but are based on an analysis of the forces for expansion and decline and are to be considered as representing the most probable outlook for the next decade. It has been assumed that the Commonwealth government will play approximately the role it has in the past and that external forces will also remain the same. For example, the U. S. economy will be generally prosperous, with short recessions of the magnitude of the 1954 and 1958 contractions alternating with periods of relative prosperity and no major armed conflict will take place. In developing the projections past experience with respect to the success of the various programs has been analyzed and extended into the future in order to arrive at the most probable developments for the coming years. It is the intention to give the projections the level of realism which is required if effective planning and coordination is to be carried out through the use of such information.

In summary, the results of the sector-by-sector analyses indicate that during the next decade the net income of Puerto Rico should increase from $1,311 million in 1959-60 to $2,650 million by 1969-70, or approximately double. Annually this represents a rate of growth of 7.3 per cent in current prices. If it is assumed that the price movements of the last seven years are duplicated during the next decade, the level of prices would increase by about 1.5 per cent per year. The reason for not taking the first three years of the 1950-60 decade into account in projecting future prices is that the earlier period was dominated by the Korean emergency. Using this annual price increase, net income in constant prices will be reduced to 5.8 per cent per year.

Chart 2

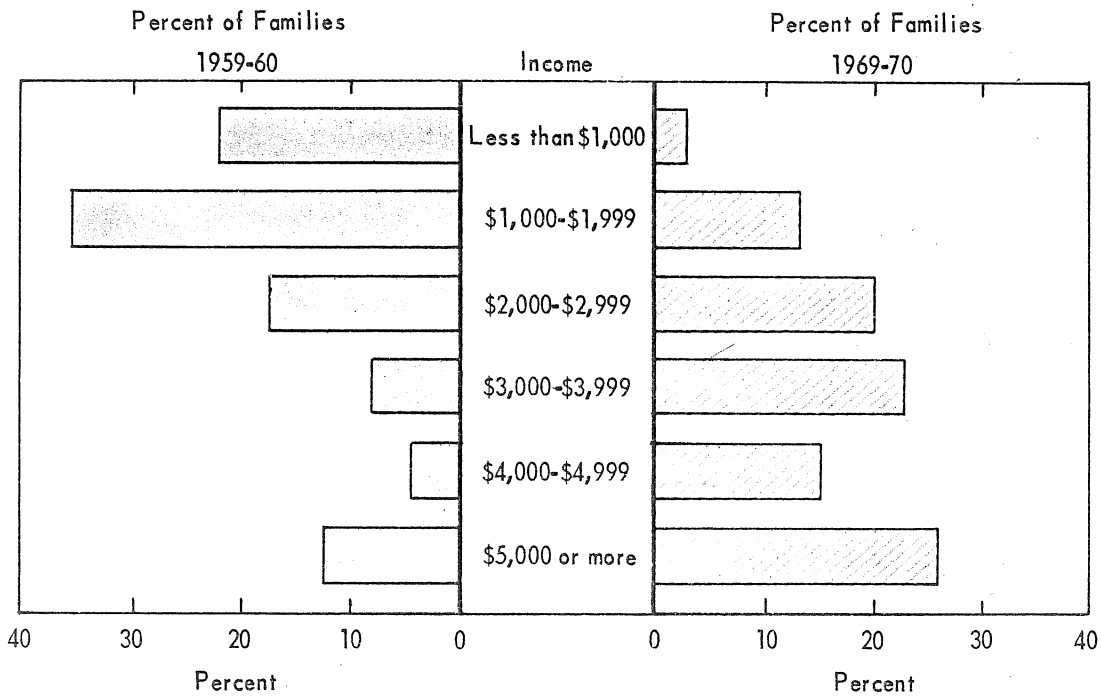
PROJECTION OF NET INCOME (Current Prices)



In accordance with the population projections which will be discussed, it is anticipated that population will grow at about .5 per cent per year so that by 1970 (July) there will be approximately 2,500,000 persons in Puerto Rico. This implies that during the next decade net income per capita, in current prices, should rise from about $565 in 1959-60 to $1,070 in 1969-70. In constant prices this represents an increase of 5.1 per cent per year. This increase, while it is considerable, is not a great deal higher than that which had developed during the last decade when the rate of increase per capita in constant price terms was 4.7 per cent per year. Thus, it appears to be a feasible rate of growth. It is estimated that the number of families with incomes above $3,000 will triple. Such an increase in purchasing power of Puerto Rican families should penetrate through all economic sectors which supply the goods and services procured by families.

Chart 3

DISTRIBUTION OF FAMILIES BY INCOME LEVEL



In effect, activity of the supporting sectors of the economy will grow greatly. Of course, there will be differential rates of growth. Commercial activity oriented toward providing durable goods will grow more rapidly than commercial activities involved in food distribution. Professional services will expand more rapidly than domestic services. An illustrative case is that of the necessity for the construction of roads. In the past decade, the increase in income permitted the number of private automobiles, excluding trucks and service cars, and automobiles owned by the government, to increase from 28,000 in 1949-50 to 122,000 in 1959-60, or an annual increase of 9,400. It is expected that all families with incomes of more than $3,000 will own private cars. During the next decade it is anticipated that the number of private cars will increase by 168,000, that is, the rate of increase per year will be something like 16,800, to reach a total of 290,000 passenger cars in 1970. In addition, of course, there will be trucks, station wagons and public vehicles. These types accounted for 58,000 vehicles in 1960.

Another illustrative case is the demand for private housing, which will be analyzed in greater detail. The increase expected in the number of families with purchasing power capable of buying private houses offered in the market should double by 1970, thus creating a demand which will be about 15,000 houses per year. In the year just past the demand for housing, which was considered quite high, amounted to 10,000 units as revealed by the number of building permits issued.

INDUSTRIAL DEVELOPMENT

DECADE 1950-60

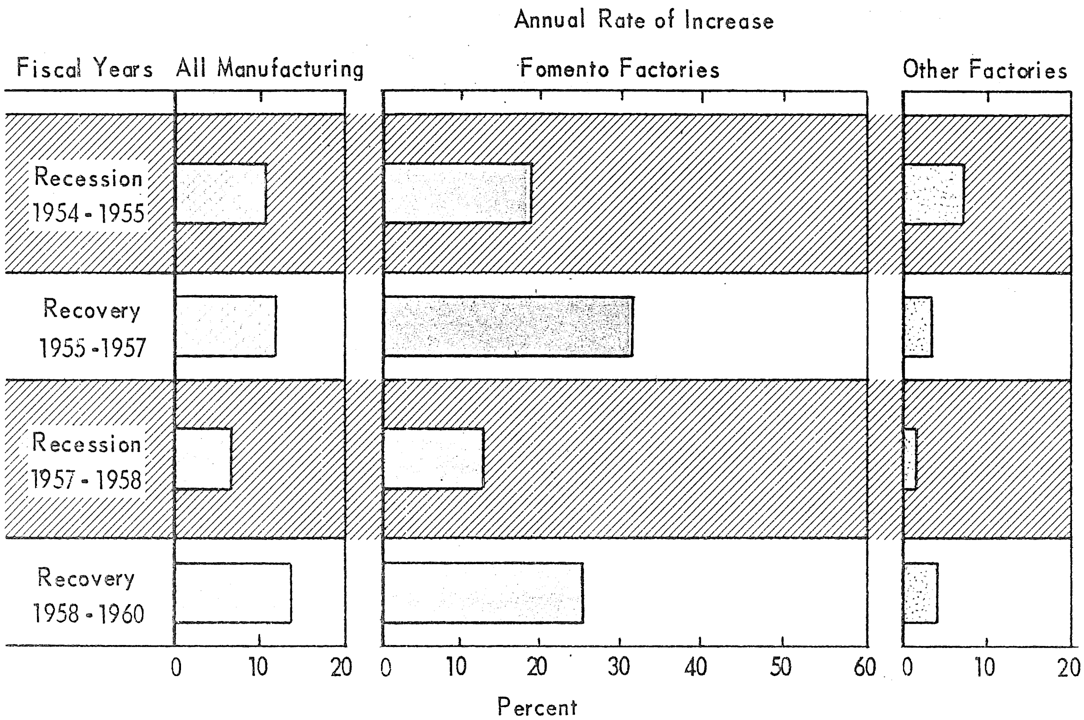
The program of industrialization has been one of the primary forces behind the growth during this decade. The rate of increase of net income generated in factories amounted to an average of 13.5 per cent per year. In contrast, activity of some of the traditional industries, especially those based on agriculture, actually moved in the opposite direction.

The expansion came from the new factories which were opened under the auspices of the industrialization program (Fomento). The income originating in these factories rose from a level of \$7.2 million in 1950 to \$157 million in 1960.

In the first years of the decade when the program of industrialization was just started, the rate of increase in the net income originating in promoted factories was spectacular. Even during the contraction of 1954, the rate of growth tended to accelerate. However, more recently, the rate of growth has become sensitive to the U. S. business cycles. For example, during the contraction of 1958 the rate of growth was reduced by more than 50 per cent. However, during the recovery expansion once again was rapid. Net income in Fomento factories increased by an average of 20 per cent during 1958-1960. Nevertheless, even during the periods of recession net income in the Fomento factories grew more rapidly than in the traditional industries. The most important traditional industry is that of sugar which followed the course of developments in agriculture. With the decline in the agricultural phase of sugar cultivation since 1954, a corresponding reduction in importance of the sugar manufacturing industry occurred. Another traditional manufacturing industry is that of tobacco stripping. A rapid descent in activity started in 1956 when it was possible to introduce mechanization into the operation. At the same time other

Chart 4

EFFECT OF U.S. ECONOMIC CYCLES ON THE MANUFACTURING SECTOR OF PUERTO RICO

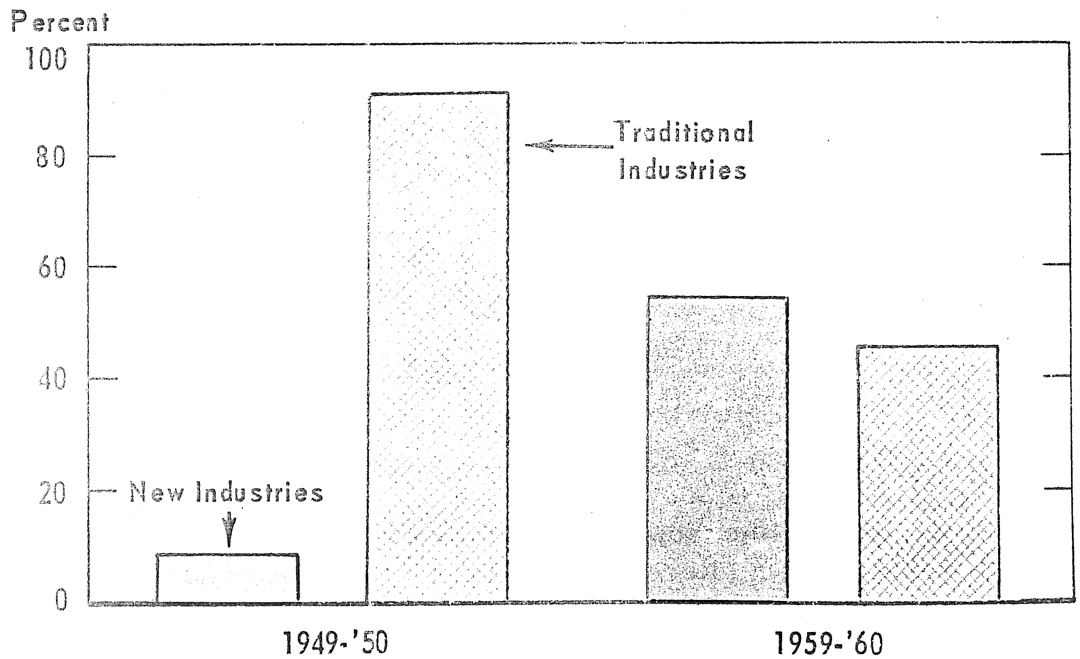


traditional industries, such as clothing, gloves and buttons, experienced a reduction because such industries could not expand productivity at the same rate as the rest of the economy. However, these stagnant or declining trends were not registered in all of the traditional industries. Some of them actually increased year by year largely due to the increase in internal demand. Typical examples of these are the beverage industries and those related to construction. The dualism typical in the processes of rapid economic development throughout the world is illustrated through the simultaneous existence of dynamic sectors and stationary, or declining, sectors. The latter industries are generally the traditional industries. In the past decade, activity in the traditional industries had increased by only 2.8 per cent per year. It is evident that traditional sectors of manufacturing have tended to slow down the rate of growth of the total. In effect, it can be seen in 1959-60 that the traditional industries pulled the rate of growth from 27 per cent among the newer industries to an overall average of 16 per cent.

The future appears to be very optimistic for two reasons. First, the more dynamic sector of the economy, that is the new industries, now represent 54 per cent of the industrial manufacturing total and, therefore, now will tend to dominate the overall growth of net income in manufacturing. Second, in the traditional sector there is a greater group of industries that can be considered dynamic. Thus, they also should grow more rapidly than in the past and thereby increase the overall rate of growth among the manufacturing industries.

Chart 5

PARTICIPATION OF NET INCOME IN MANUFACTURING



The economic growth of Puerto Rico and its primary force, industrial development, clearly offers a typical case of economic development in relationship to exports. The internal capacity of an economy with only 2.3 million persons with a per capita income of $570 to absorb manufacturing products is necessarily limited and therefore the industrialization of Puerto Rico must depend upon exports. In 1958 the payrolls of the exempt factories, which were selling their total production exclusively in the local market, amounted to $7.9 million. The payrolls of those whose output was either exported in total or in part amounted to $46.6 million. However, the economic growth which was induced by these exports expanded the internal demand, thus generating new factories oriented toward the local market.

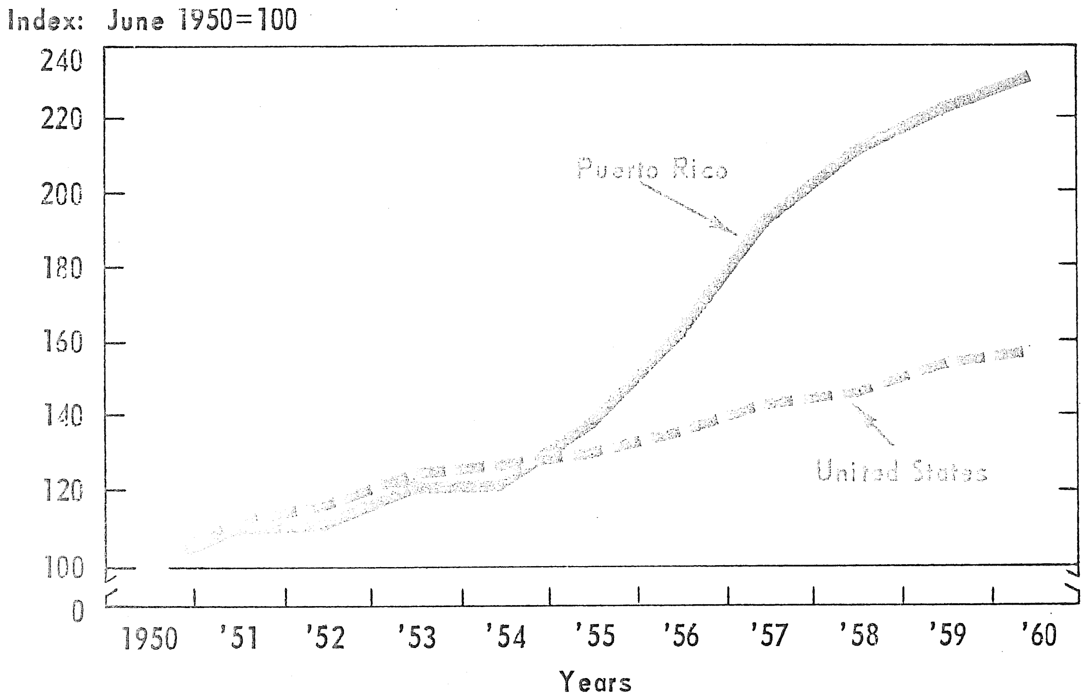
The number of new factories established under the Fomento program has been steadily increasing. In the first two years of the decade the average number of factories established was thirty-five and in the next three years the average was seventy, while in the last year it amounted to one hundred and eleven. On the 30th of June there were open and operating some 572 factories promoted under the economic development program. The accomplishments of the industrialization program were in substantial harmony with what was expected in accordance with the projections of economic development indicated some years before, except that the productivity per employee was greater than had been foreseen. In 1959-60 the net income per employee in Fomento factories amounted to $3,550. Comparison with a figure of four previous years means this represented a rate of increase of 10 per cent per year. In the United States the rate of increase in the last few years did not equal 4.5 per cent per year. It is evident that in the creation of a more dynamic structure, manufacturing results in the introduction of industries with higher levels of productivity, for example, electrical apparatus and petroleum refining as compared to the apparel industry. The result is a rather dramatic increase in the average productivity.

However, the overall increase in productivity is also attributable to the general increase in productivity in existing plants. Undoubtedly the principal cause for the rapid growth in productivity in existing plants was the increase in wages registered in the last few years, especially since 1955.

From 1955 to 1960, the increase in average hourly earnings amounted to 10.5 per cent per year in factories promoted by Fomento. In the United States, in the same period, the average factory salary increased by about 4.1 per cent per year -- less than half of that of Puerto Rico. The rationalization of the productive processes on the part of businesses was made possible by increasing the efficiency of workers which, in certain instances, resulted in a reduction in the number of employees. In 1959-60, the average annual number of employees in Fomento factories was 44,000 as compared to the level of employment of 1954-55 which was 21,000. This meant that the annual increase was about 4,200 a year, while the projections had anticipated an average increase per year of 7,600. It appears that the objective of increasing incomes rapidly through increasing wages was more intensively pursued than had been anticipated with the result that the actual level of employment was less than the projection.

Chart 8

INDEX OF AVERAGE HOURLY WAGES IN MANUFACTURING: U.S. AND P.R.



DECADE 1960-70

The potential of the expanding manufacturing sector oriented toward export is considerable. The possible exports of Puerto Rico represented only an insignificant part of the total U. S. market and then only in specialized products such as women's clothing. The potential for further expansion can be seen with reference to the fact that some twenty metallic and electrical articles manufactured in Puerto Rico utilize practically the same processes as some additional 163 products which are not yet produced in Puerto Rico. Thus, the dynamic character of growth requires the continual development of industrial sectors which are favorable for continued increase in productivity.

A comparative analysis of conditions in the United States and Puerto Rico indicates that there is considerable opportunity for competing in the United States market and thereby expanding Puerto Rico's productive capacity for such products. While it appears that the wage advantage is no longer as great as it probably was a few years ago, there is still a considerable differential in United States and Puerto Rican wages. With respect to other aspects the conditions now may be considered better than they were at the beginning of the program. During the last few years there has been steady improvement in the general level of education, industrial experience and health of factory workers, all which should lead to improved productivity per hour. In addition, investments made in the last decade for improving the economic infrastructure makes more readily available the basic services required for industrialization.

Therefore, it is not possible to visualize at this moment any major obstacles to the increase in the industrialization during the decade of 1960-70 which have not existed during the past decade. In addition, there are now a number of years experience with the technique of promotion. It appears, therefore, that the industrialization program will continue to evolve new methods and should enjoy an opportunity for growth.

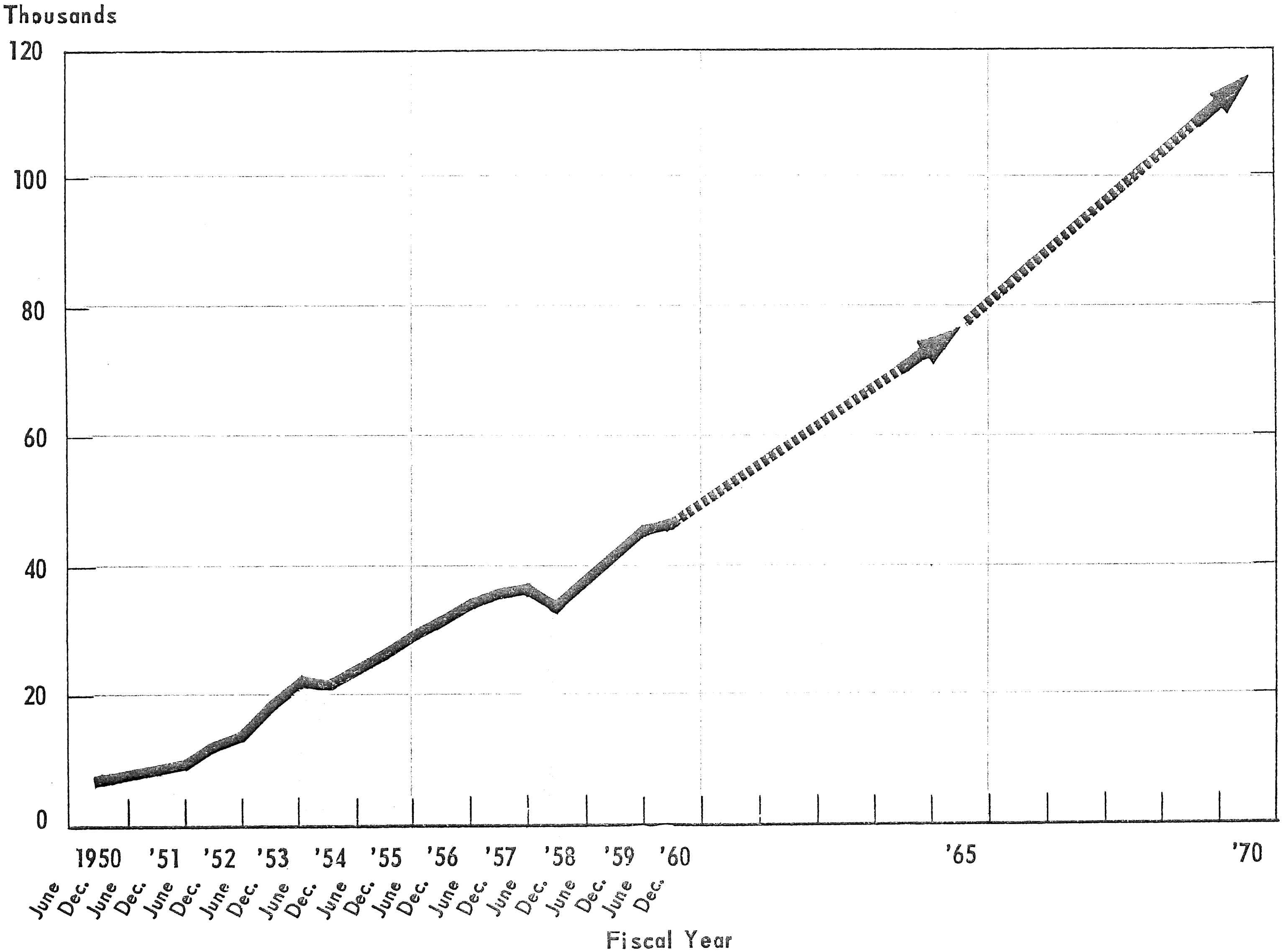
In light of past accomplishments of the industrialization program considering the potential capacity for further growth during the next decade, it appears possible that the following objectives may be achieved: (a) Increase in the net income originating in current prices in new factories from an annual rate of $157 million in 1959-60, to $346 million in 1964-65, and $683 million in 1969-70. (b) A net increase of 29,000 employees in the five-year period 1960-65, another 37,000 additional in the second five-year period 1965-70, or a total net increase of 66,000 employees during the next decade.

The rate of increase implied by this level of net income generated in the manufacturing sector during the first five-year period 1960-65 is 17.2 per cent, as compared with the annual rate of 24.7 per cent which was experienced during the second five-year period of the decade of the 1950's. The rate for 1965-70 will taper off to 14.5 per cent per year according to the above projections.

In relation to employment, the 29,000 additional employees assumed for the next five-year period means an increment of some 5,800 employees per year and 7,400 during the second part of the current decade, as compared with the average rate of increase of 4,200 registered during the last five-year period of the decade of the 1950's. These forecasts for employment are based on the condition that the increase in productivity will be slightly lower than in the past five years due to the fact that it is believed wages will not grow as rapidly as they did after 1956. Therefore, with respect to the two objectives discussed above, increased

Chart 7

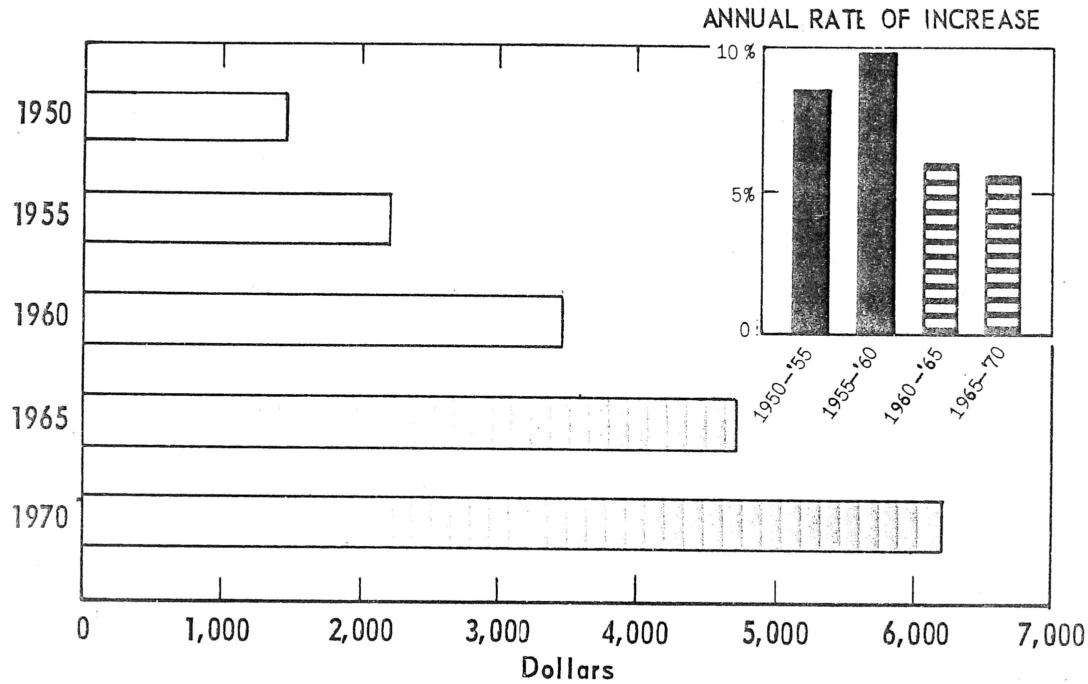
EMPLOYMENT IN FACTORIES PROMOTED BY FOMENTO



productivity and income and increased employment, it is believed that a better equilibrium will be established during the next five years. Nevertheless, it is estimated that productivity will increase by about 6.3 per cent per year during the next five-year period and probably will be translated immediately into wages.

Chart 8

PRODUCTIVITY: NET INCOME PER EMPLOYEE IN FACTORIES PROMOTED BY FOMENTO

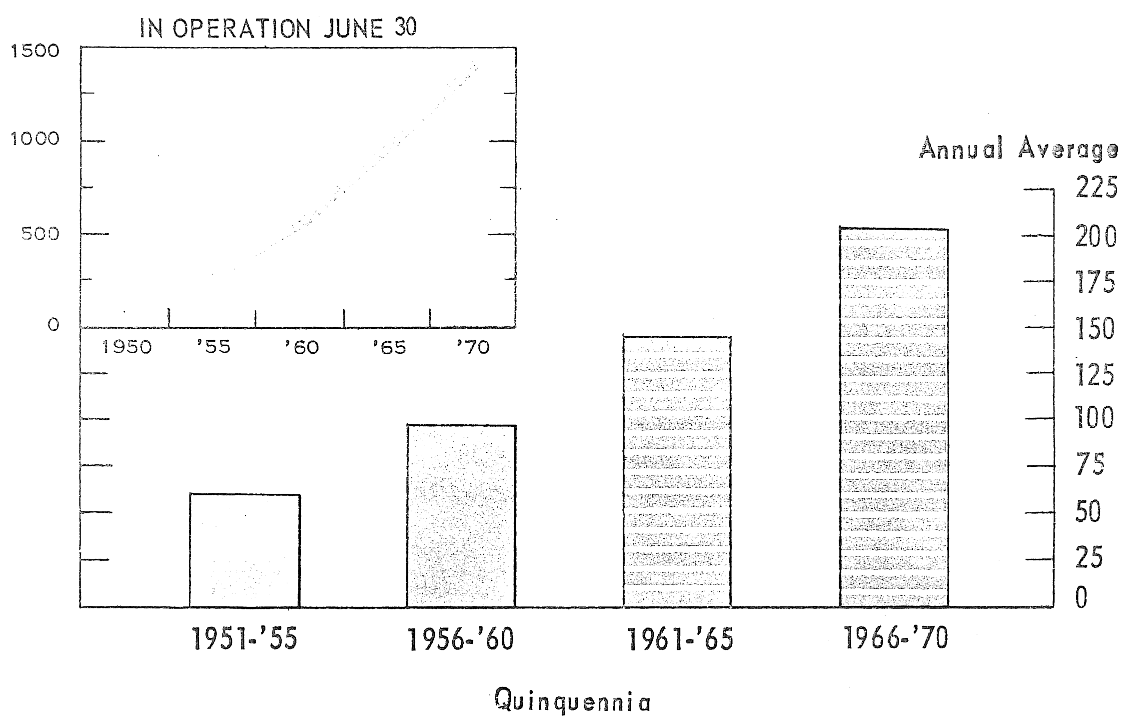


These projections in the industrial development program for the next five years imply that it will be possible to open on an average of 144 factories per year during the first five-year period and 205 during the second five-year period. It has been assumed in the projections that the new factories will have a declining average level of employment with the result that employment will rise more slowly in ratio to the number of plants in operation. However, this trend may be reversed because there is now a fundamental basis for expecting increases in the demand for consumer goods or goods for investment and intermediate products which can be produced in Puerto Rico on a competitive basis for the local market.

The level of employment in the traditional group of industries, such as sugar centrals, establishments of tobacco stripping and clothing factories, has in the last few years registered a systematic decline produced by the mechanization of the centrals and the introduction of a system of bulk-loading of sugar, as well as the displacement of the manual work of stripping through mechanical means. In the case of clothing the acceleration of general productivity was induced by an increase in salaries. However, there has been an increasing trend by this group to resist the downward pressures and they are now gradually producing increases in

Chart 9

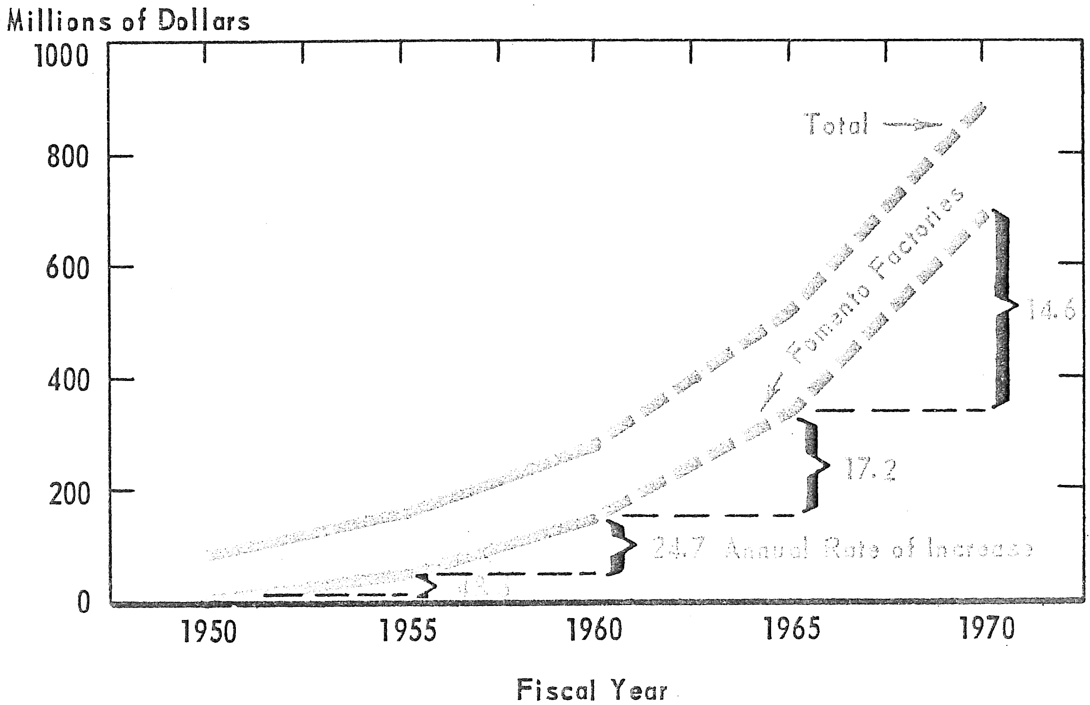
FOMENTO FACTORIES - ANNUAL AVERAGE



employment. It can be expected that this upward trend may continue because the demand for the output of the traditional industries, as well as new industries which are oriented toward supplying the local market, may be expected to increase with expanding expenditures for consumer goods as well as selected investment goods especially for the construction industry.

Chart 10

INDUSTRIAL DEVELOPMENT - NET INCOME IN FOMENTO AND OTHER FACTORIES



The accomplishment of the industrialization program stated above with respect to the new factories together with the prospect for increase in the traditional industries should enable manufacturing net income to total $520 million by 1965, or an overall average annual increase of 12.7 per cent per year. For 1970 it is calculated that net income generated in the manufacturing sector should reach about $880 million.

With respect to the level of employment in all manufacturing the outlook is such that productivity will probably increase at a constant rate and will depend upon the changes in wages. Assuming that the rate of increases in wages may diminish slightly the level of factory employment should increase from an average of 82,000 in 1959-60, to 114,000 in 1964-65, and 152,000 by 1969-70.

AGRICULTURE DEVELOPMENT

Puerto Rico has a total of 1,350,000 cuerdas of agricultural land with an inclination of 45 degrees or less, excluding the land occupied by the urban zones, roads, parks, etc. However, among these there are some 175,000 cuerdas which are practically unproductive because of poor soils, rocky land or too much sand or swamps that are difficult to drain, and other unusable land which cannot be adapted to agriculture. The result therefore, is that Puerto Rico has at the most a total of 1,175,000 productive cuerdas with an inclination of less than 45 degrees. There are 2,350,000 inhabitants in Puerto Rico which would mean that there would be only about one-half cuerda per acre of cultivable land per person. Yet, with these limited resources it was possible in 1959-60 to produce agricultural products valued at $236 million, or some $200 of agricultural output per cuerda. It is not easy to find other countries in the world which have been able to approach this high level of output from the land. Nevertheless, the present per cuerda output is not at an optimum, given presently known techniques and potential product-mixes. There is existing cultivable land which could produce more, and other good land standing practically idle.

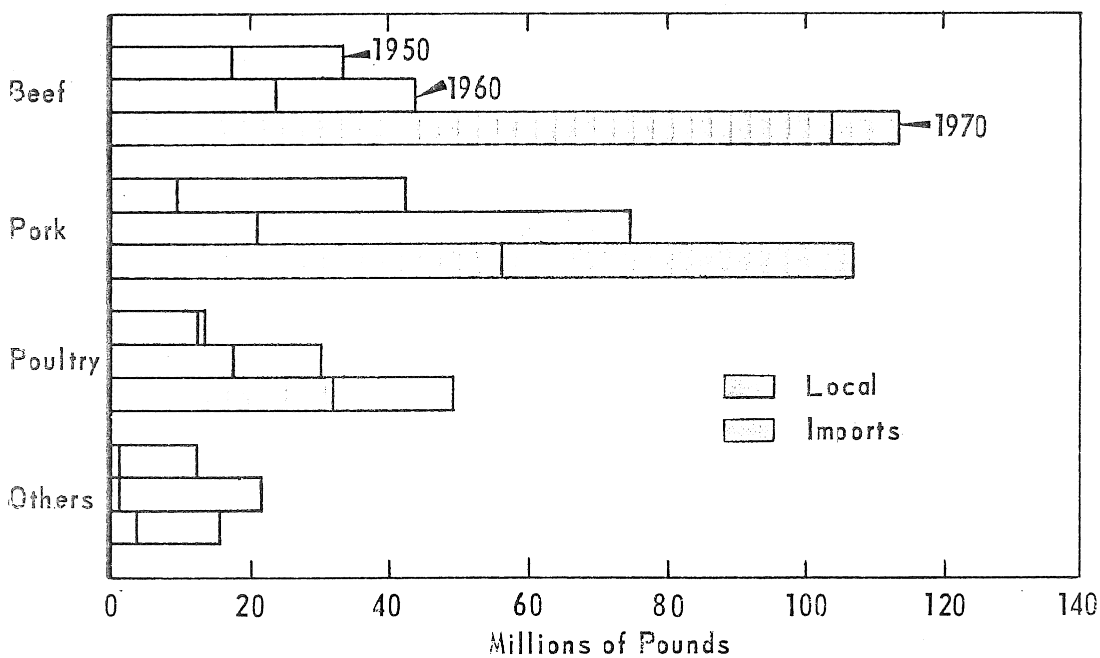
THE OUTLOOK FOR THE LIVESTOCK INDUSTRY

Many food items now consumed in Puerto Rico are susceptible to expanded production in Puerto Rico and are of considerable importance, for example, meat and eggs. The food habits of Puerto Rico are changing in favor of items of greater nutrition such as meats, their derivatives such as milk and egg products. These goods tend to replace the traditional carbohydrates which until now have constituted the most important part of the daily diet.

In 1950, the consumption of beef per inhabitant in Puerto Rico was fifteen pounds, ten years later it reached twenty pounds and according to the projections of income per capita by 1970 the consumption per inhabitant ought to be about forty-six pounds. Taking into account the population estimate for 1970 of 2,500,000 inhabitants, the total demand for beef in Puerto Rico should reach 114 million pounds per year. In previous years the amount of meat imported represented 35 per cent of the consumption. While it will probably always be necessary to import some types of meat, however, by 1975, 90 per cent of the consumption could be locally produced. Local production could expand four-fold. In 1959-60 twenty-four million pounds of beef were produced, while the demand for local production should be 104 million pounds by 1969-70. There are two factors which combine to make such an expansion a distinct possibility: (a) the program for improvement of pastures which has up to this date covered only about 200,000 cuerdas, and (b) the recent opening of a modern meat-packing establishment.

Chart 11

MEAT CONSUMPTION: LOCAL PRODUCTION AND IMPORTS

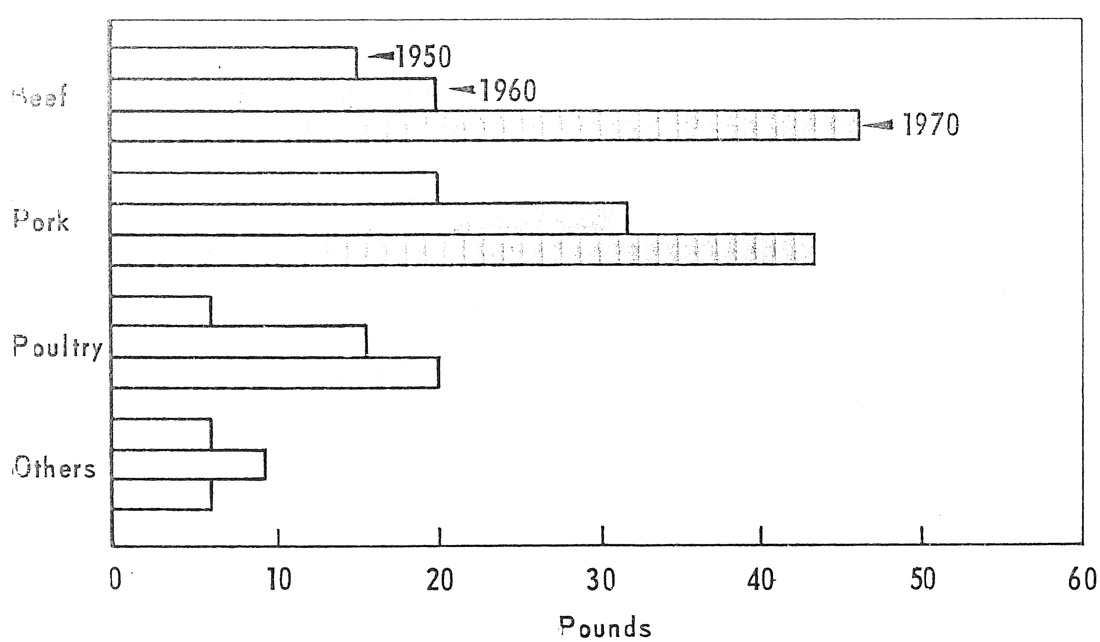


A similar picture is offered for the production of pork. The consumption per capita in Puerto Rico in the past decade increased from 20 pounds in 1949-50 to 32 pounds in 1959-60. According to the expected expansion in income it is estimated that by the end of the decade consumption per capita should reach some 43 pounds. It is expected that the production of meat which rose from 10 million pounds to 21 million pounds during the past decade should continue to increase until by 1969-70 some 57 million pounds of pork are produced.

In relation to the production of poultry the picture is equally bright. In the past decade, the consumption per capita rose from 6 to 15 pounds and in the decade now beginning it is likely to increase from 15 to 20 pounds. This implies that local production ought to duplicate this increase in the next decade since there is a considerable opportunity for import substitution.

In 1949-50 the production of all types of meat was valued at the point of origin at $20 million. With the increase in production registered during the past decade the value rose to $27 million in 1959-60. For 1969-70, assuming no change in prices, the value could reach $83 million which is approximately the value of production of cane during the last zafra.

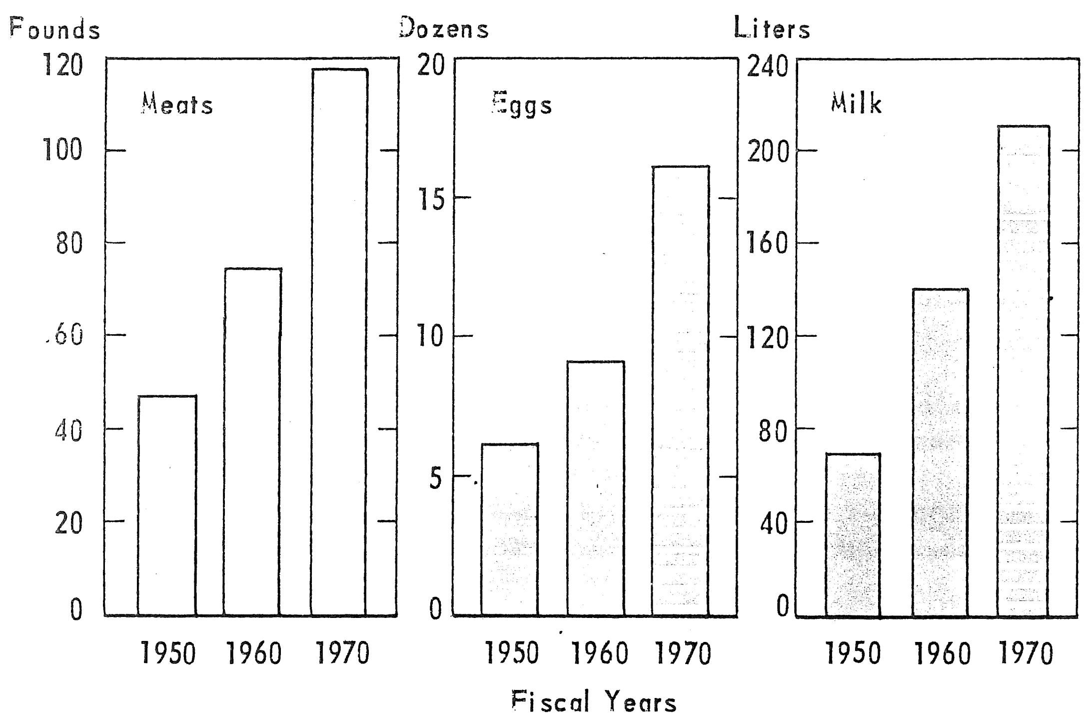
Chart 12
PER CAPITA CONSUMPTION OF MEAT



In relation to milk production the outlook is very optimistic since it is believed that the rate of growth of the past decade should be maintained. The consumption per capita of fresh milk currently amounts to 140 liters per person, in 1950 it was only 68 liters. It is calculated that by 1970 it should reach 210 liters, which is still somewhat less than in the United States. This increment means an increase in production from 33 million liters in 1959-60 to 59 million at the end of the decade. In terms of present prices, the value of production will be $84 million as compared with $50 million presently.

Chart 13

PER CAPITA CONSUMPTION OF LIVESTOCK PRODUCTS



Local production of eggs started to expand very rapidly during the last three years. In the first seven years of the decade production was relatively stationary, around 9 million dozen per year. However, in 1957 a strong upward movement was initiated which culminated in production of 14 million dozens in 1960. It is significant that most recently the growth of local production was not only sufficient to satisfy the increase in demand but simultaneously permitted the replacement of imports. In the first seven years of the decade, consumption increased by 22 per cent but nearly all of the increase in consumption was absorbed by imports which increased from 3.8 to 7.2 million dozens per year. The annual consumption per inhabitant at the present is nine dozen but with increasing incomes during the next decade the per capita consumption will be 15.8 dozens. Taking into account the outlook for population it is possible to reach the conclusion that in Puerto Rico consumption should increase from 21 million dozen to 39 million dozen by 1970. It is expected that local production will take care of about 92 per cent of consumption. It is, therefore, necessary to increase local production from 14 million dozen in 1959-60 to 36 million dozen in 1970. As we have said the rate of increase which is implied should surpass that of the last three years. In terms of value, assuming current prices, the figure of $21 million should be achieved as compared with $8 million during the last year. Considering the meat and poultry industry and its products together, it appears that there is considerable potential for the growth of these industries. In 1949-50 the value of production of all agricultural products dependent on livestock and poultry equaled $47 million and by 1959-60 it reached $86 million. In the decade of the 1960's it is expected to rise to $188 million or an increase of about $100 million.

OUTLOOK FOR OTHER AGRICULTURAL INDUSTRIES

Fortunately the expansion of the livestock industry and its products does not require a decrease in the production of cane and other agricultural products. It is believed that increased productivity of cane per cuerda can more than offset a diminution in land area devoted to cane as the result of the shift to pastures and urban uses if output can be raised in the smaller farms, occupying some 192,000 cuerdas, from an average of 3 to 4 tons per cuerda which is the average currently being produced on farms above 250 cuerdas in size.

With respect to the production of other agricultural products the projections assume a continuation of the past trends. In addition to a continuation of past trends there is a possibility that the commercial operation of fruit and vegetable farms might be introduced which would increase the production of this sector greatly. It is expected that demand for these products in the local market will increase parallel to that of livestock products.

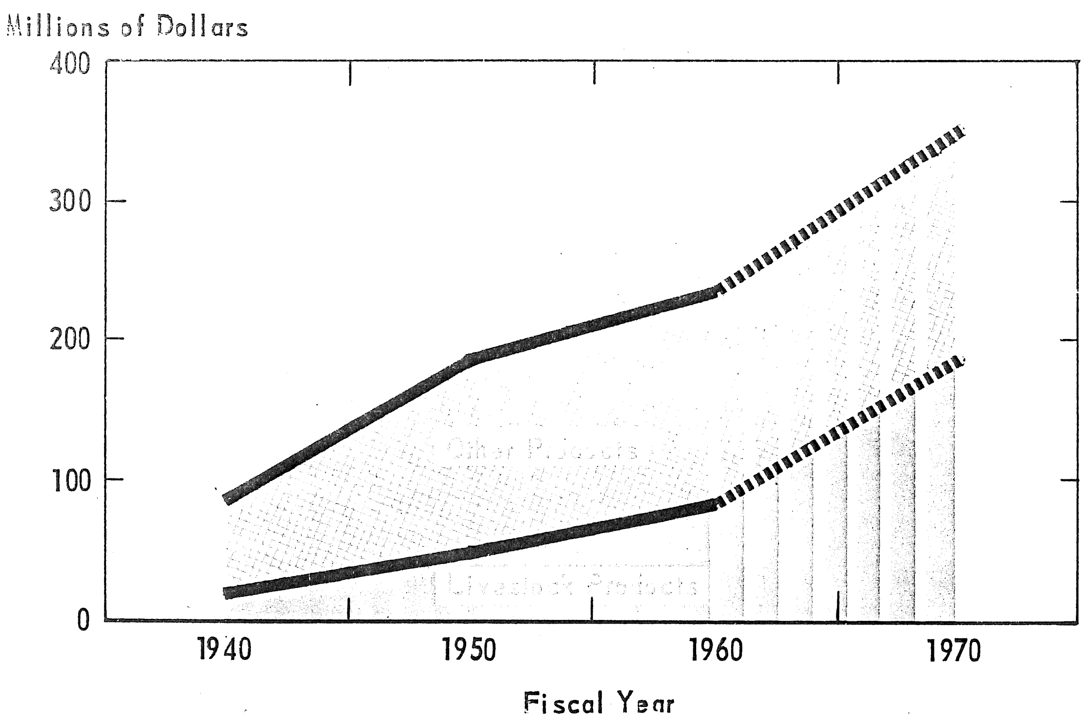
If productivity per worker rises as expected it is possible that Puerto Rico may eventually be able to sell competitively a significant part of its production of truck garden and fruit crops to the United States market.

OUTLOOK FOR NET INCOME OF AGRICULTURE

The structural expansion of agricultural production discussed above presents characteristics which may be considered typical of economies undergoing rapid development in that traditional agricultural activities are displaced by those which can achieve a higher rate of productivity. In the case of agriculture, this displacement is occurring in favor of livestock for productivity per worker is greater than in the older sectors of the agricultural industry. The value of livestock production in 1949-50 represented about 25 per cent of the total value of agricultural production. By 1959-60 it accounted for 36 per cent and according to the projections for the next ten years it should account for 54 per cent. This structural change by itself automatically introduces the increases in the average productivity of agriculture. In addition in each separate industry, especially that of cane, substantial increases in the productivity per worker will occur. The increment in productivity will result

Chart 14

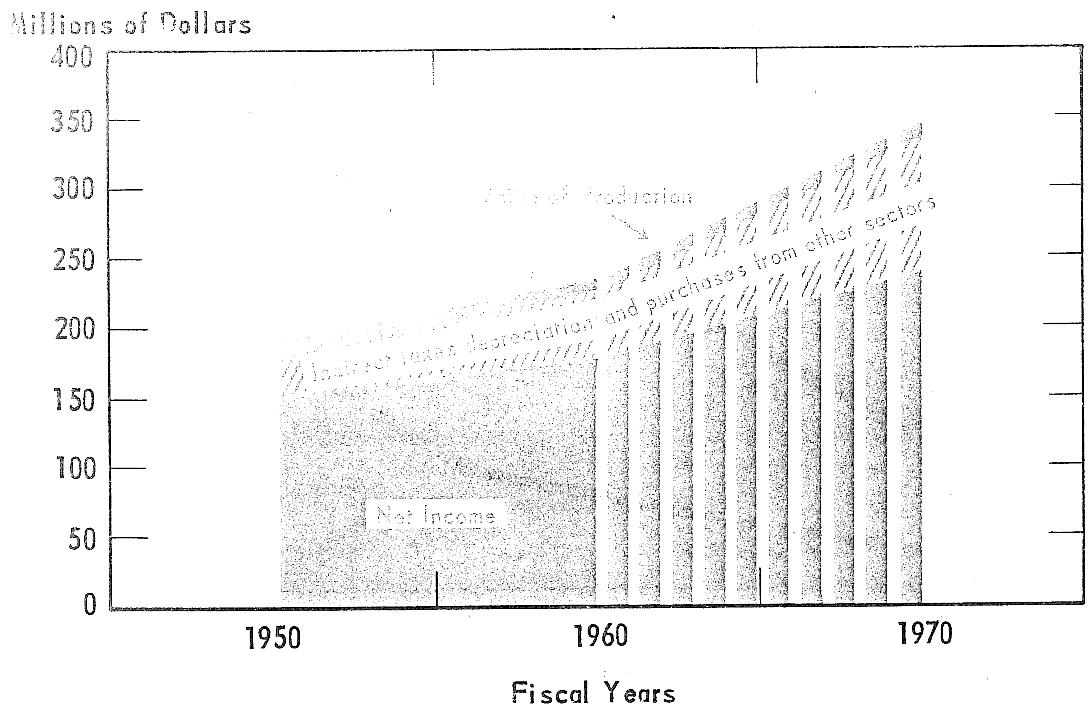
VALUE OF AGRICULTURAL PRODUCTION



from the utilization of new machinery and the more intensive utilization and application of herbicides and other chemical products. However, structural change in the composition of agricultural production and increased productivity brings with it a lower ratio of net income to sales since it is necessary to procure more machinery, fertilizers, and other chemicals and supplies, such as feed, from outside of the agricultural industry. For example, according to studies on the cost of dairy operations in Puerto Rico net income per dollar sales in 1954 was 51 cents, dropping down to 47 cents in 1958, as compared with 75 cents in the remaining sectors of agriculture. Taking into account these factors, it is believed that net income will not rise as rapidly as the value of production. Calculating the effect of the shift in product-mix it is estimated that by 1969-70 the proportion of net income will fall from 75 per cent to 68 per cent. As a result the anticipated growth in agricultural production during the next decade will probably induce an increase of about $62 million in net income generated in agriculture. This would bring net income for 1969-70 to about $240 million a year.

Chart 15

VALUE OF AGRICULTURAL PRODUCTION AND NET INCOME



Currently the rate of growth in income is about 3 per cent per year. However, the rate of growth implied by the projection of value of agriculture for 1969-70 should reach about 4 per cent per year. This rate is quite high especially if it is considered that the increase must take place without the benefit of virgin lands.

PRODUCTIVITY AND EFFECTS OF SUPPLY AND DEMAND IN AGRICULTURE EMPLOYMENT

It appears to be one of the facts of the historical process of economic development in various countries that agricultural productivity begins to increase at a faster rate than that of the economy after a certain level is reached. Turning to Puerto Rico, it appears that we have arrived at that point sometime during the last decade. Production of agriculture per employee has risen about 7.5 per cent per year, somewhat higher than the rest of the economy. An analysis of the probable increase of productivity per employee in distinct sectors of agriculture of Puerto Rico indicates a conclusion that during the next decade the increase in agricultural productivity per worker should continud to be higher than that of the rest of the economy.

It might be expected that the difference between the increment in agricultural productivity and that of the rest of the economy should be even greater than anticipated after considering the disparity existing between income levels in agriculture and the rest of the economy, since one would expect rural emigration into the urban areas between the rural and urban sectors will be so rapid as to cause an equalization of the incomes. However, propensity to migrate is not equal among the rural youths and that of the older agricultural workers. Thus, it will tend to be the younger who are migrating, while the older, being less mobile, will be content to remain despite continuing large differentials between rural and urban wages. In addition, percentage setting mechanisms tend to operate independently of labor supplies in the urban areas and therefore urban wages only slightly reflect mass in-migration to urban areas.

In April 1950 some 49,000 workers of over 50 years were employed out of a total of 223,000. By April of 1958 the number of men over 50 actually increased to 52,000 despite the fact that the total number of the workers in agriculture decreased by 57,000. The exodus of people of 50 years and over from the rural areas is at a minimum with the result that the number of older people left in the country tends to be high.

As stated above the number of workers of more than 50 years in 1950 amounted to 49,000. The coefficient of disappearance for these people was 37 per cent in eight years, since in 1958 there were only 31,000 aged 58 in the agricultural labor force. In addition the drop-out rate among the younger men in the rural areas is even greater. In April 1950 there were 65,000 men of less than 26 years, whereas by April 1958 there were only 44,000. It is, therefore, possible to account for a reduction of 39,000 persons in agriculture merely by the decisions of the oldest and the youngest. There is no reason to believe that there will be a reversal of this trend with the result that a continued reduction in the number of agricultural workers can be anticipated. The number of older workers will decline as a result of social security benefits, reduction in jobs suitable for them and increased income contributed by other members of the family. The younger men workers continue to leave the agricultural labor force for the following reasons: In the first place, the reserve of the younger ones is reduced due to the fact that the rural population which provides the source has been declining; in the second place, the motivations of the younger ones for emigration will also continue; in the third place, the internal economic expansions are offering greater opportunities to those men who are located primarily in the urban zones, even though it is not necessary to live in those zones in order to work. For example, studies indicate that out of every 100 persons who live in the rural zone 65 worked in agriculture in 1950; the latest figure indicates that no more than 40 work in agriculture. This declining tendency in the supply of agricultural workers is paralleled by a decrease in effective demand for such workers in accordance with the changing structure of production and the general increase in productivity which is expected to develop during the decade. Therefore, it is estimated that employment by the end of the decade in agriculture will not exceed 92,000. It seems quite possible that the drop in agricultural employment which in the last decade amounted to 91,000, at a rate of 9,100 per year, will be considerably reduced, namely 33,000 in the ten years or an average of 3,300 per year. Because of the factors stated above, the level of unemployment, particularly seasonal unemployment, may be expected to decline more rapidly than employment.

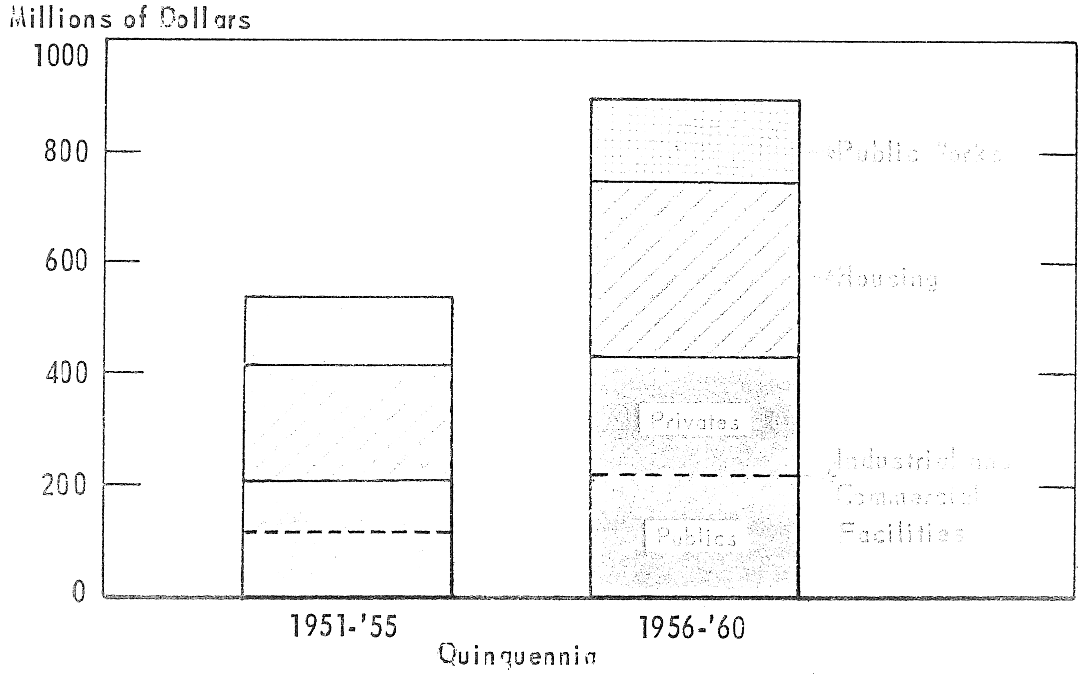
INVESTMENT AND THE CONSTRUCTION INDUSTRY

INDUSTRIAL INVESTMENTS

The last decade has testified to an investment by the construction industry, valued at $1,422 million which was without parallel in Puerto Rican economic history. Even though the construction of housing has been very great, especially in the last few years of the decade, business enterprises, both private and public, provided the basic increase by building factories, constructing electric plants, hotels and commercial buildings, and expanding airports and established systems of supplying water. These are the facilities which really provide the basis for development and give it a solid foundation.

Chart 16

CONSTRUCTION: VALUE PUT-IN PLACE
1951-55 AND 1956-60

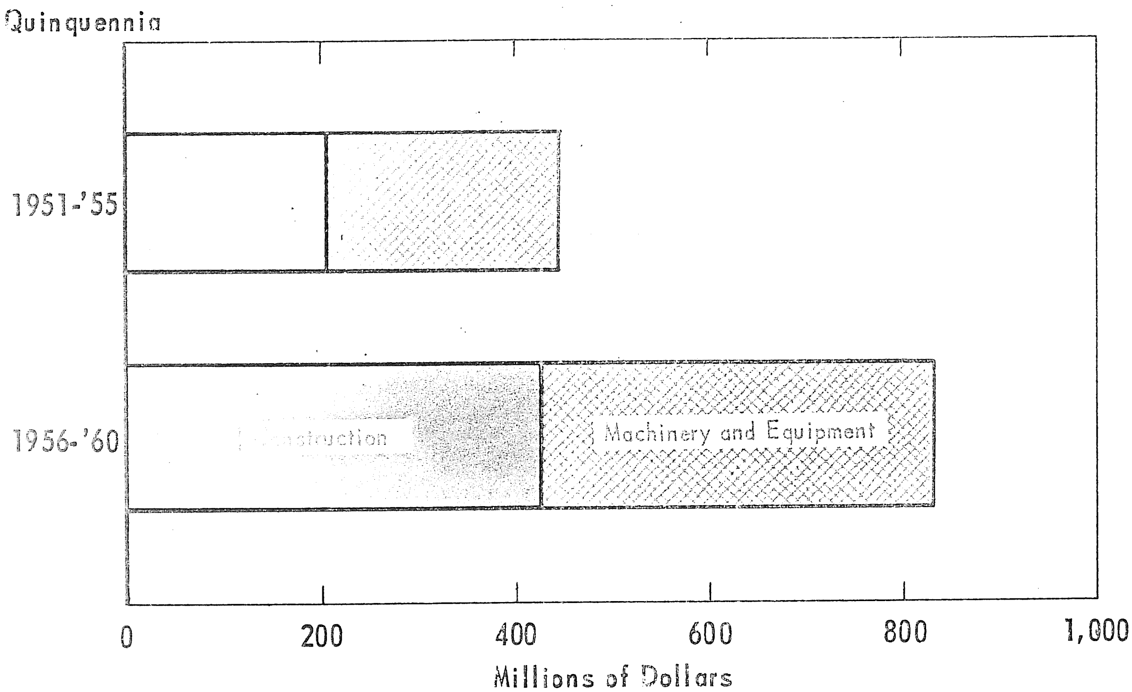


In the first five years of the decade the investment in these facilities equalled $205 million, somewhat less than the value of residential construction. But in the second five-year period, between 1955-56 to 1959-60, inclusively, the value of construction for these facilities reached $430 million, more than double the value in the preceding quinquennial.

But construction is really only part of the investment in enterprises. An almost equal amount has been invested in machinery and equipment. During the decade total investment and public facilities and plant and equipment amounted to $1,280 million. In relationship to income privately originated in Puerto Rico this capital investment is equivalent to 13 per cent of the net income originated in the non-governmental sectors during the first quinquennial and 17 per cent during the second quinquennial. A volume of investment of such a magnitude on the part of enterprises makes it possible to increase production of the economy greatly, with both capital and labor benefitting. Capital benefits in terms of the profits which it receives and labor benefits with respect to increased wages. This is the real reason for the creation of economic development. Private investments ($448 million) during the five-year period 1951-55, originated an income in Puerto Rico which was $231.5 million greater in 1955-56 than the net income which was originated in 1950-51. The net income in 1950-51 amounted to $583 million, whereas in 1955-56 it amounted to $815 million.

Chart 17

INVESTMENT OF BUSINESS AND GOVERNMENT ENTERPRISES



It is, therefore, significant that for each dollar of new investment there was produced an increment of net internal income amounting to 52 cents. Rental income, either paid or implied, for housing is excluded on the one hand, and on the other hand the value of construction of housing is not included. The ratio of output to capital drops slightly to 48 cents. Of this amount 28 cents represents salaries and the rest profits and payment to capital. Subsequently the investments of enterprises during the quinquennial 1954-55 to 1958-59, inclusively, totaled $754 million and induced an increase of $358 million in the net income of the private sector. In other words, it rose from $763 million in 1954-55 to $ 1, 121 million in 1959-60. During this period the investment of enterprises resulted in 47 cents in additional net income. If the return from housing and the capital investment in housing during the period is eliminated, the output capital ratio drops to 44 cents, of which 29 cents corresponds to salaries and 0. 15 cents for payment of capital. It is significant, therefore, that for one dollar of investment on the part of the enterprises there is generated on the average 29 cents increase in salaries and 15 cents increase in payments for capital, primarily in profits.

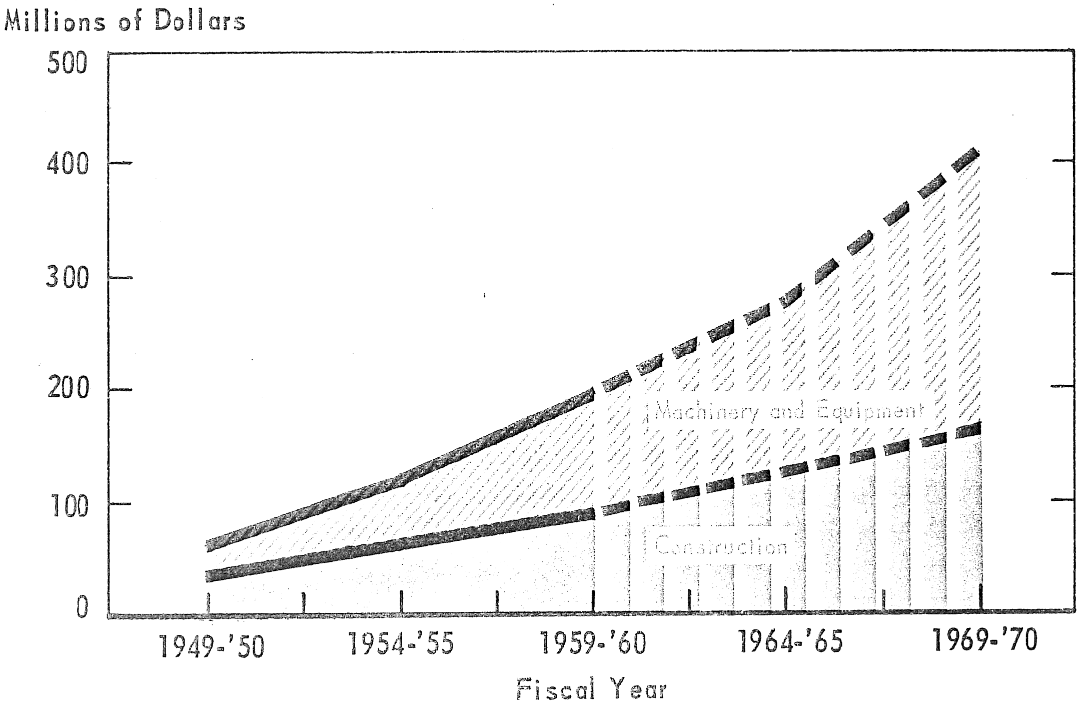
The relative stability of this production/capital ratio is partly due to the fact that until 1959-60 there had not materialized as large a net income as possible from the few plants of very high capital investment which require a definite period of time before they reach normal levels of production. On the other hand, offsetting the fact that there are potentially a few plants which can produce a great deal of net income per capital output there have been a considerable number of public utilities, such as electric plants and water systems, which tend to have a lower production/capital ratio than most of the investments which are generated by private enterprise.

The importance of enterprise investment in the future is clear if the industrialization and agricultural development programs are going to succeed. In order to achieve a growth of $517 million in private net income generated during the first quinquennial period during the decade of the 1960's and $749 million in the second quinquennial, it will be necessary to achieve a rate of investment during 1961-65 of $1,213 million, and $1, 745 million during 1966 to 1970. The level of investment in enterprises required is, of course, substantial but the rate of increase implied is not greater than that which was achieved recently. For example, during the second quinquennial of the decade of 1960 the rate of the amount of investment was double that of the first quinquennial.

This outlook for investment enterprises implies that the value of construction (excluding machinery) which amounted to $92 million during 1959-60, should increase by 1964-65 to an annual rate of $123 million and by 1969-70 to $162 million. It has been assumed that the proportion of construction in relation to total investment will diminish since it is believed that a major part of the increase in production will come about through the expansion of existing facilities, and because the new investment will tend to be oriented toward the production requiring more

Chart 18

INVESTMENT OF BUSINESS AND GOVERNMENT ENTERPRISES



intensive use of machinery. In 1949-50 the value of construction represented 55 per cent of the total investment in plant and equipment. In 1959-60 the proportion of construction had dropped to 47 per cent, and it is assumed that by 1970, 60 per cent will be in plant and equipment and 40 per cent will be in construction. In the United States, for example, the proportion of construction dropped from 46 per cent in 1929 to about 35 per cent in the first years of the preceding decade.

DEMAND AND CONSTRUCTION OF HOUSING

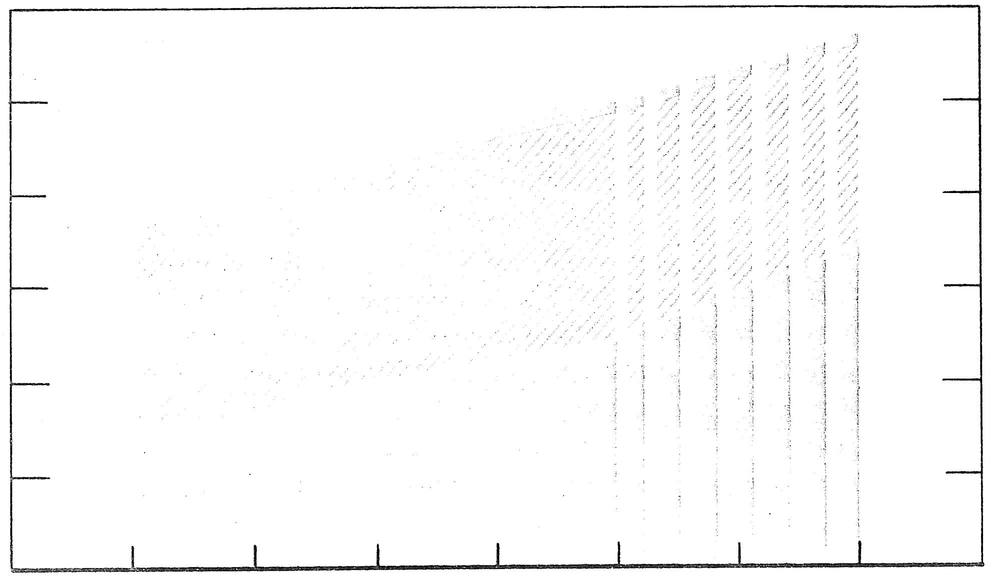
The population projections for the next decade show a total increase during the ten-year period of about 6 per cent. However, it is anticipated that the formation of new families will increase at a faster rate than the total population. One of the reasons is that adult population of 20 years or more is expected to increase during the next decade at a faster rate than the total population. However, there are several additional factors to explain the expectation of greater increases in number of households. In addition to the fact that the population above age 20 will be growing faster than the total, the population of men in the ages 45 to 65, which are the age groups who have the highest percentage of households, will be increasing even faster than the total adult population. Thus in 1955 for each 100 men of this age group 88 were heads of households, that is to say, they had their own households, while in the case of men between 20 and 30, only 43 of each 100 were heads of households. In addition, the statistics reveal two other tendencies which should result in an acceleration of the formation of households, both of these tendencies result from economic improvement occurring in Puerto Rico. The first consists of a systematic increase in the formation of families on the part of the masculine population of ages 20 to 30. The percentage of men of this age group who constitute heads of families has increased substantially between 1940 and 1950 and it is estimated that this ratio continued to grow during the past decade, although not reaching the ratio of the United States. The second factor is the increased proportion of young marriages who because of improved economic conditions are not required to live with their parents and are forming new households.

It is estimated that in Puerto Rico in 1970, taking account of these factors and according to the results assumed, the number of households which by definition will be equal to the number of occupied dwellings will probably increase from about 495,000 in 1960 (estimate based on the last census) to 568,000 in 1970. This represents an increase of some 73,000 households as compared with an increase of 64,000 registered during the past decade. Taking into account the population previously projected for 1970, it is deduced that the average number of persons per dwelling will be 4.3. This is consistent with the trend between 1940 and 1950 when the average size family dropped from 5.1 to 4.7. The 1960 figures are not yet available.

In the past decade the urban zone absorbed 84 per cent of the increase in total households, amounting to an increase of 54,000 in the number of urban households. It is calculated that in the next decade the increase in the urban zone will be even greater than the total increase. The number of new households in the urban areas may reach 89,000 as compared to a total of 73,000 for the entire island, with the result that the number of households in the rural areas will drop by 16,000. The forecast presented in the previous sentence is based on analysis of the probable distribution of employment among the rural and urban zones.

Chart 19

OCCUPIED HOUSEHOLDS CLASSIFIED BY RURAL AND URBAN ZONES



It is obvious that the increase in urban families does not constitute a good indicator of the demand of private houses because a large part of the families do not have the income which is required to purchase new houses that can be offered by the housing contractors. Therefore, it is necessary to estimate the demand for private housing by considering the increase in the number of families which will have incomes above the minimum sufficient for the purchase of houses which are offered on the market. While the number of families in the urban zone during the last decade increased by 54,000, it is estimated that the increase in families with incomes of \$3,000, namely the purchasing power required to buy a house, rose by about 50,000 during the last decade. The construction of private houses between April 1950 and June 1960 amounted to 54,000 or about the total of the increase in urban families with sufficient income to buy the new houses on the market. As seen in Table II the construction of housing by private enterprises reached an average of 6,000 during the last few years. Currently (1959-60) the rate is about 10,000 units per year. It is significant that this represents 20 new houses for each 1,000 houses occupied. In the United

TABLE II - CONSTRUCTION OF NEW DWELLING BY PRIVATE ENTERPRISE

Year	Number
1950 (1)	437
1950-51	6,942
1951-52	2,313
1952-53	2,376
1953-54	2,494
1954-55	4,549
1955-56	6,372
1956-57	6,384
1957-58	5,539
1958-59	7,122
1959-60	9,943
TOTAL	54,471

(1) Includes only the quarter of April-June, 1950.

States the proportion in the year 1959 was 22 per thousand. The rate of investment in housing has been rising faster than the number of units being constructed since the average house is higher in value, due to increased costs, but also the average house is of improved quality. In 1949-50 the value of the housing construction was \$21 million and in 1959-60 reached some \$65 million. The outlook for the next decade is equally bright for housing construction. As has been explained earlier it is expected during the next decade that there will be an increase of about 90,000 in the total number of urban households. However, the increase is even more significant when the distribution by family income is investigated.

With economic development it is anticipated that the level of income will be so great that the number of urban families with more than \$3,000 will be duplicated. If during the next decade the prices of new houses are maintained at the present level it appears that the demand for private houses will increase to 120,000 as compared to 54,000 during the past decade. This represents an average of about 12,000 private houses per year. It is significant that in the final year of the decade, the number of permits issued for construction amounted to some 10,000 units. Taking into account the probable distribution of the new houses according to value, it is estimated that the rate of construction for the year 1964-65 for private houses will amount to about $92 million and will finally reach a figure of $137 million in 1969-70. In the next five years the value of construction of private houses should be equal to at least the value of construction of the entire decade of the 1950's.

With respect to public housing, in the last quinquennial 6,900 public units were constructed and represented an investment of $59 million. It is believed that funds will be available for the construction of public housing under programs of the Federal government amounting to about 2,000 units per year. Based on an average value of $8,600 the total level of investment in construction of public housing should reach about $17 million a year. In addition, other programs for public housing and urban renewal should account for about $8 million per year.

OTHER CONSTRUCTION AND TOTAL ACTIVITY IN THE CONSTRUCTION INDUSTRY

With respect to construction by the regular government agencies and municipalities for roads, schools, hospitals and other major improvements, it is necessary to take account of the types of construction which will take place. It is projected that by 1969-70 the rate of investment by the regular government and municipalities will reach about $80 million, in comparison to some $37 million in 1959-60.

In summary, considering the three types of construction activities, housing enterprises, construction, and public works, it is calculated that total value of construction which in 1959-60 amounted to $212 million should increase by 1969-70 to $404 million.

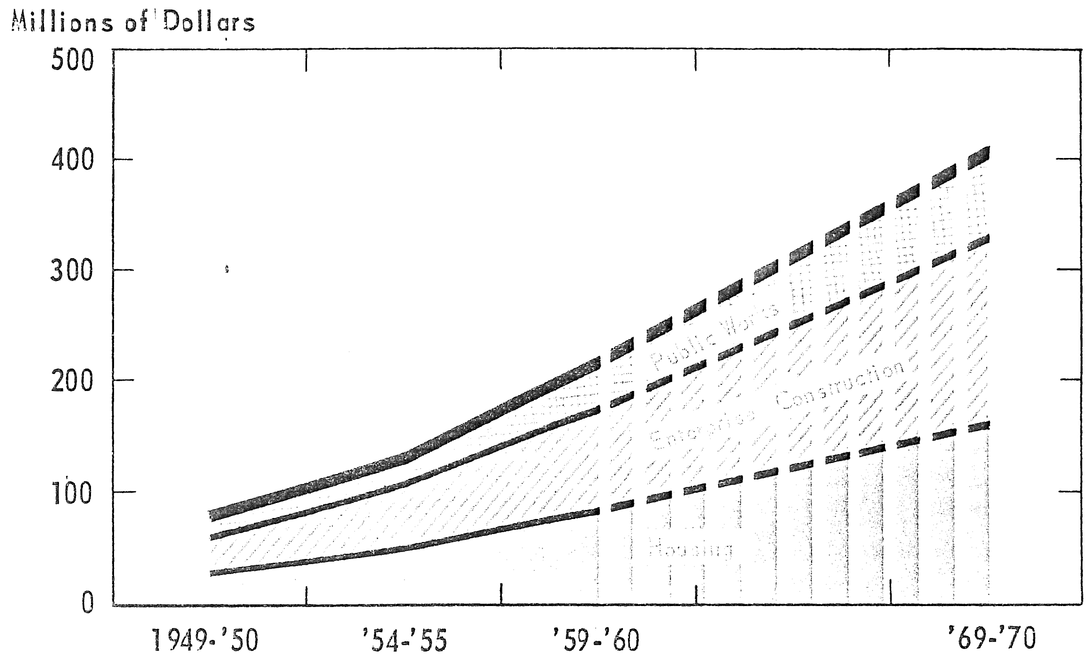
The increase in construction activity in the past decade created an increase in net income originating in the construction industry from $27 million in 1949-50 to $80 million in 1959-60. In the last year, net income generated within the construction industry represented about 37 per cent of the value put-in-place. Based on this relationship, the construction activity anticipated implies that during the next decade there will be an increase in net income generated by the construction industry from about $80 million in 1959-60 to $150 million in 1969-70, representing an average annual rate of growth of 6.5 per cent.

Considering total investment, that is, new construction and machinery and investment, it is possible to reach the conclusion that in the course of the next decade the annual rate of increase will be about

Chart 20

OUT LOOK FOR CONSTRUCTION ACTIVITY

(Value of New Construction)



7.4 per cent, reaching a total figure in 1969-70 of $658 million. Based on independent estimates of the gross product this will still be 21 per cent of the gross product, a figure which has been maintained for the last two or three years in the Puerto Rican economy.

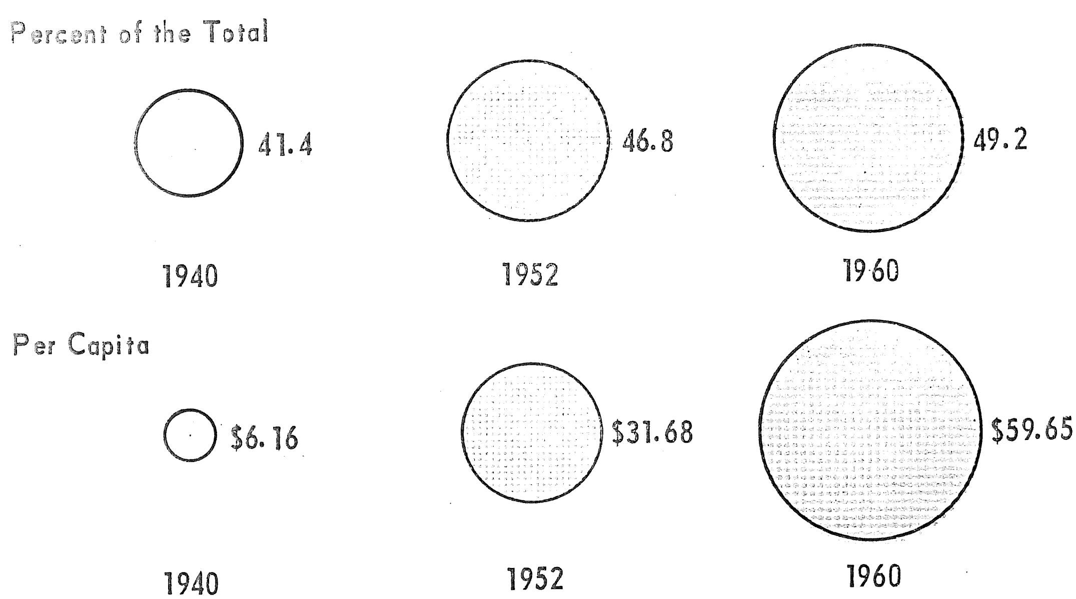
OTHER INDUSTRIES

GOVERNMENT SECTOR

The net income originating in the Commonwealth government, municipalities, and Federal agencies has risen roughly parallel to the net income total. In 1949-50 governmental sector represented 19 per cent of income and at the end of the decade also represented 19 per cent. However, as was said earlier, the role of the Federal government has tended to decline substantially since 1953-54. In that year income originated by the Federal government was $116 million, and represented 12.4 per cent of the total net income. In the following years, as troops stationed in Puerto Rico were reduced and the expenditures by the Federal government were drastically curtailed, the role of the Federal government has been reduced. Thus, during the last year 1959-60 for example, the net income attributable directly to the Federal government amounted to only $84 million, and represented 6.4 per cent of the net income, which was roughly half of that of six years ago.

Other government sectors, namely those of the Commonwealth and municipalities, have risen to offset the declining role of the Federal government. Net income generated by the Commonwealth and municipal governments during the past decade has risen from an annual rate of $70 million in 1949-50 to $170 million in 1959-60. In this last year it represented some 13 per cent of the total net income. The economic and social development during the last decade was possible only through increased government expenditures for both economic and social purposes. The budget for total expenditures for education, health, and welfare in 1959-60 represented 49 per cent of the total budget and 55 per cent of the total expenditures of the functional budget.

Chart 21
BUDGET FOR INSTRUCTION, HEALTH AND PUBLIC WELFARE



In accordance with political decisions it appears a high priority will be given to education and public welfare and health services. As a result it is anticipated that the net income derived from the government sector will also expand in accordance with the increase in the expansion of the economy. In the case of the Federal government it is believed that income originating in the operation of Federal agencies in Puerto Rico will also continue to expand, but probably at a lower rate than the increase in the total economy of Puerto Rico. Considering the possibilities of the increase it is believed that the net income generated by all three government sectors, Federal, Commonwealth and Municipal, will increase from $254 million to $368 million by 1965 and $500 million by 1969-70. This implies an annual increase of 9 per cent during the first quinquennial and a 7 per cent increase during the second quinquennial.

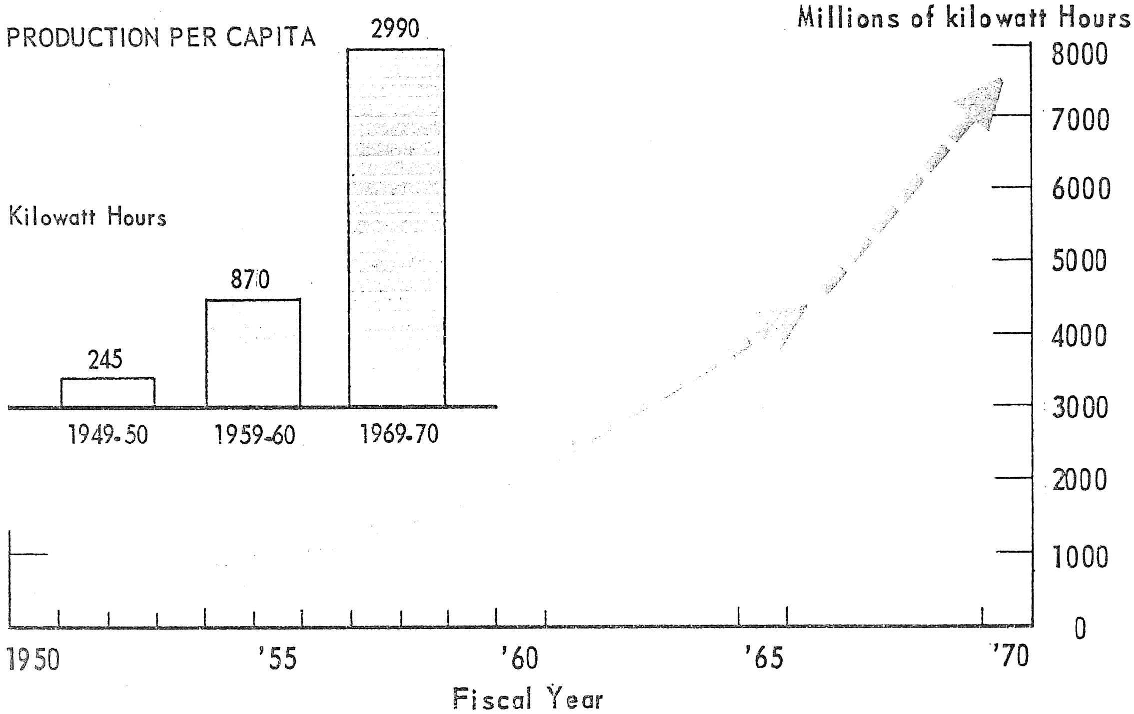
SECTOR OF DERIVED INDUSTRIES

The remaining industries which have been designated by the name "derived" are more or less determined by the activity in agriculture, manufacturing, construction, and government sectors. In the past five years there has been an increase of $203 million in the rate of income generated by these "originating" sectors and $196 million in the "derived" sectors, implying a factor of about one to one. In other words, an increase of $1 income in the originating sectors creates about $1 increase in the derived sector.

The most important sector by reason of the level of income originated is that of trade or commerce. In 1959-60 some $234 million worth of income was originated in that sector, representing 18 per cent of the total net income. The increase in the wholesale trade has been somewhat greater despite the fact that there has been a tendency for the displacement of some of the wholesaling activities, principally on food. However, there has been a rapid increase in wholesaling of construction materials and hardware goods which has been induced by the high investment rates in recent years.

With respect to the public service industries, income has gone up from $49 million in 1949-50 to $122 million in 1959-60. The principal cause has been the extraordinary increase in electric power production. In the past quinquennial the production of electrical energy grew at the remarkable rate of 16 per cent per year. In the last year, 1959-60, the production per capita reached 870 kilowatt hours per capita, putting Puerto Rico among the most economically advanced countries. During

Chart 22
PRODUCTION OF ELECTRICAL ENERGY



the last decade, 1950-60, production per capita rose from 425 kilowatt hours. Economic development projected for the next decade requires an increase in the production. Plans for the installation of new generating capacities, some of which are in process of construction, will result, by 1965-66 (next six years) in a production of electric power of about 4,400 kilowatt hours, as compared with 2,200 million kilowatt hours currently being produced. This represents an annual increase of 14 per cent or a rate of increase which means duplication in five and one-half years. At this rate of increase production per capita by 1969-70 will reach nearly 3,000 kilowatt hours.

In the rest of the service industry income generated has increased from $96 million in 1949-50 to $217 million in 1959-60. The increase has been slightly greater than the increase in total income of the economy. This steady increase is important for economies such as Puerto

Rico for it expands the technical knowledge and automatically creates local demands.

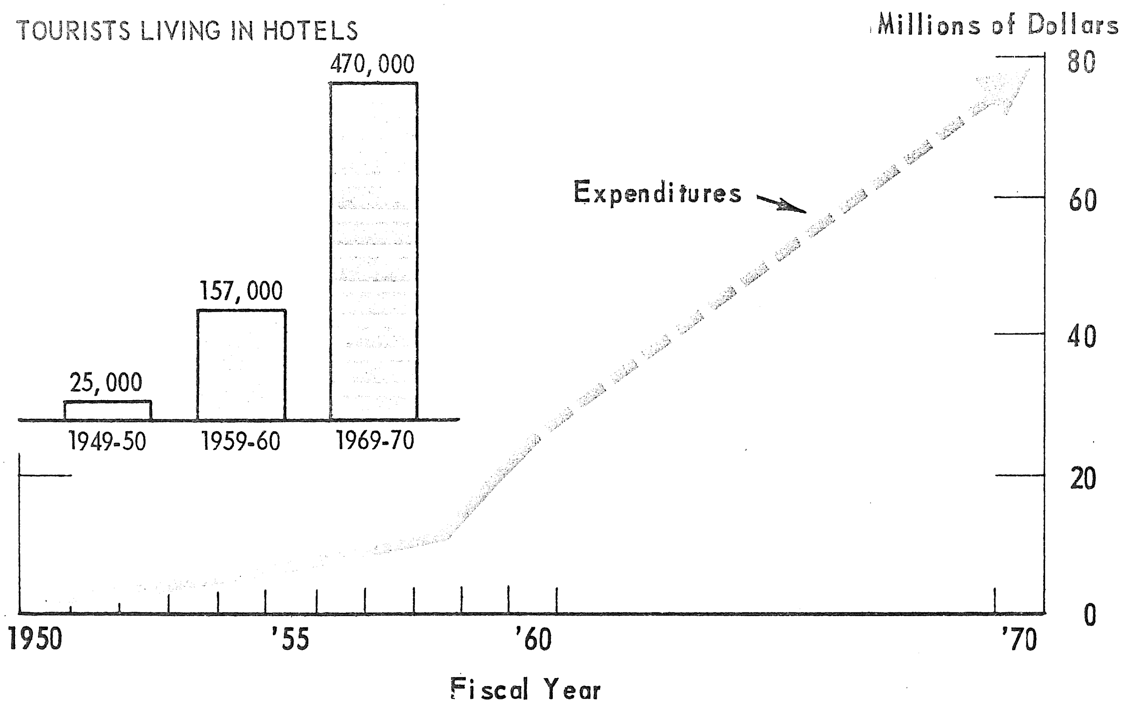
TOURISM AND THE HOTEL INDUSTRY

One of the sectors of the economy which has great possibilities for expansion is that of the hotel industry. In this analysis the projections are considered among those called "derived", however, it is obvious conceptionally that it corresponds to the "originating" sector since the fundamental cause for change is due to the external demand.

The increase in tourism in Puerto Rico can be expressed eloquently by information on the arrival of tourists. The number of tourists coming to Puerto Rico and staying in the hotels in 1954-55 amounted to about 51,000. Five years later, 1959-60, the number of tourists reached 157,000. It is significant that within only five years the number tripled.

Chart 23

NUMBER AND EXPENDITURES OF TOURISTS.



According to studies which relate Puerto Rico's tourist industry with the potential increase of the tourism activity in the Caribbean area, it is estimated that by 1970 the number of tourists should increase to 470,000. To handle this number of tourists it will be necessary to have 6,600 rooms. As of July 1, 1960, there were some 2,614 rooms in commercial and tourist hotels, therefore, it will be necessary to provide some 4,000 additional rooms during the decade. Currently there are projects under way, in process of planning, or under study, adding up to about 2,330 rooms.

This volume of tourism will mean that tourist expenditures will rise to some $77 million, based on an average expenditure per tourist of $163 which is the figure for 1959-60. Taking account of the increase in the total economy the $77 million of tourist expenditures still will represent only about 2.9 per cent of the total net income generated for 1969-70. This proportion is greater, for example, than that of France and Denmark during the last four years, but below that of Switzerland where, in 1956, the tourist expenditures represented 4.4 per cent of the total national income.

It is estimated that the increment in net income generated in the hotel industry will be about $15 million based on a ratio of net income per hotel room of $3,700 per year. This will mean that net income generated in the hotel industry will rise from $11 million in 1960 to $26 million in 1970.

With respect to employment, assuming that the ratio of 1.5 employees per room is continued, it will mean that some 6,000 new jobs will be generated in the hotel industry and another 3,000 in restaurants, stores providing articles for souvenirs, tourist agencies, etc. This would bring the total number of jobs created in the tourism industry up to about 14,500.

CHANGE IN THE INDUSTRIAL STRUCTURE

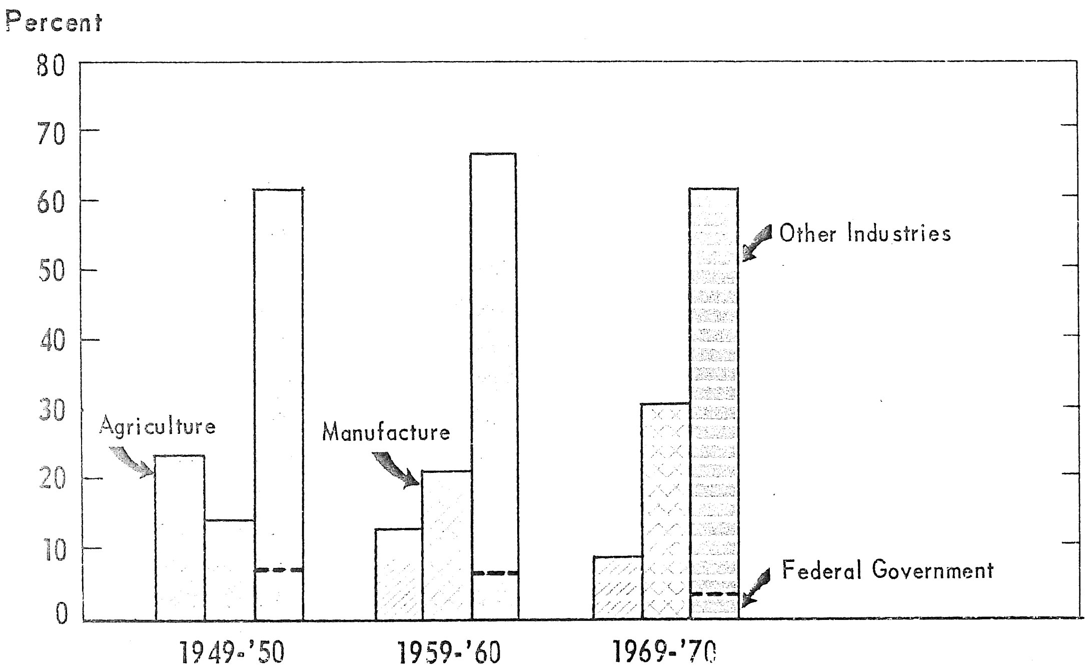
From the previous analysis it is possible to obtain a picture of the expected structural transformation in the economy. The proportion of net income generated in manufacturing with respect to internal net income, excluding net flows outside, can be taken to indicate the relative importance of the manufacturing industry with relation to other sectors of the economy. During the last decade manufacturing net income increased from 15 per cent in 1949-50, to 22 per cent in 1959-60. By 1970 the ratio should reach about 31 per cent. This is the percentage of net income generated by the manufacturing and mining industries in countries such as Holland. However, this ratio is still lower than such advanced countries as Belgium and England which have negligible agricultural resources. The proportion of manufacturing industries in these countries is 35 per cent; if mining is included, the rate reaches 39 per cent.

With respect to agriculture, the proportion of net income in agriculture related to the total internal net income of the economy has been diminishing, a fact which is generally true in all economies in the process of economic development. In 1949-50 agriculture represented 24 per cent of the total net income originated in Puerto Rico and ten years later, in 1959-60, the proportion dropped to 14 per cent. This is a proportion still higher than that of countries such as Holland, which has always been distinguished for its flourishing agriculture.

For 1970 it is expected that the contribution of agriculture to total net income will probably drop to 8 per cent, which is still double that of the ratio of net income originating in agriculture to total net income today in the United States. However, simultaneously with this decline is the relative participation of agriculture when measured in absolute terms. As indicated in earlier projections it is expected that an increase of $114 million dollars in the value of production will occur. This represents an expansion of 48 per cent above the present production levels. There has been a tendency for the rest of the sectors to obtain a greater proportion of the net income generated. Ten years ago this proportion amounted to 60 per cent and by 1959-60 the percentage reached 65 per cent. However, it is probable that their relative contribution will decline during the next decade. First, the current proportion is relatively high. The correlation relating the increase per capita income and the increase in these groups of industries appears to be among the highest in the world. In the United States the proportion of net income originating in this group has never exceeded 63 per cent. In contrast, the current percentage in Puerto Rico is 65 per cent. Second, it appears that the net income originated by the Federal government will grow less than the rest of the economy. For example, it now represents 6.1 per cent of the total net income while in 1950 it accounted for 7.2 per cent. According to the estimates for 1970 the Federal government's contribution will be only 3.2 per cent.

Other sectors in this derived group should increase at a rate slightly lower than the others; one of these is trade. The explanation for this derives from the possibility that consumer expenditures will increase more slowly than net income due to the following factors: (1) personal income will probably rise more slowly than net income due to payments to the Social Security funds; (2) disposable personal income, after allowing for deduction of taxes, will also increase at a lower rate than personal income; (3) consumer expenditures might be expected to increase more slowly than disposable income as a consequence of an increase in personal savings. These personal savings will not automatically be translated into increased investments since they will go largely for substitutes of imported capital; the total income generated, by personal savings will be reduced.

Chart 24
DISTRIBUTION OF DOMESTIC INCOME BY INDUSTRIAL SECTORS



PRODUCTIVITY AND EMPLOYMENT

In the last decade when real production in Puerto Rico increased by 75 per cent, the level of employment actually decreased by 10 per cent. It is apparent that this contraction enabled an extraordinary increase in productivity to take place during the last ten years. The annual rate of increase of real product per employee in the private sector was 6.7 per year, as compared to 2.8 per cent registered in the United States during the period 1948-1957.

This increase in productivity not only enabled a higher output, but also resulted in some displacement of workers in industries of low productivity.

TABLE III - ANNUAL RATES OF INCREASE IN PRODUCTIVITY DECADE 1950-60

Item	Rate of Increase
Private gross product per employee (1)................	6.7 %
Agriculture..................................	7.4 %
Other industries.............................	5.5 %

(1) In constant prices.

The greatest increase in productivity per worker was registered in agriculture with an annual rate of growth of 7.4 per cent. Since the total income of agriculture during the decade increased by about 20 per cent, the effect of this was an increase in total real production of agriculture by 20 per cent in the decade and a decrease in the level of employment by some 42 per cent.

The decrease in agricultural employment was not induced by the increase in urban population in order to maintain a stationary or slowly increasing productivity in the typically urban industries. On the contrary, the productivity of non-agricultural industries has also registered a considerable rate of growth amounting to 5.5 per cent per year. The principal inducement in the increase has evidently been the pressure which has been generated by the higher salaries resulting from the system of minimum wages in an economy of free competition. In the past decade productivity of private non-agricultural industries in terms of constant prices increased by about 75 per cent, however, the number of employees was maintained relatively constant. With respect to the quality of occupation there has clearly been an improvement. Currently, 39 per cent of the occupations in agriculture are professionals, technicians, office workers or trade, etc. At the beginning of the decade these occupations accounted for not more than 32 per cent.

With respect to employment the outlook appears quite optimistic. In the past decade the dynamic industries, those in which salaries were quite high, aggregated a total of some 80,000 employees. But at the same time agricultural workers, whose level of salaries are generally low, sought new levels of living and reduced agriculture employment by some 92,000 persons. In addition a very great drop in employment in the home needlework industry occurred. However, during the next decade it is expected that the level of employment in the more dynamic industries may reach 157,000, and considering that the decrease in employment in agriculture will probably be at a slower rate inasmuch as home needlework employment has already reached bottom, it is possible to conclude that there will be a net increase of 116,000 employees, in contrast with a decrease of 53,000 which was registered during the last year. This picture of employment ought to have a direct impact on the level of migration, especially among men. It can be shown that there is now a tendency for expanding industries to have employment divided about equally among men and women. As a result improved opportunities of work in Puerto Rico should mean that the migration of men over 14 may drop to one-half of what it was in the previous decade.

The structural transformation in the economy clearly suggests an increase in the number of employees engaged in the industrial sectors. In the last decade the percentage of employment in industries of lower productivity systematically declines. Thus, the agricultural sector accounted for 36 per cent of all workers in 1949-50 and currently accounts for only 23 per cent.

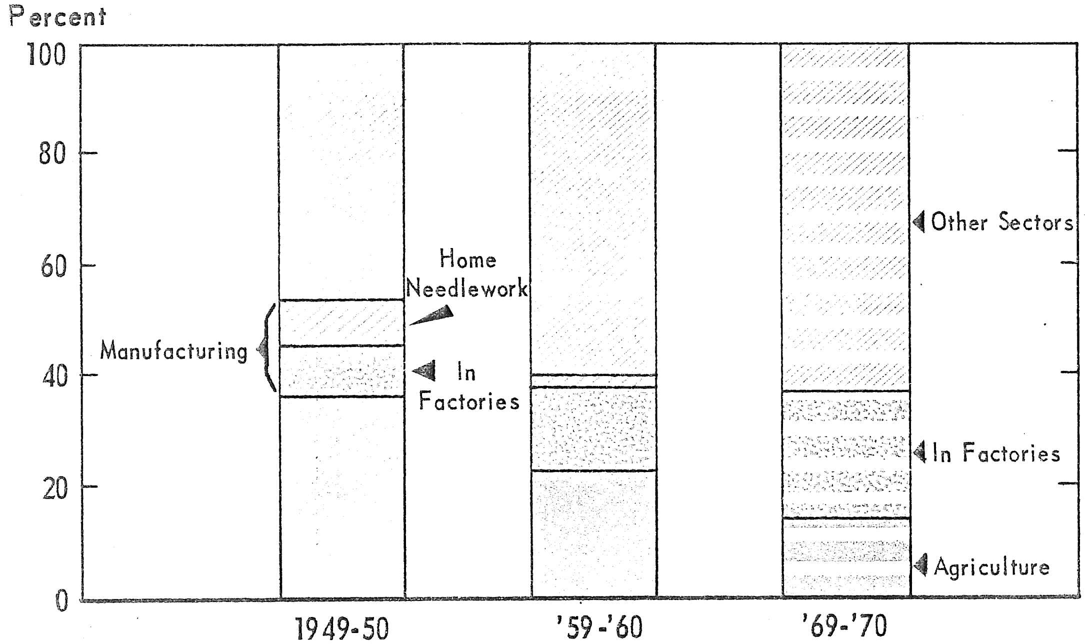
In the manufacturing sector it is convenient to analyze separately the factory employment from that of the home needlework industry. In 1949-50 home needlework accounted for 8.5 per cent of all the workers, while in 1959-60 there were less than 2 per cent. In contrast, factory employment characterized by relatively high remuneration represented only 9.3 per cent of total employment in the economy in 1949-50 and reached 15 per cent in 1959-60.

In other sectors of the economy, involving activities with relatively high salaries such as professional services, trade, banks, insurance and government, the number of employees also have increased significantly. In 1949-50 the proportion amounted to 60 per cent.

The structural transformation which should take place during the next decade can be estimated on the basis of the productivity and activity previously projected in employment. The expected increase in agricultural productivity is at the rate of 6.2 per cent per year. This will mean an increase of 48 per cent less in the number of workers. It is expected that by 1969-70 agriculture employment will represent about 14 per cent of the total.

Chart 25

DISTRIBUTION OF EMPLOYMENT BY INDUSTRIAL SECTORS



With respect to the other sectors it is anticipated that by 1969-70, 63 per cent of the employees will be in those sectors as compared to 60 per cent in 1959-60. The anticipated evolution in the structure of employment is in harmony with the development in other countries.

An analysis of employment by industrial sectors only partially reveals the structural transformation. A study by the Committee on Human Resources indicates that the increase in productivity generally will be in those industries requiring a higher degree of training. For example, there will be a greater proportion of professionals, technicians, and skilled workers in contrast to a reduced percentage of unskilled workers. For this reason alone there will be an increase in productivity during the next decade due to the rapid growth in the number of more highly paid and skilled occupations.

In 1959-60 the group of professionals, office workers, salesmen, and skilled workers constituted 23 per cent of total employment. It is believed that by 1970 they will constitute 40 per cent. On the other hand, the group composed of owners and administrators of farms and agricultural and service workers, which in 1959-60 constituted 41 per cent of total employment, will probably represent only 31 per cent of the total by 1970.

Chart 26

DISTRIBUTION OF EMPLOYMENT BY OCCUPATIONAL GROUP

POPULATION AND THE LABOR FORCE

DECADE 1950-60

According to the census the total population of Puerto Rico in April 1960 was 2,350,000 persons, as compared with 2,210,000 persons in 1950 or an increase of 140,000 persons, amounting to a 6.3 per cent increase for the decade. In the previous decade population expanded by 341,000. An analysis of the principal changes in population, births, deaths, and migration, reveals striking differences between demographic forces operating in the two decades.

The natural increase in population in the past decade was greater than in 1940-50. However, if there had not been the emigration in the population, the increase would have amounted to some 600,000 as compared to the actual increment of 140,000.

TABLE IV - PRINCIPAL COMPONENTS OF INCREASE IN POPULATION

(Thousands of Persons)

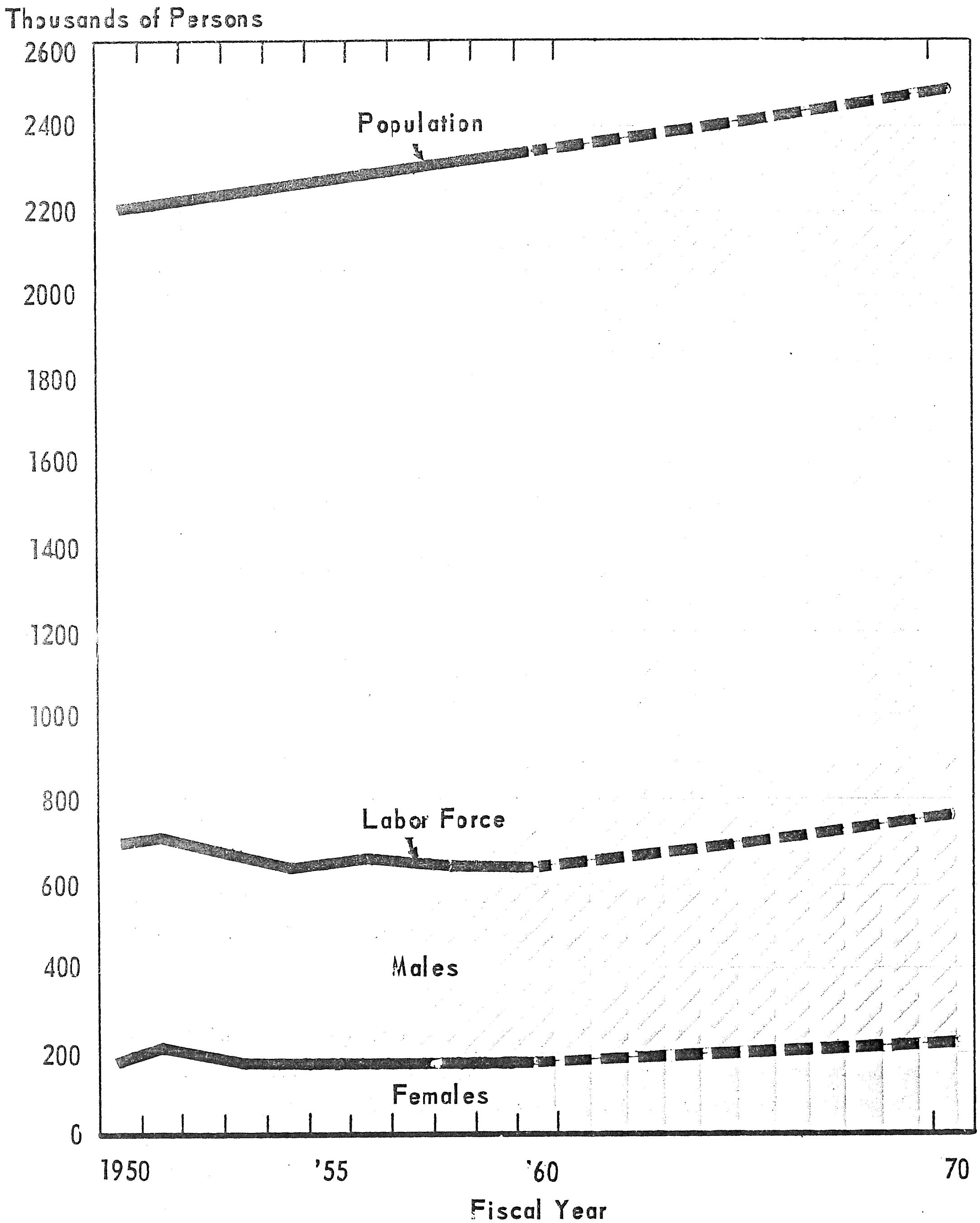
Item	Decade 1940-50	Decade 1950-60
Births..	831	785
Deaths..	290	179
Emigration..	190	444

Although the natural increase in the population registered in the decade 1950-60 exceeded by 65,000 the corresponding increase in the previous decade, the annual rates of natural increase have been declining since 1947. In 1947 the number of births surpassed the number of deaths by 66,000 -- the rate of natural increase being 31 per thousand. In 1950 the absolute difference between births and deaths decreased to 63,000 and the rate to 29 per thousand. In 1959 the natural increase was 58,500, and the rate decreased to 25 per thousand.

Emigration also reduced the growth of population. In the first five years the total migration reached 245,000, representing an average of 49,000 per thousand per year. In the second quinquennial migration was reduced to 200,000 and the average was 40,000 per year. The reduction in the last three years was even greater so that the average rate of migration was only 29,000. It appears, therefore, that there was a definite tendency to decline.

The high level migration especially during the first five-year period of the decade was associated with a reduction in the total employment. It would have been necessary to have had a quarter of a million new jobs in order to absorb the natural increase in the adult population during the decade if the rate of participation in 1950 had continued. But instead of increasing, the actual level of employment declined. In reality there were some 100,000 new jobs created during the decade. These 100,000 jobs were, however, accompanied simultaneously by the disappearance of 150,000 marginal jobs, such as in the home needlework in-

Chart 27
POPULATION AND LABOR FORCE BY SEX



dustry, domestic service and agriculture, where income per employee amounts to about $600 a year. In contrast, new jobs which were created in the manufacturing industry, construction and public service, involve an annual income of over $2,000 per employee.

In addition, a larger number of people remained outside of the labor force. Many were young persons going to school, others were older persons, generally above the age of 65, who retired from the labor force. Many of these, even though they were unemployed, did not wish to work and accept the salaries and conditions which were acceptable in 1950. However, it is obvious that the increase in salaries in some of the sectors of the economy resulted in a reevaluation of jobs on the part of all the workers. For such economic reasons, and with additional income from other members of the families, it was possible for many potential workers to either remain out of the labor force or to refuse jobs whose pay was considered below the acceptable standards. Additional sources of family income which made such decisions feasible were: (a) the 100,000 new jobs created in the economy, (b) the higher remuneration of all employees, (c) the income of families who had immigrated.

DECADE FOR 1960-70

The previous considerations indicate the difficulty of predicting the population of Puerto Rico, the level of migration and the magnitude of employment for the decade 1960-70. As has been demonstrated, these three factors are interrelated, each affecting the others and all three of them depending in the last instance on individual decisions of several million Puerto Ricans.

It is expected that the rate of births will continue to decrease as a result of the increase in urban population and in the level of living and education. It is also expected that the mortality coefficient will decline in all age groups, especially among infants. The net result should be a further decline in the natural increase in the population. It is expected also that emigration will decline. Considering the increase in the number of employees anticipated for the next decade the migration of men during the next decade would be half of that in the last ten years.

In summary, it is believed that the population of Puerto Rico by 1970 ought to reach 2,485,000, or an increase of 135,000. Participation rates in the labor force have been projected by evaluating trends in rates for specific age, sex, education, and urban-rural residence groups.

It is assumed that the rates within each of these sectors will remain relatively constant. If the suppositions are correct, the total population rate for men will decline slightly more than it has up to this time. The fundamental cause is that the participation rate of men in the urban zone is lower than in the rural zone. The level of education should not seriously affect the participation rate of men in the labor force. On the other hand, the percentage of women seeking work or being employed should rise during the next decade due to the improved level of education.

STATISTICAL APPENDIX

TABLE I - ANNUAL RATES OF GROWTH OF NET INCOME OF THE DETERMINED SECTORS

(Annual per cent of increase in 1954 prices) (1)

Sectors	Periods			
	1950-53	1953-57	1957-60	1950-60
Net income, total......................	8.6	2.3	6.2	5.3
Sugar cane industry................	-4.5	-7.8	-5.3	-6.1
Federal Government.................	36.7	-13.2	-0.5	3.7
Rest of the Economy................	7.2	5.6	7.5	6.6

(1) Deflated utilizing implicit price deflator for Gross Product.

TABLE II - DISTRIBUTION OF FAMILIES BY LEVEL OF INCOME

(Fiscal years)

Income	1950	1960	1970
Less than $1,000..........................	211,000	104,600	16,400
$1,000 - 1,999..........................	107,600	168,800	70,900
2,000 - 2,999..........................	41,400	83,200	109,100
3,000 - 3,999..........................	20,700	38,100	125,500
4,000 - 4,999..........................	12,400	21,400	81,800
More than $5,000..........................	20,700	59,500	141,900
Families..................................	413,800	475,600	545,600
Increase per families....................	$1,529	$2,692	$4,473

(1) In current prices.

TABLE III - ANNUAL RATE OF INCREASE IN FACTORY NET INCOME

(Per cent)

Item	Recovery 1950-54	Recession 1954-55	Recovery 1955-57	Recession 1957-58	Recovery 1958-60
Factory net income, total.	16.6	10.5	12.4	6.4	13.5
New factories (1).....	57.0	18.8	31.4	13.0	24.4
Other factories.......	9.6	7.1	2.7	1.4	3.9

(1) Promoted by Fomento.

TABLE IV - NET INCOME IN FACTORIES

Itèm	Distribution in 1949-50 (per cent)	Annual Rate of increase 1950-60	Distribution in 1959-60 (per cent)
Manufacturing, total........................	100.0	13.5	100.0
New factories..........................	8.1	36.1	54.2
Traditional industries.................	91.9	5.9	45.8

TABLE V - AVERAGE WAGES PER HOUR IN FACTORIES OF U. S. AND PUERTO RICO

June	Puerto Rico	United States
1950	$0.406	$1.45
1951	.444	1.59
1952	.449	1.65
1953	.491	1.77
1954	.494	1.81
1955	.560	1.87
1956	.658	1.97
1957	.780	2.07
1958	.857	2,12
1959	.881	2.24
1960	.923	2,29

TABLE VI - NET INCOME AND EMPLOYMENT IN FOMENTO FACTORIES

	Historical data			Projections	
	1949-50	1954-55	1959-60	1964-65	1969-70
Net income (million dollars)........	7.2	51.9	156.7	346	683
Employment (average)...............	4,900	23,400	44,200	73,000	110,000
Quinquennial increase in employment	---	18,500	20,800	28,800	37,000

TABLE VII - INCREASE OF EMPLOYMENT IN FOMENTO FACTORIES

Periods	Increase in Employment	
	Quinquennial	Annual average
Historical data:		
1950-55	18,500	3,700
1955-60	20,800	4,160
Projections:		
1960-65	28,800	5,800
1965-70	37,000	7,400

TABLE VIII - PRODUCTIVITY: NET INCOME PER EMPLOYEE IN FOMENTO FACTORIES

	Historical data			Projections	
	1949-50	1954-55	1959-60	1964-65	1969-70
Net income per employee (in dollars)	1,469	2,218	3,545	4,800	6,200
Annual rate of increase (percent)	---	8.6	9.8	6.3	5.3

TABLE IX - HISTORICAL DATA AND PROJECTIONS OF INDUSTRIAL DEVELOPMENT PROGRAM

(Program implicit in projections)

Periods	Average employment in last year of period	Employment end of period	Employment per factory: end of period	Factories operating: end of period	New factories	
					In the quinquennium	Annual average
Historical data						
Year 1949-50	4,900	6,300	88	72	---	34
Quinquennium 1951-55.	23,400	25,700	88	293	300	60
Quinquennium 1956-60.	44,200	46,000	80	572	489	98
Projections						
Quinquennium 1961-65.	73,000	76,000	80	945	718	145
Quinquennium 1966-70.	110,000	114,000	80	1,420	1,020	205

TABLE X - NET INCOME, EMPLOYMENT AND PRODUCTIVITY IN MANUFACTURING

	Historical data			Projections	
	1949-50	1954-55	1959-60	1964-65	1969-70
Factory: Net income (million dollars).........	81.6	166.9	288.9	524	885
Average factory employment	54,900	66,100	81,700	114,000	152,000
Productivity: Net income per employee (dollars)...	1,486	2,525	3,536	4,500	5,800

TABLE XI - LOCAL PRODUCTION AND IMPORT OF MEAT

(Millions of Pounds)

Item	Historical data		Projections
	1949-50	1959-60	1969-70
Beef:			
Local..................................	18	24	104
Imports................................	16	23	10
Total....................	34	47	114
Pork:			
Local..................................	10	21	57
Imports................................	33	53	50
Total....................	43	74	107
Poultry:			
Local..................................	13	18	32
Imports................................	1	17	17
Total....................	14	35	49
Other meats:...			
Local..................................	1	1	4
Imports................................	12	20	12
Total....................	13	21	16
Total:			
Local..................................	42	64	197
Imports................................	62	113	89
Total....................	104	177	286

TABLE XII - CONSUMPTION PER CAPITA OF ANIMAL PRODUCTS

Item	Unit	Historical data		Projections
		1949-50	1959-60	1969-70
Beef....................	Pounds	15	20	46
Pork....................	"	20	32	43
Poultry.................	"	6	15	20
Other meats.............	"	6	8	6
Total meats........	"	47	75	115
Eggs....................	Dozens	6	9	16
Milk....................	Liters	68	140	210

TABLE XIII - VALUE AND DISTRIBUTION OF AGRICULTURAL PRODUCTION

	Value in millions of dollars			Percentage distribution		
	Historical data		Projection	Historical data		Projection
	1949-50	1959-60	1969-70	1949-50	1959-60	1969-70
Total production..	186	236	350	100	100	100
Livestock.........	47	86	188	25	36	54
Other.............	139	150	162	75	64	46

TABLE XIV - VALUE OF AGRICULTURAL PRODUCTION AND NET INCOME

(Millions of dollars)

	Historical data		Projections
	1949-50	1959-60	1969-70
Value of agricultural production.............	186	236	350
Net income...................................	149	177	239
Percent Net income to total value.......	80	75	68

TABLE XV - EMPLOYMENT OF MEN IN AGRICULTURE BY AGE, APRIL 1950 AND APRIL 1958

Age	April 1950 number of employees	April 1958 Number of employees	Increase or decrease
Less than 26...........	65,000	44,000	-21,000
26 - 33...........	40,000	21,000	-19,000
34 - 41...........	38,000	24,000	-14,000
42 - 49...........	31,000	25,000	- 6,000
50 - 57...........	22,000	21,000	- 1,000
More than 57...........	27,000	31,000	+ 4,000
TOTAL.........	223,000	166,000	-57,000

TABLE XVI - AVERAGE ANNUAL EMPLOYMENT IN AGRICULTURE

	Historical data		Projection
	1949-50	1959-60	1969-70
Total agriculture..........................	216,000	125,000	92,000
Average annual decrease.....................		9,100	3,300

TABLE XVII - CONSTRUCTION ACTIVITY

(Millions of dollars)

Item	Quinquennium		Decade
	1951-55	1956-60	1951-60
New construction, total	531.7	890.0	1,421.7
Non-residential (1)	205.4	430.4	635.8
Private	86.8	214.5	301.3
Public	118.6	215.9	334.5
Houses	210.0	314.0	524.0
Private	137.0	254.8	391.8
Public	73.0	59.2	132.2
Public works:			
Roads, etc.	116.3	145.6	261.9

(1) Includes the value of factory buildings, hotels, commercial buildings, electric energy plants, etc.

TABLE XVIII - PLANT AND EQUIPMENT INVESTMENTS

(Millions of dollars)

Item	Quinquennium		Decade
	1951-55	1956-60	1951-60
Total investment	447.6	832.6	1,280.2
New construction	205.4	430.4	635.8
Machinery and equipment (1)	242.2	402.2	644.4

(1) Does not include machinery and equipment bought by government and municipalities. During the last decade amounted to $45 million.

TABLE XIX - ANNUAL INVESTMENT OF BUSINESS ENTERPRISES

(Millions of dollars)

Item	Historical data			Projections	
	1949-50	1954-55	1959-60	1964-65	1969-70
TOTAL...............	61	119	197	280	406
Construction..............	34	61	92	123	162
Machinery and equipment	27	58	105	157	244

TABLE XX - DISTRIBUTION OF OCCUPIED HOMES BY ZONE IN PUERTO RICO

Fiscal Year	Total		Urban		Rural	
	Number	%	Number	%	Number	%
1940................	356,000	100	120,000	34	236,000	66
1950................	431,000	100	191,000	44	240,000	56
1960................	495,000	100	245,000	49	250,000	51
Projections:						
1970................	568,000	100	334,000	59	234,000	41

TABLE XXI - URBAN FAMILIES BY LEVEL OF INCOME

(Fiscal years)

Level of income	1960	1970
Families..	235,000	320,000
Less than $3,000..................................	143,000	110,000
More than $3,000..................................	92,000	210,000

TABLE XXII - CONSTRUCTION ACTIVITY (Value Put-in Place)

(Millions of dollars)

Item	Historical data			Projections
	1949-50	1954-55	1959-60	1969-70
TOTAL..........................	79	130	212	404
Houses:				
Private......................	21	35	65	137
Public.......................	5	11	18	25
Construction by enterprises.....	34	61	92	162
Public works (Roads, schools, etc)...........................	19	23	37	80

TABLE XXIII - DISTRIBUTION OF NET INCOME ORIGINATING IN PUERTO RICO

(Millions)

Item	1954-55	1959-60	Increase
Income generated, total......................	975.6	1,375.0	399
Originating sector..........................	599.5	802.5	203
Derived sector.............................	376.1	572.5	196

TABLE XXIV - ELECTRIC POWER PRODUCTION

Years	Total production (Thousands of K.W.H.)	Per capita (K.W.H.)
Actual figures:		
1949-50....................	539,414	245
1959-60....................	2,021,947	870
Projection:		
1965-66....................	4,394,371	---
1969-70....................	7,421,918	2,990

TABLE XXV - EXPENDITURES AND NUMBER OF TOURISTS

Years	Expenditures (Millions of dollars)	Hotel guests
Actual figures:		
1949-50	2.0	24,648
1954-55	6.4	51,104
1957-58	10.9	84,381
1959-60	25.6	157,096
Projections:		
1969-70	77.0	470,000

TABLE XXVI - DISTRIBUTION OF DOMESTIC INCOME BY INDUSTRY

Industry	Actual		Projection
	1949-50	1959-60	1969-70
Agriculture	23.8	12.9	8.3
Manufacturing	14.1	21.0	30.6
Other industries	62.1	66.1	61.1
Federal government	7.3	6.1	3.2
Other	54.8	60.0	57.9
Total	100.0	100.0	100.0

TABLE XXVII - DISTRIBUTION OF EMPLOYMENT BY INDUSTRY

Industry	Actual		Projection
	1940-50	1959-60	1969-70
Agriculture	36.3	22.9	14.3
Manufacturing	17.8	17.0	23.1
Home needlework	8.5	1.9	---
In factories	9.3	15.1	23.1
Other industries	45.9	60.1	62.6
TOTAL	100.0	100.0	100.0

TABLE XXVIII - DISTRIBUTION OF EMPLOYMENT BY OCCUPATION

Occupation	Actual		Projection
	1949-50	1959-60	1969-70
Professionals and technical workers	22.0	32.1	36.0
Skill workers	41.9	42.1	45.7
Unskilled workers	36.1	25.8	18.3
TOTAL	100.0	100.0	100.0

TABLE XXIX - LABOR FORCE BY SEX AND TOTAL POPULATION

(In thousands)

Fiscal year	Labor force			Population
	Total	Male	Female	
Actual figures:				
1950	684	506	178	2,207
1951	713	508	205	
1952	679	491	188	
1953	646	472	174	
1954	631	458	174	
1955	637	468	169	
1956	643	475	168	
1957	636	473	163	
1958	637	472	165	
1959	637	473	164	
1960	625	455	170	2,337
Projection:				
1970	747	533	214	2,485