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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

THE COFFEE PROBLEM

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SUMMARY AND CONCLUSIONS

The purpose of this paper is to review the available evidence bearing upon the future of coffee output and consumption, to analyse the courses of action open to producing countries, and to provide a basis for judgement on prospects for coffee prices and foreign exchange earnings derived from coffee exports. The paper is intended to provide a completely objective appraisal; it does not present explicitly or implicitly any policy recommendations with regard to the handling of the coffee problem.

In the period which has elapsed since the Second World War, the world coffee market has gone through two distinctly different phases. In the first phase, lasting from the end of the war through 1954, consumption requirements exceeded current supplies. Until 1949 the gap was covered chiefly by drawing on Brazilian stocks accumulated before and during the war. From 1949 onwards there occurred a sharp and persistent increase in prices. By early 1954, at the peak of the postwar scarcity of coffee, the price had reached a level of \$1 per pound (Santos 4's). This level was the highest in real terms, (i.e. after an adjustment for changes in the value of money), recorded over the last sixty years.

The upswing phase of the coffee cycle of 1946-54, was followed by the equilibrium phase which lasted three years, 1955-57. In this phase, current supplies have caught up with consumers' demand. The price of coffee fell from the 1954 peak to a level of 55-60¢; in money terms it remained remarkably stable throughout the three years, but in real terms it showed a steady, if mild, decline. In this period both supply and demand increased substantially. Output showed rapid expansion in almost all major producing areas, particularly Africa. However, demand was also increasing at a fast pace, probably as much as 4-5% per year. United States consumption recovered from the 1954 trough, while European consumption continued the powerful upswing which has now lasted the whole postwar period.

By the second half of 1957, the world coffee trade appeared to believe that the equilibrium phase was nearing its end and that the world coffee economy was entering a period of surpluses. In anticipation of a moderate surplus in 1957/58 and a much larger surplus in 1958/59 and thereafter, coffee prices started to decline, particularly in "milds"; inventories were drawn upon and imports lagged behind consumption. Faced with this situation, seven Latin American producing countries, headed by Brazil and Colombia, acted quickly and concluded, on October 18, 1957, an agreement providing for withholding of a part of coffee supplies during 1957/58. The withholding scheme (called the Agreement of Mexico), appears to have been successful in the first few months of operation. The price recovered from 53¢ in August-September, 1957, to the 55-56¢ level in December 1957-January 1958. In late January and early February 1958 however, the price weakened again, for reasons that are not yet exactly known. There is a possibility that the coffee market could experience wide downward price fluctuations if there were violations of the Agreement or if world consumption declined. On the other hand, the major exporters are likely to consider that the risks of unlimited price competition are too great to be easily undertaken.

Available production forecasts strongly suggest that the next half-decade or more will witness a surplus situation in coffee. While the estimates of magnitudes involved are of doubtful reliability, it is fairly certain that the impending phase of the coffee cycle will be a downswing, with an excess of supply over estimated consumption. Under the impact of investment undertaken since the war and particularly in 1950-54, output is expected to increase at an annual rate of 5% in 1957/58-1963/64. The greatest increase is assumed to take place in Brazil, followed by the African producing regions.

(ii)

Over the long run, in the sixty years from the 1890's through the early 1950's, consumption was rising at an annual rate of 2% per year. In the future, the rate of increase will probably be higher on account of faster population growth, assumed faster rate of growth in real income, and possible reduction in European import duties and taxes on coffee. A case could be made that over the next half-decade or so, coffee consumption may rise at 3% rather than at 2% per year. In addition, there is a possibility that Eastern European imports of coffee, which are now only one-sixth of the prewar average, will expand fairly quickly to the prewar level. Recent policy trends in Eastern Europe suggest that the expansion may be even greater if producer countries are not able to dispose of current supplies in other markets. Even with fairly good consumption prospects, however, the rate of increase in demand over the medium term will, in all likelihood, lag behind the expected rate of increase in output.

While a rapid succession of frosts in Brazil - a possibility which cannot be excluded - may remove the threat of surpluses in the years to come on balance it is more probable that surpluses will, on the average, be generated. It is almost certain that in the next crop year 1958/59 the surplus will be quite large, double the estimated level for 1957/58, and it is likely that in the years 1959/60 - 1963/64 new surpluses will continue to accumulate. On the favorable assumption that world consumption exclusive of Eastern Europe will grow at 3% per year and that Eastern European imports will rise substantially, it may be estimated that the average annual surplus in 1957/58 - 1963/64 will amount to 10% of annual consumption (assuming one frost in Brazil until 1963/64) or 13% of annual consumption (assuming no frost), and that surpluses will accumulate at one of these probable rates.

It is generally considered that the response of world coffee consumption to short-run changes in coffee prices is fairly weak. It is estimated that in order to clear the market of the anticipated surpluses, the wholesale price of coffee would have to drop to 32-36¢ per lb. (Santos 4's f.o.b.). At these prices, which would prevail in the downswing phase of the coffee cycle (i.e. while surpluses arising from past investment are generated and sold in free market competition), coffee producers as a whole would suffer a substantial drop in earnings from coffee exports. Consequently coffee producers may feel that they would be better off, at least for a period of years, if they insulated the surplus from the market. Moreover, Brazil may consider that she would, at least for a period, derive earnings from coffee exports which would be higher, even if she supported the price single-handedly, than if she let it drop to a competitive level. However, this could involve occasional short-run foreign exchange difficulties as well as a long-term decline in her share of the market. On the other hand, there are grounds to believe that a number of other Latin American countries, particularly Colombia, will join Brazil in supporting the price of coffee. On balance, it is likely that major producers will attempt to control the marketing of coffee in the present coffee cycle, and they may be successful in preventing a precipitous fall in price, although there is a considerable risk that the withholding scheme may fail. Assuming that the stabilization agreement will essentially be successful, a price range of 45-50¢ is suggested for the period 1959-1963. The opposite assumption - total failure of the scheme - would lead to a projection of 35¢ or less.

(iii)

The course of events after 1963 will depend primarily on policy measures undertaken in producer countries in the preceding years. Since it is assumed that the price of coffee during 1958-1963 will not fall considerably, the restraint of new investment, required to restore the equilibrium, cannot come from the price mechanism. The curtailment of investment will occur if the burden of withholding coffee is shifted to coffee planters rather than to the government budget. This problem is of particular importance in Brazil, which will have to carry the lion's share of stock withholding. There is reason to believe that in the present coffee cycle the action to eliminate marginal producers and restrain new investment may be taken earlier than it was in the past. This is uncertain, however; and it is also uncertain whether the members of the international withholding scheme would be able to withstand pressures associated with a participation in the scheme over a period which may last a whole decade. The failure to apply internal restrictive measures and to adhere to concerted international action may result in a collapse in the mid 1960's, although the more likely outcome is a gradual and controlled price decline towards a level something like 40¢. Consequently a price range of 40-45¢ may be suggested for the period 1964-1970, on the assumption that necessary action to restrict output expansion will be taken in time and that marketing arrangements will continue to be applied.

A brief review of factors determining the long-run equilibrium price of coffee - i.e. the price which will prevail after the coffee cycle of 1945-1970 is overcome - suggests that it is likely to be higher than the average long-run price in the past. If world consumption of coffee rises fairly fast - and this depends primarily on the rate of income growth - Brazil will remain an important supplier of coffee. The available information suggests that costs in Brazil are high. On the other hand, the real price of coffee, received by the Brazilian grower, has tended to fall in relation to the real price commanded on the external market. Through all the vicissitudes of policies and external fluctuations, Brazilian industrial growth is likely to proceed at a rapid pace, thus exerting a pressure on the supply of labor. Despite the high rate of population growth in Brazil, on balance it is likely that industrialization will result in a rise in real industrial wages, which will tend to raise the cost of agricultural labor in the areas which are being industrialized (Sao Paulo). Against these factors suggesting an increase in real costs of producing coffee, there is a possibility of technological improvements, which would raise yields and thus reduce costs. In Colombia and in Central America, the technological improvement is likely to offset the increase in labor costs; in Brazil this is more doubtful and, on balance, unit costs of producing coffee are likely to increase rather than fall. In view of these considerations and on the basis of comparison with past prices which could be assumed to have induced an equilibrium rate of new investment, it is suggested that a price hypothesis of 45¢ be taken for the period beyond 1970.

The general finding emerging from the paper is that the world coffee economy is likely to be faced by a surplus situation over the next five to ten years. If no withholding scheme was applied, the price of coffee over medium term would drop precipitously and substantially. The coffee producing countries are likely to attempt to insulate the surplus from the market and their chances of succeeding appear somewhat greater than in the past coffee cycles. There is a risk, however, that these attempts may fail; and doubts may also be raised whether the withholding scheme will be accompanied by timely domestic measures to curtail investment in coffee planting, which would be necessary to restore market equilibrium. These risks must be taken into account in appraising these countries' future prospects. Over the long run, after the present downswing phase of the coffee cycle is over, the prospects for coffee are probably good. The volume of sales is likely to expand and the free market price ten or fifteen years from now may again be fairly high.

THE COFFEE PROBLEM

Introduction

It is widely believed that over the next five to ten years world supply of coffee will exceed the level of consumption at present prices (Santos 4's 55¢ N.Y.) by a considerable margin. This belief is partly based on the evidence regarding new plantings which have taken place during the last decade, both in Brazil, which accounts for 43% of world output, and elsewhere, particularly in Africa. It is also based on the expectation that the familiar coffee cycle will reassert itself. The period of scarcity of supply, which was accompanied by high prices and presumably by high investment in coffee production, is expected to be followed by a period in which a stream of excessive supplies will be forthcoming from the major producing areas, and this would sooner or later exercise a strong downward pressure on prices, thus repeating the pattern of development which has been observed with great regularity in the history of coffee over the last sixty years.

The purpose of this paper is to review the available evidence which indicates the future growth of output and consumption and to arrive at an estimate of the order of magnitude of the future surplus of coffee; to analyse the courses of action open to producing countries, and to provide a basis for judgment on prospects for coffee prices and foreign exchange earnings which may be derived from coffee exports.^{1/} Most of the analysis is devoted to the current downswing phase of the coffee cycle, i.e. to the coffee problem over the medium term. An attempt is also made, however, to throw some light on factors likely to influence long-run prospects of coffee - after the present coffee cycle is over.

The paper is divided into four parts. The first part contains a brief survey of recent developments on the world coffee market and a description of the agreement recently concluded amongst the major producing Latin American countries, providing for withholding of coffee. The second part reviews likely developments in output and consumption until 1963 and analyzes alternative external marketing policies which producer countries may adopt. The third part covers the five-year period after 1963. The course of events in this period will be largely determined by policies pursued within producer countries in the preceding years with respect to the financing of coffee withholding. The fourth part contains a brief review of the coffee problem in the 1970's. It is assumed that developments in this period will be determined by long-run rather than cyclical factors.

I. Recent Developments in the Coffee Market and Short-Run Outlook

Recent Developments

In the period which has elapsed since the Second World War, the world coffee market has gone through two distinctly different phases. In the first phase, lasting from the end of the war through 1954, consumption requirements exceeded current supplies. The gap was partly covered by drawing on Brazilian stocks, accumulated before and during the war and also, particularly from 1949 on, by an increase in prices which by early 1954, at the peak of the postwar scarcity of coffee, had reached a level of almost \$1 per pound (Santos 4's). This level was the highest in real terms, (i.e. after an adjustment for changes in the value of money), recorded over the last sixty years.

In the second phase, which has now lasted three years, (1955 through 1957), current supplies have caught up with consumers' demand. The price of coffee,

^{1/} The preceding report on coffee was written in the summer of 1956. (IBRD, The Outlook for Coffee, August 28, 1956).

(Santos 4's), fell from the 1954 peak to a level of 55¢-60¢ and remained remarkably stable throughout the three years.^{1/} At the same time both supply and demand increased substantially. Output showed rapid expansion in almost all major producing areas, particularly in Africa. However, demand was also increasing at a fast pace, much faster than its long-run rate of growth. In the United States, the drop in consumption recorded in 1954 was followed by a strong recovery in 1955 and 1956 ^{2/} while European consumption recorded new peaks in each successive year, continuing the powerful upswing which has now lasted without interruption, through the whole postwar decade. As a result of this growth in consumption, price stability could be maintained in the face of rapid growth in output, but some stock accumulation, although of a moderate magnitude, was required. ^{3/} While this overall stability of the world coffee market during 1955-1957 did not cover all its segments ^{4/}, it nevertheless was a dominant feature of the developments during the last three years. If it could be said that the world coffee market ever enjoyed an equilibrium, the last three years can be considered as one of the periods closely approaching such a state of affairs.

Latin American Coffee Agreement of October 1957 ("Agreement of Mexico")

By the second half of 1957, the world coffee trade appeared to believe that the "equilibrium" phase was nearing its end. An increasing uneasiness was felt in the early fall of 1957 in anticipation of a moderate surplus in 1957/58 and, more important, of a large surplus in 1958/59 and possibly thereafter. The rate of imports started to lag behind the rate of consumption in the expectation that coffee prices would decline; and this, by itself, was sufficient to cause an incipient weakness of prices. The boom in "milds" ended and their price fell relatively to Santos, to a differential lower than "normal" ^{5/}; and Santos itself started to fall, particularly on the futuresmarket. The stage seemed set for a long-awaited downswing in coffee prices which was expected to develop against a background of surplus supplies coming to the market, accentuated by buyers' reluctance to import and by their readiness to draw on inventories in the anticipation of continuing decline in price.

Faced with this situation, the major producing countries acted swiftly. Contrary to earlier views that coffee countries were not likely to come to an international agreement regulating supplies and prices, Latin-American producers, led by Brazil and Colombia ^{6/}, adopted on October 18, 1957, a restrictive scheme providing for withholding of a part of coffee supplies during the 1957/58 season, equivalent to the estimated surplus of world output over

^{1/} Since the overall price level continued to rise, however, the coffee price in real terms showed a decline of 2% in 1956 and an additional 5% in 1957. In December 1957, the money price of 55¢ corresponded to a real price (in terms of 1947/49 prices) of 46.5¢.

^{2/} See Table IV in the Statistical Appendix.

^{3/} The Brazilian stocks, which amounted to 17.6 million bags in 1946 (60% of world consumption in that year), dropped to a low of about 3 million bags, (10% of world consumption) in 1953-55. In mid-1957 they amounted to 7.8 million bags, or about 20% of the present level of world consumption.

^{4/} Under the impact of rising demand and poor 1955/56 crop, "mild" coffee prices underwent a sharp upswing from mid-1955 through mid-1957. On the other hand, "robusta" coffees experienced a substantial decline in 1955/56.

^{5/} "Normal" differential is considered to range between 3¢ and 6¢ per lb.

^{6/} The contracting parties provided 70% of world coffee exports in 1955-1956.

consumption in the current crop year. The Agreement specifies two types of retention. Precise export quotas are established for the heavy selling season during the winter 1957/58; their primary purpose seems to be to combat speculation against coffee and to reverse the trend of declining prices, particularly of "milds", which had developed in the fall of 1957. The other type of retention consists of withdrawals determined proportionately to output. For countries other than Brazil, (i.e. Colombia, Mexico, El Salvador, Guatemala, Nicaragua and Costa Rica), this "permanent" retention (i.e. retention valid through the whole season 1957/58), amounts to 10% of exports. For Brazil, the "permanent" retention amounts to 20%. 1/

The "Agreement of Mexico" is a very short-term agreement; it covers only the 1957/58 season. This was probably unavoidable if the agreement was to be reached quickly; and all member countries were particularly interested in getting quick results. The producers of "milds" were impressed by the drop in their prices which amounted to 18% between June and mid-October 1957, and afraid that this trend might continue. 2/ For Brazil, it represented the beginning of the realization of one of the primary goals of her external economic policy - price stabilization of coffee, even over a short term, resulting from a concerted action of as many producers as possible. And for all members, an agreement reached quickly meant a weapon in combatting the emerging pressure on coffee, particularly in view of the slowing down of buyers' purchases in anticipation of competitive sales by the producers.

In trading circles in importing countries and elsewhere, there are doubts about whether the Agreement will hold. These doubts rest on two arguments: (a) countries other than Brazil, Colombia and El Salvador do not seem to have physical storage facilities or administrative machinery to implement the Agreement; and (b) past experience with stabilization agreements has been poor and one may wonder whether the result will be different this time. Whether these doubts will prove justified must remain a moot question for the present. Storage facilities may be built and the administrative mechanism developed - granted a belief that the Agreement pays and granted the ability to withstand internal financial and political pressures likely to follow from the implementation of the Agreement. These aspects of the problem are discussed later in this paper.

The Agreement has now been in force for five months. So far, it has proved successful in maintaining the price of coffee. The declining price trend was not only arrested, but reversed. Santos 4's spot rose from 53¢ to 55.5¢ (N.Y.) between early October and mid-December, 1957. The market continued strong in January, but weakened somewhat in the subsequent two months. In mid-March 1958, the price amounted to 53.5¢. The causes of recent weakness are not yet precisely known. It appears that after a recovery in U.S. inventories in the last quarter of 1957,

1/ The text of the Agreement of Mexico is reproduced in Appendix I.

2/ There was also a danger that Brazil, faced by a decline in "milds", may have adopted competitive pricing policy, substantially accentuating the downward price trend.

there was a substantial decline in the first quarter of 1958; at the same time, competitive sales of considerable quantities of African coffees appear to have taken place. However, despite a sharp decline in the Brazilian coffee exports caused by these two factors, the Brazilian price policy has remained firm; and while the market weakened, the decline in price was negligible.

Short-run Outlook

The immediate prospects for coffee prices are clouded by a number of uncertainties. Estimates of world coffee output in the 1957/58 season vary. Earlier reports indicated world exportable output of about 40.0-40.5 million bags (compared to 38.5 million average in 1955/56-1956/57), with Brazil accounting for 17.0-17.5 million and Africa for 8.5 million. The most recent reports indicate that the Brazilian output may turn out to be larger than the above estimate, and the reported expansion of African sales may be taken to suggest that their crop may also have been higher. World imports in 1957 were probably in the neighborhood of 37 million bags. It is too early to appraise the effects on world coffee consumption of the current recession in the United States and of the apparent slowdown in the European economic growth. Cyclical fluctuations in the past do not appear to have been accompanied by an absolute decline in coffee consumption, although they have reduced its rate of increase. In both the United States and Europe, consumption continued to rise during the 1930's, but at a slow rate; consumption also rose during the 1949 recession. However, imports may be subject to large short-run fluctuations reflecting changes in stocks in importing countries which are in turn induced by a number of considerations, including unfavorable business expectations. A downward stock movement in importing countries appears to have been under way recently. Coupled with the expansion of sales of other producers, this has created considerable foreign exchange difficulties in several countries and particularly Brazil, which is the ultimate supporter of the price of coffee.

If despite these adverse circumstances the Mexico Agreement is implemented as agreed, the price of coffee will probably remain unchanged in the short-run, i.e., until the fall of 1958. Present information suggests that the Mexico Agreement countries intend to withhold a quantity of coffee which roughly corresponds to the 1957/58 surplus; and if this is done, the range of price fluctuations will be moderate.

The alternative development - an increase in the volume of exports in order to meet the competition of non-member countries - could also be envisaged. If this second situation were to develop, violent price changes may occur in 1958. However, a break in the price caused by substantial sales could well be followed by a subsequent price recovery, as a result either of concerted international action or of a Brazilian unilateral support policy. If the past history of intervention in the coffee market gives any clue for the future, it is unlikely that major producers would, so soon in the game, permit the price to drop to a permanently lower level.

It is a matter of conjecture which one of these possibilities is most likely to be realized. The current position is far from easy, but it may improve

if stocks are replenished. On the other hand, the major exporters are likely to consider that the risks of unlimited price competition are too great to be easily undertaken.

II. Prospects Until 1963

An Avalanche of Coffee?

Whether Brazil, possibly joined by some other producers, will be able to maintain the price of coffee not only in the current season but also thereafter, depends on the size and duration of the prospective surplus of coffee. Herein lies the greatest uncertainty surrounding the coffee problem. The fact that any medium-term projection of future price has to be based essentially on a guess of the likely market policy of the major sellers is bad enough, but even worse, this guess has to be based on yet another - a guess regarding the gravity of the future surplus situation. The point to be emphasized most strongly is that evidence on prospective output growth is so unreliable and uncertain that it defies a scholarly analysis of the problem and casts strong suspicion on any results obtained. While available information suggests that there will be a surplus, the same data form an inadequate basis for estimating the size of the surplus. In the discussion which follows estimates of future output had to be used in an attempt to arrive at quantitative results; however, they should be accepted only as guesses, which could prove quite wrong. This reservation should be singled out for one important reason. The fact that so great an uncertainty exists will probably influence, at least for a time, the marketing policy of the major sellers, particularly Brazil, strengthening their intention to maintain the present price.

Appendix II contains a survey of output projections for major producing areas until mid-1960's. The summary of projections is presented in Table I, which also contains data for earlier periods.

Table I

World Coffee Exportable Output, Annual Averages
(millions of bags of 132 lbs.)

	<u>Brazil</u>	<u>Colombia^{a/}</u>	<u>A. Actual</u>			<u>Total</u>
			<u>Other Latin America^{a/}</u>	<u>Africa^{a/}</u>	<u>Others^{a/}</u>	
1909-13	12.7 ^{a/}	0.8	3.9	0.2	0.8	18.4
1925-29	21.3	2.5	4.2	0.8	1.7	30.5
1930-34	22.7	3.1	4.5	1.3	1.6	33.2
1935-39	22.8	4.0	4.8	2.3	1.6	35.5
1940-44	13.4	4.4	4.2	2.5	0.1	24.6
1945-49	14.7	5.4	4.5	4.0	0.2	28.8
1950-54 ^{b/}	15.4	5.3	5.5	5.2	0.6	32.0
1955-56 ^{b/}	16.5	5.6	7.0	8.3	1.4	38.8
			<u>B. Projected</u>			
1957-58 ^{c/}	20.0	6.0	7.1	8.8	1.4	43.3
1959-63 ^{d/}	24.0 ^{e/}	6.2	8.2	10.8	1.5	50.7 ^{e/}

^{a/} Exports in 1909-13 through 1950-54; in Brazil, exportable output in all years except 1909-1913, when exports are given.

^{b/} Crop years 1955/56 and 1956/57.

^{c/} Crop years 1957/58 and 1958/59.

^{d/} Crop years 1959/60 through 1963/64.

^{e/} Effect of possible frost in Brazil not taken into account.

World exportable output is expected to reach a level of about 51 million bags before the mid-1960's, compared to the current output of about 40 million bags - an increase of almost 5% per year. The expected rate of increase is much higher than the rate of below 3% recorded during the first postwar decade. The expected fast rate of future expansion is due primarily to the developments in Brazil. Widespread plantings are reported to have taken place in Brazil, on a much larger scale after 1950 than in the preceding years, with a peak reached in 1954; and this is the basis for the expectation that the Brazilian capacity in the early 1960's will be no less than 24 million bags per year. If realized, this capacity would be higher than the record Brazilian output in the late 1920's and 1930's and 60% above the level recorded in 1945-55. In other areas, the expansion is expected to continue at approximately the same or an only slightly slower pace than since the war. There have been technological improvements in coffee planting particularly in some of the smaller producers. On the other hand, deceleration in some countries is due to the need for replacing old plantations, to lack of suitable land and, to a lesser extent, scarcity of labor. In view of these factors it may well be that the projections for areas other than Brazil contain an upward bias. There is little doubt, however, that the output in Africa as a whole will show further fast expansion, continuing the sharp upward trend recorded in the last three decades.

The averages projected in Table I do not take into account the possibility of a severe frost in Brazil. Due to paucity of historical records, it is not possible to impute a precise statistical probability of frost frequency. In the state of Sao Paulo, three severe frosts have occurred in the present century; 1902, 1918 and 1942. Less severe frost damage has occurred with great frequency. In the state of Parana, frosts appear to be much more frequent, but weather records are available only since 1942. In the period 1942/57, three frosts occurred (1942, 1953 and 1955). Most of the postwar expansion in coffee planting occurred in Parana; and in the projected aggregate increase in output in Brazil of about 7.5 million bags, shown in Table I, Parana accounts for about two-thirds. If there is a frost in Brazil - and the chance of this happening within the period under observation is quite considerable - the damage may be estimated at 18 million bags, (50% of capacity in the first year after frost and an additional 25% in the second year). This would reduce the average yearly world coffee output in 1959-63 from the 51 million bags level shown in Table I, to about 47 million. Consequently, an occurrence of frost will strongly influence the course and magnitude of stock accumulation in Brazil, assuming withholding policy is being pursued. On the other hand, the fact that strong possibility of frost exists is in itself likely to strengthen the willingness of Brazil to persist in withholding policy.

With or without a Brazilian frost, the expected increase in world capacity to produce coffee, as reflected in Table I, is still very large. How realistic is this expectation? There is no way of answering this question. Projections of future output are based on very rough estimates of the number of trees planted, with arbitrary adjustment, if any, for replacement of old trees. This, as well as the postwar experience with various projections which so far have been proved to have had an upward bias, may lead to a belief that the present projection contains an element of overstatement. On the other hand, it is certain that Brazil has experienced a great boom in coffee investment since 1950. Whether this will result in an avalanche of coffee rather than a more gradual acceleration in the rate of increase in output, cannot be resolved on the basis of the presently available evidence. If the experience with past coffee cycles can give any clue, however, the increase is likely to be substantial.

Projected Growth in Consumption Exclusive of Eastern Europe

The future growth in coffee consumption can be projected with more assurance if a continuing and fairly rapid rate of growth in world real income is assumed. Two areas of uncertainty remain, however. First, there are vagaries of consumer taste, technological developments in the preparation of coffee and coffee substitutes and foreign exchange and tax policies in consuming countries. These variables are difficult to predict but, barring substantial changes, they should not have a primary impact on the course of world coffee consumption. The second uncertainty deals with a possibility of substantial growth of coffee imports in Eastern Europe. This may have an important bearing on the aggregate rate of increase in world coffee consumption and may thus influence the magnitude of the coffee surplus. Some hypotheses in this direction are developed in the next section of this paper. Projections of world consumption given in this section exclude Eastern Europe.

Over the past sixty years, from the 1890's through the 1950's, world coffee consumption has been rising at an annual rate of about 2%. The rate of increase after the Second World War has been higher than the long-run rate, despite the

higher level of the "real" price of coffee. This upswing can partly be explained by the recovery in the European consumption from the very low level in the immediate postwar period, but this is not a complete explanation. The annual rate of increase in world consumption over the last few years, of about 4%, was no lower than in the earlier part of the postwar decade. The revival of United States consumption from the 1954 trough and the rise in Western European imports, which had not shown any appreciable slackening as the second postwar decade began, were the main factors responsible for the strong upward trend in world coffee imports in recent years. And underlying these factors was the rapid growth in real income in the postwar decade, - growth much faster and less subject to cyclical fluctuations than in the past.

Table II gives a projection of coffee consumption in the major importing regions (excluding Eastern Europe) until 1963/64 and between 1963/64 and 1968/69, i.e. over the next decade. Underlying data and sources are presented in Appendix III. Two alternatives are shown in the Table. A continuous rise in consumption is assumed in both, but at different rates of increase.

Table II

Consumption of Coffee in Importing countries, Annual Average
(millions of bags of 132 lbs)

	<u>1. Actual</u>							
	<u>United States a/</u>	<u>Europe a/</u>	<u>Others a/</u>	<u>Total a/</u>				
1909-13	6.8	9.8	1.1	17.8				
1925-29	10.7	10.2	1.8	22.7				
1930-34	12.0	11.3	1.8	25.1				
1935-39	13.9	11.6	2.2	27.6				
1940-44	16.4	2.6	2.7	21.7				
1945-49	20.6	6.0	3.1	29.7				
1950-54	19.4	9.5	2.7	31.6				
1955-56	20.5	12.2 b/	2.9	35.6				
<u>2. Projected (excluding Eastern Europe)</u>								
	<u>United States a/</u>		<u>Western Europe a/</u>		<u>Others a/</u>		<u>Total a/</u>	
	<u>A</u>	<u>B</u>	<u>A</u>	<u>B</u>	<u>A & B</u>	<u>A</u>	<u>B</u>	
1957-58 c/	21.0	21.4	13.3	13.6	3.1	37.4	38.1	
1959-63 d/	22.1	23.6	14.5	15.7	3.5	40.1	42.8	
1964-68 e/	23.8	26.8	16.5	18.3	4.1	44.4	49.2	

a/ Imports in calendar years 1909-13 through 1955-56; consumption in crop years 1957/58 through 1968/69.

b/ About 12 million excluding Eastern Europe.

c/ Crop years 1957/58 and 1958/59.

d/ Crop years 1959/60 through 1963/64.

e/ Crop years 1964/65 through 1968/69.

Under Alternative A, consumption in the United States is assumed to increase at a rate equal to the rate of population growth (1.6% per year), with no increase in per capita use of coffee. Western European consumption is projected to rise at an annual rate of 2.5%, which allows for an increase per capita of about 1.8%. In areas other than the United States and Europe, an annual growth rate of 3% is assumed. Combining these three importing areas, the aggregate world consumption of coffee is assumed to increase at 2% per year, compound, i.e. equal to the past long-run rate of increase. 1/

Under Alternative B, growth rates in both the United States and Europe are assumed to be higher. In the United States, total consumption is projected to rise 2.75% annually, allowing for a per capita increase of about 1.1% per year. 2/ In Europe, total consumption grows at an annual rate of 4.5% until 1960; in the 1960's the rate of increase decelerates to 3%. For countries other than the United States and Europe, the assumption of a 3% rate is retained. For the three areas combined, the aggregate consumption growth rate over the next decade works out at 3% per year, compound, i.e. lower than the recent rate, but substantially above the past long-run average.

In making a choice between these two alternatives, both of which are reasonable, the case for a 3% rate of increase (Alternative B) seems somewhat stronger for the next half-decade. In the United States there is no evidence to suggest that the saturation level in per capita consumption has been reached and that no further growth is to be expected. In Western Europe, imports have been rising over the last seven years, 1950-57, at an annual rate of 7.5%. Even with all of the postwar increase, however, the 1956 Western European per capita consumption was still below the prewar level and, probably only slightly above the level obtaining before the First World War, in 1909-1913. 3/ While it is unrealistic to count on a possibility that the 1950-57 aggregate growth rate would be maintained, it is also unrealistic to assume that an extremely sharp drop would suddenly take place. Instead, it may be more reasonable to assume a more gradual deceleration in the growth rate, as projected in Alternative B. 4/

1/ This rate of increase is assumed in the GATT's projection of import demand of North America and Western Europe in 1953/55 - 1973/75, but it is noted that this may be an underestimate (GATT, International Trade 1956, pp 30-31).

2/ This assumes a continuation of the long-run rate of increase in the United States per capita consumption of one pound each five years, (IBRD, The Outlook for Coffee, 1956, p.C-2). Similar result is obtained by using the estimated income elasticity of demand for coffee in the U.S. of 0.5-0.6, (A.S. Szarf and F. Pignalosa, Factors Affecting United States Coffee Consumption. Monthly Bulletin of Agricultural Economics and Statistics, October, 1954), on the assumption that the future rate of income growth per capita will amount to 1.8-2% (compared to 2.5% in 1947-1955).

3/ In contrast, the per capita consumption in the United States has almost doubled since before the First World War.

4/ The OEEC in their projection of Western European growth expect that aggregate coffee consumption will rise by 24% in 1955-60, or 4.5% annually. (OEEC, Europe Today and in 1960, Paris 1957). In the present paper, this rate has been adopted for the period until 1960, but then reduced to 3% for the period after 1960. For the next decade as a whole, the average rate of increase in coffee consumption works out at 3.4% per year. On the assumption that the European real income will grow at an annual rate of 3.3% over the whole decade (compared to 5.2% in 1949-1955), the implied income elasticity of demand is slightly above 1. This is much higher than in the interwar period, but lower than since the Second World War.

As already mentioned, it is not possible to determine the impact on coffee consumption of variables other than income growth. The expansion of soluble coffee, which has been particularly fast in the United States, is assumed to involve a hypothetical loss in the consumption of green coffee, but it is not clear how large the loss is.^{1/} On the other hand, the ease of preparing soluble coffee is alleged to raise the aggregate coffee consumption, and this may be of particular importance now in Europe. The net effect on green coffee use, while probably adverse, is thus by and large a moot point, at least for the time being.^{2/}

As far as changes in tax policies are concerned, it is clear that a substantial downward revision in the European custom duties and sales taxes would greatly stimulate growth in coffee consumption. Under the impact of duties and taxes, the present level of retail prices of coffee in a number of European countries is very high (see Appendix III). The weighted average for three major European consumers, Germany, France and Italy, amounts to about \$1.65 per pound^{3/}, compared to about 90¢ in the United States. On the basis of available estimates of the elasticity of demand for coffee with respect to price changes in these countries^{4/}, it would appear that a reduction in price of 25¢ per pound, would lead to an expansion of consumption of about 900,000 bags a year, while a price reduction of 33¢ would raise consumption by 1.3 million bags annually.^{5/}

The possibility of tax and tariff reduction exists, unless the foreign exchange position in Europe is under continuous strain; and if the surplus of coffee becomes large, it is likely that major European countries would be exposed to strong political pressure by coffee producers to reduce tariff and tax barriers. While it is too arbitrary at the present time to explicitly introduce the effect of such changes into our demand projections, (i.e. to raise the future consumption given in Table II by the quantities shown in the preceding paragraph), the fact that such possibility exists should, at least implicitly, be taken into account in choosing between various alternatives of future consumption growth. It strengthens the belief that world consumption is more likely to rise at 3% than at 2% per year.

1/ See Appendix III.

2/ I.B.R.D, The Outlook for Coffee, 1956, p.C-3.

3/ About \$2.00 in Germany and \$1.50 in France and Italy.

4/ The elasticity coefficients by countries are shown in Appendix IV. They amount to -1.3 in Germany and Italy and -0.26 in France, giving the average weighted by aggregate coffee consumption, of -0.8. It should be noted that price elasticity of demand in Europe is generally much higher than in the United States.

5/ A price reduction of 25¢ per lb. implies a percentage drop of 15%, and a reduction of 33¢ implies a drop of 20%. With a price elasticity coefficient of -0.8, this price drop would lead to an increase in consumption of 13.9% and 19.5% respectively. Applied to aggregate imports of the three countries (consumption assumed equal to imports) in 1956 of 6.7 mln. bags, the increase in consumption works out at 940,000 and 1,340,000 bags, respectively.

It is only to be expected that the actual course of future consumption of coffee will differ from our projections. There is one thing which may be taken as reasonably certain, however. Assuming high and sustained rate of income growth, consumption of coffee is likely to rise faster than the long-run trend rate; and this will tend to soften the pressure on coffee producers arising from the expected rapid expansion in output. If the downward phase of the coffee cycle in the past was characterized not only by a flood of additional supplies, but also by sluggish demand, it is to be hoped that in the current coffee cycle the latter element is lacking, and that, instead, a continuous growth in consumption at a high rate would take place.

Eastern European Market

The countries of Eastern Europe are likely to provide an additional source of increased demand for coffee over the next decade. The present apparent level of coffee consumption in the area is extremely low compared with the prewar, in aggregate terms about one-sixth and in per capita terms even less. In comparison with Western European consumption, the current per capita use of coffee in Eastern Europe amounts to only 5% and, if the Soviet Union is also taken into account, to 2%. (Table III).

Table III
Eastern European Imports of Coffee
(Estimated)

	Aggregate Imports in 1938, Thousands of Bags	Current Imports (average in 1955-1956)		
		Aggregate Imports Thousands of Bags	Per Capita Imports lbs.	As % of Western European Imports
Eastern Europe ^{a/}	1,215 ^{b/}	224 ^{c/}	0.284	5%
U.S.S.R.	9	10	0.006	negligible
Total	1,224	234	0.1	2%

^{a/} Bulgaria, Czechoslovakia, Hungary, Poland, Rumania, Eastern Germany.

^{b/} Countries other than Eastern Germany, 394,000 bags; imports of Eastern Germany (821,000 bags), estimated as one-fourth of the imports of the whole of Germany, on the assumption that prewar per capita consumption in Eastern Germany was one-third lower than in Western Germany.

^{c/} The upper limit of the range. The lower limit is 177,000 bags, giving a total for the area of less than 200,000 bags. Both limits are crude estimates.

Recent trends in the Eastern European economic policies, with emphasis on increasing consumption and more variety in the pattern of consumption, suggest beyond reasonable doubt that coffee imports will accelerate. What the rate of acceleration will be is, however, a matter of guesswork. On this question, two hypotheses can be made. First, it is likely that considerations of domestic economic policy will lead to an expansion of coffee consumption at a fast rate, irrespective of whether there will be a coffee surplus.^{1/} Secondly, if recent experience is any guide, it is likely that an emerging serious surplus will be accompanied by massive offers to buy coffee.^{2/} Under the first hypothesis, a guess could be made that the prewar level of coffee imports (1.2 million bags) could be reached before the mid-1960's.^{3/} Under the second hypothesis, an annual rate of coffee imports of, say, 2 million bags, would not be an impossibility.^{4/}

Taking into account these hypotheses regarding Eastern European imports and assuming a 3% rate of increase in consumption in the outside world (Alternative B from the preceding section), total world consumption can be projected as follows:-

Table IV
Projected World Consumption of Coffee, Annual Averages
(millions of bags)

	World Excluding Eastern Europe.	Eastern Europe		Total World
		Hypothesis I	Hypothesis II	
1955-1956 Actual <u>a/</u>	35.4		0.2	35.6
1957-1958 Projected <u>b/</u>	38.1	0.5	0.5	38.6
1959-1963 Projected <u>c/</u>	42.8	1.0	2.0	43.8-44.8
1964-1968 Projected <u>d/</u>	49.2	1.3	2.3	50.4-51.5

a/ Imports in calendar years 1955 and 1956. World consumption in the crop year 1956/57 is estimated at about 36.5 million bags.

b/ Crop years 1957/58 and 1958/59.

c/ Crop years 1959/60 through 1963/64.

d/ Crop years 1964/65 through 1968/69.

1/ There are indications that this acceleration is already taking place. Reliable import data are available for Czechoslovakia, and they indicate that coffee imports doubled in 1955 and then increased by another 40% in 1956.

2/ Soviet bloc's purchases of cotton, rice and rubber clearly indicate this trend. Cotton imports doubled between 1954/55 and 1955/56 and in 1956/57 were held at the 1955/56 level; imports of rice into the U.S.S.R. and Eastern Europe increased several-fold during 1955/56 compared with the preceding period; and the 1956/57 imports of rubber were more than double the 1953/55 level.

3/ An import level of 1.2-1.3 million bags in 1963/64 would still imply a per capita consumption 30% below the prewar. It also implies that the U.S.S.R. does not import any coffee for its own use.

4/ Assuming that in addition to the Eastern European imports of 1.2 million bags, the U.S.S.R. imports for its own use 0.8 million bags per year. Soviet imports of 0.8 million bags would mean a per capita use of coffee at a rate equal to one-fourth of the present British per capita imports; (both are tea-consuming countries). It should be noted, however, that such Soviet purchases would probably be erratic rather than a regular flow.

In the period immediately ahead, 1957/58-1958/59, it is reasonably certain that world average consumption of coffee will vary between 38 and 39 million bags. The certainty is much smaller for the period 1959/60-1963/64. The projection beyond 1964 is merely illustrative; its purpose is to show what may be expected under conditions of continuing rapid economic growth, which is accompanied by high response of coffee consumption to income and by a revival in Eastern European coffee consumption.

Magnitude of Coffee Surplus

A comparison of output and consumption projections, shown in Tables I and IV, suggests that the next half-decade will witness a surplus situation in coffee. It should be stated at the outset, however, that the magnitude of the surplus will vary greatly, depending upon weather conditions in Brazil and upon the rate of increase in world consumption. If two frosts occur in Brazil before the mid-1960's - and this possibility cannot be excluded - the current surplus position would be temporary and the period 1960-65 could even see a shortage of coffee. On the other hand, an absence of frosts coupled with consumption growth no higher than 2% per year - another possibility which cannot be excluded - could result in a cumulative surplus by 1964, of over 50 million bags, which is equal to one-half of the quantity that was withdrawn from the market during the Great Depression. These two extreme possibilities properly reflect the uncertainty which exists regarding the coffee problem.

One thing is fairly certain, however. At the present time there is little doubt that in the crop year 1958/59 the surplus will be large, probably double that of 1957/58. It has been reported that weather conditions in Brazil during the flowering season (July-August 1957) were excellent. Barring a drought or excessive rains, world exportable output in 1958/59 is likely to be 15% above 1957/58, while consumption is unlikely to increase more than 3-4%. The surplus in 1958/59 may amount to 6-7 million bags, compared with 3 million in the current season, 1957/58. The surplus will occur mostly in Brazil.

For reasons already emphasized, the course of events beyond 1958/59 is essentially a matter of speculation. Table 7 indicates the range of projected surpluses under five alternatives. In order to simplify the presentation, the whole period 1957/58-1963/64 is treated as one unit, 1/ except in Alternative 1.

1/ In the period 1957/58 - 1958/59, for which the information is much more reliable, the estimated average annual surplus amounts to 4.7-5.4 million bags, or 12-14% of the estimated world consumption.

Table V

Projected Surplus of Coffee, 1957/58-1963/64

<u>Alternatives</u>	<u>Surplus in millions bags</u>		<u>Annual Surplus as % of annual con- sumption</u>
	<u>Cumulative over seven years</u>	<u>Annual Average</u>	
1. Two frosts in Brazil	10 mln.in 57/58- 58/59; no surplus thereafter	5 mln.in 57/58- 58/59; no surplus thereafter	12-14% in 57/58- 58/59; no surplus thereafter
2. Consumption growth at 3%; one frost in Brazil <u>a/</u>	26	3.7	9%
3. Consumption growth at 3%; no frost <u>b/</u>	39	5.6	13%
4. Consumption growth at 2%; one frost <u>b/</u>	36	5.1	13%
5. Consumption growth at 2%; no frost <u>b/</u>	54	7.7	19%

a/ Eastern European imports assumed under Hypothesis I
(increase to the prewar level by 1963/64).

b/ Eastern European imports assumed under Hypothesis II
(2 million bags annually from 1959/60 onwards).

Any of the cases shown above may occur, but it may be argued that the probability is greater in some than in others. On the basis of present knowledge, a rapid succession of severe frosts in Brazil is less likely than the occurrence of only one frost in the period under consideration; consequently Case 1 - no surplus after 1958/59 - is less plausible than the others. On the other hand, assuming that world real income increases in the future faster than the past long-run average, and considering the weight of evidence discussed in the foregoing sections, world coffee consumption is likely to grow faster than the past long-run rate of 2%. It follows that Cases 4 and 5 are also implausible.

The conclusion is that in the light of present information, Cases 2 and 3 appear to be the most suitable basis for further analysis. Both cases are based on the assumption that world consumption outside Eastern Europe will increase by 3% annually. Case 2 assumes one frost in Brazil, while Case 3 assumes no frost. In Case 2 Eastern European imports are assumed to be determined primarily by domestic policy considerations; their annual average level is projected at less than 1 million bags. In Case 3, which shows a larger surplus (no frost), Eastern European imports are assumed to be influenced by the surplus situation itself; they are placed at almost 2 million bags per year, but this may well be an exaggerated expectation.

Under the conditions described above, the cumulative surplus of coffee over the seven years 1957/58 - 1963/64 may range between 26 and 40 million bags, or, say, 10% to 13% of world consumption.

Price Elasticity of Demand for Coffee

If producing countries were to embark upon competitive selling, the drop in price required to clear the market would be substantial. It is generally considered that the response of coffee consumption to price changes in countries which are leading consumers, primarily the United States, is small over the short-run, at least if price changes occur within a certain range.^{1/} Computations of price elasticity coefficients are presented in Appendix IV. They imply that in order to raise world consumption by, say, 10% (Case 2), the price of coffee would have to decline by 35%; and if the required increase in consumption was 13% (Case 3), the necessary decline in price would amount to 40%. The resulting price of coffee which would liquidate the surplus would thus range between 32¢ and 36¢ per lb.^{2/} Santos 4's f.o.b., compared to the present f.o.b. price of 53¢. At these prices, coffee producers as a whole would suffer a substantial decline in earnings over the next few years; the gain from the increase in the volume of sales would be much smaller than the loss caused by the decline in price.

The possibility of price competition amongst coffee producers cannot be entirely excluded. This situation would arise if the Agreement of Mexico was not extended and if Brazil did not undertake unilateral price support, but decided to outbid other producers. In particular, it is conceivable that during a certain part of the seven-year period 1957/58 - 1963/64, the withholding scheme would fail to work and that under these circumstances Brazil, pressed by short-run payments difficulties, would unload all current output on the market. On balance, however, it is difficult to envisage coffee producers, particularly Brazil and Colombia, accepting a substantially lower price over the period as a whole, without first attempting to defend a higher price.

^{1/} Coffee trade appears to believe that the response is greater when prices rise above \$1 per lb. retail, and also when they fall below 50¢ retail.

^{2/} It should be noted that this competitive price of coffee is not a long-run equilibrium price of coffee. The price of 32-36¢ would be required to clear the market of surpluses caused by investment induced by excessively high prices in 1950-1956. Consequently the 1950-1956 actual price of 60¢ per lb. was above the long-term equilibrium level, while the assumed price of 32-36¢ is below that level.

Possibilities of Joint Action by Producers

In the dramatic history of coffee over the last fifty years, the support of the price of coffee has almost invariably been undertaken by the largest producer, Brazil. With the exception of the period during the Second World War^{1/}, Brazil has always had to act alone. From 1902, with the first official intervention on the coffee market, until 1937 when Brazil embarked upon free price competition, she supported the price singlehanded, with varying success, whenever there was a surplus. The most trying period of the defence of coffee occurred, of course, in the interwar period from 1924 to 1936. After establishing an artificially high support price of coffee in the 1920's, Brazil fought alone under most difficult circumstances, throughout the Great Depression, to prevent the collapse of the coffee market. Brazil destroyed almost 80 million bags of coffee (more than three-years' world consumption) and in addition held stocks at an average of 20 million bags in 1924-36. It is a testimony to the resiliency of the Brazilian coffee economy that despite all this, Brazil is now again expected to reach the peak-output of the 1920's.

Will Brazil repeat the lone support of coffee if surpluses start piling up and if the Agreement of Mexico is not extended? The argument in favor of such policy is that even under these conditions, Brazil may consider that she would be better off, in terms of foreign exchange earnings over the medium term, if she pegged the price than if she let it drop to a level which would clear the market.

^{1/} The Inter-American Coffee Agreement, signed on November 28, 1940 by 14 Latin American coffee producing countries and the United States, established export quotas for exports from the signatory countries to the United States and other markets and for exports to the United States from non-signatory countries.

Table VI

Brazil's Hypothetical Earnings from Coffee Exports
Annual Averages, 1957/58 - 1963/64

	Competitive Situation			Unilateral Price Support			Extension of Agreement of Mexico		
	Export Volume mln.bags	Price ¢/lb.	Assum. Value \$ mln.	Export Volume mln.bags	Price ¢/lb.	Assum. Value \$ mln.	Export Volume mln.bags	Price ¢/lb.	Assum. Value \$ mln.
Computed Values	22.9	32	965	17.3	53	1,210	18.4	53	1,290
Required Stockpiling	-			5.6			4.5		
Brazil's share of the market	48%			40%			43%		

Notes: (a) Computation is based on Case 3, Table V, which projects a cumulative surplus of 39 million bags. The relationship between various solutions remains similar if the computation is based on Case 2, Table V, (surplus of 26 million).

(b) In the competitive situation all output is assumed to be sold out. With unilateral price support, Brazil stockpiles 39 million bags. With the extension of the Agreement of Mexico, Brazil stockpiles 31 million bags, and other Agreement countries, 8 million.

(c) Computed export values are not values which will normally be realized. The average unit price for Brazil's coffee exports will be lower than 53¢ (or 32¢), since poor quality coffees represent a large proportion of the total, thus resulting in a level of earnings lower than projected. The relationship between various solutions, expressed in terms of indices, would remain unchanged, however.

(d) The above projections compare with actual exports volume of 16.3 mln. bags in 1950-54, 13.7 mln. in 1955 and 16.8 mln. in 1956. In the latter year, the computed export value (at 53¢ price) would amount to \$1,176 mln; actual export value - see (c) above - amounted to \$1,030 mln. or 12% less.

The purpose of Table VI is only to illustrate the problem facing Brazil and not to estimate its likely future earnings from coffee. In particular, it should be noted that the average export quality of the Brazilian coffee exports is below that of Santos 4's, the price of which is used in the Table in order to simplify the presentation (see notes c and d to the table).

The computation indicates that as a residual supplier of the world market, supporting the price alone and undertaking to accumulate all of the world surplus, Brazil's foreign exchange earnings over the medium-term would be 25% above the level which would result if price competition were to obtain.

Such unilateral price support also would have its serious drawbacks. It could be accompanied by occasional short-run declines in Brazilian foreign exchange earnings, severely taxing her generally low external reserves. As a lone supporter of the price of coffee, Brazil might be compelled to wait with her sales until other producers unloaded their supplies. If faced with short-run payments obligations, she might find it difficult to stay out of the market for very long within a given season.^{1/}

In the long run, unilateral price support would involve the danger of a decline in Brazil's relative share of the world market. By holding the price umbrella and resigning herself to the position of a residual supplier, the Brazilian rate of export expansion would be lower than that of other producers. If world consumption should rise at 3% per year, the Brazilian export volume would rise, but slowly. If world consumption were to increase at only 2%, there would be a slow absolute decline. This dilemma has always been present in the Brazilian export strategy and, for that matter, in all cases of unilateral price support.^{2/} Brazil's share of the world coffee market, after a rise from 50% in the middle of the 19th century to 75% at the turn of this century, has been declining over the last fifty years and now amounts to less than 45%. While it may be argued that underlying economic forces - emergence of new producers with lower costs - would have brought about similar developments whatever the Brazilian policy may have been, it may also be felt that the "umbrella" policy was partly responsible for the long downswing in Brazil's share of the market. For these reasons, Brazil has always tried to find a compromise between the two conflicting policy goals - maximization of foreign exchange earnings vs. maintenance of the relative share of the world market - by striving for an international stabilization agreement.

The conclusion of the Agreement of Mexico may be taken as an indication that in the present coffee cycle, Brazil will probably not be the only supporter of the price of coffee. The supporting action of other producers would alleviate Brazil's efforts and would represent at least a partial solution of the dilemma discussed above.^{3/} The readiness of a number of Latin

^{1/} This was presumably one of the factors which led to doing away with price support in 1954, although it may be argued that the cause was also the pegging of the price at a level which met very severe buyer resistance.

^{2/} There is an analogy between the Brazilian coffee situation and the U.S. agricultural problem. In both cases the price support has stimulated the expansion of output abroad and led to a gradual loss of the export market. The analogy is not complete, however. In the U.S. the price support is motivated exclusively by income distribution considerations. In Brazil, it is now dictated more by the desire to maximize foreign exchange earnings over the medium term.

^{3/} See last three columns in Table VI which indicate the hypothetical level of Brazil's earnings and her share of the market if the Agreement of Mexico is extended.

American countries to join in the support of the price of coffee is in part an expression of "coffee solidarity"; even more, it reflects these countries' direct interests. As a rule, countries with a small share of the market and with rapidly rising output are less vitally interested in participating in price stabilization, particularly if there is a certainty that the price will be supported even without their participation. At present, however, the second largest world producer, Colombia, has as much as 15% of the market and her output is expected to expand only at a slow rate over the next decade; and the latter is also true of a number of small Latin American producers. Consequently, unless a great rise in productivity were achieved, these countries could not appreciably offset the effect of a drop in price by an increase in volume. In fact, if competitive conditions were to prevail, their loss in earnings would probably be greater, in percentage terms, than that of Brazil, since Brazil presumably would be more successful in expanding the volume of exports. On the other hand, other producers seem to be aware of the limitations which might be imposed on Brazil's ability to support the price alone within any given season, due to a weak short-run position; and they also seem conscious of the importance to Brazil of a "just" share of the world market.

Prospects of Latin American Withholding Scheme

It is impossible to say with any degree of assurance whether all these factors will lead to a more permanent inter-American stabilization scheme, able to sustain considerable stresses which are in prospect. If the initial difficulties encountered in the application of the Agreement of Mexico are successfully overcome, and if world consumption continues to grow at a fast rate, the stabilization scheme may work for some time. If the African producers, which now account for more than 20% of world exportable output, do not join, this would be the major weakness of the scheme. These producers, staying outside the scheme, would be its main beneficiaries, enjoying both high prices and unrestricted volume of sales^{1/}; and their export expansion would be watched with uneasiness by all members of the stabilization scheme. However, if it is assumed that at a stabilized price of say, 50¢ per lb. the African output would expand over the next seven years at a rate of say, 0.5-0.6 million bags per annum, i.e. similar to the rate recorded since 1950, the room for growth of Latin American coffee exports would still be considerable, i.e., above 2% per year, as long as world consumption exclusive of the Soviet bloc, rose at 3% annually. An increase in sales to Eastern Europe would further raise the growth rate in export volume. At stabilized coffee prices, a rise in volume would be reflected in a rise of foreign exchange earnings; and a withholding scheme which is associated with a rise in external earnings has much more chance of success than a scheme which results in a loss, even if such loss were smaller than the loss to be expected in the absence of any scheme at all.

^{1/} There is a striking similarity between the position of the African countries today and the position of Latin American countries other than Brazil in the interwar period.

The situation would be different, however, if world consumption were to rise only sluggishly. In that case, the prospects for a stabilization program restricted only to Latin America, would be rather dark. Also, if output expansion in Africa turns out larger than anticipated, problems facing the members of the stabilization scheme would be correspondingly increased.

Not much can be said at the present time about the likely distribution of export quotas amongst the member countries during the whole duration of the withholding program. Brazil, where most of the increase in output is expected to occur, will probably have to carry the lion's share of the stockpiling burden. It is conceivable that exports of other countries will continue to be determined as proportionate to output and not as fixed quantities, thus permitting efficient producers to continue expanding their output and sales, while Brazil would undertake to stockpile the remainder of the estimated world surplus. Under this solution, if world surplus over the seven years 1957/58-1963/64 amounted to, say, 40 million bags (Case 3, Table V), the six smaller Mexico Agreement countries would have to accumulate 8 million bags, (10% of output), and Brazil the remainder of more than 30 million. If the cumulative surplus was reduced to 26 million (Case 2, Table V), the six Mexico Agreement countries may be called to accumulate, say, 4 million (5% of output) and Brazil 22 million bags.

Could the member countries stand the psychological impact of stockpiling of this magnitude? And, more important, could they stand its internal cost? As far as psychological impact is concerned, the long history of the Brazilian intervention suggests that the prospective stockpiling in Brazil would not be an impossible undertaking^{1/}. Colombia, the second largest member of the withholding scheme^{2/}, would probably do everything possible in order to assure its success; her interests in the success of the scheme are very great, and the tight organization of her coffee trade should enable her to apply the scheme. In other countries, uncertainties are somewhat greater; stockpiling would be a new experience, and the domestic reaction to it is relatively more unpredictable.

Internal Cost of Stabilization Scheme

Internal cost of the stabilization scheme will be heavy, assuming, of course, that the projected surpluses materialize. Since their average annual level (3.7-5.6 million bags in 1957/58-1963/64, Cases 2 and 3, Table V) is fairly close to

1/ The Brazilian stocks in mid-1957 were estimated at close to 8 million bags. An addition of more than 30 million (Case 3, Table V), would raise the stock level to nearly 40 million bags in mid-1964, while an addition of 22 million (Case 2, Table V), would imply a stock-level of 30 million. Withholding of 30-40 mln. bags is one-third to two-fifths of what was done during the Great Depression, when more than 100 million bags were withheld or destroyed.

The Brazilian warehouses, built during the 1930's, can absorb up to 30 million bags of coffee. If this limit is surpassed in the future (Case 3, Table V), Brazil would have to build more warehouses or destroy coffee again.

2/ If retention quotas of countries other than Brazil continue to be determined as proportionate to output (as was done under the Agreement of Mexico), Colombia would have to undertake more than one-half of these countries' aggregate stockpiling.

the quantity to be withheld under the Agreement of Mexico throughout the season 1957/58 (about 4.4 million bags), the present cost of withholding may be taken to illustrate the order of magnitude of future costs. It has been estimated that the local currency value of supplies to be withheld under the Agreement of Mexico, ("permanent" quotas only), expressed as a percentage of budget revenue, varies from less than 2% in Mexico to 12.5% in El Salvador.^{1/} Related to public investment financed from central government budgets in mid-1950's, the local currency value of coffee withholding, excluding Mexico, ranges between 20 and 40%^{2/}. This is quite a sizeable proportion; and if coffee withholding was to be financed exclusively by the government (and without recourse to inflation) it would require a substantial reduction in public investment, at least at the initial stage of withholding.

It should be noted, however, that such reduction, if it was undertaken, would not be "net". If no withholding scheme was applied and the price of coffee was permitted to drop, this would reduce governmental revenue (from export levies, import duties and taxes on income) and would in turn require a cut in public investment in any case. Thus it is a moot question how large the "additional" reduction in investment on account of the withholding scheme proper would be.

In practice, it is improbable that governments will pay for the entire cost of withholding of coffee. A part of the cost will be shifted back to the planters. Steps taken in some of the signatory countries of the Agreement of Mexico indicate a development in this direction.^{3/} How fast the "sacrifice" quotas^{4/} or similar devices will be applied and how severe they will be, will depend on external and internal developments as they affect each particular country. The sooner this is done, thus reducing the incentive for new plantings, the greater the chances that the stabilization scheme will work.

The most likely course of events in countries withholding coffee will be a combination of three policies: cutback in government investment, imposition of "sacrifice" quotas, and inflationary financing of stockpiling. The latter method, unless accompanied by a proportionate devaluation of the export exchange rate for coffee, will tend to raise costs for planters and this will work in the direction

^{1/} Percentages for other countries are: Nicaragua 5.6%, Costa Rica 7.3%, Brazil 9%, Guatemala 11.3% and Colombia about 12%. Estimate by the Bank's Department of Operations, Western Hemisphere.

^{2/} The ratios are: Mexico 4%, Nicaragua 17%, Costa Rica 27%, Guatemala 30%, Brazil 35%, Colombia 40%, and El Salvador 41%. The ratios of investment to central budget expenditure taken from IBRD, "Comparative Data on Latin American Countries" July 1956.

^{3/} It is reported that in Mexico no exports can be made until an amount equivalent to 10% of shipments is deposited in national warehouses. In El Salvador, the National Coffee Department buys 10% of coffee offered for exports, but at a fraction of the New York price.

^{4/} "Sacrifice" quotas were introduced in Brazil during the 1930's. They varied between 20 and 40% of planters' output. The quantity surrendered was either paid at a fraction of the ruling price or sometimes, not paid at all. "Sacrifice" quotas usually comprised low grade coffees, which were destroyed after collection.

of reducing incentive for new investment in coffee. From the general economic point of view, of course, inflationary financing of coffee withholding will be damaging. It would be unrealistic, however, to suppose that an acceleration of inflation will deter these countries from applying the stabilization scheme as long as they are convinced that it helps to maximise their foreign exchange earnings.

Price of Coffee until 1963

Whether or not the factors reviewed so far will make it possible for the Latin American stabilization scheme to last through more than the current year, is a matter for individual judgment. The assumption that by applying the scheme, foreign exchange earnings of major producers may be maximized over the medium term suggests that an attempt will be made to insulate the emerging surplus of coffee from the market, not only in the current year, but also in the years to follow. The risk of failure is considerable, however; and while the hypothesis that the withholding scheme will endure through the early 1960's may be suggested, it is also proposed that the risk of failure be explicitly recognized.

The hypothesis that the withholding scheme may be successful over the medium term, does not necessarily imply that the price of coffee will stay exactly at its present level of 55¢ per lb. The Agreement of Mexico is a flexible arrangement; the price of coffee is not rigidly fixed, nor are the export quotas (except for seasonal supply flows). At present, there is no reason to suppose that any subsequent arrangements will lack this flexibility. Under these conditions, the price of coffee is likely to fluctuate within limits. It is also reasonable to assume that, with the surplus overhanging the market, the fluctuations will generally be in the downward direction. With the passing of time, compromises amongst participating countries on exportable supplies will probably be achieved by raising permissible exports above the equilibrium level^{1/} rather than by reducing them below that level. Also, it is reasonable to assume that participating countries will from time to time respond to some extent to competition from areas which remain outside the stabilization scheme. It is therefore suggested that a hypothesis be adopted by which the price of coffee (Santos 4's, N.Y.) ranges between 45¢ and 50¢ in 1959-1963. This price projection recognizes only in part the risk that the withholding scheme may fail. The opposite assumption - total failure of the scheme - would lead to a price projection of 35¢ or less.

^{1/} The level required to maintain the present price of 55¢.

III. Coffee Problem in 1964-1968

Conditions Required to Restore the Equilibrium

The hypothetical price of 45-50¢ mentioned above, is not an equilibrium price of coffee over the medium term; if it were so, withholding of coffee would not have been required. Since it is reasonable to suppose that no withholding scheme, whatever its benefits in maximising foreign exchange earnings, can last forever if it implies constant accumulation of stocks, the question must be raised, what are the prospects for achieving a position in which stock accumulation would cease? Can such a situation be envisaged in the foreseeable future without an ultimate collapse in price?

At this point it may be useful to refer to the equilibrating mechanism of the classical coffee cycle. In this case, the downswing in the price, caused by output expansion, not only cleared the market of surplus supplies, but also performed another equally important function: by reducing or eliminating the profit margin, it severely curtailed new investment in coffee plantations, thus making possible, after a considerable time-lag, the restoration of equilibrium and eventual recovery in price.^{1/} With the application of the stabilization scheme, this mechanism is prevented from operating fully; the squeeze of the profit margin can come only in small part from the fall in price. It can be brought about by a rise in costs, however; and unless this occurs there is little hope of restoring the equilibrium.

While there is reason to believe that costs of producing coffee will tend to rise under the impact of increases in real wages, particularly in Brazil, it would be unrealistic to suppose that this spontaneous increase will be fast enough to sufficiently discourage new investment in coffee plantations within, say, the next decade, as long as the price of 45-50¢ is maintained. An additional increase in costs to the planters, or some other means to discourage increased production, must be created deliberately in the period of surpluses. We are thus driven back to the problem of financing the stabilization scheme, discussed in a different context in an earlier section of this paper (pp. 20-22). If the whole cost of the withholding scheme were shifted to the community at large, (i.e. to the government budget) and if acreage controls, did not occur, the incentive to invest would continue and the restoration of equilibrium would be postponed for a long time. Conversely, if the burden of withholding coffee is shifted to the planters, through "sacrifice" quotas and similar devices, this would be equivalent to a rise in costs; or alternatively, administrative prohibitions of new plantings would cut off new investment directly. In both cases, the rate of increase in output would slow down, currently generated surpluses would gradually diminish and the point would be reached at which current output would be no higher than current consumption - all this while maintaining the external price fairly constant and thus maximizing foreign exchange earnings.

^{1/} In fact, the effect of price decline on new investment used to be so strong that the new coffee cycle would start with a shortage of coffee and a sharp increase in price. Consequently, neither the price in the downswing phase of the coffee cycle, nor the price in the upswing were long-run equilibrium prices, but only fluctuated around the long-run equilibrium trend.

In order to illustrate the conditions under which such a position may be approached, Table VII contains a hypothetical development of output and consumption of coffee through the whole next decade. Particular years - one in the mid-1960's and one at the end of the 1960's - have been singled out as benchmarks.

Table VII
The Coffee Problem in the 1960's
(Projected annual averaged, millions of bags)

	World Consumption <u>a/</u> (3% growth & 2 mln. bags sales to E. Europe)	World Exportable Output						Current Surplus
		<u>Brazil</u>	<u>Colombia</u>	<u>Other L.A.</u>	<u>Africa</u>	<u>Others</u>	<u>Total</u>	
1959-63 <u>b/</u>	46.5	24.0	6.2	8.2	10.8	1.5	50.7	4.2
1963 <u>c/</u>	49.2	24.0 <u>f/</u>	6.3	9.0	12.0	1.7	53.0 <u>f/</u>	3.8 <u>f/</u>
1964-68 <u>d/</u>	53.4	(19.0-22.0) <u>g/</u>	6.5	9.5	14.0	2.0	51.0-54.0 <u>g/</u>	-2.4 or +0.6 <u>g/</u>
1968 <u>e/</u>	55.8	(21.0)	6.5	9.5	15.3	2.2	54.5	-1.3

a/ Figures from Table IV, increased by about 1 million bags on account of drop in price to 50¢.

b/ Crop years 1959/60-1963/64.

c/ Crop year 1963/64.

d/ Crop years 1964/65-1968/69.

e/ Crop year 1968/69.

f/ No frost assumed.

g/ Lower figures if there is one frost in Brazil; higher figures if there is no frost.

The above projection indicates that equilibrium of the coffee market could be reached in the second half of the 1960's, under the following assumptions:-

- (a) World consumption, exclusive of Eastern Europe, increases at 3% annually, i.e. at a rate substantially above the long-run average. Eastern European consumption, after a sharp increase in the late 1950's, gradually rises to a level of 2.3 million bags per year in the late 1960's.
- (b) Output in Africa continues to grow at a fast rate, 0.6 million bags or 5% per year. It is assumed that the African countries remain outside the stabilization scheme. In Colombia and in the smaller Latin American countries as a group, there is also some increase, but at a sluggish rate. In the latter half of the 1960's, growth in these countries ceases altogether, partly because of the lack of suitable land and also under the impact of the coffee withholding scheme, whose burden is partly shifted to the planters.

- (c) The equilibrium is achieved mainly at the expense of Brazil. Her output after an average of 24 million bags in the early 1960's, starts to decline in the mid-1960's under the impact of "sacrifice" quotas, other increases in costs and prohibition of new plantings.^{1/} It is assumed that these measures are taken somewhere around 1960, when coffee stocks have surpassed 20 million bags. As a result of this decline in output, the Brazilian share of world exports falls below 40% at the end of the 1960's.
- (d) With one frost in Brazil in the latter half of the 1960's, stocks that had been accumulated during 1957-65 could be gradually released to the market in the latter half of the 1960's. If there is no frost, release from stocks could not start before the late 1960's.

Assumptions (a) and (c) are crucial. Will world consumption continuously rise at 3% rather than 2% per year? And will the Brazilian government be prepared to go through half-decade or more of restraining new investment, and even inducing a fall in output, while African output, sheltered by the stabilized price of 45-50¢ continues rapid expansion and other Latin American countries essentially hold their own?

Doubts are justified on both counts. Consumption growth at 3% per year is a fair assumption for the next half-decade, but it may turn out to be an excessively optimistic assumption for a longer period; it is questionable whether a continuous growth in coffee consumption at a 3% compound rate of increase (as different from constant or moderately rising absolute increases) is feasible. It is somewhat difficult to envisage world coffee consumption increasing by 15 million bags in ten years (1958/59-1968/69)- a development without a precedent in the history of coffee. This could be achieved given a combination of rapid income growth, particularly in Western Europe, reduction in taxes and duties on coffee, and an acceleration in the shift in favor of personal consumption in Eastern European policies. Such a combination is possible, but not certain.

Views on Brazilian Policy.

Views on the probable Brazilian reaction to rising surpluses differ widely. One school of thought maintains that the Brazilian authorities will not do anything to restrict production of coffee and that the equilibrium will be ultimately restored through a disastrous fall in price, which will only be accentuated by the current attempts to hold it at the present level. The other view is that the restrictions on output will be imposed, not immediately, but when it becomes absolutely clear that the world coffee economy has entered a period of prolonged surpluses.^{2/} According to one authoritative source, the principle of coffee control

^{1/} In the interwar period, the prohibition of new plantings was introduced in 1931, when coffee stocks surpassed 25 million bags.

^{2/} This is the assumption (c) underlying Table VII.

has gained considerable ground in Brazil^{1/} implying that the response to surpluses will be more prompt and more systematic than in the past. It is also implied that Brazil does not have much choice but to accept voluntary cuts in output, while maintaining, as a leading member of an international stabilization scheme, the external price. An opposite policy - continuing output expansion followed by a collapse in price and free price competition - would mean not only a loss in foreign exchange earnings over medium term, but could also result, due to rising costs in Brazil, in an ultimate net loss of the market, which may be greater than under voluntary restrictions.^{2/}

At this point reference should be made to the Brazilian postwar coffee policy - the subject which is discussed at length in a later section (pp. 30-33). There is clear evidence that during the postwar period the coffee sector has not enjoyed the same position in Brazil as before the war. Exchange rate practices which were applied, resulted in a "real" price of coffee for the grower substantially below the price commanded on the world market. This was equivalent to the transfer of income from the coffee sector to the rest of the economy - the reverse of the position which had prevailed in the inter-war period. This change in the relationship of economic forces may be taken to suggest that there will be readiness to apply further measures in order to prevent new investment and even to reduce the current level of output, if this is necessary to maintain the external price of coffee and maximize foreign exchange earnings. But there is also another view that the present policy, is already discriminatory and is not likely to be accentuated further by an introduction of administrative measures.

Alternative Developments during 1964-1968

In addition to these two uncertainties - regarding the rate of consumption growth and the likely Brazilian coffee policy - there is a third one. Our output projections in general, and in particular for Brazil and Africa, may turn out wrong, probably having an upward rather than downward bias. And behind all this there is a possibility of rapid succession of frosts in Brazil, which could make all the computations in this paper worthless.

^{1/} Joint Working Group of the Banco Nacional de Desenvolvimento Economico (Brazil) and the Economic Commission for Latin America, The Economic Development of Brazil, New York 1956, p.100: "(there are) new aspects of the problem, especially the need to avoid encouraging marginal coffee production during a period when surplus stocks must be purchased. In this respect, consideration has recently been given in Brazil to the possibility of paying planters only a part of the coffee price in cash and using the remainder to finance surpluses. It is felt in some circles that this solution would have the desired effect upon marginal production. ...This is not the appropriate place to discuss such a proposal in detail. The only reason for mentioning it is to emphasize how far the principle of coffee control has gained ground in Brazil and how great is the anxiety of some sectors to provide for financing methods which, like the one described, would not have inflationary consequences".

^{2/} The Economic Development of Brazil p. 98 "...The recovery of markets through the exclusion of competitors would appear fairly impracticable in Brazil's case and would have negative effects over both the short and the long term. Given the inelasticity of supply in nearly all producer countries and the inelasticity of demand in importing nations, a reduction in prices with competitive ends in view would merely involve a transference of income at the expense of Brazil as well as of other exporting countries. Moreover, since Brazilian costs appear to be just as high as those of its principal competitors (they are probably increasing more rapidly), it is to be expected that a prolonged price decline would, in the long run, bring about a contraction in supply that would be greater in Brazil than in the other exporting countries."

Faced with these three formidable unknowns, it is possible to talk only of alternatives, and not of final solutions. The first alternative, which is optimistic, is contained in Table VII: due to fast expansion in consumption, decline in output and one frost in Brazil, equilibrium is reached fairly quickly and the disposal of earlier accumulated stocks (say, 40 million bags), can start in the second half of the 1960's, while the price of 45-50¢ is still maintained. Under the second alternative, somewhat less optimistic but still favorable, consumption rises less rapidly (2.5% rather than 3%)^{1/}; however, the Brazilian output declines and one frost hits Brazil. In this case, the equilibrium is reached in the second half of the 1960's, but no stock disposal can be undertaken before the late 1960's. Any attempt to dispose of stocks earlier brings the price down.^{2/} In the third alternative, consumption rises at 2%, an effort is made in Brazil to prevent new investment, but no decline occurs in the already attained level of output (24 mln. bags). Surpluses continue to be generated. Assuming that stocks earlier accumulated are held off the market, but that all current output is being sold, the price must drop to 42.5¢ (assuming one frost in Brazil) or 33¢ (no frost) in order to clear the market. The fourth alternative assumes a disastrous end of the stabilization scheme. No output restrictions are introduced, all currently generated surpluses are sold and, in addition, stocks are disposed of. The degree of price fall depends on the rate of stock disposal; if the latter was, say, 3 million bags per year, the price would have to decline to 25-33¢ per lb.

In the final analysis, the choice amongst these alternatives depends on the assumption which is adopted with respect to internal and external economic policies of Latin American countries, primarily Brazil. The task they face is very difficult: in all likelihood, they will have to cope with a cyclical surplus situation, lasting a number of years, probably a full decade. It is not a temporary imbalance which could be met by stop-gap measures. If the whole downswing phase of the cycle is to be overcome, it is not sufficient solely to stabilize the external price. It requires a prolonged and systematic restraint of inefficient investment in coffee planting and it also requires an international discipline both for orderly accumulation and for subsequent disposal of surpluses. As stated in the earlier sections of this paper, the producer countries would maximize their foreign exchange earnings, at least over the medium term, if this were done; and their chances of controlling the course of events are somewhat better now than they were in the earlier coffee cycles. However, the question of whether the required measures will in fact be undertaken and systematically applied, depends on the judgment of the countries' likely behaviour in the years to come.

In formulating this judgment, the policies of leading non-producing countries must also be taken into account. In view of the importance of coffee earnings to the economies of a number of nations^{3/}, a threat of substantial and prolonged decline in coffee prices could, depending on the particular circumstances, lead to a conclusion among non-producing countries conducive to their participation in the attempts to stabilize coffee prices. It is impracticable to speculate on this matter any further at this stage. It raises substantial issues both of

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- 1/ In alternatives 2-4 Eastern European imports are assumed at the aggregate prewar level (1.2 million bags).
 - 2/ Stock disposal at an annual rate of 1 million bags would be accompanied by a drop in price to 43¢; at a rate of 2 million, the required drop would be to 40¢ (starting from 47¢).
 - 3/ The total value of coffee exports from Latin America in 1950 amounted to \$1,955 million, of which \$1,313 were exported to the United States. The share of coffee in aggregate exports of 14 Latin American countries in 1956 amounted to 30%; in six of these countries it was much higher (Guatemala 84%, El Salvador 78%, Colombia 75%, Haiti 71%, Brazil 70%, Costa Rica 53%).

principle and of practical application (form of participation, level of prices etc.). Nevertheless, this possibility, however remote it may seem should be kept in mind in considering the circumstances likely to prevail during the 1960's.

It is very difficult to make any explicit price projection in the face of all the uncertainties described above. The possibility of a collapse of the price of coffee in the mid-1960's cannot be entirely excluded. On balance, however, it seems that the most likely outcome lies somewhere between the second and the third alternatives, which imply a gradual and moderate decline toward a level something like 40¢.

IV - The Long-Run Equilibrium Price of Coffee

The preceding discussion has dealt with the coffee problem primarily over the medium term. It has been essentially an analysis of the coffee cycle in 1945-1970 ^{1/} and of the likely behaviour of major sellers during the downswing phase of the cycle. Even if it is assumed that coffee countries will be successful in controlling and overcoming the present cycle, the problem still remains whether the price which may emerge would be an equilibrium price over the long-run. The latter may be defined as the average price which assures a continuous growth in output at a rate sufficient to satisfy the expected growth in consumption in the course of several decades. It is subsumed that the downswing phase of the present coffee cycle is over, that administrative control over production growth is no longer exercised, and that the rate of profit in the coffee business is at a level which induces an equilibrium rate of new investment.

The question may be raised, however, whether any discussion of the long-run price of coffee is useful at all. The world coffee economy has always moved in cycles; and after the preceding discussion of the current downswing phase of the cycle, it may seem more practicable to talk about a new cyclical upswing which could take place in the 1970's, rather than to discuss the long-run equilibrium.

A cyclical upswing during the 1970's is quite within the realm of possibility. If the price of coffee declines substantially during the current downward phase of the coffee cycle and if all new investment ceases, an upswing in the price in the 1970's could hardly be avoided. However, if producer countries succeed in preventing a substantial drop in price within the next decade, and if this is accompanied by a continuation of some investment activity, the chance for a new upswing will be delayed into a very distant future. Under these circumstances, it is more useful to throw some light on the factors which are likely to determine the future long-run price rather than to speculate on the emergence of new cycles.

The level of costs

Since, in the final analysis, the level of costs determines the price under competitive conditions, a direct answer to the problem of long-run price could be given if costs in major producing areas were known. This is the case only in part. There is scattered information on particular countries and this is of varying

^{1/} This would be the fourth cycle in the modern history of coffee. The preceding three cycles have been defined to have taken place in 1890-1910, 1910-1930 and 1930-1950. (FAO, The World Coffee Situation, April 1956).

reliability. It is generally assumed that costs in Africa are very low; 1/ and, according to one view, a price of 40¢ (Santos 4's N.Y.) would not prevent further expansion in output, although it may slow it down. 2/ In Latin American countries other than Brazil, it is considered that costs are fairly high and that at a price of 40¢, approximately the current production level would be maintained but not expanded. 3/ For the major producer, Brazil, cost estimates vary greatly between particular coffee regions. According to an earlier Bank study, 4/ current costs per pound in 1953 in Parana, the new producing region, were as low as 15¢; assuming a rate of return on capital of 15%, total costs per pound were estimated at about 26¢. 5/ In contrast, in the old producing region of Sao Paulo, which still accounts for as much as 18-20% of world exportable output, 6/ average current costs in 1953 were estimated at 35¢ and total costs were assumed to be as high as 66¢ per pound.

If this latter estimate approximates the true situation, even with a margin or error of 25%, the price of coffee fifteen or twenty years from now could hardly be any less than 50¢ per pound, unless a widespread technological advance were to occur in coffee growing. However, the margin of error may well be larger than 25%; and, besides, there is no information on how wide and how important are the deviations from the Sao Paulo average, even if it was accepted as correct. The available cost data cannot be dismissed, but there is a fairly general concensus of opinion that their quality is not adequate to serve as the only basis for price projection.

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- 1/ In Ethiopia, which produces good quality coffee (comparable to good Brazilian), the Bank's mission has estimated the cost level on the larger estates at 14-22¢ per lb. It is not clear, however whether this includes both current and capital costs. (IBRD, Current Economic Position and Prospects of Ethiopia; February 25, 1957). In Uganda, the support price of 15.5¢ for robusta coffee in 1955 was considered to have been far above the break-even point. (IBRD, The Economies of British East Africa, March 3, 1955). The support price for French African producers of robustas is much higher, however, (34¢), and this apparently reflects higher costs (Jacques Louis Delamare, Progress Noted in French African Coffee, Tea and Coffee Journal, October 1957). Costs are reported at 22¢.
 - 2/ This view is implied in IBRD, The Outlook for Coffee, 1956, p.12.
 - 3/ IBRD, The Outlook for Coffee, p.11. The Bank's mission estimate on costs in Costa Rica, suggests that the average break-even point is 40¢ per lb., while in very efficient farms costs have dropped to 32¢ (IBRD, Current Economic Position and Prospects of Costa Rica, November 18, 1957).
 - 4/ IBRD, Coffee Production and Prices in the Light of the Brazilian Situation, August 25, 1954, p.3-5.
 - 5/ No allowance for the effect of possible frosts was made in these estimates. Consequently, they understate the likely real cost levels.
 - 6/ Costs in Sao Paulo are taken as representative for all old producing regions in Brazil. The second in importance of the old regions is the state of Minas Gerais, which accounts for 8% of present world exportable output.

Changes in Real Returns from Coffee Growing in Brazil

An hypothesis can be made that the long-run equilibrium price should fall in the area between the peak and the trough of the current coffee cycle. It cannot be as high as 60¢ 1/ per lb., which had prevailed in 1950-1954, since at this price there would presumably be a constant tendency to over-invest in coffee planting. It cannot be as low as 35¢ 2/ - a free market level presumably required to clear the market of prospective surpluses - since at this level the investment would be curtailed below the long-run requirements. Could a price centered around, say, 45¢ 3/ be considered as a long run price?

There is one strong reason which may lead to the belief that a price of 45¢ (Santos 4's, N.Y.), would be above the long-run equilibrium level. Expressed in real terms, this price is above that which had prevailed on the external market over the forty years 1910-1950. 4/ Within this period, the world coffee economy has experienced prolonged surpluses. Therefore a conclusion would seem to follow that, other things remaining equal, a price of 45¢ would constantly tend to cause an over-production of coffee.

The case is not so simple, however, since other things - rate of growth of world consumption of coffee and marginal real costs of producing coffee - may not remain equal. In the period 1910 - 1950, world consumption growth was sluggish, less than 1.5% per year. The rate of increase both before and after this period was twice as fast, and it will presumably remain high in the future. If marginal costs of producing coffee have risen and if they may be expected to continue to rise, world price of coffee must be higher if rising consumption requirements are to be met.

On balance, it is likely that unit costs of producing coffee in Brazil, which will continue to determine the world price of coffee for a long time, have tended to rise over the last decade or two. Technological improvements in coffee growing have been applied only sporadically; on the other hand, it is likely that some increase has taken place in the level of real wages.

Direct statistical evidence on cost trends in coffee production in Brazil is lacking. Another statistical series can be computed, however, which reflects the long-term trends in real returns from coffee in Brazil in a more comprehensive way. Coffee prices in cruzeiros (i.e. prices received by domestic exporters on the basis of current exchange rates applicable to coffee exports) for 1920-1957 have been deflated by the Brazilian cost of living index. The resulting series of real prices of coffee in Brazil shows short-term variations in the same direction as those exhibited by the series of the external real prices of coffee (New York market). The

1/ In terms of 1947/49 prices 54¢, compared with the present price of 46.5¢ (also in 1947/49 prices).

2/ 30¢ in terms of 1947/49 prices.

3/ 38¢ in terms of 1947/49 prices.

4/ See Chart I in the Statistical Appendix. The assumed price of 45¢ would be 58% above the average New York price of the whole period 1910-1950. Compared to the 1910-1914 level, it would be higher by 30%, and compared to 1924-1929, by 10%.

rate of change is very different, however, and as a result, the long-term trends between the two series diverge widely. 1/ While the present external real price of coffee is 30% above the 1924-1929 average, the present Brazilian real price is 15% below the 1924-29 level. Consequently, while the comparison between the assumed (45¢) and past external prices may suggest a continuing inducement to over-investment at the assumed price, 2/ the latter is far from certain when the attention is focused on the trend in the domestic Brazilian coffee prices. The external long-run price of 45¢ implies a decline of 18% from the present level. If one-half of this decline was shifted to the Brazilian planters and the other half absorbed by the government, the resulting real price of coffee in Brazil would be almost equal in real terms, to the average over the thirty years 1920-1949. Since it may be assumed that the price level in this period as a whole was probably below rather than above the equilibrium, (high prices in the 1920's were followed by a prolonged depression in the 1930's and 1940's), it appears that the Brazilian equivalent of 45¢ would not be conducive to over-expansion in the long-run. With further rise in costs in Brazil this price may even turn lower than required for normal growth, unless the rise in costs in Brazil was more than offset by successive devaluations of the exchange rate for coffee exports. There is little doubt that there will be offsetting action when the prices decline. On the other hand, it may be questioned whether this action will be carried so far as to completely reverse the relative price trends observed over the last two decades.

Table VIII gives the movement of the New York price of coffee and of the price in Brazil in 1920-1957. The lower part of the Table gives the projected relationship on the basis of the assumed price of 45¢ and, alternatively, 50¢.

1/ See Chart II in the Statistical Appendix.

2/ It is reasonably certain that the 1924-29 price level would have caused an over-supply of coffee even if the Great Depression had not occurred.

Table VIII

Index of Real Coffee Prices in New York and Brazil
(1924-1929 = 100)

	<u>New York Price</u>	<u>Price in Brazil</u>	<u>Index of the Brazilian Price as % of the Index of the New York Price.</u>
<u>A. Actual</u>			
1920-1923	58.4	89.4	153%
1924-1929	100.0	100.0	100
1930-1939	56.7	72.5	128
1940-1946	57.0	53.3	94
1947-1949	82.9	61.8	74
1950-1954	156.3	104.5	66
1955-1956	148.3	95.1	64
August 1957 ^{a/}	131.5	84.8	64
Average 1920-1949	68.2	74.7 ^{d/}	109
Average 1950-1957	151.2	99.7	66
<u>B. Projected Long-Run</u>			
Assumed long-run price of 45¢	110.1	71-77-85 ^{b/}	64-70-77
Assumed long-run price of 50¢	122.3	79-82-85 ^{c/}	64-67-70

a/ Last month for which the Brazilian deflator is available.

b/ 71 if the internal price falls proportionately to the fall in the external price; 77 if it falls at half the rate of the external price drop; 85 if the domestic price remains at the present level. (August 1957) and the whole decline is absorbed by the government. All changes in real terms.

c/ 79 if the internal price falls proportionately to the fall of the external price; 82 if it falls at half the rate of the external price drop; 85 if the domestic price remains at the present level (August 1957) and the whole decline is absorbed by the government. All changes in real terms.

d/ See footnote 1/ on page 33.

It should be noted that statistical defects of the above series may be considerable, depending on the reliability of the Brazilian cost of living index, which was used to derive the real price of coffee in Brazil. 1/ It is doubtful, however, that the margin of error is so large as to change the general picture.

The relative weakening of the economic position of the Brazilian coffee grower is reflected in the upper half of Table VIII. The great upswing in coffee prices on the external market after 1950 (first column), was transmitted to Brazil (second column) and caused an over-investment during 1950-1954, when the Brazilian real price of coffee had surpassed the 1924-1929 level. Over the last three years 1955-1957, however, the real price in Brazil has slipped considerably. And throughout the whole period since 1920, the real price received by the Brazilian coffee grower has been constantly declining in relation to the external real price of coffee (third column).

The mechanism through which this relative decline took place was simple: devaluation of the exchange rate for coffee exports did not keep pace with the rate of internal inflation. 2/ The economic and social background has been less simple. The hypothesis can be made that rapid industrialization and economic growth has resulted in emphasizing the industrial sector rather than the coffee sector. In the 1920's, there was a transfer of income to the coffee sector through subsidized coffee prices; in the 1940's and particularly in the 1950's, the situation has been reversed and prevailing tax policies have resulted in a transfer of income away from the coffee sector, thus raising substantially its costs relative to earlier periods. There is always a possibility that these policy trends may change; and over the medium term it is virtually certain that a decline in price will be accompanied by compensatory income policies, thus reducing the impact of a fall in price on the incentive to invest. The crucial question, however, is what will be the long-run trend. On this, a guess may be ventured that resources will be diverted, through the market mechanism and otherwise, to fields other than coffee.

1/ Another source of error, independent of the above, relates to the Brazilian real prices received by planters in the 1930's. The second column in Table VIII has been derived from the New York price and the exchange rate for coffee exports. During the 1930's, when "sacrifice" quotas were applied, the planter did not receive the whole price for the "sacrifice" part of output. Therefore, the Brazilian real price in the 1930's was in fact lower than shown in the Table. The error does not change the picture substantially, however, if it is assumed that one-half of the total quantity that was burned during the Great Depression was an export tax in kind (i.e. not paid at all), this would be equivalent to an 8% reduction in the average real price for the whole period 1920-1949. The index thus obtained would be 69, compared to 75 shown in the table.

2/ Between 1946 and August 1957, the Brazilian cost of living index rose by 337% while the number of cruzeiros received per dollar of coffee exports increased by 154%.

Price of Coffee After 1970

In the final analysis, the price of coffee over the next two or three decades will be determined by two variables: rate of growth in world coffee consumption and changes in costs in Brazil. If world consumption of coffee rises fairly fast - and this depends primarily on the rate of income growth - Brazil will remain an important supplier of coffee whose costs will determine the price. The African low cost producing regions - Ethiopia as a good quality producer is an example - will proceed with their expansion and in the very long-run may well dominate the world coffee market, replacing Brazil, just as the latter replaced, more than a century ago, the older Asian producing areas. But such a dramatic change is unlikely to happen within twenty to thirty years.^{1/} In the meantime through all the vicissitudes of policies and external fluctuations, Brazilian industrial growth is likely to proceed at a rapid pace, exerting a pressure on labor supply. The Brazilian rate of population growth is high (2.4%), which will enable a fast rise in the labor force. Nevertheless, on balance it is likely that real wages in industry will tend to rise over the long-run rather than stagnate. This will probably raise labor costs in coffee growing in the areas where industrialization is proceeding rapidly, like Sao Paulo, since the competitive industrial demand for labor is likely to be strong. And labor costs in the coffee industry represent the major portion of total costs.

Against these factors working for a long-run increase in costs, there will be another factor operating in the opposite direction: technological improvements in coffee growing. On the basis of present knowledge of varieties and cultivation techniques, it is possible to increase yields significantly, thus reducing the costs. Technological improvements will certainly take place in Colombia and Central American countries; they may also take place in Brazil. In the past, improvements in technology were applied on a limited scale, and their impact on the average cost level was probably minor. In the future, this may change, particularly if acreage is restricted, due either to natural or administrative limitations. It is a moot question, however, whether this development will offset the likely increase in real wages. In countries other than Brazil, the net result will probably be a reduction in unit-cost; in Brazil, however, the rise in labor costs may well exceed the effect of technological change.

The factors discussed in this section suggest that on the average, through its cyclical and accidental variations, the future long-run equilibrium price of coffee is likely to be higher than in the inter-war period. The analysis cannot lead to a concrete figure. If a working hypothesis is required, it is suggested that a price of 45¢ Santos 4's, N.Y., be adopted as an average for the period after the late 1960's. In real terms, the price of 45¢ ^{2/} coincides with the average between the

^{1/} It should be noted that from the present total African output of 8.5 million bags, 6.7 million consist of low-quality coffees (robusta) and only 1.8 million are good qualities (arabica). In order to replace Latin America and particularly Brazil as a leading producer, African output has to expand primarily in good qualities. Areas suitable for growing arabica coffees are limited to Ethiopia, Kenya and some parts of Uganda, Tanganyika, Belgian Congo and the Cameroons.

^{2/} 38¢ per lb. N.Y., in terms of 1947-49 prices, compared to the average of 51¢ in 1955-56, 48¢ in 1957 and 47¢ in December 1957, (all in terms of 1947-1949 prices).

prices that obtained in 1948 and in 1950, both in Brazil and in New York. It may be assumed that the price in 1950 ^{1/} was conducive to over-investment in coffee planting, while the price in 1948 ^{1/} was probably somewhat below the level which would assure an equilibrium rate of investment. If it is further assumed that real costs per unit of output will tend to rise over the long-run, a case for a price of 45¢, appears plausible.^{2/}

^{1/} In terms of 1947/49 prices, the New York price in 1950 amounted to 49.5¢, and in 1948, 26¢, giving an average of 37.8¢.

^{2/} An hypothesis of 40¢ could also be made, but seems less acceptable. In real terms in Brazil, this price would equal the average price in 1947-1949, when investment in coffee was probably below the equilibrium requirements; (the great coffee boom did not start before November 1949).

APPENDICES

- Appendix I : Agreement of Mexico
- Appendix II : Underlying Data and Sources
for Table I, World Coffee Exportable
Output, Projected.
- Appendix III : Underlying Data and Sources for
Table II, Consumption of Coffee in
Importing Countries, Projected, and
Table III, Eastern European Imports
of Coffee.
- Appendix IV : Price Elasticity of Demand for Coffee.
- Appendix V : Statistical Tables.

APPENDIX I

AGREEMENT OF MEXICO

Messrs. Paulo Guzzo, Representative of The Brazilian Coffee Institute (Instituto Brasileiro do Café); Andres Uribe, Representative of the National Federation of Coffee Growers of Colombia (Federacion Nacional de Cafeteros de Colombia); Rodolfo Peters, Representative of the Government of the Republic of Costa Rica; Tomas Regalado, Representative of the Government of the Republic of El Salvador; Flavio Guillen Castanon, Representative of the Government of the Republic of Guatemala; Juan Rebolledo Clement, Representative of The National Agricultural Union of Coffee Growers of Mexico (Union Nacional Agricola de Cafeteros de Mexico); and Horacio Gonzalez Rappaciolli, Representative of Coffee Growers Cooperative of Nicaragua (Sociedad Cooperativa Anonima de Cafeteros de Nicaragua), having carefully studied the current problems of the world coffee market, and acting with the highest spirit of solidarity and cooperation, agree on the following :

ARTICLE I

The Governments and Coffee Entities subscribing to this Agreement, resolve to establish a plan regulating the exportation of coffee from their respective countries to world consuming markets during the periods later referred to, with the purpose of promoting an orderly and stable market with conditions equitable for both producers and consumers.

ARTICLE II

The regulatory plan to which this Agreement refers will be applied to Brazil's coffee exports, in the following terms :

- a) The Brazilian Coffee Institute agrees to maintain unchanged its policy of support of the world coffee market in keeping with the regulations decreed in Brazil for the coffee crop year beginning July 1, 1957 and ending June 30, 1958. These policies will consist principally in regulating the shipping of coffees to ports and foreign markets, and in the maintenance of minimum prices and domestic purchases whenever necessary. It is estimated that Brazil's coffee exports from the 1st of October 1957, through the 30th of June 1958, will not exceed 11,200,000 bags of 60 kilos each.
- b) The Brazilian Coffee Institute also assumes the obligation of retaining as a reserve at least 20% of the quantity of coffee exported between October 1st 1957 and September 30th, 1958. The

Appendix I (Cont'd)

reserves thus retained will be made up of coffee of exportable quality and may not be exported during the period herein referred to.

ARTICLE III

The regulatory plan to which this Agreement refers will be applied to the coffee exports of the mild coffee producing countries, whose Governments or Coffee Entities are signatories, on the following terms :

a) From November 1st, 1957 through March 31st, 1958, these countries will limit their coffee shipments to 80% of the average quantities exported during the same period of the previous two years, approximately. Therefore during the period in question, these shipments will not exceed the following quantities.

	<u>60 kilo bags</u>
1) For Colombia	2,302,000
2) For the member nations of the Coffee Federation of America whose Governments or Coffee Entities are signatories	<u>2,070,240</u>
TOTAL :	4,372,240

The distribution of the quantities corresponding to each one of the countries referred to in No.2 above, appears in the Appendix to this Agreement, said Appendix being part of the Agreement.

b) Shipments made between April 1st and September 30th, 1958, by mild coffee producing countries, whose Governments or Coffee Entities are signatories, will be regulated in accordance with standards to be adopted at a Conference, to be held not later than the last week of January 1958. This Conference may be called by one or more of the subscribing countries, after consultation with the others.

c) Both the National Federation of Coffee Growers of Colombia and the Governments or Coffee Entities of the FEDECAME member countries subscribing to this Agreement assume the obligation of establishing and maintaining coffee reserves equivalent to 10% of all shipments to be made between November 1st, 1957 and September 30th, 1958, such reserves not to be exported during the period in question. These reserves will be created through the retention of 10% of the coffee shipped and will be of the same

Appendix I (cont'd)

quality as such shipments.

ARTICLE IV

A Board of Directors is hereby established, consisting of a representative from each of the countries subscribing to this Agreement. The designation of the representatives shall be made in accordance with the internal procedures of each country. The Board of Directors will keep under study the developments of the world coffee market and shall be empowered to adopt jointly, the resolutions or dispositions which it deems convenient for the orderly and stable functioning of said market.

The Board of Directors will designate an Executive Committee, formed by a representative from Brazil, a representative from Colombia and a representative of the FEDECAME member countries subscribing to this Agreement.

The Executive Committee will keep under supervision the fulfillment of the terms of this Agreement and will have the power to establish an accounting system which will permit the verification of coffee shipments from the participating countries as well as the coffee reserves, quality and quantitywise, which they have agreed to constitute and maintain.

The Executive Committee can convoke the Board of Directors whenever the occasion arises.

ARTICLE V

The Governments or Coffee Entities of the other member countries of FEDECAME which have not for the present subscribed to this Agreement, may do so providing they accept the obligations it lays down. The other coffee producing countries in the world can also subscribe to this Agreement, under the terms and conditions upon which they agree with the Board of Directors. Adherence will become formal in each case through notification given to the Board.

ARTICLE VI

The interpretation or amendment of the clauses of this Agreement shall belong exclusively to the Board of Directors.

(Appendix I (cont'd))

ARTICLE VII
(Transitory)

In view of the need to enable the participating countries to resolve jointly, from now on, all matters arising from the application of this Agreement, the undersigned Representatives shall constitute the Board of Directors referred to in Article IV, fulfilling provisionally the duties of the Board until final appointments are made.

The Executive Committee shall be formed provisionally by Messrs. Paulo Guzzo, representing Brazil; Andres Uribe, representing Colombia, and Tomas Regalado, representing the participating FEDECAFE member countries.

IN WITNESS THEREOF, the undersigned Representatives subscribe to this Agreement in Mexico City, on the eighteenth day of the month of October, of the year nineteen hundred and fifty-seven.

(signed)	Paulo Guzzo	(signed)	Andres Uribe C
(signed)	Rodolfo Peters	(signed)	Tomas Regalado
(signed)	Flavio Guillen Castanon	(signed)	Juan Rebolledo Clement
	(signed)	Horacio Gonzalez Rappaciolli	

APPENDIX II

Underlying Data and Sources for Table I:
 "World Coffee Exportable Output, Projected
 1957/58-1963/64" p.6

World 1957/58-1963/64

1. Annual averages given for the two years 1957/58-1958/59 and for the five years 1959/60-1963/64, are based on the following hypothetical annual output data (in millions of bags).

<u>Year</u>	<u>Brazil</u>	<u>Colombia</u>	<u>Other Latin America</u>	<u>Africa</u>	<u>Others</u>	<u>Total</u>
1957/58	17.1	6.0	7.0	8.5	1.4	40.0
1958/59	23.0	6.0	7.2	9.0	1.5	46.7
Average	20.0	6.0	7.1	8.8	1.4	43.3
1959/60	22.0	6.1	7.5	9.3	1.4	46.3
1960/61	26.0	6.2	7.8	10.3	1.4	51.7
1961/62	23.0	6.3	8.3	11.0	1.5	50.1
1962/63	25.0	6.3	8.7	11.5	1.5	52.8
1963/64	24.0	6.3	9.0	12.0	1.7	53.0
Average	24.0	6.2	8.2	10.8	1.5	50.7

As indicated in the body of the paper, no allowance is made in the above data for a possibility of a severe frost in Brazil. The loss due to severe frost is estimated at 18 million bags, spread over two years.

2. For the years for which a comparison can be made, the above estimate is substantially above that given in the earlier Bank's staff report on coffee (IBRD, The Outlook for Coffee, August 28, 1956). The comparison is given below, (annual averages in millions of bags):

	<u>1958/59-1959/60</u>	<u>1960/61-1964/65^{a/}</u>
Earlier report	42.0	43.0
This report	46.5	48.3

a/ In both estimates it is assumed that one severe frost affects Brazil.

Differences which arise are almost exclusively on account of prospective developments in Brazil and Africa. It should also be noted that the earlier report's estimate of developments in 1960/61-1964/65 was based on the assumption that the price of coffee would fall to 40¢ level before 1960, which would exert a depressing effect on output as early as 1960/61-1964/65. In the present report it has been assumed that, due to the stabilization scheme, the fall would be negligible.

Brazil

3. The most controversial of all output estimates is that for Brazil. The earlier Bank's staff report dealt extensively with this problem and came to the conclusion that the higher estimates then available (prepared by the staff of the Sub-Committee of the Special Commission on Coffee of the Inter-American Economic and Social Council and by the United States Department of Agriculture)^{1/} contained a significant upward bias. Instead, the Bank's staff report suggested a figure of 19.5 million bags annually for the period 1958/59 and 1959/60 and 17.0 million for 1960/61-1964/65. (The latter estimate was heavily influenced by the expected drop in prices before 1960).

4. New information has arrived in the meantime, strongly suggesting that the Brazilian productive capacity has increased much more than was previously estimated, partly on account of plantings which, presumably, took place in 1955-56. According to this information, exportable output in 1958/59 may amount to 22.5 million bags, and beginning with 1959/60, 25 million bags annually. This estimate was accepted for the purposes of this report, with a downwards adjustment by 1 million bags. It was the feeling of experts who were consulted that output in the Parana region was unlikely to average 10 million bags, which had to be assumed if the total Brazilian output was to amount to 25 million bags per year. On the basis of this adjustment, the Brazilian annual average exportable output in 1959/60-1963/64 was estimated at 24 million bags^{2/} with the following distribution among various producing regions: Sao Paulo 9 million, Parana 9, Minas Gerais 3.5, Espiritu Santo 2, others 0.5 million.

Colombia

5. The prevailing view of experts is that the country has reached a plateau for the foreseeable future, as acreage is not expanding fast

^{1/} 28 million bags in 1958/59-1959/60.

^{2/} This estimate is considerably above the estimate of 20-22 million, given in: Joint Working Group of the Banco Nacional do Desenvolvimento Economico (Brazil) and the Economic Commission for Latin America, The Economic Development of Brazil, 1956, p.98. It appears, however, that this latter estimate did not take into account plantings that presumably took place since 1955.

enough to more than offset the decline in yields on older plantations. Stagnation in output in recent years tends to confirm this view. Over a longer period, say a decade, exportable output may rise by 10%. This is the assumption underlying the estimate in Table I of the paper.

Other Latin America

6. The estimate in Table I, which assumes that the present level of exportable output (7 million bags) will increase by about 2 million bags by 1963/64 (or 3.5-4% per year), was derived by combining the output projections contained in the Bank's staff economic reports on particular countries. Since periods of projections varied, it was necessary to make extrapolations (or interpolations) in order to arrive at a combined estimate for the year 1963.

Bank's staff estimates and our derivations are stated below :

Country	Actual Exports		Bank's Projections		Derived	Bank's Projections	Annual Growth Rate
	1955	1956	1960	1961	1963	1965	
El Salvador	1,185	1,132		1,300	1,320		2.5%
Guatemala	982	1,026	1,150		1,265		3.5%
Mexico	1,367	1,260			1,850	2,200	6.0%
Haiti	355	463		500	510		1.5%
Costa Rica	463	393			700	800	7.5%
Ecuador	384	408		530	590		5.5%
Nicaragua	312	285			300	300	0.0%
Total Covered	5,048	4,967			6,535		3.8%

For excluded countries (Venezuela, Dominican Republic, Honduras, Peru, Cuba and others), which accounted for 1,650 thousand bags, exported in 1956, it is arbitrarily assumed that output will also grow by 3.5-4%, thus giving a total of about 8.7 million bags for 1963.

Sources: Current Economic Position and Prospects of El Salvador, September 16, 1954, Current Economic Position and Prospects of Guatemala, January 23, 1957, Mexico's Public Investment Program, September 17, 1957, Current Economic Position and Prospects of Haiti, July 23, 1957, Recent Financial Developments in Costa Rica, November 18, 1957, Current Economic Position and Prospects of Nicaragua, November 27, 1957. Current Economic Position and Prospects of Ecuador, July 29, 1957.

Africa

7. The method applied to the preceding group of countries (other Latin America), was also used in the case of the African producing regions. Since the Bank's staff estimates were not available for all countries, in some cases estimates of exportable output were derived from other sources. Country estimates are as follows, (in thousands of bags).

Country	Actual Exports		Projections		Derivation	Projections		Annual Growth Rate
	1955	1956	1960	1961	1962	1965	1968	
Ethiopia	702	700			1,250 ^{a/}	1,667		11-13%
Belgian Congo	728	856			1,280 ^{a/}			7%
British East Africa	1,874	2,244			2,750		4,000	5.5-6.0%
(Kenya)	(496)	(496)			(611) ^{a/}	b/		(3.5%)
(Uganda)		(1,138)			(1,500) ^{a/}			(5.5%)
(Tanganyika)		(n.a)			(n.a)			(n.a)
French Africa	2,725	3,041			4,250			6.0%
(Madagascar)		(875)	(1,030)			(1,200)		(3.0%)
(French Cont. Africa)		(2,170)	(2,850)		.			(6.5%)
Angola	964	1,399	1,667		1,850			4.5-5.0%
Total Covered	6,993	8,220			11,380			6.0%

^{a/} Projected

^{b/} One view maintains that Kenya production in 1965 may reach 1,500,000 bags.

Areas not covered are minor producers (166 thousands exported in 1955 and 189 thousands in 1956).

8. The aggregate estimate shown above is substantially above that given for 1960/61-1964/65 in the Bank's previous report (9.5 million annual average). The difference presumably originates in all producing regions. In the light of the postwar experience and subsequently received future projections, the earlier estimate now clearly appears to have been an underestimate. On the other hand, the present estimate may have an upward bias. It is reported that in Madagascar, Angola and Kenya, which together account for one-third of the present African output, the prospects for immediate expansion are limited (old plantations in need of replacement in Madagascar, old plantations and labour shortage in Angola, limited acreage in Kenya). As a result, the aggregate African production, although it will continue its powerful rise which has now lasted for three decades, may well be somewhat lower than projected in this paper.

Sources for the estimate of African exportable output given in this paper:

- IBRD, Current Economic Position and Prospects of Ethiopia, February 25, 1957.
- IBRD, The Economy of the Belgian Congo, October 29, 1957
- G.E. Schluter, Looking Ahead at Coffee in East Africa, Tea and Coffee Trade Journal, October, 1957.
- Jacques Louis Delamare, Progress Noted in French African Coffee, Tea and Coffee Trade Journal, October 1957.
- Pierre Massia, Recent Developments in Madagascar Coffee, Tea and Coffee Trade Journal, October 1957.
- Gregory Martinez, African Coffees Are Now Firmly Established in the U.S. Market Primarily Due to Solubles, Tea and Coffee Trade Journal October 1957.
- U.S. Department of Agriculture, Foreign Agriculture Circular, Coffee, December 27, 1957 (note on Angola).

APPENDIX III

Underlying Data and Sources for Table II:
 "Consumption of Coffee in Importing Countries,
 Projected", p.8 and Table III: "Eastern European
 Imports of Coffee", p.11

World Exclusive of Eastern Europe 1957/58 - 1963/64

1. Annual averages given for the two years 1957/58 - 1958/59 and for the five years 1959/60 - 1963/64, are based on the following hypothetical annual consumption data (Alternatives A and B), in millions of bags.

<u>Year</u>	<u>United States</u>		<u>Western Europe</u>		<u>Others</u>	<u>Total</u>	
	<u>A</u>	<u>B</u>	<u>A</u>	<u>B</u>	<u>A & B.</u>	<u>A</u>	<u>B</u>
1957/58	20.8	21.0	13.1	13.3	3.0	36.9	37.3
1958/59	21.1	21.7	13.4	13.9	3.2	37.7	38.8
Average	21.0	21.4	13.2	13.6	3.1	37.3	38.1
1959/60	21.5	22.4	13.7	14.6	3.3	38.5	40.3
1960/61	21.8	23.0	14.1	15.3	3.4	39.3	41.7
1961/62	22.1	23.6	14.5	15.8	3.5	40.1	42.9
1962/63	22.5	24.3	14.9	16.2	3.6	41.0	44.1
1963/64	22.8	24.9	15.4	16.7	3.7	41.9	45.3
Average	22.1	23.6	14.5	15.7	3.5	40.2	42.8

As indicated in the body of the text, Alternative A implies an aggregate growth rate of about 2% per year, and Alternative B about 3%.

United States

2. The methods of derivation are explained in the body of the text. There are other estimates, which vary considerably, and are quoted in the earlier Bank's staff report on coffee (The Outlook for Coffee, August 28, 1956).

3. In judging the prospects of the United States consumption there are several elements, in addition to those quoted in the body of the text, (population growth and the estimated income elasticity of demand for coffee), which should be mentioned.

(a) As mentioned in the text, the estimate of future consumption does not make any allowance for the hypothetical "loss" arising from growth in the use of soluble coffees. Solubles have risen very fast in the United States; in 1956, they accounted for 16% of all roastings, compared with 12% in 1954. Purchases of solubles by households have doubled between 1953 and 1956, but the percentage rate of increase in 1955 and 1956 (17% and 18% respectively) was much smaller than in 1952, 1953 and 1954 (26%, 34% and 45% respectively).^{1/} The hypothetical "loss" results from the assumption that on a cup basis, more cups of coffee can be prepared from a given quantity of green coffee when used to produce soluble coffee rather than regular coffee. The magnitude of the actual "loss" is far from clear, however. The greater the number of cups of regular coffee produced from a given quantity of green coffee, the smaller the loss, and vice versa; and if the number of cups per pound of green coffee reaches 65, it is alleged that there is no more loss, assuming that the number of cups of soluble coffee produced from a pound of green coffee remains unchanged. According to recent preliminary information, the preparation of regular coffee in the United States in recent years has worsened substantially, ("watered down"); and by 1954-1956 more than 60 cups of regular coffee were obtained from one pound of green coffee, compared to 52 cups in 1951 and 45 cups before 1950 (a 45 cups extraction rate is considered "normal"). If this information is confirmed (and if no "watering down" has also occurred in the preparation of soluble coffee), this would imply that no further significant "loss" in green coffee use would occur in the future on account of growth in solubles. The whole situation is too complex to permit any quantitative appraisal of the adverse impact on green coffee use. A further complication is that the coffee trade now expects, rightly or wrongly, that the quality of preparing coffee will improve in the future, by using more coffee per cup. If this happens, it will represent an addition to green coffee use; but, on the other hand, if growth in solubles also continues, the improvement in the quality of regular coffee would then imply a relative loss. The net result of all this, although probably adverse, is difficult to gauge.

(b) The United States per capita consumption of coffee showed a powerful rise in the 1940's. From 13 lbs. in 1937, it rose to 19.4 in 1949, or almost 3.5% per year. As indicated in the Statistical Appendix, Table IV, the per capita consumption after 1949 declined, presumably under the impact of rising prices of coffee. The trough was reached in 1954, when the per capita consumption (14.7 pounds) was almost as low as in 1935-39 (14.2). The recovery since 1954 appears to have been rapid, 4.8% in 1955 and an additional 3.9% in 1956. The projection under "B" (faster growth in coffee consumption) implies that the recovery in per capita consumption will continue at a slow pace of 1.1% - 1.2% per year and that in 1963/64 the per capita consumption will amount to less than 17.5 lbs. This is, of course, much lower than the 1949 peak. It is also slightly below the average prevailing in 1946-1953.

^{1/} Pan-American Coffee Bureau, Annual Coffee Statistics 1956, pp.3-4.

(c) The future age composition of the United States population will presumably be more conducive to coffee drinking than was the case in the postwar period. The annual rate of increase in the laborforce age group (15 years and over) in 1950-1955 amounted to only 1.0% (compared to the rate of growth of total population of 1.75%). In 1955-1970, the labor-force age group will rise much faster, 1.5% per year (1.2% until 1960 and 1.6% in the subsequent two quinquennia).

Western Europe

4. The factors underlying the Western European projection are stated in the body of the paper (p.9). In Alternative "B" (higher consumption growth), it is assumed that the postwar aggregate rate of increase (7.5%)^{1/} will slow down, first to 4.5% (as projected by the OEEC) and, after 1960, to 3%. On these points, only a few additional comments and explanations are required.

(a) In 1938, the average Western European per capita imports amounted to 5.3 lbs. In 1955, they were 4.3 lbs. and for 1956 they can be estimated at 4.8 lbs., i.e. still below the prewar level. Country-by-country review for 1938 and 1955 (last year for which complete data are available) is given in the following table.

Per Capita Imports of Coffee, in lbs, 1938 and 1955

	<u>1938</u>	<u>1955</u>
Iceland	n.a.	16.9
Sweden	18.4	16.3
Finland	15.8	15.6
Denmark	20.2	14.1
Norway	14.6	13.9
Belgium-Luxembourg	13.6	11.4
France	10.0	9.2
Switzerland	9.1	8.1
Netherlands	13.2	6.6
Germany ^{a/}	6.3	5.4
Italy	1.8	3.4
Portugal	1.9	2.5
Austria	2.1	1.8
Greece	2.4	1.6
United Kingdom	0.9	1.5
Spain	0.5	0.7
Turkey	0.7	0.6
Ireland	0.2	0.2

^{a/} In 1938, all Germany; in 1955, Western Germany.

^{1/} For year-to-year percentage changes, see Table V in the Statistical Appendix.

As can be seen from the Table, only in Italy, Portugal, United Kingdom and Spain, the 1955 import level per capita was above that recorded in 1938.

(b) In their projection of Western European growth in 1955-60 and its impact on international trade^{1/}, the OEEC have used the following consumption elasticities (per cent change in per capita consumption for 1 per cent change in per capita income or total consumption) for non-alcoholic beverages, (coffee, tea, cocoa).

	<u>Income Elasticity</u>
Belgium-Luxembourg, Denmark, Norway, Sweden, Switzerland, United Kingdom, Austria, France, Germany, Iceland, Netherlands	1.2
Ireland, Italy	1.1
Greece, Portugal	0.9
Turkey	0.7

No break-down by particular beverages is available. However, the aggregate imports of tea and cocoa are expected to rise at a considerably slower rate than coffee in 1955-1960,^{2/} and this implies that income elasticities of demand for coffee are higher than the figures quoted above. It should also be noted that the highest elasticity group above largely determines the elasticity for Western Europe as a whole (the first Group accounts for more than 85% of total Western European imports).

(c) The above income elasticities of demand, presumably derived from postwar time or consumer survey series, are much higher than those computed by FAO, mainly for the inter-war period. The latter are :

<u>Country</u>	<u>Period</u>	<u>Income Elasticity</u>
Sweden	1920-1938	0.39
Italy	1921-1938 and 1939-1953	0.69
Germany	1925-1937 and 1953-1955	0.48
Switzerland	1924-1938	0.34
Finland	1929-1939	0.54
Greece	1927-1938 and 1952-1953	0.68

Source: FAO, The World Coffee Situation, April 1956.

^{1/} OEEC, Europe Today and in 1960, Paris 1957
^{2/} Tea 12%, Cocoa 20% and Coffee 24%.

Since the inter-war period could hardly be considered as representative of future European growth, the OEEC elasticities quoted under (b) above, will probably be closer to the actual developments. On the other hand, whether they will hold for a period beyond 1960 may be doubted. Consequently the aggregate growth rate in consumption was scaled down considerably for the period after 1960.

(d) Consumption of soluble coffees in Europe is much smaller than in the United States, both in absolute quantities and in proportion to total consumption. According to the latest available estimate, the percentage of soluble in total coffee consumption in 1956 amounted to: Denmark and France 4%, Western Germany 4 - 4.5%, Netherlands 6%, and Switzerland 12-15%. Only in Switzerland is the proportion of solubles comparable to that of the United States. (Source: Pan American Coffee Bureau, Annual Coffee Statistics 1956, p.6).

5. The current retail prices of coffee in Europe, particularly in some countries, are very high. The available information is reproduced below :

Average Retail Price per Roasted Pound

Austria	2.70 (1953)
Western Germany	1.90-2.92 ^{a/}
Spain	2.23
Finland	2.08
Turkey	1.55 (1953)
Italy	1.31-2.18
France	1.24-1.76
Switzerland	1.30 (1953)
Sweden	0.95-1.52
Norway	1.07
Denmark	1.05-1.12
United Kingdom	0.94 (1953)
Portugal	0.87 (1953)
United States	0.89

^{a/} The weighted average is probably close to \$2.0 per pound.

6. Substitution relationship between tea and coffee certainly exists, but no thorough statistical investigation of this problem is available. One authority on the economics of beverages doubts that price substitution plays a significant role under normal conditions: "Among beverages of a habit-forming character, it is necessary to make certain qualifications with respect to their "competitive" relationships. Considerable changes in the price relationships between coffee and tea, for example, have only limited effects upon per capita consumption of either. Coffee and tea are important alternatives for consumers primarily

on the basis of taste preferences, and secondarily on the basis of price. They are competitive in the habit-determining sense, but less so by the ordinary yardstick of relative prices. Only when both are very expensive, or when the usual price relationship between the two is radically altered, does the price aspect assume more importance than the habit or custom aspect. The same type of "competitive" relationship exists between wine and beer, and between alcoholic and nonalcoholic habit-forming beverages."^{1/}

Eastern European Imports

7. In considering possible trends in Eastern European imports, reference was made in the body of the text (page 12, footnote 1), to the recent developments in Czechoslovakia. The absolute quantities imported were as follows, (in thousands of bags):

<u>Aggregate Prewar</u>		<u>Aggregate Postwar</u>	
1924-1928	224	1953	46
1929-1933	223	1954	45
1938	195	1955	64
		1956	117

The peak prewar import level was achieved in 1930-1931; it amounted to 250,000 bags.

The latest data for postwar imports are available for 1956. Compared to 1953-1954, an almost three-fold rise is recorded.

8. It may be of interest to follow the postwar developments in coffee consumption in Yugoslavia as a possible indicator of what may happen in Eastern Europe if it is assumed that, sooner or later, the Eastern European policies with respect to personal consumption will have to follow the pattern established by Yugoslavia.

The prewar Yugoslav imports of coffee (1938) amounted to 120,000 bags, (about 1 lb. per capita). In the period 1950-1953, the volume of imports was very low, between one-tenth and one-fifth of the aggregate prewar. In 1955 and 1956 imports rose substantially. According to the Yugoslav Foreign Trade Statistics, imports in 1955 amounted to 50,000 bags and in 1956 to 75,000 bags, (63% of the prewar), while, according to the Pan-American Coffee Bureau data^{2/}, presumably derived from trade statistics of exporting countries, imports in 1955 were 60,000 and in 1956, 137,000 bags. (This latter estimate, if correct, implies that the prewar aggregate volume has been surpassed and that the per capita imports in 1956 were equal to the prewar).

^{1/} V.D. Wickizer, Coffee Tea and Cocoa, Stanford University Press, 1951 (p.395)

^{2/} Annual Coffee Statistics, 1956.

APPENDIX IV

Price Elasticity of Demand for Coffee

The elasticity of world demand with respect to the wholesale price for green coffee was computed from the elasticities of demand with respect to retail prices for the United States, France, Germany, Italy, Belgium and the "rest of the world". The price elasticity for the United States was taken as -0.27 at the 1953 income level from a study^{1/} by the FAO which yielded a range of price elasticities from -0.2 to -0.3 depending upon the income level. The price elasticities and the average retail prices of the individual European countries as well as the United States, and the method of averaging the elasticities were set forth in a Fund study on coffee.^{2/} It was arbitrarily assumed that on the average the "rest of the world" would have a price elasticity of -1.0 and a retail price of \$1.20 per lb.

The equation used in the computation was :

$$E_p = \frac{e_1 \cdot q_1 + e_2 \cdot q_2 \cdot \frac{P_1}{P_2} + \dots + e_6 \cdot q_6 \cdot \frac{P_1}{P_6}}{q_1 + q_2 + \dots + q_6} \cdot \frac{P}{P_1}$$

e_n = elasticity of demand of country n with respect to retail price

p_n = country n retail price

q_n = quantity consumed (imported) by country n

P = green coffee price; Santos 4 in Santos (\$0.53 in Nov. 1957).

E_p = world elasticity with respect to green coffee price (f.o.b.)

The data used were :

Country	n	Elasticities	Retail prices ^{a/} U.S.\$ per lb.	percent of total imports in 1956
U.S	1	e_1 -0.27	p_1 0.89	q_1 57.09
France	2	e_2 -0.26	p_2 1.22	q_2 8.71
Germany	3	e_3 -1.3	p_3 2.00	q_3 6.05
Italy	4	e_4 -1.3	p_4 1.34	q_4 3.39
Belgium	5	e_5 -0.5	p_5 1.10	q_5 4.58
"Rest of the world"	6	e_6 -1.0	p_6 1.20	q_6 20.18
Total				100.00

^{a/} Average retail prices in 1953 except for Germany where the reduced price after the tax cut in August 1953 has been used.

Appendix IV (Cont'd)

The elasticity of world demand obtained in this calculation was -0.2399. On the basis of this elasticity the decline in green coffee prices f.o.b. required to bring about a 10 per cent rise in consumption would have to be 33 percent from the November 1957 level. The price reductions necessary to raise consumption by other amounts are given below:

<u>Percent increase in consumption.</u>	<u>Percent decline in price required</u>
1	4.1
2	7.9
3	11.6
4	15.1
5	18.4
6	21.6
7	24.6
8.5	28.8
10	32.8
11	35.3
12	37.7
13	39.9
14	42.1
15	44.2
16	46.1
17	48.0
18	49.8
19	51.6
20	53.2
22	56.3

Computations have been made by Mr. Charles Goor, Bank's Statistics Division.

1/ A. Szarf and F. Pignalosa, Factors Affecting United States Coffee Consumption FAO Monthly Bulletin, October 1954. There is another estimate of the price elasticity of demand in the United States, prepared by the Federal Trade Commission, which gives a coefficient of -0.5, much higher than that computed by FAO and used above (Federal Trade Commission, Economic Report of the Investigation of Coffee Prices, July 30, 1954, pp.37-40 and 509-510). However, the coefficient of determination in the Federal Trade Commission computation is very low, 0.4963, compared to the FAO of 0.901.

Earlier investigations in the price elasticity of demand for coffee in the United States (the period 1875-1918) have also resulted in a finding that demand curve is "definitely inelastic" (Elizabeth Waterman Gilboy, Time Series and the Derivation of Demand and Supply Curves, The Quarterly Journal of Economics, August 1934, pp. 667-685).

2/ G. Lovasy: Prospective Price Developments for Coffee and Their Effect on the Payments Position of Exporting Countries, IMF DM/55/21, October 24, 1955.

APPENDIX VStatistical Tables and Charts

- Table I : Estimated World Exportable Production
- Table II : World Coffee Exports
- Table III : World Coffee Imports
- Table IV : Consumption in the United States
- Table V : European Imports of Green Coffee
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- Table VII : Brazil: Registered Coffee Production
- Table VIII: New York Spot Prices for Green Coffee
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- Chart I : Real Coffee Prices
- Chart II : Coffee: Indexes of Real Prices of Santos No.4 in U.S. and Brazil.
- Chart III : Spread in Actual Coffee Prices Between Manizales and Santos No.4.
- Chart IV : Coffee: World Exportable Production and Imports

Table IEstimated World Exportable Production

(in millions of bags)

	<u>1952/53</u>	<u>1953/54</u>	<u>1954/55</u>	<u>1955/56</u>	<u>1956/57</u>	<u>1957/58</u> (pre- liminary)
Brazil	15.20	14.30	14.20	21.16	11.81	17.0 - 17.5
Colombia	5.71	6.35	5.67	5.40	5.70	6.0
Other Latin America	6.37	5.90	6.55	6.55	7.71	7.0
Africa	5.28	6.54	6.68	8.45	8.25	8.5
Asia and Oceania	<u>0.62</u>	<u>1.25</u>	<u>0.66</u>	<u>1.19</u>	<u>1.54</u>	<u>1.4</u>
World Total	33.18	34.34	33.76	42.75	35.01	40.0 - 40.5 ^{a/}

Source: Pan American Coffee Bureau for 1952/53 - 1956/57; trade estimates for 1957/58.

^{a/} Latest trade estimate (Paton report, November 29, 1957) indicates world exportable output of less than 40 million bags.

Table II

World Coffee Exports
(in thousands of bags)

<u>Country of Origin</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>
<u>Western Hemisphere</u>							
Brazil	14,835	16,358	15,821	15,562	10,918	13,696	16,805
Colombia	4,472	4,794	5,032	6,632	5,754	5,867	5,070
El Salvador	1,107	1,059	1,098	1,149	996	1,185	1,132
Guatemala	919	848	1,007	1,159	885	982	1,026
Mexico	767	865	870	1,267	1,112	1,367	1,260
Haiti	390	417	541	372	517	355	463
Venezuela	309	308	498	733	431	497	387
Costa Rica	312	309	333	465	365	463	393
Dominican Republic	223	290	442	374	400	409	440
Ecuador	335	273	340	311	351	384	408
Nicaragua	350	268	303	312	285	379	282
Honduras	113	137	138	187	154	149	195
Peru	14	37	45	78	76	114	117
Cuba	-	-	-	-	-	75	347
Other	<u>45</u>	<u>52</u>	<u>67</u>	<u>90</u>	<u>93</u>	<u>116</u>	<u>163</u>
Total	24,191	26,015	26,535	28,691	22,337	26,038	28,488
<u>Africa</u>							
French Africa 1/	2,019	1,830	1,947	1,797	2,615	2,725	3,041
Br. East Africa	1,000	1,213	1,325	1,108	1,156	1,874	2,244
Angola	626 2/	1,074 2/	794 2/	1,193	737	964	1,399
Belgian Congo	554	590	515	566	573	728	856
Ethiopia	315	458	424	467	527	702	700
Other	<u>139</u>	<u>104</u>	<u>115</u>	<u>112</u>	<u>174</u>	<u>166</u>	<u>189</u>
Total	4,653	5,269	5,120	5,243	5,782	7,159	8,429
<u>Asia & Oceania</u>							
Indonesia	228	402	313	548	637	386	960
India	15	14	40	15	96	60	131
Other	<u>142</u>	<u>140</u>	<u>125</u>	<u>150</u>	<u>66</u>	<u>55</u>	<u>80</u>
Total	385	556	478	713	799	501	1,171
<u>World Total</u>	<u>29,229</u>	<u>31,840</u>	<u>32,133</u>	<u>34,647</u>	<u>28,918</u>	<u>33,698</u>	<u>38,088</u>

1/ Includes: French West & Equatorial Africa, French Cameroons, Togoland and Madagascar

2/ Includes: Angola, Cape Verde, San Thome and Principe.

Table III

<u>World Coffee Imports</u>								<u>1957</u>
(thousands of bags)								(preliminary)
	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	
<u>United States</u>	18,440	20,357	20,274	21,065	17,092	19,651	21,238	21,036
<u>Europe</u>								
France	2,493	2,522	2,681	2,842	2,811	3,042	3,240	
Scandinavia ^{1/}	1,357	1,474	1,866	1,972	1,964	2,204	2,401	
Benelux	1,278	1,195	1,204	1,348	1,175	1,306	1,704	
Italy	636	889	1,016	1,112	1,158	1,206	1,262	n.a.
Germany ^{2/}	443	677	949	1,311	1,727	1,997	2,251	
United Kingdom	676	721	720	507	568	574	746	
Switzerland	421	331	304	319	319	299	374	
Other	<u>1,098</u>	<u>825</u>	<u>965</u>	<u>770</u>	<u>791</u>	<u>843</u>	<u>978</u>	
Total	8,402	8,634	9,505	10,181	10,513	11,471	12,956	13,100 ^{3/}
<u>Other Countries</u>								
Argentina	480	476	518	494	566	469	485	
Canada	626	669	752	813	721	785	829	
South Africa	280	198	198	196	174	180	185	n.a.
Other	<u>1,290</u>	<u>1,324</u>	<u>1,119</u>	<u>1,276</u>	<u>1,036</u>	<u>1,260</u>	<u>1,506</u>	
Total	2,676	2,667	2,587	2,779	2,497	2,694	3,005	n.a.
<u>World Total</u>	<u>29,518</u>	<u>31,658</u>	<u>32,366</u>	<u>34,025</u>	<u>30,102</u>	<u>33,816</u>	<u>37,199</u>	n.a.

^{1/} Finland, Norway, Sweden, Denmark.

^{2/} Western Germany after 1945.

^{3/} January - October 1957, annual rate.

Source: Pan American Coffee Bureau.

Table IVConsumption in the United StatesA. Net Civilian Visible Disappearance

	<u>Per capita</u> (pounds of green coffee)	<u>Population</u> (millions)	<u>Total</u> million pounds
1935-39	14.2	130.7	1,856
1946	19.4	138.4	2,685
1947	17.8	142.6	2,538
1948	18.4	145.2	2,672
1949	18.7	147.6	2,700
1950	16.3	150.2	2,448
1951	16.5	151.1	2,493
1952	16.7	153.4	2,562
1953	16.9	156.0	2,636
1954	14.7	159.1	2,339
1955	15.4	162.3	2,502
1956	16.0	165.3	2,645

B. Volume of Roastings a/

	<u>Thousand Bags</u>	<u>Percentage Increase</u> <u>Over Previous Year</u>
1955	18,340	
1956	20,020	9.1%
1957	20,560	2.7%

a/ First fifty-one weeks in each year.

Source: Pan American Coffee Bureau.

Table VEuropean Imports of Green Coffee

	<u>Thousand bags</u>	<u>Percentage Increase Over Previous Year</u>
1935-39	11,510	
1945-49	5,990	
1950	8,402	
1951	8,634	2.8
1952	9,505	10.1
1953	10,181	7.1
1954	10,513	3.3
1955	11,471	9.1
1956	12,956	12.9
1956, January - October	10,633	
1957, January - October	10,885	2.4

Source: Pan American Coffee Bureau.

Table VI

Coffee Stocks and Output in Brazil
(thousand bags)

<u>Crop Year</u>	<u>Exportable Output</u>	<u>Stocks, July 1</u>		<u>Stock Change</u>
		<u>Year</u>	<u>Stocks</u>	
1945-46	11,394	1945	16,800	
1946-47	12,608	1946	13,000	- 3,800
1947-48	12,253	1947	12,600	- 400
1948-49	15,750	1948	10,000	- 2,600
1949-50	14,945	1949	7,550	- 2,450
1950-51	15,716	1950	5,750	- 1,800
1951-52	14,962	1951	4,929	- 821
1952-53	16,100	1952	2,952	- 1,977
1953-54	14,300	1953	3,304	+ 352
1954-55	14,200	1954	3,319	+ 15
1955-56	21,160	1955	6,420	+ 3,101
1956-57	11,810	1956	10,820	+ 4,400
		1957	7,790	- 3,030

Source: I.B.R.D. Reports on Coffee.

Table VIIBrazil: Registered Coffee Production a/
(thousand bags)

	<u>Average</u> <u>1949/50-1951/52</u>	<u>Average</u> <u>1952/53-1954/55</u>	<u>1954/55</u>	<u>1955/56</u>	<u>1956/57</u>	<u>1957/58</u>
Sao Paulo	7,217	6,894	7,333	9,269	5,920	7,600
Parana	3,059	3,194	1,337	6,305	2,158	3,850
Minas Gerais	3,111	2,795	3,172	3,743	1,849	3,300
Espiritu Santo	1,981	1,735	1,848	2,047	1,467	1,920
Rio	373	243	287	231	145	225
Goiaz	31	132	208	93	218	300
Other	<u>199</u>	<u>261</u>	<u>327</u>	<u>375</u>	<u>419</u>	<u>605</u>
Total	15,971	15,254	14,512	22,063	12,176	17,700

a/ i.e. registered for shipment from interior points to the ports; includes Brazilian port and coast consumption estimated at 0.8 million bags.

b/ IBC estimate July 1, 1957

Table VIII

<u>New York Spot Prices for Green Coffee</u>				
(Cents per pound)				
	<u>Brazils 1/</u>	<u>Milds 2/</u>	<u>Robustas</u>	
			<u>Ambriz (Angola)</u>	<u>Ivory Coast</u>
<u>1952</u>				
January/June	54.0	56.9	46.9	
July/December	54.0	57.1	45.4	
<u>1953</u>				
January/June	55.6	56.5	47.4	
July/December	60.3	63.2	51.1	
<u>1954</u>				
January/June	82.9	83.6	68.4	
July/December	74.5	76.4	57.6	
<u>1955</u>				
January/June	58.7	62.3	49.3	
July/December	55.5	66.9	41.2	
<u>1956</u>				
January/June	56.0	69.6	37.4	30.4
July/December	60.2	78.3	39.3	31.6
<u>1957</u>				
January/June	59.4	68.3	40.2	33.9
July/December	54.5	59.7	40.0	34.5
1952	54.0	57.0	46.2	
1953	57.9	59.8	49.2	
1954	78.7	80.0	63.0	
1955	57.1	64.6	45.2	
1956	58.1	74.0	38.5	
1957				
1952-53	54.8	56.8	46.4	
1953-54	71.6	73.4	58.7	
1954-55	66.6	69.3	53.5	
1955-56	55.8	68.3	39.5	
1956-57	59.8	73.3	39.8	
	<u>1/</u>	Santos 4's		
	<u>2/</u>	Manizales		

Source: Pan American Coffee Bureau

Table IXPrice Movements in the Preceding Coffee Cycles

(in terms of 1947/49 real prices, cents per lb)

<u>Cycle</u>	<u>High Prices</u>	<u>Low Prices</u>	<u>Price Recovery</u>
1890-1910	46.2¢ (1889-1903)	19.1¢ (1898-1902)	23.6¢ (1908-1912)
1910-1930	23.6¢ (1908-1912)	21.5¢ (1919-1923)	34.4¢ (1925-1929)
1930-1950	21.0¢ (1931-1935)	16.5¢ (1939-1941)	38.5¢ (1948-1950)
1950-1970	54.0¢ (1950-1954)		

Source: FAO, The World Coffee Situation
April 1956

Table X

Underlying Data for Table VII, p.30: "Index of
Real Coffee Prices in New York and Brazil"

A. Prices in Brazil

<u>Year</u>	<u>Current Price</u> <u>in New York,</u> <u>Spot per. lb.</u> <u>(Santos 4's)</u>	<u>Exchange</u> <u>Rate</u> <u>Cruzeiros</u> <u>per U.S.\$</u>	<u>Amount of</u> <u>Cruzeiros per lb.</u>		<u>Cost of</u> <u>Living</u> <u>1954=100</u>	<u>Index of "real</u> <u>cruzeiro price"</u> <u>of coffee</u> <u>1954 = 100</u>
			<u>Actual</u>	<u>1954=100</u>		
1920	19.1	6.65	1.27	5.5	6.96	78.5
1921	10.4	7.50	0.78	3.3	7.16	46.4
1922	14.3	7.60	1.09	4.7	7.83	60.2
1923	14.8	9.60	1.42	6.1	8.62	70.8
1924	21.3	9.10	1.94	8.3	10.08	82.9
1925	24.6	8.13	2.00	8.6	10.75	79.7
1926	22.3	6.94	1.55	6.6	11.08	60.0
1927	18.7	8.40	1.57	6.7	11.37	59.3
1928	23.2	8.37	1.94	8.4	11.20	74.6
1929	22.1	8.47	1.87	8.0	11.12	72.2
1930	12.9	9.26	1.19	5.1	10.12	50.8
1931	8.8	13.7-16.0	1.21-1.41	5.1-6.0	9.75	(av. 57.1)
1932	10.6	14.14	1.49	6.4	9.79	65.6
1933	9.1	12.69	1.15	4.9	9.79	50.4
1934	11.1	11.8-14.8	1.31-1.54	6.6-7.1	10.46	(av. 60.4)
1935	8.9	11.8-17.4	1.05-1.55	4.5-6.6	11.04	(av. 50.5)
1936	9.5	11.8-17.2	1.12-1.63	4.8-7.0	12.65	(av. 46.6)
1937	11.0	17.41	1.92	8.2	13.62	60.5
1938	7.7	17.50	1.35	5.8	14.21	40.7
1939	7.4	16.50	1.22	5.2	14.58	36.0
1940	7.1	16.50	1.17	5.0	15.38	32.8
1941	11.3	16.50	1.86	7.9	17.00	46.6
1942	13.4	16.50	2.21	9.4	19.04	49.5
1943	13.4	16.50	2.21	9.4	22.30	40.7
1944	13.4	16.50	2.21	9.4	28.00	33.6
1945	13.4	16.50	2.21	9.4	34.00	27.8
1946	18.5	18.38	3.40	14.6	40.50	36.0
1947	26.7	18.38	4.91	21.0	48.28	43.5
1948	27.1	18.38	4.98	21.4	52.62	40.5
1949	31.8	18.38	5.84	25.1	51.42	48.7
1950	50.9	18.38	9.36	40.1	54.66	73.3
1951	54.3	18.38	9.98	42.8	59.54	71.8
1952	54.1	18.38	9.94	42.6	70.08	60.6
1953	58.0	23.36	13.55	58.1	85.45	67.9
1954	79.3	29.41	23.32	100	100.00	100.0
1955	57.1	37.06	21.16	90.6	123.92	73.2
1956	58.3	37.06	21.53	92.2	147.00	62.8
1957- August	53.7	46.7	25.08	107.5	177.20	60.6

Table X (Cont'd)

B. Real Prices in New York Compared to
Real Prices in Brazil

	New York Price			Price in Brazil
	Current Price in New York, Spot per lb. (Santos 4's)	Real Price in New York in terms of 1947/ 49 prices.	Index of Real Price in New York, 1947/49=100	Index of Real Price (last column from A) converted to 1947/ 49 = 100
1920	19.1	19.0	66.4	177.6
1921	10.4	16.4	57.3	105.0
1922	14.3	22.7	79.4	136.2
1923	14.8	22.6	79.0	160.2
1924	21.3	33.4	116.8	187.6
1925	24.6	36.6	128.0	180.3
1926	22.3	34.3	119.9	135.7
1927	18.7	30.2	105.6	134.2
1928	23.2	36.9	129.0	168.8
1929	22.1	35.7	124.8	163.3
1930	12.9	23.0	80.4	114.9
1931	8.8	18.6	65.0	129.2
1932	10.6	25.2	88.1	148.4
1933	9.1	21.3	74.5	114.0
1934	11.1	22.7	79.4	136.7
1935	8.9	17.1	59.8	114.3
1936	9.5	18.1	63.3	105.4
1937	11.0	19.6	68.5	136.9
1938	7.7	15.1	52.8	92.1
1939	7.4	14.8	51.7	81.4
1940	7.1	13.9	48.6	74.2
1941	11.3	20.2	70.6	105.4
1942	13.4	20.9	73.1	112.0
1943	13.4	20.0	69.9	92.1
1944	13.4	19.8	69.2	76.0
1945	13.4	19.5	68.2	62.9
1946	18.5	23.5	82.2	81.4
1947	26.7	27.7	96.9	98.4
1948	27.1	26.0	90.1	91.6
1949	31.8	32.1	112.2	110.2
1950	50.9	49.4	172.7	165.8
1951	54.3	47.3	165.4	162.4
1952	54.1	48.5	169.6	137.1
1953	58.0	52.7	184.3	153.6
1954	79.3	71.9	251.4	226.2
1955	57.1	51.6	180.4	165.6
1956	58.3	50.8	177.6	142.1
1957 - August	53.7	45.4	158.7	137.1

Table X (Cont'd)Notes for: "A. Prices in Brazil"

- a) All exchange rates represent yearly averages, except that the end-year rates are given for 1939, 1946 and 1953.
- b) The 1939-1957 exchange rates are the "coffee export rates" given in IMF, International Financial Statistics, December 1956.
- c) The 1928-1938 exchange rates are taken from United Nations, Statistical Yearbook 1948, and are based on officially established rates.
- d) The 1921-1927 rates are taken from League of Nations, Statistical Yearbook 1930/1931.
- e) For 1920-1939, the Rio cost of living series is used; for 1939-1957, the Sao Paulo series.

Notes for: "B. Real Prices in New York Compared to Real Prices in Brazil"

- a) The New York money price deflated by the United States wholesale price index 1947/49 = 100.

REAL COFFEE PRICES *
 SANTOS NO. 4, NEW YORK †
 (CENTS PER POUND)

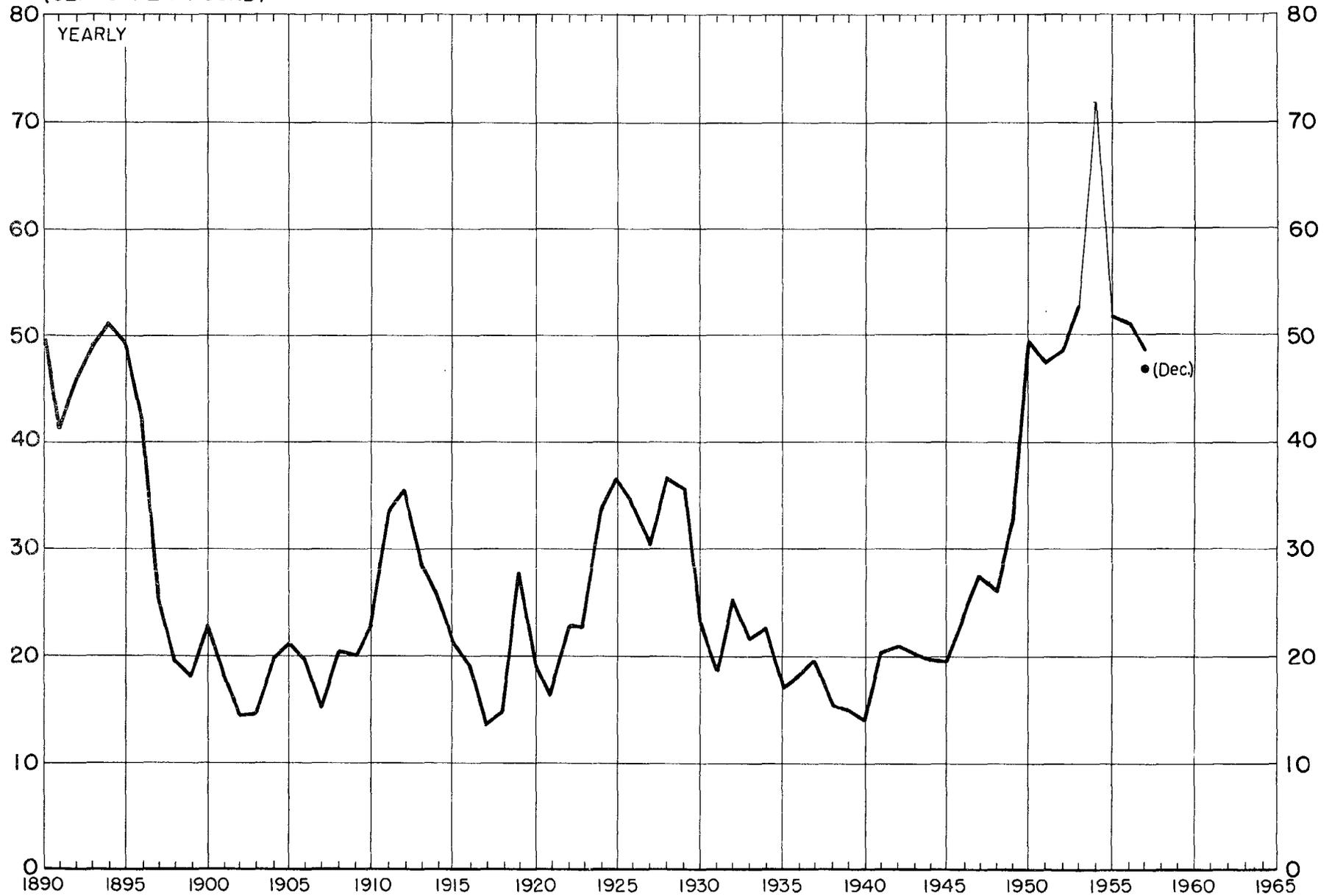


CHART I

* Actual prices deflated by the BLS General Wholesale Price Index, 1947-49 = 100

† 1890-1896, Rio "fair to prime"; 1897-1907, Rio 7's

COFFEE: INDEXES OF REAL PRICES OF SANTOS NO.4 IN U.S. AND BRAZIL
 (INDEX, 1947-49 = 100)

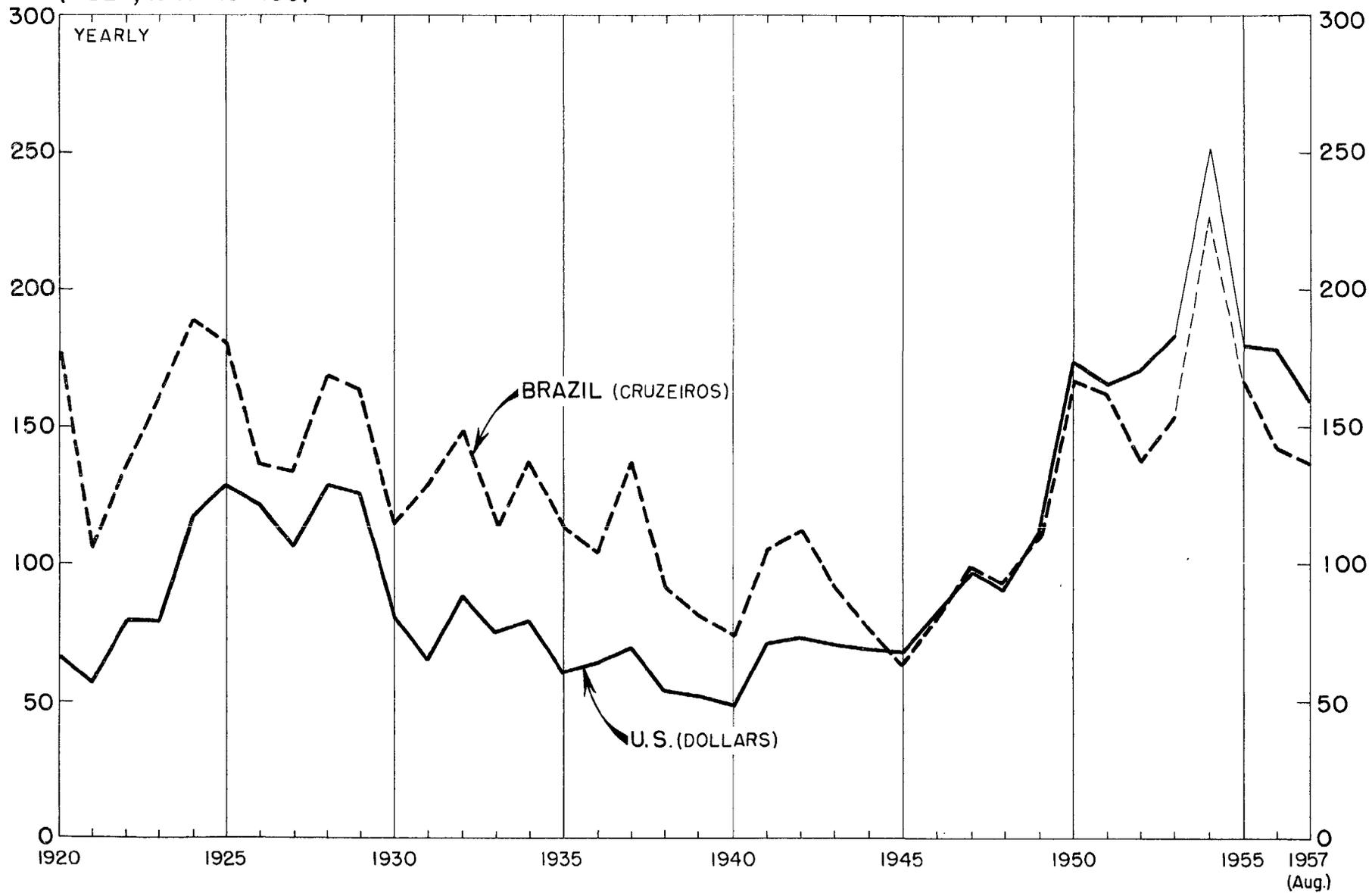


CHART II

SPREAD IN ACTUAL COFFEE PRICES BETWEEN MANIZALES AND SANTOS NO. 4
(CENTS PER POUND)

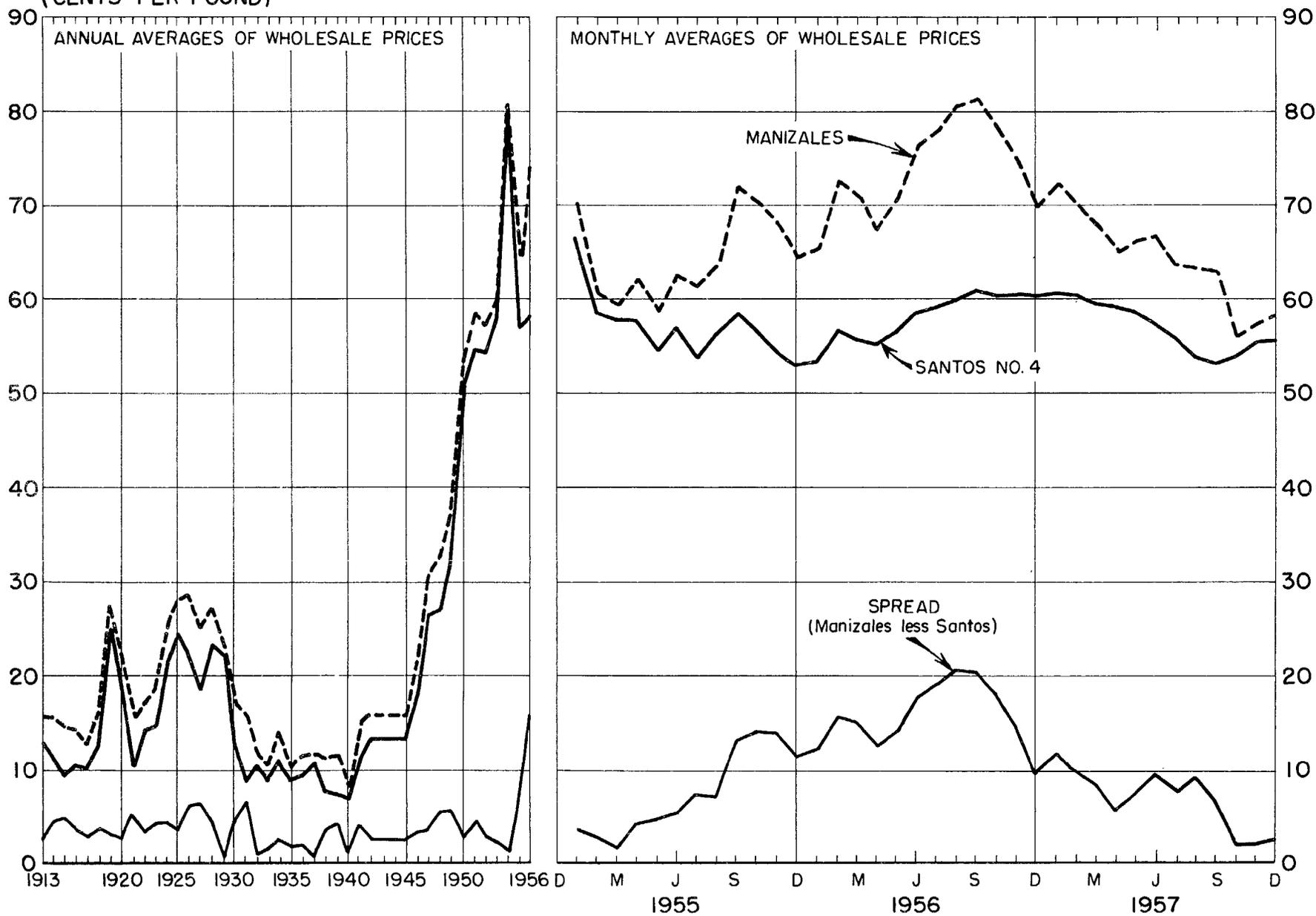
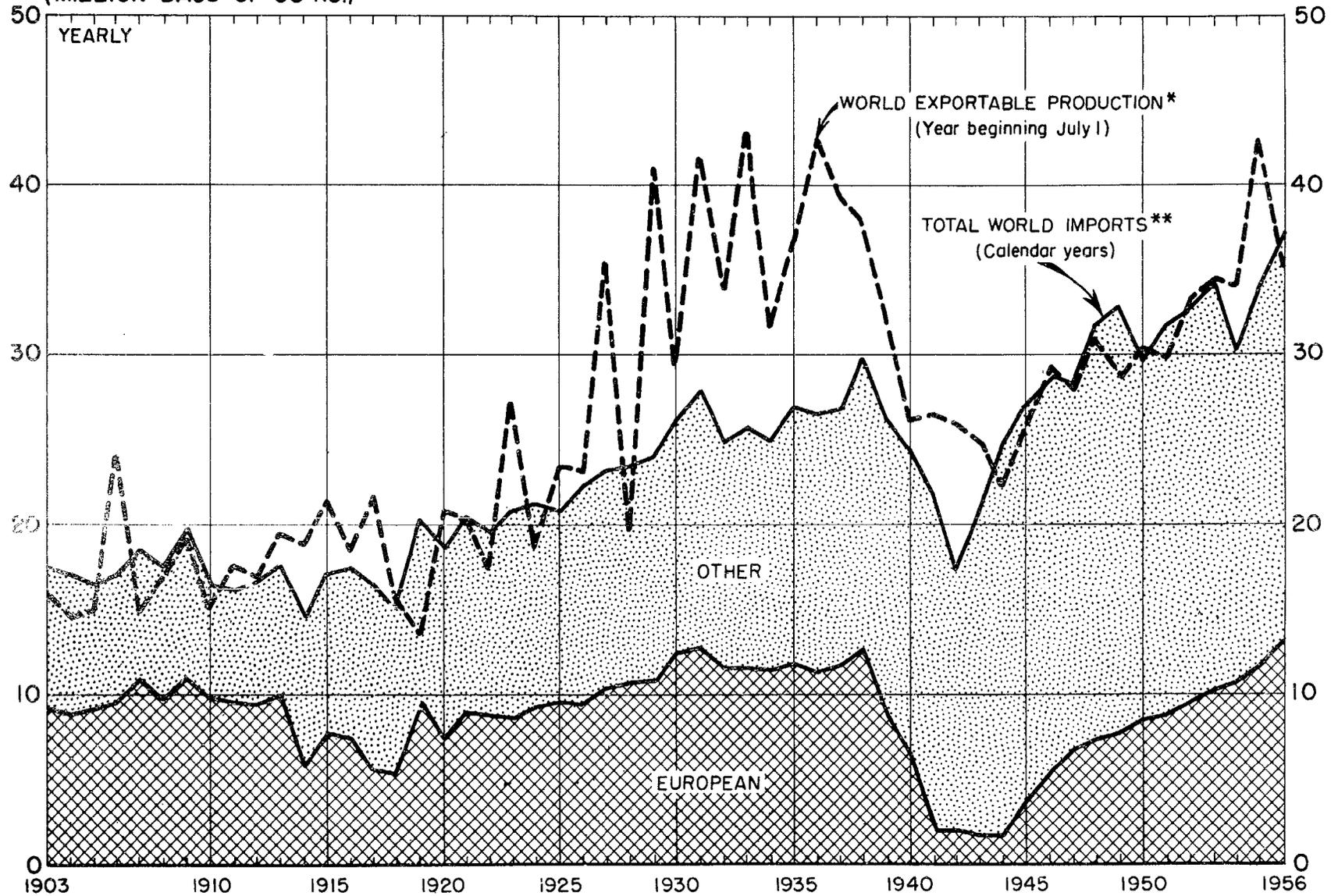


CHART III

COFFEE: WORLD EXPORTABLE PRODUCTION AND IMPORTS
(MILLION BAGS OF 60 KG.)



*Prior to 1929-30 total production is shown. 1955 and 1956 are estimates from producing countries and trade source.

**Prior to 1930 and 1940-45 imports are net.