ABSTRACT

CONSIDERATIONS ON DEVELOPMENT AND THE
POULTRY INDUSTRY IN PERÚ

By

Guillermo Santiago Burga

The present Government of Perú is politically com-
mitted to overall development of the country. In order to
achieve that goal, it is fundamental to establish a clear
understanding of development and for all economic sectors
to cooperate with those efforts. In the present thesis,
development was considered in the broad sense of expanding
opportunities and the human capacities needed to exploit
them, along with a general reduction of mass poverty, un-
employment, and equality. The objective of development can
be stated better in terms of the growth of inputs and out-
put. Therefore, it can be said that Perú is a developing
country.

A description has been made of the poultry industry
including breeders, broilers and table egg producing farms.
The supply of key inputs for the industry has been surveyed,
encompassing credit availability, breeding stocks and hatch-
eries, feed manufacturers, feedstuffs, and other inputs like
vaccines and government technical assistance to the industry.

Very little accurate information is available on the marketing of poultry products. An effort was made to describe imports and exports, consumption, supply and marketing channels, existing processing plants and reported prices for poultry products.

The National Development Plan: 1971-1975 will be implemented after the recent reforms in land tenure have taken place. Low income segments of the population have been favored with the hope that their incomes will increase. Income elasticity of demand for animal products reportedly is high at those income levels. Effective demand for higher cost, better quality protein food will expand due to the larger population, the expected increased incomes, and better education. Poultry products can capture a share of this expanded effective demand if priced competitively. Poultry meat supply was projected to be doubled and egg supplies to increase by almost threefold in the five year period. During this anticipated growth process, the poultry industry should also contribute to the development efforts of the country.

In order to build a conceptual developmental framework for the Peruvian poultry industry, the following guidelines are proposed:

- Improved technology is transferable to the Peruvian poultry industry

- **New** entrepreneurial forms can help transfer some of the **fruits** of the new technology to the workers
- **The** poultry industry's improved technology can **encourage** expansion of the domestic feedstuffs **industry**
- **The** benefits of new technology can be distributed to **Peruvian** consumers.

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By

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CHAPTER I

INTRODUCTION

The present Government of Perú is politically committed to overall development of the country. In order to achieve that goal, it is fundamental to establish a clear understanding of development and for all economic sectors to cooperate with those efforts. In the present thesis, development is considered in the broad sense of expanding opportunities and the human capacities needed to exploit them, along with a general reduction of mass poverty, unemployment, and inequality.

The formal training of Ph.D. candidates from developing countries should pointedly be oriented towards making them think very deeply on questions basic to an effective attack on the problems of development, since these problems are of urgent and vital importance in public policy issues. Gross National Product, which is the money value of current production of goods and services, needs to be reexamined in its acceptability as a yardstick for measurement of the level and rate of development and as the criteria on which public policy decisions are made. Few people understand development in these terms.

Perú is a very large net importer of food crops, meat, and dairy products. The Peruvian Government in its "National Development Plan: 1971-1975" has assigned an important role to the poultry industry for alleviating the deficit of edible animal protein. During this anticipated economic growth process, the poultry industry should also contribute to the development efforts of the country.

When he has returned to his home country, the foreign-trained "expert" will be asked the question: What are your policy recommendations for the poultry industry to further the development of the country? This thesis is an attempt to search for those answers, recognizing the constraints of limited availability and timeliness of specific empirical information, and the lack of recent first hand exposure to the current dynamism of changes in the environmental conditions.

First step in this study will be to establish an understanding of development. Perú's National Development Plan: 1971-1975 and the Outlook of the Socio-Economic Situation of Perú: 1960-1970 will then be examined in detail to comprehend the future expectations and the current situation of the country. In addition, a description as detailed as feasible of the Peruvian poultry industry will be made. Lastly, some guidelines will be outlined for the poultry industry to contribute to development of Peru.

CHAPTER II

OBJECTIVES

1. To establish an understanding of development in its broadest sense, including not only the economic considerations but also social, biological, and institutional factors in government policy making.

2. To gather some insights into the Peruvian poultry industry structure, behavior, and performance.

3. To build a conceptual developmental framework for the Peruvian poultry industry:

   a. To ascertain if there exists improved technology which is potentially transferable to the Peruvian poultry industry.

   b. To investigate if the design of new entrepreneurial forms could help transfer some of the fruits of new technology to the workers.

   c. To determine if the poultry industry's improved technology can encourage expansion of the domestic feedstuffs industry.

   d. To ascertain if the benefits of new technology can be distributed to consumers.

CHAPTER III

UNDERSTANDING DEVELOPMENT

Training Graduates from Developing Countries

The formal training of doctoral candidates from less developed countries should pointedly be oriented towards serious consideration of questions basic to an effective attack on the problems of development, since they are of urgent and vital importance in public policy issues.

In analyzing the relevance of development economics to development, Currie (1965) indicated that it is at the heart of public policy issues in non-industrialized countries. In reference to the training of Ph.D. candidates in United States universities, specifically, he pointed out: If a student's formal course training is limited to two years of graduate study and he expects to work on development problems, he is in danger of finding that he has acquired a lot of mental luggage of dubious utility while he has not been expected to think very deeply on questions basic to an effective attack on the problems of development. It is not really an answer to say that you are giving him his analytical tools and that his thinking can come later.

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If he has not been made aware of the basic issues in his university training, he may well pass through life unaware of their very existence.

The limited relevance for the developing countries of some dissertation topics chosen by their native graduates when studying in universities from developed countries has deserved concerned criticism. UNESCO (1969) reported three main ways in which science and technology in the advanced countries affect the developing countries: the internal brain drain, the external brain drain, and the composition of the stock of knowledge and its economic consequences. The orientation of science in the less developed countries is often influenced and determined by objectives which are relevant to the advanced countries, but which are external to the developing countries themselves and which have little enough to do with the requirements of development. The result is the internal brain drain, whereby a substantial part of the scientific work going on in the developing countries, in addition to being under-financed and poorly organized, is irrelevant to the environment in which it is being done. The external brain drain is the large scale migration of highly qualified personnel from developing to developed countries. This migration is encouraged by the intensive development of scientific and technical activities and the demand it generates for qualified workers; it is also associated with the incapacity of scientific institutions in the

developing countries to absorb and use scientific workers.
The output from the third level education is increasing in
the developing countries at roughly two to three times the
rate of aggregate economic growth. Unless some way is found
of bringing the employment possibilities for trained people
into line with their increasing numbers, this means educated
unemployment and/or international migration.

Thiesenhusen (1968) reported that in 1966, U.S.
colleges and universities graduated about 6,000 students
from less developed countries. In that same year, 4,390
scientists, engineers, and physicians from these countries
migrated to the United States, giving a net gain to the less
developed countries of only three in ten. These migrations
of university trained professionals was valued as an U.S.
$88 million contribution to the United States. A higher
calculation would be more realistic since this figure
includes simply the cost of their education and not the
potential value of their abilities. Besides, the profes-
sionals from less developed countries who migrate to the
U.S. have job experience, while new graduates usually return
home or go to a third country, as required by their exchange
visitor visa. How many of these remigrate after the termi-
nation of the two years they are required to spend out of
this country is unknown.

UNESCO (1969) indicated that the adverse composition of the stock of knowledge is shown by the large gaps in scientific and technological knowledge that would be particularly relevant to the developing countries. Important technical problems have been left neglected and unsolved by the present concentration and orientation of scientific effort to the political and economic objectives of the advanced countries. The stock of scientific and technological knowledge is proportionately less directly suitable for use by the developing countries. The new technology emphasizes production methods which are suitable for capital-rich, and unskilled labor-short countries. The developing countries by contrast are short of capital and skills, but relatively rich in labor. This discrepancy between the resource-mix for which modern technology is increasingly designed, and the actual resource-mix in the developing countries places them at an increasing disadvantage. The available technology emphasizes production on a large scale whereas the initial markets of developing countries, even including their realistic export markets, are usually small in economic terms. Also, products, design of plant, equipment and consumer goods emphasize the needs of the richer industrialized countries. Finally, a very great deal of world scientific and technological effort is concentrated in industries which simply do not exist in the developing countries, and which will not exist there for many years to

come. The products of scientific research in developed countries are often such that they exert harmful "backwash" effects on the economics of the developing countries, i.e., the development of synthetics of primary interest to the advanced economics. Many scientists from developing countries probably have contributed in such research efforts. When the advantages and benefits of further development of synthetic substitutes are considered, the harmful effect on the producers and exporters of the primary commodities thus displaced is not normally taken into account. In the meantime, work on the development and improvement of natural primary commodities of special interest to the developing countries does not receive the emphasis it deserves.

Thiesenhusen (1968) in discussing a long run "brain drain" policy for the United States, indicated that of all students in Latin America, only 2 percent enter the university and perhaps 1 percent finally complete their course work. There has, as yet, been no dramatic progress in introducing democratic equalization into the process of education, and a pupil from the lower social class still has very little chance of making his way to college. Meanwhile, the university educated person may cling tenaciously to his newly achieved respectable niche rather than spearheading the change that development requires. The implication for graduate study of Latin Americans in the United States was that, in order to prevent exacerbating the brain drain by graduate training here, the U.S. must concentrate upon those

students who are development oriented, those who are dissatisfied with the status quo and willing to make the sacrifices which a rapidly changing situation may demand, and those who are not interested in higher education solely as a way to achieve the higher status that accompanies education in the United States. Graduates returning to their native less-developed countries may find that their U.S. training may have been less than appropriate for needs at home.

While catholicity in the physical and biological sciences is certainly more general than in the social sciences, in one very important sense it is at least premature in both. While all academic fields have certain assumed or proven truths, priorities for training and research (advanced degrees are usually considered research degrees) within disciplines often must vary from one country to another. It appears that some departments do not always judge these priorities adequately when training foreign scholars.

The same author indicated that there are a disproportionate number of students from less developed countries who work on basic problems, answers to which interest the entire community of scholars in a discipline, as opposed to applied problems, whose solution is quite specific to the home country. The origin of such emphasis could be in the university system of the less developed country itself; some students may come to the U.S. to train themselves in fields

for which they have no special calling and for jobs that will not exist at home until much later in their country's development process. Frequently, these students have little respect for work on applied problems, and this attitude is only reinforced by study here. Too often, universities in less developed countries have little contact with the community and the problems it faces. They should remunerate well scientists whose work most contributes to a local development need. Also, recognition should be given to the fact that most foreign and U.S. students are not at the apex of their disciplines and perhaps should not pretend to be. The neglect of applied issues causes wasteful gaps in scientific knowledge which may make basic work premature and even inapplicable. If the goal of science is to serve mankind, the scientist must focus on its most pressing contemporary problems. If not, the theoretical constructs of scientists will not correspond to reality.

Pinto and Sunkel (1966) reported that some economists from less developed countries are so taken with the current pioneering emphasis on systems of analysis and game theory that they attempt to explain the intricate workings of their economies with transplanted models of doubtful applicability using unsure statistics and unproven functions. But one must raise the question: At this stage of development, should not economists utilize their expertise for improving statistics and understanding the rural farm and

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community microeconomy, with its large subsistence or semi-
subsistence sectors, which are less glamorous and nearly
unexplored areas of endeavor?

Thiesenhusen (1968) indicated that fortunately there
is no need for contemporary research in less developed
countries to move from applied to basic areas in a progres-
sion exactly like the one followed in the U.S. in an earlier
era, because the backlog of accomplished research in devel-
oped countries makes it possible for some of these tech-
niques to be transferred to less developed countries at low
cost. Sophisticated methodology and existing theoretical
constructs not always attack the most important problems and
sometimes are not even applicable. Often problems are
chosen for research simply because they can be tested with
a sophisticated technique, not because they are priority
issues of difficult quantification.

Among the reasons for the difficulties that U.S.
universities find in training foreign scholars were cited:
U.S. professors have found little financing for efforts to
prepare themselves to work on international research prob-
lems in less developed countries and gain needed experience
overseas. Professors may feel they cannot alter the course
material to fit a foreign minority of students. Professors
may feel the need and the pressure to require students to
delve into investigation in his specific fields of interest,
and not those of his students. Many of the problems con-
fronted by less developed countries do not fall neatly into

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traditional disciplines as defined by current university departments, and may depend on an interdisciplinary effort that means various departments working together, which in turn may be interpreted by some faculty members as giving up one department's independence to another. The pressing problems to be solved in the process of development are all too often only slightly touched upon by the U.S. graduate education received by foreign students from less developed countries.

Haussamen (1965) expressed the wants and needs of less developed countries when they send students to the U.S. by saying that they need teaching that illuminates their own ancestral struggles, programs oriented towards their economic and political problems, in short education that launches students into the mainstream of their own nation's future, and not of the United States.

The Meaning of Development

A distinction should be made between the terms economic growth and economic development. Schiavo-Campo and Singer (1970) indicated that a relevant basis for distinction is that, while the term "economic growth" applies to income increases within the existing social and economic framework, the term "economic development" includes the notion of structural change on the economic or on the social level or both. Economic growth has come to be

identified with the process of income increases in the more developed countries, while economic development is a term associated with economic progress in the poorer countries.

Development means more than a quantitative increase in production. An increase in production would in fact be more a consequence of development than its essence; UNESCO (1969) expressed that development is more than growth. The real problem of development is not to increase production but to increase the capacity to produce. This capacity ultimately is inherent in people. It depends on people with the outlook, knowledge, training, and equipment to solve the problems posed by their own environment, and thus, control their environment rather than be controlled by it.

It was mentioned by Chenery (1969) that there is no agreed definition for development, and that the rate of economic growth depends in part on the success with which changes in the economic structure are carried out. Nevertheless, most writers accept that the concept of economic development encompasses the changes in the economic and social structure that are related to rising income, but they make the distinction that theories of development try to explain these causal relationships, while theories of growth are more narrowly focused on the sources of increased output.

Economic literature identified development with average rates of increase in real output per capita. Dorner (1971) indicated that little research has focused on interrelations between productivity increases and other indicators

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of development such as the reduction of mass poverty, unemployment, and inequality.

Lack of data on poverty, unemployment, and inequality reflects the priorities of statistical offices rather than difficulties of data collection. The conceptual problems of these measures, in Seers' (1969) opinion, do not seem to be more formidable than those of the national income. We have just grown accustomed to ignoring them.

There is agreement among Dorner (1971), Seers (1969), and Parsons (1969) in considering development in the broad sense of expanding opportunities and the human capacities needed to exploit them, along with a general reduction of mass poverty, unemployment, and inequality.

We are going to draw on the concepts expressed by Seers (1969) in explaining the meaning of development: we have all been aware that development consists of much else besides economic growth. Nevertheless, we are still setting targets mainly, or only, for the national income. While it is very slipshod for us to confuse development with economic development, and economic development with economic growth, it is nevertheless very understandable. We can, after all, fall back on the supposition that increases in national income, if they are faster than the population growth, sooner or later lead to the solution of social and political problems. But the experience of the past decade makes this belief look rather naive. It looks as if economic growth

growth may not merely fail to solve social and political difficulties; certain types of growth can actually cause them.

Now that the complexity of development problems is becoming increasingly obvious, this continued addiction to the use of a single aggregative yardstick, looks like a preference for avoiding the real problems of development.

The national income is not totally meaningless just because it is not an indicator of development. It has some significance as a measure of development potential. To release the developmental potential of a high rate of economic growth depends therefore on the policy being followed. A country may have little or no economic growth but be busy reshaping its political institutions so that when economic growth comes, it can be turned into development; such a country probably has a greater developmental potential than one with fast growth where political power remains very firmly in the hands of a rich minority.

Development can be defined if the question is made: What are the necessary conditions for the realization of the potential of human personality?

1. An absolute necessity for this is enough food.
   Since to be able to buy food is a matter of income, the criterion can be expressed in terms of income levels.

2. Another basic necessity is a job. To be chron-
ically dependent on another person's productive
capacity is incompatible with self-respect. If
per capita incomes are falling, absolute poverty
can hardly be reduced much, nor can unemployment.
But a rise in per capita income can be accompanied
by, and even cause, growing unemployment.

3. The direct link between per capita income and the
numbers living in poverty is income distribution.
Equality, which should be considered an objective
in its own right, is the third element in develop-
ment. Inequalities are objectionable by any reli-
gious or ethical standards. Poverty will be
eliminated much more rapidly if any given rate of
economic growth is accompanied by a declining con-
centration of income. The questions to ask about
a country's development are:

  - What has been happening to poverty?

  - What has been happening to unemployment?

  - What has been happening to inequality?

If all three of these have declined from high levels,
then this has been a period of development for the country
concerned. If one or two of these central problems have
been growing worse, especially if all three have, it would
be strange to call the result "development" even if per
capita income doubled. A "plan" which conveys no targets

for reducing poverty, unemployment, and inequality can
hardly be considered a "development plan."

Of course, the fulfillment of human potential
requires much that cannot be specified in purely economic
terms. They include adequate educational levels, freedom
of speech, citizenship of a nation that is truly indepen-
dent, both economically and politically, in the sense that
the views of other governments do not largely predetermine
his own government's decisions.

As undernourishment, unemployment, and inequality
dwindle, these educational and political aims become in-
creasingly important objectives of development.

The essence of a state of development, to Currie
(1967), is not merely a question of keeping alive under any
conditions. It is, rather, the possession of widely dif-
fused and rising cultural, educational and economic levels,
a sense of improvement and betterment, and a widespread
conviction in the justice and efficiency of the economic
and political systems under which the individual is living--
in short, a sense of dominance or purposeful control over
one's environment. A rapid growth in population in under-
developed areas today prevents less developed countries
from utilizing technology to achieve an assured dominance
or control over their social, economic, cultural, or polit-
ical environment. Now it is being proposed to devote more
of the poor country's scanty savings to the growing of more

agricultural goods for domestic consumption. But true
development should correspond with a smaller proportion of
our expenses being devoted to agriculture. Growing more
food is not the solution to underdevelopment; it is a
painful and regrettable necessity, forced on us by the rapid
growth in population and the failure to achieve development
in the true sense of the term. High birth rates are more a
result of poverty than of lack of birth control knowledge or
the attitude of the Catholic Church, the reason being mass
poverty resulting from mass unemployment.

Rapid population growth creates new needs but not
effective demand. To add to a number of very poor country
people creates little additional buying power. A station-
ary population does not mean a stationary effective demand.
On the contrary, as a general rule, the more slowly a popu-
lation is increasing, the more rapid is the growth in income
per capita and gross income, and hence, buying power in
absolute terms. On the other hand, the extraordinarily high
proportion of children in the population will add nothing to
production, and will impose a drag on savings.

It is generally thought that the size of the family
is the sole concern of the individual parents. But the
interest of the community and the state should be imposed
on the individual. If we collectively want to exercise
purposeful control of our environment, the unrestrained
growth in population should be prevented. Currie (1967)

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regards the rate of growth in the population of the under-
developed countries as the single most important obstacle
to development and hence the single most important problem
of the world. Restraint of population may not be the suf-
ficient condition for development, but it is an essential
condition. He hopes that official national development
plans will include in their objectives a marked reduction
in the rate of population growth.

Looking for insights into the nature and require-
ments of public policies for the mitigation of poverty,
Parsons (1969) expressed that those policies need to have
more comprehensive terms of reference than optimum resource
allocation supplemented by maintenance of a high level of
employment opportunities. The policies need also be formu-
lated with systematic reference to generalized conceptions
of rightful participation in the political, economic, and
social order. In a free society, a citizen's failure to
overcome the natural drag towards poverty could be due to
a lack of objective opportunities.

It was also recognized by Dorner (1969) that devel-
opment is more than capital, investment, and markets. It
is also a complicated process of institutional change,
redistribution of political power, human development, and
a concernted, deliberate effort in public policy for redis-
tributing the gains and losses inherent in economic progress.

Although high levels of employment and aggregate
demand are a key to any solution to urban and rural poverty,

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greater attention must be given to those tough questions
of income distribution, the structure of economic power
and opportunity, and a redress of the inequalities that
accumulate in the course of economic development.

Schiavo-Campo and Singer (1970) referring to the
main features that a simplified model of economic and social
growth should have to be relevant to the developing coun-
tries of today, stated: "if we accept the basic thesis
that the problem of the underdeveloped countries is not
just growth, but development. Development is growth plus
change; change, in turn, is social and cultural as well as
economic, and qualitative as well as quantitative."

The key target must be the improvement in the qual-
ity of people's lives. This is a notion that combines both
growth and change. Improvements in the quality of life are
at the same time consumption and investment, objective and
instruments, demand for resources and supply of resources.
Health measures are the instrument for improving the quality
of life, but better health is also a desired result itself,
and in turn a source of increased productivity which pro-
vides the necessary resources for further health expendi-
tures. Better food is the instrument but better nutrition
is also the objective. Better education and training are
the instruments of change but the better educated man is
an end in himself. Better housing is the instrument but it
is also the objective. The same is true of social security,

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of improvements in rural living conditions and of other
social indicators.

This raising of the level of people's lives is both
the objective of development and its instrument. Improve-
ments in people's level of life can be achieved both
directly or indirectly via income increases. Thus, the
model must include provision for measurement of improvements
in the quality of the level of living, according to its main
relevant components, whether they are labeled economic or
social. It must incorporate the four types of relevant
development.

1. The direct improvement of levels of living

2. Translating the improvement in the levels of living
   into economic growth

3. Using economic growth to improve the levels of
   living

4. Growth alone, the predominant concern of economists.

The conventionality and arbitrariness of the dis-
tinction between "developing" and "developed" countries has
a parallel in the arbitrariness and inadequacy of the crite-
rion for measuring economic development. The traditional
criterion is per capita income, that is, the aggregate value
of the flow of national production divided by the population
of the country. Schiavo-Campo and Singer (1970), in consid-
ering the problems in the terms "aggregate" and "value,"
indicated it was easy to realize the imperfections of per

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capita income as an indicator of economic development. The conceptual, methodological, and statistical difficulties are very considerable particularly if international comparisons are attempted. Among the various possible aggregate indicators of economic development, per capita income remains the least inadequate one.

Distribution theory concerns itself with tracing out the effects of various policies in distributing economic benefits among persons who own or otherwise command control over resources. So, distribution of ownership or other control resources among people is given. Long (1952) expressed that in terms of the dynamics of economic development, the real problem of distribution is: How does ownership or other control over resources come to be distributed in the manner it is? The question is not whether a landlord and a tenant each receives the appropriate return for the resources he controls, but rather, is it appropriate from the standpoint of the economic development of the country in question, for the landlord and the tenant to have these particular proportions of the nation's resources under his control.

In analyzing capitalism, underdevelopment, and the future of the poor countries, Weisskopf (1971) argues that capitalism in the poor countries of the modern world is likely to perpetuate underdevelopment in several important respects. First, the increasing integration of the world

capitalist system will tend to heighten the economic,
political, and cultural subordination of the poor countries
to the rich. Second, capitalist institutions within the
poor countries will tend to aggravate rather than to
diminish inequalities in the distribution of income and
power. And third, capitalism will be unable to promote in
most poor countries a long-run rate of economic growth suf-
ficiently rapid to provide benefits to the whole population
or to reduce the income gap between the poor and the rich
countries. The likely failure of capitalism in the poor
countries points to the necessity of radical social change
in order to construct a decent world society and to achieve
a just basis for world peace. These negative consequences
of capitalism for the poor people of the world will create
the basis for revolutionary movements aiming to achieve
these goals. It is terribly important to minimize both the
time and the violence associated with the necessary and
ultimately inevitable changes in the poor countries.

What can progressive elements within the rich
capitalist countries, and intellectuals in particular, do
to help the cause? They must, on the one hand, work to
destroy the myth of gradual improvement in the poor coun-
tries under the existing world capitalist system. It is
important to show convincingly that radical change is
necessary for true development, in order to counter the
ideological rationalizations used to support the present
system. On the other hand, they can increase the pressure

on the ruling elites to reduce their involvement in the poor countries, to cease to oppose revolution with economic and military force, and to show willingness to recognize the trade with revolutionary governments.

Such policies, of course, run counter to the interests of important groups among the elites in the rich capitalist countries. It would be frivolous to expect these groups to accede to such changes without powerful struggle, even though in the long-run they appear doomed to failure. The crucial question that remains is whether this struggle can be won peacefully--through mounting popular pressure on the intransigent elements of the ruling elites--or whether it will entail a violent confrontation within the rich capitalist countries themselves.

Development Economics

The vast literature on economic development has not yet produced a unified, generally applicable, and operationally useful theory of development. Schiavo-Campo and Singer (1970) indicated that perhaps no such unified theory is possible or even desirable. Theoretical writings in the field of economic growth can be joined in a common framework more easily than writings on economic development, since growth takes place on the basis of an unchanged social and economic structure. Income changes can be analyzed with greater certainty owing to the solidity of the underlying

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structure; the *ceteris paribus* assumption is a legitimate one. Economic development, however, means structural change in addition to income increases; the rate and direction of structural change is perforce different in different countries and at different historical times. Valid and useful generalizations on development phenomena are thus difficult to find and do not easily fit into a unified and consistent theoretical framework.

Commenting on the scope of the field of development economics, Chenery (1967) indicated that its central concern was the process by which economies evolve and increase their productivity. He made three groups of the problems that have received major attention in the study of economic development:

1. Sources of growth: the relation of increased output to increases in factor inputs (capital, labor, natural resources), technological advance, and institutional change.

2. Structural change: shifts in the composition of output, international trade and resource allocation that typically occur in the process of development, and the nature of the causal relations among them.

3. Effects of rising income levels on the composition of demand, the location of economic activity, the distribution of income, the rate of population increase, etc.

A theory of development must encompass all three of these interrelated aspects to some extent and they cannot be treated in isolation.

There is little reason to believe that the concepts and hypotheses derived from the U.S.A. theories of the firm, of markets, of pricing, and of equilibrium, are entirely relevant to problems facing the poor, agricultural countries, indicated Dorner (1971). These theories could be developed and perfected only within a particular political and institutional context. They provide no analytical insight into a system whose institutions are different. The need is to understand institutional systems and the nature of public policy issues.

The same author also is of the opinion that emphasizing the need for research on policy issues does not mean that the goals of policy are set by politicians, bureaucrats, or pressure groups and that the role of research is merely to seek the most efficient means of arriving at such pre-determined goals. Rather, it means that the investigator must be concerned with both ends and means. Seers (1969) is of the opinion that since development is far from being achieved at present, the need is not, as is generally assumed, to accelerate economic growth--which could even be dangerous--but to change the nature of the development process.

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Dorner (1971) mentioned that certain strategic developmental questions are not being addressed, like: creation of productive employment for the growing rural labor force, creation of opportunities for the development of human abilities and capacities, and ownership distribution of land and other resources. An agricultural economist, using a farm management approach, may ignore the displacement of workers or their need to find viable opportunities on the land. He is concerned with profit maximization from the resources available to the firm. Even in dealing with farm policy for the whole agricultural sector, he could ignore these questions. Nor does a macroeconomic approach assure that these strategic questions will be addressed in the analysis.

On their recent book Schiavo-Campo and Singer (1970) stated that economic development of the poorer areas of the world is a priority task for economic analysis and policy. This economic development cannot proceed in a continuing and self-sustaining fashion unless it is preceded, accompanied, and followed by changes in the social, and economic structure of these countries. Economic development is then growth plus change. A new focus should be established to encompass the social nature of development as well as its strictly economic side. What is necessary is a more frankly subjective type of analysis, where comprehensiveness is to some extent sacrificed to a perspective.

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Their perspective revolves around three main
themes:

First: Development must be viewed in an interna-
tional context; a greater emphasis on the external sector
is needed because of increased communication, and the
capital-intensive, large-scale nature of much modern tech-
nology is making it necessary to go beyond the limitations
of domestic market size. Today it is impossible to examine
the development prospects without taking into consideration
export possibilities, import requirements, balance of
payments effects, private capital inflows, or aid in its
different forms.

Second: Social factors must be incorporated into
economic development analysis; development economists agree
that it is not fruitful to identify economic development
with a larger volume of production *per se*, or with specific
input growth. Immediate production increases, or improve-
ment of facilities for enlarged production are a part of
development. But, development relates to the establishment
of a mechanism which will produce self-sustaining and
cumulative indigenous economic improvement. The essential
problem of economic development is not production, but the
capacity to produce. The capacity to produce is clearly not
determined exclusively by the stock of physical capital or
of natural resources; a vital component of it is inherent in
people. This leads to the relevance of the human and social
factors in development.

The automatic transfer of institutional tools and standard-of-living patterns prevailing in industrialized countries to the poorer countries, disregarding the different social and cultural conditions of the latter, may not only disrupt social and cultural cohesion, but also prove self-deafeating in terms of economic development itself.

Third: Economic development is a dynamic process; development implies structural change, which calls for a modification of conditions of production. Economic concepts need to be reinterpreted in a dynamic sense, and policies must be based on projected future conditions of production and of demand. An economic development strategy for a less developed country should be based not on current comparative advantages, but on estimates of future possible dynamic comparative advantages. A comparative advantage in a specific sector can be created by a very conscious policy decision.

Dorner (1971) takes the position that as major changes occur in society, the existing body of theory, developed through the study and eventual resolution of major policy issues, becomes inadequate and fails to comprehend the new policy issues that confront society.

Without direct attention to relationships not prescribed by present theories, some of the most pressing public policy questions are ignored.

The techniques of economic analysis have evolved from the study of mature industrial societies; Chenery (1967) indicated they include: (a) deductive reasoning from purely theoretical models, (b) quantitative analysis in either descriptive or econometric form, and (c) historical analysis. Research on economic development attempts to apply these techniques to a broad range of societies at different levels of development for which alternative basic assumptions may be more appropriate; it has also led to more systematic use of comparative analysis to reveal similarities and differences in economic structure and development processes. The character of development research and its accomplishments may be illustrated by four major types of study: (1) analysis of development models, (2) country studies, (3) inter-country comparisons, and (4) development planning.

Theoretical Analysis of Economic Development

The theoretical analysis of economic development attempts to show the interrelationship of changes in different economic magnitudes over time. For the underdeveloped countries, the main purpose of deductive analysis has been to discover various processes by which a primitive economy can start developing and to determine possible causes of changes in the economic structure. The nature of these studies was illustrated by Chenery (1967) by describing three types of theory which utilize different approaches.

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Dual economy theories.--The development model is
based on a breakdown of the economy into a modern or cap-
italist sector and a backward or subsistence sector. The
process of development was characterized by Lewis by the
expansion of the capitalist sector, a consequent increase
in savings and investment, and a transfer of labor out of
low productivity rural activities to more productive occu-
pation in the modern sector. A number of empirical studies
have been conducted for individual countries.

The unlimited supplies of labor argument of Lewis
(1954) has considerable validity even if some of its rather
restrictive assumptions (large population growth induced by
economic development, near zero marginal productivity in the
agricultural sector, ease of training skilled workers) are
related. Thus, it is not necessary that marginal productiv-
ity in agriculture be negligible for development through
surplus-labor absorption; it is sufficient for it to be
lower than the wage rate in industry. The existence of a
perceptible wage differential may be enough to induce occu-
pational labor mobility to the point where labor supplies
can, for all practical purposes, be considered "unlimited."
Even though industrial development may proceed at a faster
rate than the rate of population growth, labor surplus
absorption can still take place for a long time if the
industrial sector is small to begin with. Finally, it is
not necessary that training costs be high; it is enough

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that they be constant through time and in relation to the number of skilled workers needed.

Lewis's major contribution may be seen in having analyzed the implications of differences between marginal productivity and wage rates, and thus in having pointed out the need for evaluating investment decisions on the basis of "shadow" (scarcity) prices rather than market prices. Schiavo-Campo and Singer (1970) commented that this theory can be faulted on several grounds. First, the view that large amounts of unskilled labor can be transferred out of agriculture with no reflection on agricultural productivity and to the extent necessary to remove labor from our list of operative bottlenecks seems too optimistic and unwarranted.

Second, developing countries are not in a position to develop their own technology, but must adopt and adapt technologies developed in, and for, the industrialized countries. Thus, development is associated with technological progress. Technological progress can be expected to consist of increases in the capital/unskilled labor ratio, and in the skilled labor/output ratio; and absolute training costs can be expected to increase both on account of the income increase itself and on account of the technical change accompanying it.

Balanced growth theories.--It was expressed by
Chenery (1967) that the notion of balanced growth is based
on an assumption that complementarity or relative fixed
proportions is the predominant feature of the demand for
final goods as well as for intermediate goods used for
further processing. On these assumptions, an increase in
total income will require that the output of each sector of
the economy be increased in determinate proportions, modi-
fied only by the possibilities of external trade. On the
further assumption that trading possibilities are relatively
limited, balanced growth theory implies that an increase in
income can only be secured by channeling labor and capital
in predetermined proportions to different economic sectors.
The failure of market mechanisms to perform this allocative
function adequately provided an explanation of lack of
growth, and the determination of the proper proportions
becomes an essential element in development planning.

This type of theory contrasts with the neo-classical
model of general equilibrium, which assumes sufficient sub-
stitutability among factors and products, and sufficient
responsiveness in the economy to allocate resources accord-
ing to their relative productivity. The practical value of
the several versions of balanced growth theory are largely
untested.

Less-than-unlimited substitutability applies not
only between different categories of inputs, between labor
and capital, but also between different types and qualities

of the "same" input (Schiavo-Campo and Singer, 1970). Not only is labor not perfectly substitutable for capital, but, domestically produced machines are not perfectly substitutable for imported machines, nor domestic raw materials or intermediate goods for imported raw materials and intermediates. An import constraint may also arise, therefore, depending on the pattern of growth of the country in question and its dependence on imports of embodied technology and of foreign resources. This is tantamount to stating the obvious proposition that economic development does not take place in an autarkic vacuum; that the domestic lack of a factor of production means little if the country can finance imports of that factor in the required amounts; that in a relatively open economy, trade-off possibilities are just as relevant with respect to domestic versus foreign resource substitutability as they are with respect to input versus input substitutability; and that the external sector is a crucial dimension of the overall economic development picture.

In discussing the need for foreign aid, Currie (1967) indicated that most aid is in the form of loans. Consequently, all underdeveloped non-Communist countries are going deeper in debt to the developed and are becoming increasingly dependent on this continuing process. The servicing of the existing debt now amounts to 30 percent of the new aid extended annually and this percentage may be expected to rise steadily. This means that a cessation of

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new loaning or even a slackening plunges the heavily
indebted underdeveloped countries into grave exhcange
difficulties. The alternatives are repudiation which,
unless carried out with the consent of the lending countries
and called "refinancing," means no more aid, or an accep-
tance of whatever conditions that may be laid down by the
lenders. The one avenue of escape a currently underdevel-
oped country would have from extreme dependence on foreign
powers would be to succeed in economic development, that is,
to put itself in a position to control its own economic
environment, but this possibility would be gravely weakened
if the extension of aid is to be determined by political and
foreign policy considerations rather than economic, and
economists are to remain subordinates to diplomats. The
main criticism of the aid program today should be directed
at its lack of success in promoting viable economies whose
development has become assured and self-generating.

To attain success in development, Currie (1967)
considers certain conditions as necessary, which, if imposed
by international lending agencies could be resented or
criticized on technical grounds. For instance, recipient
countries will be expected "to do something about the birth
rate." This presumably means dissemination of family plan-
ning knowledge or the setting up of clinics for that purpose.
This may or may not be efficacious. What we know to date
suggests that a rise in the educational and economic levels
is a necessary condition of a marked fall in birth rates.

Merhav (1968) utilizes some of the insights of the
balanced growth theorists as part of his Marxist view of
development. He explicitly makes the connection between
the small-market argument and the nature of modern tech-
nology. One major characteristic of developing countries
is their dependence on imported technology. This technology,
elaborated in and for, developed economies, is highly
capital-intensive in nature, and characterized by signifi-
cant economies of scale. Lacing the capacity for creating
an indigenous technology, a developing country will thus
usually offer a market barely sufficient for one or two
plants. The resulting oligopolistic structure of industrial
production will constitute an ever-increasing obstacle to
further development. Merhav's conclusion is that investment
is necessary on a number of related projects, but it is only
possible under a socialist organization of the economy and
collective allocation of profits. To hope that the balanced
growth prescription can take place in a capitalist economy
does not make either political or economic sense, in view of
the vested interest of the capitalist class in the preserva-
tion of the existing socioeconomic structure.

Disequilibrium theories.--It is assumed that struc-
tural disequilibrium is the normal condition of underdevel-
oped economies and that the price mechanism must be supple-
mented by government intervention to bring about continued
growth (Chenery, 1967).

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This diagnosis is used to explain and prescribe for the chronic disequilibrium in the balance of payments that characterizes many underdeveloped countries. A similar set of assumptions leads to a focus on the shortage of entrepreneurs and decision making capacity as the key elements in accelerating growth rather than an overall shortage of capital or natural resources. Most planning models are based on some version of the disequilibrium system, which leads to what may be called a bottleneck theory of development in contrast to the classical focus on total resources and technological improvement.

In analyzing the problem of structural imbalance and future development in Latin America, Chenery (1966) defined structural imbalance as the failure of a country to adapt its productive structure and trade pattern to the factors which conditions its future development. The factors to be considered are both external and internal. Among the former are the market conditions for its exports, the forms and amounts of external capital available to it, and the prospects for economic integration or other institutional changes in the future. Internal factors include the growth and location of population, the changing composition of domestic demand as income rises, and the amounts of domestic savings, both public and private, that can be achieved. When the structure of production and trade does not change in a way that is consistent with these limitations,

shortages--of imported goods, transport facilities or skilled manpower--are likely to occur in some parts of the economy and impede the development process as a whole. This form of structural disequilibrium results from defects in the mechanisms by which resources are allocated in a growing economy.

In order to illustrate some of the characteristics of a growth pattern which is consistent with the principal structural limitations, the same author considered the effects of the changing composition of domestic demand and the opportunities for international trade. International comparisons suggest that typical income elasticities of demand for agricultural products and manufactured goods in Latin America are on the order of .7 for agriculture and 1.3 for the manufactured goods currently produced. The income elasticity of demand for the capital goods and raw materials imported by Latin America is on the order of 1.5 or higher. Whether this demand should be met through increasing exports or through import substitution depends on each country's long term comparative advantage and the future export markets. If resources could be efficiently allocated, most Latin American countries could probably increase their national incomes at rates of 6 to 7 percent per year. On the basis of the demand elasticities just cited, 7 percent growth of Gross National Product would require exports or import substitutes growing at 10 percent,

existing types of industry at 9 percent and agriculture at
5 percent or so. In Perú, this pattern is met largely
through export increases, since the country has both the
supplies of diversified exportable products and the markets
for them to sustain such a growth rate. Almost all Latin
American countries have shown the ability to expand rapidly,
6 to 7 percent for 3 to 5 years, in periods when exports
were expanding and they were not hampered by balance of
payments limitations. This experience supports the thesis
that it is not the shortage of capital or the ability to
carry out productive activity that hampers development in
Latin America, but rather the ability of governments to
devise policies to channel investments in the right direc-
tion.

In reference to technology and the problem of the
mix in underdeveloped countries, Currie (1967) indicated
that utilizing the techniques of capital-abundant economies
in labor-abundant economies poses peculiarly difficult prob-
lems of varying the mix. The attainment of a better mix
given the conditions of gross inequality and the difficulty
experienced in developing exports makes it probable that a
dual economy of considerable magnitude can continue to exist
even if more reliance is had on the price mechanism. But
such an economy can lead to a perpetuation of the conditions
making a desirable mix almost impossible to attain without
wise and massive aid being given to the market mechanism.

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The problem of underdevelopment has become one that cannot be resolved even by a perfectly functioning market system; more important are its dynamic and institutional elements that call for an approach widely different from the current extension of limited loans and grants and technical assistance. The favorite solution of all underdeveloped countries, an improvement in the balance of payments resulting either from borrowing or by exports, can rarely be of the magnitude that would permit a pattern of consumption and a type of mix appropriate in the developed countries. A factor aggravating the inadequacy of capital in relation to labor is the generally shocking underutilization of existing capital and malallocation of new capital. The poor use of capital is a symptom of underdevelopment as well as a cause, just one of the many vicious circles that impede the effective functioning of the market system. The mix can be improved by actual under-employed labor and capital being put to work to produce new capital and goods of mass consumption. In conclusion, to utilize capital-intensive equipment and provide more remunerative employment in general with limited imports is a problem requiring careful study by each underdeveloped country. Currie suggests a few general lines of policy and criteria for establishing priorities:

    a. Every effort should be made to use the market mechanism as far as it is feasible. This implies relatively high prices for imported capital goods

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and relatively low level of wages and salaries as long as a great amount of disguised unemployment exists.

b. Quantitative restrictions on the purchase of foreign currency may be necessary to offset the effects of great inequality of income and lack of confidence. In applying rationing, the most difficult decisions will arise as between goods permitting future exports (or substitution of imports), public services, and goods permitting production of goods of mass consumption (including housing). Most public services are also mass consumption goods. However, too low costs and tariffs may encourage extravagant use.

c. Even in the mass consumption industries, high intensity of use should be given high priority in permitting imports.

d. Imported capital requirements can be reduced without loss of essential services, i.e., replace private cars for buses.

e. Avoidance of patterns of consumption whose widespread adoption presupposes a capital abundant economy, i.e., the costly systems of processing and packaging goods like throw-away paper milk cartons and a host of plastic containers.

f. Probably too much emphasis has been given to
    infrastructure. Imports for these purposes are
    universally accorded highest priority.

Obtaining a more desirable factor mix obviously
depends on the actual mix, the degree of inequality in
income, the foreign balance, and other factors, which vary
from country to country. We have here an important part of
the explanation of the persistence of dual economies, and
massive disguised unemployment or very poor mobility, and
also a part of the explanation of self-perpetuating under-
employment.

Country Studies

Chenery (1967) indicated that the more traditional
studies are largely descriptive; more recently, country
studies have become more analytical and have attempted to
provide a test of one or more of the hypotheses derived in
development theory. A further refinement is to select
several countries which are similar in some respects (e.g.,
cultural heritage, levels of income) so that differences in
development performance can be associated with some of the
observed differences in the remaining factors. Studies
focusing in Latin America have shown that in this region
the failure of market mechanisms and of government policy
to maintain equilibrium in the balance of payments and the
resulting distortion of the productive structure emerge as

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more important impediments to further growth than any
overall shortage of resources. It has been observed a
prevalence of regional inequalities and the tendency of
development to be concentrated in a few favored regions,
so development policy will be faced with a probable con-
flict between the social goals of maximizing total income
and increasing regional equality.

Inter-Country Comparisons

The main objective has been to determine similar-
ities and differences in the economic structures of coun-
tries at similar income levels (Chenery, 1967). The work
of Simon Kuznets in particular has revealed broad similar-
ities in patterns of savings and investment, consumption,
production, labor use and other structural characteristics.
The notion of a discontinuity between advanced and under-
developed countries has been dispelled, since virtually all
elements show a continuous variation with rising income. It
also provided a basis for comparing the historical changes
in the more advanced countries to the present-day patterns
of inter-country variation. The rise of the share of
industry with rising income levels is quite similar in both
cases, as is the fall in the share of agriculture. Of equal
interest are the differences among countries that are sta-
tistically associated with their size, natural resources,
and other characteristics.

Problem of Increasing Employment
in Agricultural Development
Economics

It was indicated by Dorner (1971) that agricultural

policies emphasizing modernization and increased production

from the commercial farm sector without explicit attention

to the creation of employment opportunities will yield

increased output of certain farm commodities and growing

labor productivity for a part of the farm labor force. But,

they tend to widen the income disparities and throw the

burden of adjustment on the disadvantaged who join the ranks

of the landless, become migrant seasonal workers, continue

to crowd into existing small farm areas, move out to rapidly

shrinking frontiers, or join the under-employed in the

cities. There is no evidence that the increased volume of

commodities moving through commercial channels as a result

of increased production creates sufficient jobs for workers

displaced by modernization or for the continuing new addi-

tions to the rural labor force.

The policy that food should be produced by the

cheapest, most efficient means possible, when viewed from

the private interest of an individual firm frequently means

displacing people with machines. The professional analyst

will view the problem with decision making criteria appro-

priate to the private firm while ignoring the possible lack

of correspondence between private and social costs and

benefits. Dorner (1971) pointed out that it has become

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an article of faith that mechanization, mechanical tech-
nology and automation generally, always creates as many
jobs as it destroys and sometimes more. This assumption
may be justified in a highly industrialized nation; but
it may not apply to a country that does not produce its
own technology, since the new employment opportunities will
remain in the manufacturing country.

The majority of the people depend on the land for
employment in most less-developed countries; jobs in manu-
facturing are growing much less rapidly than manufacturing
output; and the number of people dependent on farming for
a livelihood is increasing. Owen (1966) has referred to the
non-farm claim against that limited part of the total income
stream which passes into the hands of the farm population
as "farm-financed social welfare." This is the claim to
maintenance at farm sector expense of any labor that is
rendered redundant by the development process in that sector
until such time as this labor actually realizes an alterna-
tive employment opportunity in the non-farm sector. In
order to achieve the benefits that may accrue, it requires
that employment opportunities be provided in the farm sector.

There is an implicit assumption that somewhere
policies are being implemented to maintain full employment,
and that when a laborer moves from a low productivity rural
job, he migrates directly to a higher productivity urban
industrial job. Todaro (1969) indicates that these are

unwarranted assumptions in most cases of less-developed
countries. Indeed, these assumptions point to some of the
critical problems of development. The question is rarely
asked whether or not the typical unskilled rural migrant can
indeed find higher-paying regular urban employment. The
empirical fact of widespread and chronic urban unemployment
and under-employment attests to the implausibility of such a
simple view of the migration process.

There is great difficulty in substantially reducing
the size of the urban traditional sector without a concen-
trated effort at making rural life more attractive.

In the less developed countries, the most abundant
potential resource is labor; Dorner (1967) indicated there
has been a tendency to ignore the need for investment in and
development of the labor potential. Instead of viewing land
as a vehicle for employing people and for developing the
skills and experience required of the rural labor force,
land has been viewed primarily as a resource to be effi-
ciently combined with scarce capital so as to maximize
agricultural output.

The manner in which increased production is achieved,
and the number of people who participate and reap some bene-
fits from the experience, may be as important as the produc-
tion increase itself. One gets a different perspective
regarding the role of the land if (in addition to its
accepted function in the production of farm products) it is
viewed as a vehicle both for creating economic opportunities

and upgrading the human skills and capacities required for their exploitation.

Johnston and Cownie (1969) are of the opinion that in an agriculture with an over abundant and growing labor supply, it is unlikely that one can make a logical case for importation of labor saving machinery if the problem is viewed from the standpoint of national policy rather than profit maximization of the firm.

Johnston and Mellor (1961) and later Todaro (1969) agreed that if the agricultural sector is to make its most effective contribution to economic development, it must not only improve labor productivity for a select group but must also expand employment opportunities.

There is difficulty in reconciling mutually conflicting objectives, like output maximization versus employment maximization. To Schiavo-Campo and Singer (1970), ideal would be the development of a technology which would lessen or hopefully even eliminate this conflict by making it possible, under certain circumstances, to maximize output while increasing employment. It is also necessary to stimulate the transfer of existing technology to developing countries and to temper its unsuitability with efforts at adapting it to the different conditions.

A possible guideline for the choice between a capital-intensive, large-scale type of technology and a labor-intensive, small-scale technology has been spelled out by Lewis (1965) after discussing the possibility that

industrial growth may go hand-in-hand with a reduction in employment as a result of employment destroyed in handicrafts, traditional forms of transportation, and old-fashioned types of personal service. This possibility is increased by the tendency of wages to rise sharply in the modern sector. The higher wages are, the more it pays to import cheap machinery from the developed countries, and, therefore, the less employment investment creates. Most developing countries have to give the highest priority to providing employment now rather than to maximizing consumption or income or employment in ten years time.

Studies in Chile and Perú have suggested that in those countries almost 30 percent of the non-agricultural labor force was under-employed (Lederman, 1969).

Schiavo-Campo and Singer (1970) talking on the role of social security and its effect over labor utilization in developing countries stated:

"One of the fundamental obstacles to economic development is the fact that the developing countries have to rely for their modernization on the technologies of the industrial countries, since the latter have a virtual monopoly of modern technology. Which has been developed to conform to their own requirements and factor endowments, so it puts a premium on replacing labor with capital. The developing countries have the opposite problem--scarce capital and abundant labor. The technologies of the industrial countries require a high level of skill and industrial

discipline in the installation, operation, repair, and maintenance of the equipment. Yet, these skills are scarce in many developing countries, which would instead need equipment that is easier to install, operate, repair and maintain. In such circumstances, a social security system of the style familiar in the developed countries, financed by contributions from workers and employers, may clearly have a harmful effect. By making labor more expensive, it will give an added inducement to producers to use more capital-intensive methods of production. This effect may be desirable in the advanced countries, but in the poor countries, it may further magnify the distortion of using too little labor and too much capital already inherent in the dependence on imported technology."

From the standpoint of a private firm, the entrepreneur of a large farm enterprise may find the importation of labor displacing machines highly profitable due to a variety of circumstances, many of them related to government policies: overvalued exchange rates, subsidized credit, rising minimum wages and fringe benefits, etc. Eckaus (1955), reasoning from analogy, developed countries experience of farm enlargement and mechanization is sometimes cited to support this type of development. But such analogy is inappropriate for the widely different situation with respect to factor proportions and real factor costs in non-industrial societies, in contrast to existing factor prices

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which are often controlled and distorted by some of the above policies.

Higher minimum wages for farm workers could be counterproductive so long as investment decisions in the farm sector are made by private entrepreneurs. Dorner (1971) pointed out that higher minimum wages might lead to a shift to labor-extensive enterprises, or to an acceleration of machine substitution for labor. Even with low wages, there is a strong incentive on large farms to mechanize and simplify labor supervision.

The mechanism of allocating resources in underdeveloped countries, says Currie (1967), is not functioning properly either in securing a proper mix of factors, or in the type of goods and services actually produced. If the gap between urban and organized workers' pay and that of the rural and unorganized workers' remuneration is steadily widening, something serious has happened to the machinery of the mobility of labor, and labor is being very badly allocated. If, in order to improve agricultural productivity, large sums are diverted by public agencies to agriculture, there is a further malallocation of resources. The test of sufficiency in mobility, or goodness or badness in allocation of resources, can only be whether inequality of income is being increased or decreased. The proof of the inadequacy of mobility is the inequality existing in incomes from work.

Typically underdeveloped countries possess large numbers of people economically unemployed. They are characterized by great inequality of income, and this inequality is probably growing. Besides, the industry is characterized in large part by imperfect competition, and the economy is characterized by rapidly growing populations and working forces. Currie (1967) indicated the combination of relatively small markets, economies of scale, and modern technology tends on balance to make for relatively few industrial units in many fields and consequently for a lessening in competition in at least prices. In general, the economic mechanism of most underdeveloped countries is functioning badly. It ought rationally to call for a massive reallocation of labor. The reallocation that is taking place is in reality not sufficient to provide truly remunerative jobs for the increase in the working force, to say nothing of decent jobs for a large proportion of the existing labor force. It is not that the people do not have unsatisfied needs, but rather that the economic system is not organized to permit them to satisfy these needs. At the same time the mechanism, operating obediently in response to a distorted pattern of demand, is diverting resources to the production of luxuries, to an enormous quantity of personal services and so on.

The attainment of greater mobility, or a better distribution of the work force, appears to have played

an important role in the development of economically advanced societies. Currie (1967) stated that whatever factor that impedes mobility, or a better distribution of the work force, as measured by a greater equality of earnings brought about by a relative movement of workers from lower to higher paying jobs, by the same token impedes the rate of per capita output. It is not the greater equality of earnings that in itself brings about a rise in per capita income, but only that greater equality which results from the relative growth in numbers in the better paying jobs.

Increases in output resulting from greater employment or less disguised or under-employment, and from greater mobility or a better distribution of the work force, are closely related. The effect on output of greater employment may be offset by poorer mobility or by an increase in under-employment. Greater mobility may permit a rise in Gross National Product per capita despite increased unemployment. Even greater productivity may only be the consequence of better mobility.

Schiavo-Campo and Singer (1970) consider that some obstacles to technological development of the developing countries are their low capital formation, and their limited capability to evolve an indigenous technology. So, there should be no exclusive choice between promoting indigenous technological development and stimulating the transfer and adaptation of existing technology. In a sense the problem

can be looked at in almost statistical terms: while the probability of evolving a truly new and suitable technology for developing countries is not very high, the payoff would be enormous; conversely, while speeding up the transfer and adaptation of existing technology can make a smaller though significant contribution to international development, the probability of doing so effectively and in the near future is significant.

The contribution that the appearance of an efficient and up-to-date labor intensive and flexible technology could make to international development is so great that calling for allocation of at least part of national and international development resources toward practical research in that direction is justified.

In the underdeveloped world of today, Currie (1967) stresses, the failure lies not in an inadequate growth in aggregate money demand but rather in effective demand, and an essential element in this inadequacy must be sought in the chronic rise of industrial wages, profits, and prices above the national gains in production per capita. The obvious solution of the problem is to increase aggregate effective demand, production, employment, saving-investment, demand again, and so forth. But, the economic organization is not giving adequate employment and production, nor a defensible distribution. This suggests the necessity and the means of achieving a deliberate and massive concentration of effort to raise within a decade the economic,

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educational, and cultural level of the poorest half or more
of the population. The cost in terms of foreign assistance
and the internal effort required would probably be much less
than the indefinite continuance of the present desultory and
pointless policy of lending and refinancing which supplies
just enough to keep up a modicum of services for a contin-
ually expanding population, but not enough to check that
expansion.

The breakthrough requires as an indispensable
condition "an incomes policy" in important segments of the
economy, especially in the industrial sector where groups in
a strong bargaining position have become entrenched. This
is a difficult policy for which to secure acceptance and
execution. In all Latin American countries, the governing
class has made its peace with organized labor by securing
and sharing a larger portion of a slowly growing production.
All this has been at the expense of the unorganized and
self employed, and at the expense of a vigorous and dynamic
growth in the production of articles of mass consumption.
So little is the economic process understood that virtually
all regard the gains of organized labor as signifying gains
for the whole economy. Under these conditions, the dis-
tribution of incomes becomes a highly arbitrary and even
capricious operation. All that economic theory can tell
us is that enough must be paid for any service to call forth
the requisite marginal supply to satisfy the marginal demand

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at the price people are prepared to pay. But, in the absence of mobility and competition, this rule is consistent with very wide and ethically indefensible variations in incomes. What is needed today is an overall national job creation plan designed to eliminate poverty, which is of dubious acceptance or implementation.

The ILO (1970) report indicated that what is needed is to change the nature of the process of economic growth. A full employment strategy will inevitably involve faster growth in particular sectors, perhaps in all sectors. But when one treats employment as a specific objective, one starts by investigating the labor absorption potential of each sector, and then searches for a balance between sec- toral growth rates which meet some employment target. So, employment becomes the target and overall growth the by- product, and attention is concentrated from the outset on sectoral detail rather than on the economy as a whole. To reduce unemployment is to raise consumption levels espe- cially of those who most need increased consumption, and incidentally also to strengthen the country's independence by reducing its political vulnerability. The question is ultimately one of distribution; the decision is whether it is more desirable to raise the income and consumption at the bottom of the income distribution than to raise income and consumption in the rest of the community. To treat income as a net total, without inquiring who gains and who loses, and then set this against employment, is to miss the whole point.

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There is a time dimension as well, with the need to judge the value of more employment immediately against more employment in the long term. This arises most sharply in the case of industries which have export possibilities. The shortage of foreign exchange could block an employment strategy, and it follows that to overemphasize employment creation in some fields could be counter-productive in the longer term. Assuming that the foreign exchange constraint determines how much capital investment can be undertaken in a country heavily dependent on imports of capital, then the common sense policy is to spread this as thinly as possible over the plentiful supply of labor; it is likely that this would yield higher levels of output than an allocation of investment which left a large fraction of the active labor force unemployed.

Dorner (1971) emphasizes that poverty is a problem that has direct and important implications for increased productivity. Supply does not create its own demand under conditions of a high skewed income distribution. To focus primarily on production widens the income gap between rich and poor.

Why are policies not formulated to accommodate both of these requirements--increased production and increased employment with a more equitable distribution?

Because, recommendations are too often based on private or project decision-making criteria, rather than those appropriate to the interests of the entire nation.

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He proposes three concepts as required for a redirection of economic analysis:

1. Creation of secure opportunities on the land

2. Development of human abilities and capacities

3. Inclusion of income distribution as a variable in analysis.

In proposing the "creation of secure opportunities on the land" he points out the current profitability of importing labor displacing machinery by private entrepreneurs in less developed countries. Job opportunities must be created, since making rural life more attractive means providing the farm family with a secure opportunity on the land. Land tenure arrangements and size of holdings must be included as variables in the analysis.

Targets for Development

When we turn to the so-called national plans, says Currie (1967), the overall goal is a rise in something called the Gross National Product per Capita, a series of such inaccuracies as to be practically useless, and available only long after the event. As a national objective G.N.P. per capita is especially worthless in underdeveloped countries because of the wide and probably growing difference in income levels concealed by an average per capita figure. Finally, it does not lend itself as an objective of planning as there is no direct and predictable relation

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per capita.

On the Gross National Product as an objective and
measure, Morgenstern (1963) described the insurmountable
conceptual difficulties and the inaccuracy of the American
Gross National Product and the practical worthlessness of
the series in underdeveloped countries.

The publication of statistics showing a greater
growth in Gross National Product than of population, and by
the visual confirmation afforded by swarming cities, high
buildings, traffic congestion, great dams, steel plants, and
so on, lead us to believe that development is taking place.
Currie (1967) said it is only when we take into account the
frightening increase in the number of very poor people; the
rise in the rate of population growth so that in many coun-
tries the population is now doubling every twenty-three
years; the increasingly unfavorable relation of dependents
to workers, and of workers to natural resources; the sharply
rising cost of public services in rapidly growing cities;
and various other indices, does the suspicion arise that in
a more profound sense of the term there has been no develop-
ment, and the problem of underdevelopment is growing more
acute. Since practically all underdeveloped countries are
characterized by extreme inequality of income, the condition
of the masses, whose numbers are continually growing, may
actually have worsened.

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There is a need for a reexamination of the accepted yardsticks for the measurement of the level and rate of "development" and on the criteria on which public decisions are based (Schiavo-Campo and Singer, 1970).

The G.N.P., Gross National Product, which is the money value of current production of goods and services, obviously is not in and by itself the purpose of economic activity. It is only a proxy target. In less developed countries, one cannot be satisfied with treating a flow of goods and services as the sole purpose of the economic system, irrespective of the composition and allocation of that flow. One is concerned about problems of health, illiteracy, lack of access to educational facilities, nutrition, high mortality, bad housing. One obviously cannot find an acceptable measure of welfare, and particularly of aggregate welfare. A realistic approach could consist of evolving a workable and consistent form of social accounting that will go beyond the conventional market-price valuation of goods and services or of money income, and that will systematically include, as far as feasible, social, biological, and institutional information.

Viner (1950) proposed a criterion of development radically different from output per capita; to him the reduction of mass poverty should be made a crucial test of the realization of economic development.

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Commenting on Viner's criterion, Currie (1967) indicated that the suggested objective of development, the reduction of mass poverty, is a much more desirable starting point than output per capita. First, because it directs attention to what should be the ultimate goal of policy and the criterion by which to judge the effectiveness of any economic system. Second, it directs attention to the necessity of breaking the vicious circle of poverty--high birth rates--poverty again. The fact that the attainment of this objective is a tremendous challenge is no valid reason for rejecting it.

The basic problem is that of breaking the vicious circle of poverty and population growth. As stated by Viner (1950), it is a paradox of the population problem that on the ground of historical experience and theoretical analysis the attainment of high levels of per capita income and of education appears to be almost essential prerequisites of a cure of the problem, and that the excessive rate of increase of the population itself is the most important barrier to the establishment of these prerequisites. Apparently, the influence of income and educational levels on birth rates far outweigh all other factors.

In practically all countries classified as underdeveloped, the worst conditions of poverty and illiteracy are concentrated in the very large rural sectors. Currie (1967) indicated the major problem becomes that of elevating as quickly as possible the economic and educational levels

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of rural, village, and small town people, as well as the very poor in the large cities. The agrarian problem, to him, is the existence of too low incomes and not of too low production.

The urgency of lowering the high birth rate is highlighted by Coale (1963); it might take at least thirty to sixty years to attain a state of industrialization that would in itself cause a rapid decline in fertility. In fact, the adverse effects of continuous high fertility in the interim might in itself postpone the attainment of the needed state of advanced industrialization.

Dovring (1964) in analyzing the share of agriculture in a growing population mentioned that when the population increases at the rate of 3 percent per annum, the growth of non-agricultural employment would have to be extraordinarily high to absorb the increase in the working force and still higher to effect an absolute decline in agricultural employ-ment. Assuming that such extraordinary growth rates cannot be expected, Dovring concludes that there is no reason to expect reduction in absolute numbers in the agricultural population within the near future, and that it will take decades before agriculture ceases to employ and support the majority of the world's population.

Leibenstein (1957) stressed the highly significant finding that the long term rate of population growth depends very largely on how soon the fertility rate falls following

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the decline in the mortality rate. In most Latin American countries, this so-called "fertility lag" is lengthening year by year, thus presaging an extraordinarily high rate of population growth.

The poverty-excessive birth rate problem is concentrated among the large rural proportion of the population. Currie's (1967) opinion is that the problem cannot be resolved there. To him, development implies mechanization and technification of agriculture which in turn implies a drastic reduction in the percentage of the labor force engaged in agriculture. This, in turn, implies massive shifts in the labor force from agricultural to non-agricultural occupations. The slower the shift the more the population increases and the more difficult is a solution of the problem. Hence, the solution of the agrarian problem must be sought in the non-agrarian sectors of the economy of underdeveloped countries.

Actually, in most underdeveloped countries, this shift is occurring, but much too slowly. The cause of the slowness is not only or even mainly inadequate saving and investment. In Latin American countries with an infrastructure of social capital and an industrial base, existing capital equipment is grossly under-utilized, and the nature of the industrialization process results in too low a ratio of employment to capital. Despite substantial foreign borrowing, there appears to have been no rise in industrial

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employment. At the same time, there is abundant evidence that real wages and fringe benefits of industrial workers rose substantially in relation to non-industrial earnings and especially peasants' incomes. Rural population continued to increase, although at a slower rate than urban.

Some writers appear to feel that as long as the growth in per capita output is positive, development is proceeding, and the speed or rate is not too important. Currie (1967) believes this is a grave error, as a not so slow growth in average output per capita may be quite compatible with growing inequality. In any case, as the growth in population continues, the relation of population to natural resources deteriorates; the largest cities begin to encounter rising relative costs for municipal services; impatience, frustration, and general economic illiteracy lead inevitably to demagoguery and ill-conceived improvisation; and the prestige both of the free enterprise system and democratic institutions falls.

The recognition of the importance of the social forces in the process of development favored the attempts to evolve a measure of the level of development less arbitrary and more meaningful than simple per capita income. In the developing countries, these measures fail to tell us very much about the reality of life at the lower end of the national income scale.

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In their study, Adelman and Morris (1967), by
combining several social, political, and economic variables,
reach a complex and comprehensive measure of the level of
development. By means of factor analysis, 41 indicators
were chosen, according to the general criteria of inclusive-
ness and parsimony; only those indicators which could be
formulated with sufficient concreteness to permit unambig-
uous classifications were included. In their grouping of
countries by factor scores on factor representing level of
socioeconomic development, the higher the factor the higher
is the level of socioeconomic development presumed to be.
Perú was included in the highest group with a factor score
of 0.68, with a per capita Gross National Product in 1961
of U.S. $181.

Schiavo-Campo and Singer (1970) commented that when
relating the socio-political-economic development indicators,
the factor scores, to per capita G.N.P. for 74 developing
countries, per capita G.N.P. explains about 50 percent of
the variation in factor scores. This may be interpreted as
meaning that the factor scores index is both economically
relevant and that it represents a substantial improvement
over simplistic indices, like per capita G.N.P., of an
aggregate nature.

Chenery (1970) in explaining the deviations between
the actual growth rates of less developed countries and
those predicted by his computations, indicated that more

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probably explanations are political stability, adminis-

trative efficiency, and other sociopolitical factors. He

referred that Adelman and Morris (1967) have established

significant associations between sociopolitical factors and

rates of growth, but it is difficult to use their results

as a basis for policy judgments because the nature of the

causal relationship is ambiguous.

For a study of new approaches on how to spark a

breakthrough towards economic development, Currie (1967)

considers three prerequisites as necessary: a recognition

that the present approach is failing in its basic end of

creating viable economies, the abandonment of the Gross

National Product per capita as an objective of policy and

test of success and the adoption of more significant cri-

teria, and a decision not to use foreign aid as an arm of

foreign policy.

Schiavo-Campo and Singer (1970) hold the commonly

shared postulates that a better-fed, better-clothed, better-

educated individual with some leisure time is "happier" than

his poorer counterpart; then, we must regard economic prog-

ress as a positive component of human improvement, and a

worthwhile target for human action in general, and economic

analysis in particular. These considerations are relevant

to show that the analysis of economic development is ulti-

mately founded on a series of postulates--of value judg-

ments--just as much as other areas of economics. Their

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postulates were simple ones: more is better than less, more for a greater number of people is better than more for a fewer people, life is better than death, longer life is better than shorter life, healthier life is better than disease, and culturally richer life is better than illiteracy.

In analyzing targets for development, Chenery (1970) stated that when we think of "development" as different from "growth," we usually have in mind the set of structural changes that are needed to sustain future growth of output and to respond to the changing needs of the society. While in the long run, growth and development go together, they need not do so over periods as short as a decade. Thus, an expansion of Gross National Product based on the growth of primary exports without other changes in resource allocation constitutes growth with little development, while large increases in infrastructure and education that have not led to increased output in other sectors represent development without much growth. In determining the success of countries in achieving their long term economic objectives, one must take account of both current growth and the structural change that will facilitate or impede future growth.

In relating growth and structural change, Chenery (1970) indicated that in order to determine the interrelations between the rate of growth and the structure of an economy, we need to have an idea of the variation in the

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composition of production and trade that normally occurs
as income rises. Empirical studies, like those of Kuznetz
(1966), have shown that almost all aspects of economic
structure, such as rates of savings and investment, the
composition of demand and production, the pattern of trade,
the allocation of capital and labor, change systematically
as the level of income rises. These "normal patterns" of
development can be traced to similarities among societies
in their tastes, access to technology and international
trade, and common elements of development policy. We can
measure both the normal variation with income changes and
the effects of other factors (such as size, resources,
capital inflow) by means of multiple regression analysis
based on statistics for all countries. The stability of
these "normal development patterns" has been shown by
Chenery *et al.* (1970) in their study "A Uniform Analysis
of Development Patterns."

Table A-1 (Appendix A) lists a number of measures
of structural characteristics that may affect the present
and future rate of growth. The factors that receive most
attention in theories of growth are the accumulation of
capital, skills, and other productive factors. In addition
to increasing the supply of inputs, a country must allocate
them according to its changing pattern of demand and its
opportunities for international trade. As developing pro-
gresses, a country's difficulties in transforming the sruc-
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supply and demand in each sector are often greater than
its difficulties of accumulation. Other aspects of struc-
tural change that are relevant to the setting of development
targets and which are most important for human welfare are:
the possibilities of providing full employment for the labor
force, and a slowing down of population growth is also
required for successful development.

Formal statistical analysis can identify factors
that have a significant effect on growth, but it cannot
capture the interaction among various elements in a success-
ful development strategy. Chenery (1970) for its statisti-
cal explanation of growth uses time series and cross country
estimates. The time series technique consists essentially
in estimating statistically the contribution of increases in
inputs like capital and labor to growth, under the assump-
tion that each factor receives its marginal product, and
then attributing the unexplained residual to technological
change. To be applicable to the less developed countries,
this methodology must be modified because the labor share
of income exceeds its marginal product and, therefore, the
share of capital understates its contribution to growth.
Based on results for middle income countries, capital accu-
mulation has been shown to be much more important for the
growth and to account for 40 to 50 percent or more of the
total increase. The residual growth that is unexplained by
increased inputs is, therefore, less important in most of

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the low income countries than in the advanced ones. These results should discourage the uncritical application to the developing countries of conclusions from Europe and the United States that growth can be secured primarily by technological change.

Cross country estimates have been used to associate differences in rates of growth with structural factors through statistical analysis of growth data for a number of countries. The main weaknesses of the intercountry estimates are: (1) their assumption that the explanatory factors affect each country in the same way, (2) the lack of an adequate model of disequilibrium growth on which to base the analysis. Despite these limitations, regression analyses can identify factors that are important to growth even though they do not determine the nature of the causal relationships.

Chenery *et al.* (1970) conducted studies to test the effect of the increase in capital and labor, the level of income, and several aspects of structural disequilibrium on economic growth. The following findings were considered of particular significance for the assessment of development targets of underdeveloped countries:

1. The rate of investment and the level of income are the largest single influences on the rate of growth.

2. The inflow of capital (net foreign balance) con- tributes to the explanation of the variation in

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growth rates over and above its contribution to the financing of investment.

3. The results support the hypothesis of a normal rate in growth rates up to income levels of $300 as the share of agriculture declines, even when allowance is made for variation in investment rates and other factors.

4. Taken together, these factors explain 70 percent of the variation in growth rates of less developed countries in the decade 1951-1959, but a smaller proportion in more recent periods.

The intercountry regressions also provide a rough basis for judging the development performance of each country. There were few countries whose performance diverged by much more than 1 percent from the growth rates predicted by several regression equations. In their study, Perú for instance is considered as relatively inefficient. But this interpretation is subject to several qualifications; Perú may have a high capital output ratio because of its extractive industry, which need not be a sign of inefficiency.

In order to analyze the sources of successful growth performance, Chenery (1970) selected 31 countries that had been able to sustain an average growth rate of at least 5.5 percent for the period 1950-1967; some allowance was made for countries having a very large agricultural sector to start with. Three aspects were of primary interest:

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(1) the financing of investment as among domestic savings, private foreign investment, and public external sources; (2) the role of natural resources, as evidenced by primary exports; and (3) the pace of transformation of the economy, as evidenced by the lead or lag of industrialization compared to the "normal patterns." Measures of the deviations of trade and production patterns from the normal, for a given income level and country size, were used to measure the last two characteristics. Indicators of all three characteristics, and of several measures of structural change, are given in Table A-2 (Appendix A).

The countries Chenery *et al.* (1970) selected for this study were grouped in accordance with the different pattern of resource allocation. Some countries enjoyed large supplies of foreign exchange through aid or primary exports; these features of trade and external capital were associated with characteristic leads and lags in the growth of industry and primary production and hence were described as different strategies of development:

Strategy A: High Capital Inflow--More than 30 percent of investment financed by aid or other foreign sources for at least the first decade.

Strategy B: High Primary Exports--Levels of primary exports at least 50 percent above normal values. These seem to be more important in characterizing the pattern of resource allocation than a high capital inflow.

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Strategy C: Moderate Capital Inflow--Countries
having external financing to the extent of 10 to 30 percent
of investment during most of the period. Perú is in this
group, with external finance of 16 percent and 8 percent
for the periods 1951-1959 and 1960-1967, respectively.
This strategy is typical of medium and large countries in
which primary exports are less than 15 percent of Gross
National Product--Perú in 1960 had 14.1 percent. Also,
trade has less effect on the structure of production than
in the smaller export oriented countries. Perú showed a
balanced trade orientation between manufactured goods and
primary exports, as measured in Chenery and Taylor (1968).
Most countries in this group were previously heavily depen-
dent on primary exports but have undergone sufficient indus-
trailization to achieve average productive structure for
their level of income. In most cases, both savings rates
and exports have risen in the second decade to levels that
are adequate to sustain fairly rapid growth. Transforming
the economic structure to a more balanced pattern has proven
difficult for medium and small economies. The possibilities
for economical import substitution in manufacturing are
limited; therefore, continued growth requires either a shift
to manufactured exports or the development of new primary
exports.

Strategy D: Low External Dependence: Countries
that have had little dependence on either primary exports
or external capital in the early stages of development.

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The early development of manufactured exports is required to cover minimum import needs, which means a higher than average capital-output ratio and, hence, high rates of investment for rapid growth.

The conclusions arrived at by Chenery (1970) can be stated as follows:

The objective of development can be stated better in terms of the overall transformation of the economy and the society than in terms of the growth of inputs and out-puts. Achievable rates of progress toward this goal depend to a large extent on the starting point.

In reference to the possibilities of accelerating growth, over the observed range of rates of growth, capital requirements per unit of output tend to fall at at higher rates of growth. Savings rates have usually risen in response to higher growth rates; therefore, the financing of self-sustaining growth becomes more feasible once the initial momentum has been achieved. Accumulation appears to have been easier than transformation of the economic structure. The management of the balance of payments had been a greater source of failure than the financing of investment or a shortage of skills.

On the issue of economic growth versus distribution, there is acceptance that development objectives must give greater weight to welfare increases for the poorer groups in the society, and not only be concerned with economic growth. But, the possibilities of transferring income

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through fiscal measures are very limited in poor countries; the only significant means of improving the incomes of the poor is through the quality and quantity of employment provided by the economic system. The distribution issue then becomes a question of the nature of the tradeoff between growth and employment. Few countries have tried to implement policies that would favor the use of more labor and less capital in production. The generalization that high economic growth and high employment currently provide the most reliable approach to maximizing the welfare of the lower income groups, seems to be supported by the experience of Communist and capitalist countries. Cuba is perhaps the most notable case in which fuller employment and welfare increases for the poor have been achieved with little growth in per capita income. It was estimated that the more opti- mistic 6 to 7 percent growth targets are unlikely to prevent unemployment from growing, which emphasizes the need for greater attention to the possibilities of substituting labor for capital.

In reference to the allocation of foreign aid, it is proposed that the basic test of aid effectiveness is accel- erated growth, which would result in the highest per capita amounts going to countries in the income range of $100 to $300. At higher income levels, it is concluded that exports and private investment should be able to finance imports. On the other hand, adequate domestic savings are considered mainly a question of government policy.

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Development Planning and Policy

The current interest in economic development is largely due to its concern with government policy. Chenery (1967) indicated that a high proportion of research on development is aimed at providing a better basis for decisions on resource allocation and other aspects of long term economic policy.

One of the most significant developments has been the construction and testing of empirically based models designed to determine the choices available to policy makers. In concept, these planning models draw on the techniques of operations research and systems analysis in an attempt to relate decisions on individual aspects of resource allocation to policy decisions elsewhere in the economy.

Two types of research illustrate the trends in this field. One is the development of multi-sector, economy-wide models of the input-output type, which have now become the analytical core of the development plans of many countries in the process of industrialization. The current use of these models is to determine the consistency among different aspects of a development program, but they are being extended to determine the effects of alternative assumptions and to aid in the search for more effective plans.

A second type of study is concerned with resource allocation in a single sector, such as agriculture or water

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resources. Earlier work was devoted to applying benefit-
cost or other criteria for resource allocation within
sectors. The need to broaden the analysis to encompass
indirect effects and sectoral interdependence is reflected
in more recent studies, which try to bridge the gap between
partial analysis and overall planning analysis.

A notable by-product of research on planning models
has been the refinement of the concept of opportunity cost
in the form of the shadow prices of a linear programming
model. From being a fairly esoteric concept a few years
ago, shadow pricing has become a standard tool of develop-
ment planners.

To Currie (1967) the rate of growth in the value
of output per capita at constant prices should be more a
means to an end than an end in itself. A tendency toward
greater equality of income in non-socialist developed coun-
tries would be accompanied by a relatively high income per
capita. The greater the mobility of labor, and the higher
the average income with such mobility, the slower should be
the growth in Gross National Product per capita both because
of the lower opportunities for further mobility and the
substitution of leisure, education, and so forth, for hard
goods. The poorer the distribution of the working force and
the lower the incomes of the great majority of the people,
as in most underdeveloped countries, the higher should be
the growth in output per capita.

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As objectives of development, the same author mentioned: first, a reduction of "illfare" whose components are pain, suffering, fear, and insecurity; second, the widespread diffusion of a modicum of goods and services well above the bare minimum required to remove pain and suffering; and third, would come education, diversions and tolerable working conditions, and an enhancement in the quality of living. No one of the so-called underdeveloped countries has attained a satisfactory degree of any of the elements of a desirable society except for a small proportion of their peoples.

The attainment of greatly reduced "illfare" and of positive satisfaction from a bountiful and widely diffused supply of goods and services requires: high physical output per capita and a fair measure of equality of income, wealth, and opportunity; in other words, a big pie in relation to the population and an equitable sharing of the pie.

The problem of underdevelopment should be met by concentrating resources to provide: new jobs outside of agriculture, a reduction in the numbers and rise in the well being of the agricultural population, less inequality and a big rise in consumption of what used to be called wage goods, a fall in birth rates, and eventually a fall in population growth rates.

In analyzing international policies and their effect on employment, Singer (1970) stated that unemployment has become increasingly serious in the last 10 to 20 years in

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rural and urban areas in less developed countries. On
present indications it is bound to increase further, unless
it is adapted to a more vigorous and balanced development of
science and technology in directions more relevant to the
less developed countries and their factor endowments, and
if in the longer run population growth slows down. His
thesis was that the present relations between rich and poor
countries has been consistent and contributory to a global
disequilibrium in the incidence and persistency of unemploy-
ment, 3 to 5 percent in the rich countries and 20 to 30 per-
cent in the poor countries. Reforms are needed in their
present relations to improve or even to prevent the situation
from worsening. Through trade the developing countries
could find an outlet for their abundant labor and be enabled
to remedy their deficiencies in capital through imports.
Labor-intensive manufactures, agricultural commodities, and
other raw materials should be admitted to the huge markets
of industrial countries on a duty-free or preferential basis.
Today it is misleading the moderate-looking nominal tariff
rates on processed and manufactured goods from less devel-
oped countries which conceal the real, and much higher,
effective taxes on value added by employment.

The same author is of the opinion that present
foreign aid practices form an "anti-employment syndrome;"
for that reason improvements in the terms of foreign aid,
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become more employment intensive in its impact should be pursued. Aid is now available predominantly for the import component of projects, largely equipment. This puts an artificial premium on preferring capital-intensive projects to more labor-intensive ones. The Pearson Commission on International Development has recommended that aid givers remove regulations which limit or prevent contributions to the local cost of projects, and to make a greater effort to encourage local procurement wherever economically justified. Aid is also more readily available for investment in the urban/modern sector than in the rural/traditional sector, and for a few large projects rather than for a variety of smaller projects. Aid given for the more effective utilization of existing capital would nearly always be much more employment-intensive than aid given for the introduction of new capital. Nevertheless, it is easier to obtain aid for a new project rather than for the expansion of an existing one. Aid for financing public works, and especially of rural public works, is almost impossible to obtain, partly because there is no single project and partly because the expenditure involved is local.

The employment impact of private foreign investment, according to Singer (1970) is impaired for a number of reasons. A foreign firm will almost automatically utilize capital-intensive technology readily available from the parent company, it avoids incomprehensible and politically-charged problems of handling large masses of local labor,

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it faces a demand for wages much higher than that domes-
tically prevailing, and many other factors.

It is in the area of science and technology where
the rich countries have the most powerful impact on employ-
ment in the less developed countries (Singer, 1970). The
strong dominance of the richer countries is such that even
the research and development expenditures of the poorer
countries are largely devoted to making a marginal contri-
bution towards "extending the frontiers of knowledge" in
ways and in directions automatically determined by the
conditions and factor proportions of the more developed
countries. UNESCO (1969) described this phenomenon as the
"internal brain drain," qualifying it as perhaps more impor-
tant and dangerous to the less developed countries than the
"external brain drain" (visible geographical movement of
highly qualified people) which has attracted so much more
attention. Because of the dominance of rich-country tech-
nology which controls the inputs, infrastructure, and also
sets the standards and determines what is considered as
"progress" or "modern" or "efficient," even within the less
developed countries--however contrary to their true inter-
ests--it was proposed as necessary a planned global change
in the composition and direction of scientific and techno-
logical progress. This must include a restructuring of the
research and development priorities within the richer coun-
tries. It should include more of the things that are useful

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to the less developed countries (production on a smaller scale, simpler product design, tropical product improvement, protein foods for young children, etc.) and fewer of the things that are directly harmful to them. Any such change would be bound to give much higher priority to employment intensity, capital saving and reduction of sophisticated skill requirements in operation, maintenance, etc. The sending of experts abroad and the building up of an indigenous scientific and technological capacity within the less developed countries must take place simultaneously; by the same token feasibility studies of projects will have to be based on spectra of technology and on pricing systems which reflect their real resource scarcity and needs. The present dominance of a technology appropriate for the rich countries ensures a continued handicap for the less developed countries. The present rates of population increase, the actual capital-intensive trend of technology, and productive full employment are three things which simply cannot co-exist. Something has to give, and at present, it is employment.

Recognition of the fact that unemployment is now serious in nearly every developing country favored the decision of sending ILO mission to Colombia in order to analyze its unemployment situation and to suggest a program for solving the problem. The report of the International Labour Office (1970) in its general terms could also fit the Peruvian situation.

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In defining the nature and extent of unemployment, they assert three dimensions to the problem:

1. Many people are frustrated by lack of employment opportunities.

2. A large fraction of the labor force, both urban and rural, lack a source of income both reliable and adequate.

3. A considerable volume of unutilized or under-utilized labor forms a potential productive resource which ought to be brought into use.

They emphasize that the ultimate object of policy is to provide work which is socially productive and yields enough income for a reasonable standard of living.

In reference to urban employment, there is a definite shortage of urban work opportunities and a high level of disguised unemployment. Urban incomes are inadequate, so poverty emerges as a big human problem. There are unutilized or under-utilized reserves of urban labor; there is an economic potential of labor not used to the full, so the will and the way could be found to mobilize them for national development. In 1967, there was a pool of unemployed, under-employed, or unproductively employed labor, equivalent to at least a third of the whole urban labor force of Colombia.

Fewer and weaker statistics were available on employment in the rural areas than for towns. Three broad generalizations were made:

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1. The rural situation varies sharply from area to area.

2. Rural employment varies widely over the year.

3. The nature of rural life often makes nonsense of over-precise urban concepts like "active labor force" or even "unemployment."

There exist shortages of rural work opportunities especially during seasonally slack periods. Migration to the cities is evidence of the low income of many of those living in the country areas, which has continued at a rapid pace in spite of growing urban unemployment. There is a labor reserve in agriculture bigger than just the open unemployment, constituted by the disguised unemployed.

It is considered that the main reason that chronic unemployment exists is the widespread imbalance throughout the economy, which only in minor respects can be attributed to the individual characteristics of the unemployed themselves.

An attempt was made to offer a tentative explanation for the emergence of the massive volume of people without jobs: unemployment is basically a problem of a chronic imbalance between the supply and demand for labor as the economy expands. Any economy will experience short-run imbalances in the supply and demand for labor in different sectors. Chronic imbalances reflect the pace of population growth in relation to the sluggishness of the economy: the

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potential labor force has been increasing at too fast a rate for it to be adequately absorbed in productive employment.

To analyze the reasons for the slow absorption of labor in Colombia, the rural and urban economies were separated. The distribution of landholdings was so uneven that the rate of growth of the rural labor force had greatly exceeded the absorptive capacity of the land, and while some land lay unused, the rural labor surplus kept pouring into the cities. It would have required a very fast expansion of urban employment to match the natural increase in the urban population plus this influx. This has failed to happen for a number of reasons. First, because income is highly concentrated in the hands of a few people, whose tastes run to sophisticated engineering products (embodying a good deal of imported materials and equipment). Second, the urban economy has been adopting increasingly inappropriate techniques, requiring much imported equipment, but little labor, especially unskilled labor of the types that are in surplus.

Third, because of these growing needs for foreign exchange, there have been sporadic shortages of the imported materials, semi-manufactures, spare parts, etc. Also, inadequate investment has rendered an insufficiently dynamic urban economy.

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The growing imbalance, in level and structure, between demand and supply for labor, should be given much more attention by policy makers of the developing countries. The dangers of further increases in unemployment are indeed so likely to materialize that development strategy could become very largely employment strategy.

The ILO (1970) report compared the relative importance of policies which might reduce unemployment with other ultimate economic objectives such as raising consumption levels for the population as a whole, or for its poorest members, or achieving national economic independence. In Colombia, this question of priorities has been avoided by treating overall economic growth as the over-riding objective. The root of the discontent with economic growth as a supreme objective has been the dawning realization that even when it is rapid, it has generally been accompanied by rising unemployment and widening gaps between the rich and the poor, and between town and country. Productivity is not independent of the rate of economic growth, the faster the rise in output, the faster tends to be the rise in productivity, with the result that the impact on employment is muffled.

According to the ILO (1970) report, the basic choice of strategy is how much reliance to put on different sectors as job providers. Neither the urban sector nor the agricultural sector alone can create all the jobs that are necessary. Policies can affect employment first by influencing

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what products are made and second by influencing how they
are made. The first issue is essentially one of income
distribution: steering consumer expenditures toward goods
which require labor rather than capital or foreign exchange.
Second, it is possible to influence choice of technique
in favor of labor-intensive methods. In actual practice,
many influences have operated to bias decisions in favor
of mechanization. Some are psychological: the glamour
of technical novelty disregarding its social and economic
costs. Also, some policies have encouraged labor-saving
techniques. The exchange rate has at times been over-valued
to an extent that amounted to a subsidy on imported capital
goods. Interest rates have been kept artificially low.
Labor legislation and high wages paid in the modern sector
have discouraged the hiring of new personnel. These biases
can be removed without necessarily raising costs and thus
damaging the power of industry to face foreign competition.

The ILO (1970) report strategy for attaining full
employment in Colombia is a package of policies which fit
together, directed towards the best use of productive
factors. A big investment program would provide the in-
frastructure needed; it would also give an impetus to the
growth of incomes and thus to the demand for goods produced
by the private sector. Higher taxation is needed to provide
resources for both the capital and the current elements in
this program, as well as for limiting the demand for con-
sumer durables which are capital-intensive. Incomes policy

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could encourage the search for labor-intensive techniques; it could also reduce the attractiveness of the cities. Unless an over-valued exchange rate is avoided, it will be very hard to carry through the necessary export drive or to prevent a continued mechanization of output. Faster agricultural growth is necessary to meet the demand for food, to earn foreign exchange, and also to provide the markets needed for industrial products. Land reform is needed to absorb some of the growth in the labor force in productive employment, and it is an additional way of limiting the expenditure of rich. Increased educational expenditure is needed to provide the skills which are necessary, as well as an understanding of the country's problems; it would also provide jobs for unemployed teachers and reduce the numbers looking for work in the younger age group, where unemployment is particularly heavy. Better health services would not merely be desirable in themselves; they would improve the quality of the labour force and help to provide the framework for a policy of population limitation. The provision of social services in country areas, especially for education and health, is a condition for inducing people to settle on new land and thus for the increased agricultural output required. These policies are all needed together, and special attention should be given to phasing to make sure that the program was politically realistic. At the same time access to markets of industrial countries will be needed in order to earn the necessary foreign exchange, and

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this means the reduction or removal of other barriers as well as tariffs. It will also require foreign financial and technical assistance.

Thorbecke (1970) commented that the ILO report strategy entails major changes in the composition of output towards relatively more labor-intensive goods and services and in technology away from capital-intensive techniques at least outside of agriculture. It would amount to "progressive modernization" from the "bottom up." The reduction of the rate of growth of labor productivity could only take place if more reliance were placed on traditional and newly designed labor-intensive techniques befitting Colombia's resource endowment better than "modern" techniques. In agriculture, the increase in the growth of labor productivity suggests that relatively more capital-intensive techniques are to be used. It is, probably, consistent with the need for irrigation facilities to cultivate new land areas, the increased use and high yields of intermediate capital inputs (e.g., fertilizer, insecticides, improved seeds) and perhaps some selective mechanization.

The ILO strategy would necessitate the implementation of major structural changes, as well as agrarian reforms, a removal or reduction in the artificial distortions in factor prices, fiscal reforms, and limiting consumption expenditures of the higher and middle-income classes, the design of entirely new labor-intensive techniques of production and policies conducive to altering

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the composition of output. Thorbecke concluded that in any case, the ILO strategy should be considered as a set of general guidelines to achieve full employment by 1985, rather than a specific and detailed plan.

In studying the relationship between employment and output in Perú and Guatemala, Thorbecke and Stoutjesdijk's (1970) frame of reference attempts to reflect the dual economic structure of these countries. The output and employment performance over the last 20 years and their prospects over the next 10 years are analyzed first for the economy as a whole, broken down into a number of production sectors. The past evidence and future projections clearly reveal the limited capacity of the essentially urban, non-agricultural, sectors to absorb labor productivity and the rising resulting unemployment and under-employment. Even though a number of factors exist in the modern sector which may bias the choice of technique towards more capital-intensive ones, no attempt was made to explore in detail ways of increasing the labor-intensity of the production methods in that sector. This stems from their judgment that the scope for improvement in the employment record of the modern sector in the next decade is quite limited. A different approach was taken with respect to agriculture, which was broken down into three subsectors (i.e., exports, traditional production, and commercial production for domestic consumption), to highlight the dualism which exists within

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agriculture itself and analyze more rigorously the different structural forces affecting the three subsectors' performance. In addition to analyzing the past output and employment performance, and attempting to measure the degree of under-employment both structurally and seasonally, the likely future effects of different techniques by crops on output and effective employment are explored. In fact, one can think of the above process as the tracing of various output and employment paths between now, starting from the prevailing situation and 1980.

Three projection alternatives were considered in their study:

1. Land expansion with no changes in techniques, and thus yields.

2. Land expansion, yield increase and mechanization.

3. Land expansion, yield increase without mechanization.

Two important findings resulted from their study: (1) The last alternative was the most attractive one, both from the point of view of employment creation and production growth within agriculture, gross output as well as value added. Therefore, in both countries, the agricultural expansion path giving the highest growth rate of output among the three alternatives selected was also the one to provide the highest growth rate of employment. (2) Even under the above most favorable alternative, the magnitude of unemployment and under-employment in agriculture will persist at very

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high levels, because of the limited capacity for productive labor absorption outside of agriculture and the very high rate of growth of the labor force.

The significance of these results is that at least within agriculture there need not be conflict between output and employment. But, the profitability of this alternative based on land expansion and yield increase without mechanization either at the individual or national level could not be determined with any degree of precision. This strategy could be relatively expensive particularly since it would call for the building of irrigation facilities which together with intermediate inputs (mainly fertilizer, improved seeds, and insecticides) would combine to increase yields on a somewhat expanded land base. However, even if the last alternative were to be the best one on all grounds within agriculture, it is still possible that the opportunity cost of the necessary public and private funds to implement that strategy might be high in the sense that higher returns for these funds could be obtained outside of agriculture. In other words, it is conceivable that a higher rate of growth of Gross National Product could be achieved by investing at the margin outside of agriculture. In that case, it is highly likely that the conflict would take the form of a slightly larger total output, at the expense of a reduction in total employment. That is, the non-agricultural production would increase by more than the fall in agricultural

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output per unit of investment; and, the increase in employ-
ment within non-agriculture being smaller than the fall in
agricultural employment per unit of investment.

It is not evident that such conflict does, in fact,
exist; and even if it did, the advantages of implementing
the land expansion cum yield-increasing alternative in
agriculture in terms of employment creation, more equal
income distribution and balance of payments might well more
than compensate the possible slight output disadvantages.
It should be remembered that Perú is a very large net-
importer of food crops, meat, and dairy products.

Thorbecke and Stoutjesdijk's (1970) analysis demon-
strated that, even under the best production alternative in
agriculture, a serious under-employment problem will persist
in the rural areas. The bulk of the under-employment will
be of a seasonal type, so that additional employment oppor-
tunities should, as much as possible, be of a complementary
type in a seasonal sense. This would be particularly true
under the land-expansion, yield increasing alternative since
the output and employment expansion paths corresponding to
that strategy, are likely to require the entire projected
labor force at harvest time. The preferred strategy would
be equivalent to the "progressive modernization" of the
agricultural sector which would reduce the outflow of
migrants from rural to urban areas.

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The same authors concluded that there is a need for major structural changes more consistent with a "progressive modernization" strategy. Rather than concentrating resources on the modern sector and waiting until that sector has been able to take over gradually the backward traditional sector, the prevailing view is that these resources should be allocated increasingly to the backward sector to help modernize it. The major advantages of this development strategy are the positive effects on overall employment and income distribution and rapid process of economic and social integration between sectors.

Schiavo-Campo and Singer (1970) indicated that at the policy level, efforts at economic development are very unlikely to succeed unless they are planned. In this sense-- organization and coordination of development efforts--planning is a clear prerequisite for successful development.

Plans encompass a recognition by developing countries of two fundamental propositions: that economic progress is the result of analysis and human action based on reasoning. And, that by systematic examination of both policies and investment projects as parts of a whole, one can improve their total efficiency by forming consistent and complementary "packages" and patterns of such policies and projects.

Classical economic theory attributes the function of efficient allocation of resources, between sectors and over time, to the market. In developing countries there are

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imperfections of the market mechanism, and there are
indivisibilities and externalities. So, some means of
ensuring consistency and coordination of allocative and
investment decisions must be present, although in varying
forms and to a different degree, in most developing econo-
mies. The main advantages of development planning in less
developed countries:

1. Plans allow for the formulation of a strategy of
   development, and they increase the consistency
   between short-run decisions and long-run choices.
   The formulation of a plan forces a government to
   make some sort of choice between a number of often
   mutually conflicting objectives.

2. Plans force a less developed country to think in
   terms of a balance between resources which are
   available, including those from foreign sources,
   and national economic goals.

3. Plans can give the entire economy a sense of moving
   forward if they are realistic and if the government
   is trusted to implement them effectively. So, plans
   must be communicated to and underwritten by the
   general population.

4. Development planning decreases uncertainty. This
   effect may be particularly important in increasing
   the inflow of private or public capital.

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Guides to Practical Action
in Latin America

It was considered necessary to incorporate some
qualified opinion in reference to the regional socioeconomic
and political environment within which the process of devel-
opment of Perú must take place. A report confined to the
experience of Latin America, which analyzed in a very thor-
ough manner most of the relevant aspects of development, was
prepared for the Inter-American Development Bank.

Prebisch's (1970) report was aimed at considering
the great task of change and development which Latin America
must face in order to give its economy the additional dyna-
mism it needs and to promote social equity. His opinion was
that decisive headway must be made in the political art of
development, which calls for the intensive mobilization of
the Latin American communities, and that there should be no
further delay in drawing up the broad outlines of a develop-
ment and international cooperation strategy. The main con-
clusions which might serve as guides to practical action
were presented under the following topics:

1. The lack of the required degree of dynamism in the
    Latin American economy, and its social and political
    effects.

2. Structural changes and the rate of development for
    the current decade.

3. The convergence of the internal effort and supple-
    mentary international cooperation.

4. The role of foreign trade: a new tempo and structural change in its composition.

5. External cooperation in the field of trade.

6. The fole of domestic and foreign private enterprise.

7. Strengthening multilateralism.

8. Development discipline.

The significance and importance of each one of these conclusions was shown by Prebisch (1970) in a detailed discussion of each topic.

In this chapter an attempt was made to establish a broad understanding of development, which was considered a fundamental task, because of its urgent and vital importance in public policy issues and for the private enterprises in Perú.

The National Development Plan: 1971-1975 for Perú will be examined next in order to comprehend the nation's future expectations; specific emphasis will be given to the agricultural and animal production plans for the period.

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CHAPTER IV

PERÚ'S NATIONAL DEVELOPMENT PLAN: 1971-1975

Foreword

The Inter-American Bank (1971) reported on the
development planning being conducted in Perú, indicating
that the 6.1 percent annual growth goal established in the
Peruvian national development plan for 1967-1970 was not
attained. G.N.P. grew by only 1.4 percent and 1.7 percent
in 1968 and 1969, respectively, and although a much higher
level of growth is expected for 1970, the average increase
will fall far short of the target. These results can be
attributed to the extremely difficult fiscal, monetary, and
balance of payments problems of the past three years, which
were met with austerity measures that involved lower invest-
ment levels and a business recession.

Although there had been discussions of a new plan-
ning ministry within the government, it now appears that no
major change will take place in the present planning mecha-
nism. Development planning is currently carried out in
coordination by the National Planning Institute and the
Ministry of Economics and Finance, with assistance from

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the Central Reserve Bank, the Bank of the Nation, and the Ministry of Industry and Commerce. The National Planning Institute prepares the long term goals and plans, whereas, at the short-term level, the Ministry of Economics and Finance has had primary responsibility.

Previously, short-term plans were drawn up on an annual basis, coinciding with the annual budget, but in 1970 it was decided to present the budget on a biannual basis. Consequently, when completed, there will be a 1971-1972 national budget reflecting the underlying planning emphasis. The preparation of this biannual plan was undertaken by the National Plan Committee, headed by the Minister of Economics and Finance and made up of representatives of the National Planning Institute, the Central Reserve Bank, and the Bank of the Nation, each of which prepares reports related to its field of interest: the National Planning Institute presents economic goals; the Ministry of Economics and Finance drafts the fiscal budget; the Central Reserve Bank, drawing on information and assistance from the Ministry of Industry and Commerce, prepares the foreign exchange budget; and the Bank of the Nation, the government's fiscal agent, prepares the cash budget. Based on these documents the plan committee prepares the final two-year plan which is then submitted to the Council of Ministers.

The National Planning Institute, besides formulating short-term economic targets, reviews the performance of

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short-term plans. In 1970 mid-year and end-of-the-year
reviews were made, but in the future the process will take
place three times each year. This mechanism enables the
government to determine the areas requiring more attention
and to adjust initial goals or reallocate assigned resources.
The Institute is also working on the preparation of an
investment plan for each of the major sectors for 1971-1975,
which will permit the planning and preparation of individual
projects according to priorities established in the overall
plan.

In the field of medium and long-term planning, the
National Planning Institute has prepared an overall national
plan for 1971-1975.

The National Development Plan 1971-1975 for Perú
determines qualitatively the basic conceptual framework,
both in reference to the development process and planning,
as for activities to be carried out in the next five year
period in Perú. Without that conceptual framework, the
quantification would be meaningless and could characterize
a simple process of economic growth.

This plan conceptualizes development as a process
that gives harmonic top priority to structural transforma-
tion over economic growth. Qualitatively, the political
position of the Revolutionary Government will not vary, but
the quantification will admit variations in accordance with
the different available alternatives.

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It is proposed to have an average growth in Gross Domestic Product of 7.5 percent per year and corresponding to consumption, a yearly average growth of 6.0 percent and to Gross Domestic Investment, a rate of 18.9 percent.

The forecasted growth in consumption is almost twice the demographic growth and will allow an improvement in the standard of living of the marginal masses of population, without an extreme sacrifice of the middle class.

Gross Domestic Investment will be around s/. 270,000 millions of soles, 1970 soles,[1] during the five year period. It is expected that Private Investment will be improved over that of 1967-1970; this recovery will be slow during 1971-1972, but will speed up in 1973-1975. The projected Public Investment will reach about s/. 140,000 millions (1970 soles), growing at a dynamic rate of 32 percent, average per year.

The composition of this planned investment will require importation of inputs and capital goods which will put pressure on the balance of payments. In order to keep the equilibrium in the balance of payments, it will be necessary, besides a big internal effort, to have a gross foreign financing of U.S. $1,838 million. It is expected

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[1]Unit of Peruvian currency: Sol (s/1). Rate of Exchange: draft dollar, 1969 = s/. 43.57/U.S. dollar, draft dollar, 1970 = s/. 43.48/U.S. dollar; dollar certificate, 1969-1970 = s/. 38.70/U.S. dollar.

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that both direct foreign investment and loans in the private sector together will provide about U.S. $750 million mainly for mining investment; about U.S. $1,103 million are expected from loans to the Public Sector, of which U.S. $421 million are loans already obtained, and U.S. $628 million are loans to be obtained.

The key importance that the investment in mining has for the intermediate run must be highlighted. The equilibrium of the balance of payments, and as a consequence to be able to reach the quantitative goals of this plan, will depend upon getting the direct foreign investment and the loans to the Public Sector for mining projects.

This level of foreign financing is relatively high if we consider the historical experience of the country and could be considered as contradictory to the objective of drastically reducing dependency on the exterior. Nevertheless, it should be considered that from the gross external financing of U.S. $1,838 million, around U.S. $1,000 million will be used for amortization of the foreign debt and for remittances of profits of the foreign enterprises working in Perú. The net foreign financing will then be reduced to U.S. $800 million. From this amount should also be deducted the interests on the public debt and other services like payments of royalties, patents, etc. We are left with only a U.S. $500 million of net external remittances to Perú for the five year period. This indicates the magnitude of the internal effort required to implement this 1971-1975 plan.

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On the other hand, the economic policy approved by
the Revolutionary Government, the definition of the "rules
of the game" and the proposed program of investment, will
determine a situation which could ease the adequate external
financing. Besides, in order to prevent the worsening of
the dependency, a single source of foreign capital, par-
ticularly those funds not channeled through multilateral
sources will be avoided; external financing should be
strictly regulated by the established rules.

Nevertheless, it is probable that the external
sector will not behave as forecasted and this may determine
adjustments in the short run plans.

In summary, the National Development Plan for 1971-
1975 points the direction that the Peruvian development will
follow and proposes an optimal rate of economic growth which
will require an adequate inflow of foreign capital. The
adjustment of this rate of growth, without varying the
direction and purpose of the development process, will
be accomplished by the short run plans.

The Revolutionary Government's Concept of Development

The process of development does not have a uni-
versally valid definition, because it is an historical
phenomenon whose character and meaning depend upon consid-
erations of time and place. The characteristics of under-
development will determine the way in which development will

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proceed.   There exist relations of economic subordination
between the economically powerful and economically weak
countries.   This dependency refers to the imperialistic
phenomena, in other words, the penetration of economic
interests from the powerful industrial centers in areas
of less diversified economies and of pre-industrial char-
acteristics.

Recognizing this reality, the development process
for Perú cannot be proposed under the same criteria of the
capitalistic countries, that is, only quantitative change,
modernization within a situation of capitalism and subordi-
nation, would only increase the state of dependency and
underdevelopment.   Therefore, development is a dynamic
phenomenon that implies much more than "economic growth and
social progress," or "evolution," or the simple change whose
orientation and goals cannot be established in absence of
political considerations.

To give orientation to the process of development is
the main task of planning.   Two key starting points are:
the specific environmental conditions of Perú and the polit-
ical orientation of the state.

Repeatedly the Revolutionary Government of Perú has
defined its position: the task of development implies to
drastically reduce internal structural disequilibrium and
Perú's foreign dependency.   Independence and transformation
of the structures are the key issues of the revolutionary

philosophy.

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philosophy. Development is wanted not as an instrument of
sheer prosperity, improvement, or modernization of the
current social structure, which could lead to industrial
capitalism, but is wanted in order to establish a new
democratic system on which there will not be class priv-
ileges or privileges derived from political, economic,
racial, or religious factors.

Development, then, is conceptualized as a process
of deep transformation of the existing economic, social,
political, and cultural structures.

The President of Perú, at CADE 1970 expressed: Our
revolution is working for a solidary society of full partic-
ipation, with authentic freedom, with social justice, where
the community works for the individual and for itself and
not for the State or for the groups of privilege and power.

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Fundamental Aspects of the
National Problems

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The Peruvian society is underdeveloped and subor-
dinated within the capitalistic system. The developmental
task should define, analyze, and solve the problems of Perú;
they are:

1. The existence of a rigid social structure is char-
   acterized by severely unequal distribution of wealth
   and of the access to goods and services produced by
   society as a whole. The great social differences
   ultimately generated make impossible the creation
   of a unified national image.

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2. The lack of coordination of the economic system whose incipient productive capacity and growth effects are almost nil. This lack of organization affects also the corresponding regional coordination, and both make a lot more difficult the task of integrating the country and its economy.

3. The Peruvian economy is subordinate to foreign decision-making centers, their dictates profoundly affect the economic life of the country impeding an autonomous development process devoted to attaining national objectives.

These essential problems constitute cause and effect of a society totally organized for the benefit of the privileged sectors, which control the power and society's means of production. Virtually all the government machinery and institutional systems, are so set up as to be selective, discriminatory, and tending to perpetuate the rigidity of the social structure, whose own basis impede and greatly block the possibilities for mobility.

Objectives, Goals, and Strategy

Planning in the past was limited to an interpretation of the obstacles to national development and to proposing ways of correcting them. Those proposals were not implemented by a lack of political decision.

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The present five year plan will be implemented after the recent reforms in land tenure have taken place, the State has reestablished its sovereignty, there has been a new definition of the terms of relations with the international consortiums that exploit our natural resources, the State controls the financial mechanism, and the workers participate in the economic processes.

Nevertheless, this process of structural reforms is lagging behind the rapid institutional transformation as to allow a full activation of the economy and a consciously organized participation of the people.

A fast paced process of change directed towards substantially improving the standard of living of all Peruvians, in a short period, urgently requires intensive planned action in reference to adjusting institutions, to rationalization of the decision-making process, and to the transformation and capacitation of the masses in order for them to participate and benefit from development.

Permanent Goals of Development

They were defined as:

1. To build a fair society, without privileges, exempt of discrimination, economic, social, political, or cultural, that offers opportunities for the full development of human capabilities and of the national culture.

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2. Quick and self-sustaining development, fundamen-
    tally nurtured in domestic potentialities, through
    a productive structure coordinated and integrated,
    both by sectors and regions. Development charac-
    terized by a substantial increase of the domestic
    product, improved efficiency in the use of human
    and natural resources and more rationally in the
    occupation of the national territory.

3. Strengthening of the national sovereignty, which
    implies a drastic reduction of the economy's
    dependency and vulnerability, guaranteeing the
    national control over the domestic resources; and
    a modification of the traditional pattern of inter-
    national economic relations and external sector
    complementary contribution becoming more dynamic,
    as to contribute to the national development policy.

Generic Objectives for the Intermediate Period

The fulfillment of the permanent goals requires a
definition of a coherent set of generic objectives for the
intermediate period. They are:

1. Effective participation of the masses in the basic
    issue decision, through their organization in inter-
    mediate institutions like cooperatives, trade
    associations, etc.

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2. Acceleration and conclusion of the process of rural property transfer in the whole country, within the process of Agrarian Reform.

3. Improvement in the standard of health of the Peruvian people allowing full physical and mental development.

4. Provision of social services to marginated groups, particularly interior and rural areas, diverting the appropriate government expenditures.

5. Integral transformation of the educative system as to support structural change, work, and development of society, as well as the self-enhancement of the nationality.

6. Maximum increase of production and productivity. More sector and regional coordination of the economy whose dynamism will be based upon the sectors, agricultural, fishing, industrial, and mining. The activities of the sectors transportation, communications, and energy will be directed to support the previously mentioned productive sectors, besides contributing to the national security.

7. Propagation to the whole economy of the external sector inputs, directing all activities to our increase in foreign capital and its national use; an effective programming of foreign borrowing and its service as to reduce dependency; a decisive State

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participation--sometimes monopolistically--in the foreign marketing of some products.

8. Establishment of integrated industries, taking maximum advantage of the domestic natural resources; increasing the established industry's productivity in order to have costs competitive with those of the international markets and regionally integrated markets.

9. Substantially increase job opportunities in the economic sectors, where compatible with modern technologies.

10. Domestic savings should be used in activities of priority for development, insuring State control over the financial system.

11. Diminishing the population allocation disequilibrium in the whole country.

12. Strengthening of the activities of the Public Sector as main agent for national development; modernizing the administration and using planning as a government tool; the Private Sector should be encouraged to participate in the productive and financial activities not reserved to the State.

13. Rational participation of workers in the firm's profits in accordance with: the levels of production and productivity, progressive participation of the workers in the managerial activities,

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encouragement and protection to the formation of
new cooperative enterprises.

14. Intensive but rational exploitation of natural
resources to benefit the country with direct
participation of the government; special emphasis
to the mineral resources and those within the 200
mile sea jurisdiction.

15. Development of the scientific and technological
research as to allow a better use of the nation's
productive resources.

Goals

They are the quantitative expression of Generic
Objectives, they include: employment, production, invest-
ment, balance of payments, price levels, and productivity.

The attainment of these optimal goals will depend
upon the direction and implementation of the development
policy, and other factors like: favorable weather and
oceanographic conditions, international price levels for
our exports, and adequate external financing.

Employment goals.--The Development Plan proposes the
creation of approximately 1,164,000 new jobs during the five
year period, which will furnish full employment in 1975 to
4,216,000 people or about 83.2 percent of the Economically
Active Population (PEA) of that year.

It is considered that a worker is fully employed if
he is working at least 35 hours per week, and his salary is
equal or above the vital minimum wage.

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Table 1. Employment goals for Perú

	1970	1975	1970-1975 Increase or Decrease
Economically Active Population (PEA)	4,268,700	5,065,200	796,500
PEA Equivalent Fully Employed	3,052,800	4,216,600	1,163,800
Deficit of Productive Employment	1,215,900	848,600	-367,300
Deficit of Productive Employment in Relation to PEA	28.5%	16.8%	

Source: Perú's National Development Plan: 1971-1975.

It was estimated that in 1970 the Economically Active Population (PEA) was 4,268,700 people, of which 201,800 were unemployed and 1,960,000 were under-employed. The combined effect of unemployment and under-employment meant a deficit of adequately productive employment equivalent to 28.5 percent of the Economically Active Population.

During the period 1970-1975, under-employment and unemployment will be reduced. Demographically the PEA will increase by 796,500 people, meanwhile new jobs adequately productive will be increased by 1,164,000, so the deficit of adequately productive employment equivalent will be reduced to 16.8 percent. This reduction will be due to the attainment of the proposed production goals, to the better direction of the labor policy, to the use of adequate

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technologies, and to a larger participation in the mutual help programs.

Production goals.--It is proposed that the Gross Domestic Product will have an average growth of 7.5 percent per year. The proposed rate of growth for this intermediate period is larger than the 3.1 percent expected rate of demographic increase as to that observed in the past five years, 1966-1970.

The growth in the Manufacturing Sector is proposed to be a yearly average rate of 12.4 percent; it is also expected that the Mining Sector will have a 5.7 percent yearly average rate of production increase. The Fishing Sector and the Agricultural Sector are expected to grow at the slower rates of 4.8 percent and 4.2 percent, respectively. All other sectors will grow at an expected 6.6 percent rate.

These different rates of growth will alter the basic structure of the Gross Domestic Product (Table 2). The Agricultural Sector will reduce its share from 14.5 percent in 1970 to 12.4 percent in 1975. The Manufacturing Sector will increase its participation from 20.9 percent to 26.0 percent during the same period.

The economy will be headed towards industrialization, based upon the establishment of factory-plants which will allow the incorporation of a larger value added to the traditional exportation products.

Table 2.

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Fishing

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Industry

Other[a]

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Table 2. Structure of the Gross National Product by sectors
and rate of growth, 1971-1975

	Structure 1970 (%)	Cumulative Average Rate 1970-1975 (%)	Structure 1975 (%)
Agriculture	14.5	4.2	12.4
Fishing	2.1	4.8	1.9
Mining	6.8	5.7	6.3
Industry	20.9	12.4	26.0
Other[a]	55.7	6.6	53.3
Total	100.0	7.5	100.0

Source: Perú's National Development Plan: 1971-1975.

[a]Includes the following activities: construction, commerce,
energy, housing, public administration, transport, health,
education, finance, banking, tourism, and other services.

The production goals of the Agricultural Sector and
of the Fishing Sector include an accelerated increase in the
domestic supply of food, which will allow a relevant in-
crease in quantity and quality of people's diet, especially
by increasing protein consumption.

Investment goals.--Gross Domestic Investment will be
around s/. 270,000 millions of soles (1970 soles). The
investment coefficient, that is, the relation between
investment and gross domestic product, will increase from
12.8 percent in 1970 to 21.3 percent in 1975. Production

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Table 3.

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and employment goals can only be attained if this continuous capitalization effort is realized.

The Gross Domestic Investment will increase by an average of 18.9 percent in the next five years, while total consumption will increase at an average of 6.0 percent per year, which will guarantee an accelerated growth of essential consumption and a moderate rate of non-essential consumption (Table 3).

Table 3. Growth goals for Gross Domestic Product, consumption, and Gross Domestic Investment: rates for 1970-1975

	Increase (%)
Gross Domestic Product	7.5
Consumption	6.0
Gross Domestic Investment	18.9
Private Investment	9.6
Public Investment	32.0

Source: Perú's National Development Plan: 1971-1975.

It is proposed that private investment will grow at an average rate of 9.6 percent. In the first years of the Plan, a slow recovery is expected from the low investment levels observed in the period 1967-1970. During the last two years of the Plan, 1974-1975, it is estimated that the rate of private investment will increase due to the

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acceptance of the new "rules of the game" established by the Revolutionary Government. It is feasible that a more accelerated rate of increase is likely to show up in the expanding economy as a consequence of new investment opportunities and due to the effort of the cooperative enterprises that will be in a stage of consolidation.

The public investment goals are more ambitious than those expected in the private sector. It is proposed that in the next five years public investment will grow at an average rate of 32 percent per year, becoming the more dynamic factor for economic development.

Public investment in the period 1960-1967 was directed towards building physical infrastructure; in the period 1971-1975 it will be mainly in mining and manufacturing projects (Table 4).

Goals of the balance of payments.--For the five year period, the export of goods and services, it is proposed, will reach about U.S. $7,000 million, in other words, an average increase of 4.1 percent per year. That will be the source of foreign exchange for national development.

An outflow of about U.S. $7,500 million is expected, for required imports of goods and services, taking into consideration the proposed high levels of investment.

On the other hand, the inflow of capital, coming from already formalized agreements for direct investment will reach U.S. $826 million. The outflow is proposed to

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Mining
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Table 4. Public investment by productive sectors

	1960-1967 (%)	1971-1975 (%)
Agriculture	8.0	7.6
Transportation	30.21	16.4
Mining	-.1[a]	16.4
Manufacturing	14.2	25.1
Fishing	-.1[a]	4.2
Other	47.6	30.3
Total	100.0	100.0

Source: Perú's National Development Plan: 1971-1975.

[a]Less than 1 percent.

be U.S. $945 million, corresponding mainly to amortizations of the public foreign debt (Table 5).

These negative balances will determine a financial gap of U.S. $796 million. It is expected these will be covered by new loans to the Public Sector, about U.S. $564 million, mainly for projects in mining, industry, electricity, and communications. The loan negotiations are already started. Besides, new direct investments for U.S. $265 million are now in progress, mostly in mining projects.

These balance of payments goals will maintain adequate levels of foreign exchange as to allow a fluid foreign trade.

Table 5

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Table 5. Goals of the balance of payments: 1971-1975

	U.S. $ Millions	U.S. $ Millions
1. Balance in Current Accounts:		-677
Inflow	6,831	
Outflow	7,508	
2. Balance in Capital Accounts:		-119
Inflow	826	
Outflow	945	
3. Financial Gap to Be Covered (1 + 2)		-796
4. New Net Inflow of Capital		829
Public Sector	564	
Private Sector	265	
5. Superavit in Balance of Payments (3 - 4)		33

Source: Perú's National Development Plan: 1971-1975.

Goals in the price levels.--It is expected that during the five year period the general level of prices will grow at an average rate below 7.2 percent. This increase is lower than that experienced during the 1960's (Table 6).

This forecast will be dependent upon the attainment of the goals proposed for production, investment, and balance of payments, which will allow a substantial increase in the supply of popular consumer goods and avoidance of external sector restrictions.

Table 6.   Increase in the general level of
prices, 1961-1975

	(%)
1961-1965	7.9
1965-1970	11.7
1970-1975	7.2

Source: Perú's National Development Plan:
1971-1975.

Productivity goals.--For the five year period it is
proposed a yearly cumulative rate increase of 3.52 percent
in the national labor productivity.

Nevertheless, this rate could be improved if the
following are taken into account: the effects of the
reduction in unemployment and under-employment, the upward
mobilization of workers from jobs of low to jobs of higher
relative productivity, the more adequate combination of
production factors, and other qualitative variables; all
of these interacting harmoniously will contribute to the
growth of the Gross Domestic Product and to a substantial
increase in productivity.

Strategy

The attainment of these objectives and goals will
need a development strategy fundamentally based upon: (1)
Strong promotion for the masses participation in economic
development tasks.   (2) The government should guide the

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development process through administrative and entrepreneurial activities.

The proposed social participation during the period has to be formulated in terms of specific policies, which must be followed by all sectors of economy and of the national administration. The minimum participation is defined by the following fundamental policies:

a. Promote the capacitation, acceptance of role, and organization of the masses as to allow their effective incorporation to the developmental tasks and the consolidation of the autonomous cooperative sector.

b. Activate the systems investment--labor; appreciation of the non-scarce resources such as under-employed labor time, available farm land, or mineral resources not under exploitation.

c. Encourage the creation and development of autonomous cooperative enterprises, support them in terms of organization and financing, as for them to play an ever important role in the national economy.

d. Set up systems for communication and dialogue between the masses and the national decision making centers, which will allow them to participate in the decisions that affect society as a whole.

All these policies are being concentrated in strategic actions like:

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Agrarian reform.--Already started, will allow a
better distribution of property, of income and of political
power in the benefit of the rural masses. The process must
be continued and completed especially in the Sierra, which
is the most depressed region of the country.

In the intermediate term the government will retain
a certain degree of control over the agricultural production
units in order to insure the most benefits to the farmers
and for the country as a whole. Recognizing the fact that
Perú is relatively poor in agricultural resources, special
attention will be given to avoid the formation of a new
privileged group not even if larger than the former land-
owning class. The introduction of labor-displacing tech-
nology will be impeded. The new agricultural centers will
be encouraged to trade with the neighboring regions and
urban centers.

Institutionally, the autonomous cooperative form of
land tenure will be preferred.

Reform of the enterprise.--Three laws have been
passed to accomplish the permanent goals of development:
General Law of Industries, Law of Industrial Communities,
and the General Law of Fishing.

Recognizing that in the intermediate term the direct
effects of the industrial community will be very limited,
because it only employs 5 percent of the economically active
population, nevertheless, it will generate indirect effects

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as a model of social participation and economic process, with which the activities of the mining and fishing sectors will identify.

On the other hand, the necessary restriction of non-essential consumption can be supported only with institutions like the industrial and fishing communities. Today's savings are the guarantee of tomorrow's benefits.

Educational reform.--It is considered the most difficult task of the period to radically transform an educational system that possesses all vices and defects of the older social structure. It is proposed that the new educational system will be characterized for being directed towards work and development, towards the structural transformation of society and towards strengthening the nationality.

Unemployment and under-employment.--It is a fact that large segments of the population will not get in the intermediate term a significant increase in their incomes, because the creation of new productive jobs will be limited. Nevertheless, it is expected a significant expansion of the construction sector, where mass employment can be created if appropriate technology is employed.

A system should be established that will facilitate the transformation of excess labor into capital, giving participation to its creators. Especially important will be those activities that allow incorporation of new farmland or urban settlements.

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<u>Management of the development process</u>.--The govern-
ment should intervene in the transfer of power: economic,
political, and social, and also in the dynamization of the
economic activities, by controlling the essential mechanism
of the system. The State should consolidate the reforms
already started and the institutionalization of mass
participation in the development process. All economic
excedents should be expanded and further utilized, the
economic growth process should be compatible and will be
subordinated to the prerequisites for socioeconomic devel-
opment.

The administrative machinery of the State is under-
going a thorough transformation, which should increase its
efficiency.

The public sector role as promoter, director, and
participant of the economic activity will be shown by the
large share of public expenditures in the economy. Key
activities of the Public Sector will be its increased
entrepreneurial role and gross capital formation. The
increase in production and sectoral coordination of the
economy will be attained by stimulating the productive
sectors: industry, agriculture, mining, and fishing.
Each one will contribute by providing foreign exchange,
by supplying goods for the domestic and foreign markets,
by improving incomes and job opportunities for the people.
Direct participation of government will mainly be in mining
and basic industry.

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The analysis of the Peruvian economy clearly indi-
cated that for the near future, mining production shows the
bigger and most advantageous possibilities for generating
economic excedents, especially foreign exchange; the role
of fishing also will be important.

Agriculture, which traditionally was an important
sector in terms of foreign trade, will continue to reduce
its relative participation. It is proposed that agricul-
tural production should be directed towards dupplying the
domestic food demand, to satisfy which increasing imports
of food products had been needed.

The management of the development process will also
consider its financing and the role of the foreign sector.

Science and technology.--In order to reduce depen-
dency, the scientific and technologic research policies
should be directed towards encouraging the indigenous
creativity, and the adaptation of foreign technology.

Integration.--The participation of Perú in the
process of Latin American integration is important, not only
in the economic field, but also in terms of sociopolitical
development.

It is proposed that a fair distribution of benefits
should be guaranteed as to avoid the increasing disparity in
levels of development.

National goals will not be subordinated to regional
economic objectives. Perú's participation in the Andean

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Regional Group will have priority over the Latin American
Free Trade Association.

Summary of the Agricultural and Animal Production Plan

Objectives

A summary of the objectives is as follows: to
incorporate the rural sector to the economy, as to progres-
sively reduce the rural-urban imbalance and the marginal
rural masses, and to encourage the rural people to partic-
ipate in the political decision making process.

In the intermediate term, to increase rural incomes
and to mobilize the rural masses will require the following
actions:

a. To complete the Agrarian Reform process.

b. To increase production, as to substitute for the
    current food imports and to encourage exports.

c. Improve the marketing system.

d. Reduction of rural under-employment by a better
    and more intensive use of land, water, and the
    available natural resources.

e. To promote rural population participation in
    decision making processes.

f. Consolidate the government administrative
    organization to promote planned agricultural
    development.

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Goals

The five proposed goals, employment, production, investment, balance of payments, and other goals for the sectors, are summarized as follows.

Employment goals.--The employment goals are to provide 308,000 new jobs in the five year period.

Table 7. Employment goals: 1970-1975

	1970	1975	Increase or Reduction
Economically Active Population	1,912,400	2,116,200	203,800
Fully Employed Population	1,320,600	1,628,400	307,800
Deficit of Jobs	591,800	487,800	

Source: Perú's National Development Plan: 1971-1975.

Production goals.--In Perú's National Development Plan: 1971-1975, a cumulative rate of growth of 4.3 percent was forecasted for the period; this, it was expected, would allow food import levels to remain the same as in 1970.

The expected progress of the main products is shown in Table 8.

Table 8.

Product

Rice
Corn
Wheat
Potatoes
Beans
Lima Bea
Peas
Cotton
Sugar Ca
Coffee
Cattle
Pork
Sheep
Poultry
Milk:
Eggs
Wool:
Fiber:

Source:

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Table 8. Agricultural commodities, production goals: 1970-1975

Product	1970	1971	1975
	(thousands of metric tons)		
Rice	465	432	625
Corn	536	577	762
Wheat	136	136	232
Potatoes	1,896	1,990	2,496
Beans	50	55	98
Lima Beans	11	12	16
Peas	27	27	51
Cotton	244	250	276
Sugar Cane	7,531	8,231	8,356
Coffee	60	69	82
Cattle	67	68	103
Pork	43	43	65
Sheep	21	22	31
Poultry	50	54	109
Milk: Dairy Cattle	584	609	916
Eggs	26	28	75
Wool: Sheep	8	8	14
Fiber: Auchenids	2	2	2

Source: Perú's National Development Plan: 1971-1975.

Investment goals.--It is difficult to estimate the total investment requirements due to the large number and widespread distribution of the production units. A rough estimate was made, some s/. 32514.6 millions of soles of 1970 will be needed for net fixed investment; 20,000 million will be originated on the private and cooperative sector, and the rest will be in the public sector. An important

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role in the cooperative sector investment will be made through the mutual-help system, contributing to the capitalization of the sector and to the use of the underemployment labor.

Balance of payments goals.--In spite of the policy of substitution of food imports, the increase in domestic production will only reduce the gap in supply for food, so the import volume will remain about the same. A slight price increase is expected, so the value of food imports will increase from U.S. $145.9 million in 1970 to U.S. $187.4 million in 1975.

The planned industrial growth will increase the demand for agricultural inputs, which will further increase total agricultural imports. This growth will be superior to that of exports, so the deficit in the balance of payments will increase. It is expected that during the five year period agricultural exports will increase from U.S. $163.1 million to U.S. $186.6 million. Traditional exports (cotton, sugar, coffee, wool) have been assigned slightly lower prices and volumes than those observed in 1970. On the other hand, non-traditional agricultural exports are expected to increase from non-significant levels in 1970 to about U.S. $39 million in 1975 (Tables 9, 10).

Table

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Source:

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Imports:

  Wheat

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Exports:

  Cotton

  Sugar

  Coffee

  Wool

  Other

    Tota

Source:

Table 9. Balance of payments: agricultural sector

	Imports	Exports	Balance
	(U.S. $ millions)		
1970	180.0	163.1	-16.9
1975	248.0	186.6	-61.4

Source: Perú's National Development Plan: 1971-1975.

Table 10. Agricultural sector imports and exports

	1970	1971	1975
	(U.S. $ millions)		
Imports:			
Wheat	38.4	51.1	53.9
Milk & Milk Products	21.1	13.8	12.9
Meats	37.0	25.9	29.0
Fats and Oils	11.8	9.2	4.7
Other Food Items	12.0	12.1	10.4
Food Inputs	34.5	31.4	76.5
Non-Food Inputs	34.1	38.5	60.6
Total	180.0	182.0	248.0
Exports:			
Cotton	54.2	50.7	46.3
Sugar	61.3	58.3	56.5
Coffee	43.4	43.1	39.1
Wool	4.2	5.7	5.2
Other	--	9.0	39.0
Total	163.1	166.8	186.6

Source: Perú's National Development Plan: 1971-1975.

Other goals for the sector.--(a) Agrarian Reform:
242,088 people will benefit through transfer of 24,822
farms with a total area of 11,387,000 Ha.[1]   (b) Technical
Assistance: in 1971, integral assistance to 10.8 percent
of the area with first priority crops, that is, 133,049 Ha.
out of 1,233,743 Ha. In 1975, 22 percent will be covered
for a total of 298,000 Ha. (c) Supervised Credit: in 1971,
s/. 970.2 million soles were provided. In 1975, s/. 2410
million will be given to first priority crops. For animal
production, in 1971 s/.510 million and in 1975 s/. 746
million will be provided.

Programs for Products of Deficitary Domestic Supply

The demand studies for wheat, fats and oils, meats,
and milk,when compared to the projected domestic supply,
showed that food imports will remain at 1970 levels. These
gaps could increase if the proposed production programs are
not given top priority and the required budgetary implemen-
tation, or if weather conditions are adverse.

Wheat.--The Plan expectancy is a 50 percent increase
in production for the five year period, with an average rate
of growth of 14.8 percent per year. The deficit will only
grow from 670,000 M.T.[2] in 1971 to 705,000 M.T. in 1975.

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[1]Ha. = hectares.

[2]M.T. = metric tons.

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Table 11

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    Cotton
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A whole array of activities are proposed for attaining output growth, improved marketing and utilization, financing, etc.

Oleaginous.--The Plan will promote the production of soybeans, peanuts, olives, palm oil, and the production of hydrogenated fats from fish oil. At the same time cotton areas should not be allowed to be further reduced (Table 11).

Table 11. Supply and demand of fats and oils: 1971-1975

	1971	1975
	(thousands of metric tons)	
Apparent Domestic Demand	134	154
Fats Domestically Produced[a]	50	51
Demand for Liquid Oils: (1 - 2)	84	103
Oils Domestically Produced:		
Cotton	29	32
Soy, Peanuts, etc.	1	9
Total	30	41
Fish Fat	5	40
Import of Liquid Oils	48	22

Source: Perú's National Development Plan: 1971-1975.

[a]It does not include palm oil production, which is estimated will be 800 M.T. in 1972 and 6,400 M.T. in 1975.

A package program is proposed for attaining the goals of reduced imports by 55 percent at the end of the five year period.

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Table 12

Beef

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Pork

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Source:

Meats.--Domestic supply of meats was not adequate
in the past years. In 1969, 25,000 M.T. of live and frozen
beef meat and 8,600 M.T. of sheep meat were imported.

The estimated apparent domestic demand in 1971
will be 221,277 M.T. and 282,590 M.T. in 1975, for meat
of all three species together: beef, pork, and sheep.

The projected supply will not cover the domestic
demand of 1975, but the deficit will be reduced from
87,706 M.T. in 1971 to 83,158 M.T. in 1975.

It is proposed to import 43,320 M.T. meats, of
which 35,520 will be beef for 1971. There will still be
a deficit in supply, which will require special price
controls (Table 12).

Table 12. Apparent domestic supply and apparent domestic
demand for meats

	Produc-tion	1971 Demand	Deficit	Produc-tion	1975 Demand	Deficit
	(thousands of metric tons)					
Beef	68.5	131.7	-63.2	102.8	172.0	-69.3
Sheep	21.9	33.1	-11.2	31.2	37.4	-6.-
Pork	43.2	56.5	-13.3	65.4	73.2	-7.8
Total	133.6	221.3	-87.7	199.4	282.6	-83.2

Source: Perú's National Development Plan: 1971-1975.

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In the intermediate term, this pressure on prices is proposed to be relieved somewhat by an increased supply and consumption of fish and poultry meat.

A package program was proposed for attaining output growth, improved marketing, etc. Special emphasis will be given to specific geographical areas.

Milk.--Production is projected to increase to 916,044 M.T. in 1975, a comulative growth of 10.7 percent per year. Imports of milk and milk products were expected to decrease from 573,300 M.T. in 1971,to 410,000 M.T. in 1975.

A package program was proposed for attaining this goal; special emphasis will be given to specified geographical areas.

Programs for Regulated Products

Rice.--Self-sufficiency reached in 1970 will be maintained throughout the five year period, which will require a 44 percent increase in output.

Corn.--This program was directed towards covering the domestic demand which was forecasted to increase from 577,000 M.T. in 1971, to 762,000 M.T. in 1975.

Poultry.--The goal proposed was to increase the production of and the demand for poultry meat and eggs; special attention will be given to increasing rural consumption.

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For 1971, it was expected that poultry meat production will be 59,300 M.T., and egg production will reach 43,000 M.T. It was proposed that in 1975, poultry meat output would be 108,800 M.T. and egg production 75,000 M.T.

Through this increased output, it was projected that per capita consumption, in 1975, poultry meat could increase to 6.6 kilograms and eggs to 4.8 kilograms.

Exportation Products

Special attention has been given to cotton, sugar cane, coffee, wools and fibers, and to non-traditional export products.

Programs for Action

Agrarian Reform programs have been spelled out in detail in the Plan. The Programs for Promotion of Agricultural Development will include: educational assistance, credit and technical assistance, supervised credit, improved seeds, and agricultural machinery; for animal production the heavier support will be given to beef cattle, sheep, pork, and auquenids.

The Agricultural Marketing Program will concentrate its activities in the Agrarian Reform areas, by giving them technical assistance, conducting basic studies as to identify specific problems, information and recording of prices, and setting up quality standards. Strong support will be given to increase exports of traditional and non-traditional export agricultural products. Foreign market potential

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studies will be conducted, and domestic producers will be
encouraged to export. In reference to imports, quotas and
licenses will be required as to reduce import volumes
through domestic substitute production.

Water being a very scarce resource for agriculture,
a strong program of irrigation has been set up by the
Peruvian government.

Also a program of Agricultural Research has been
developed in cooperation with universities, giving priority
to research on the products of strategic importance.

A detailed investment program for the whole
agrarian sector has been included in the Plan.

This chapter was devoted to a detailed examination
of the nation's development plan for the 1971-1975 period.
This plan conceptualizes development as a process that
gives harmonic top priority to structural transformation
over economic growth. The general strategy will be to
accelerate agrarian reform, expand industrial development
along the lines established by recent industrial laws, in-
crease mining and fishing investments, implement educational
reforms, and create the basic economic infrastructure
necessary to achieve primary national goals. Mining and
fishing investments are emphasized because both sectors
will increasingly be the principal suppliers of foreign
exchange, thereby facilitating the purchase of capital
goods and other necessary services abroad to speed up the

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development process. The agrarian reform and industrial
expansion measures were considered particularly important
because of their significance to Peru's future development.

The outlook of the socioeconomic characteristics
of Perú between 1960 and 1970 will be considered next in
order to have some understanding of the current situation
of the country.

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CHAPTER V

OUTLOOK OF THE SOCIOECONOMIC SITUATION

OF PERÚ: 1960-1970

Basic Data

A fairly detailed description was considered
necessary in order to attain a better understanding of the
socioeconomic conditions prevailing in Perú, under which we
expect to design recommendations for the development of the
poultry industry (Table 13).

The U.S. Department of Commerce (1971), in its
publication, Foreign Economic Trends and Their Implications
for the United States, made a summary of their opinion of
the economic situation in Peru, reporting that:

"The Peruvian economy is now in a period of recovery
following three years of economic stabilization and little
growth. The Finance Minister has announced that the coun-
try's real Gross Domestic Product increased by 7.3% in 1970.
While recovery appears likely to continue in 1971, progress
is expected to be limited by reluctance of private investors
to expand fixed plant. Strong international demand for
Perú's major export products plus rising internal consumer
and government demand pulled and assisted, respectively, by

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Table 13. Perú: basic data

Area (square miles) 494,293

Estimates of Total Mid-Year Population:
       1970 31,586,000
       1980 18,527,000

Percentage of Urban Population (1969) 51.9

Rate of Growth of Total Population (1960-1970):
  (percent per year) 3.1

Central Government Tax Revenues as a Percentage
  of GDP (1969) 16.6

Percentage of Total Central Government
  Expenditures for:
       Education (1969) 21.5
       Public Health (1969) 7.5
       Housing (1969) 1.4

Death Rate (per thousand, 1968) 16.0

Infant Mortality Rate (per thousand, 1968) 105.6

Years of Life Expectancy at Birth (1968) 55.0

Percentage of Literacy (1961) 61.1

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[a]Sources: Population Estimates, 1970 and 1980:
America en Cifras 1970, Situacion Demografica: Estado y
Movimiento de la Poblacion; Urban Population: United
Nations, Demographic Yearbook 1969; Central Goverment Tax
Revenue: Information furnished to IDB by the Banco Central
de Reserva del Perú, December 1970; Central Goverment
Expenditures for Education, Health, and Housing: Informa-
tion furnished to IDB by the Banco Central de Reserva del
Perú, December 1970; Death Rate, Infant Mortality Rate, and
Life Expectancy at Birth: ibid.; and Literacy: Pan American
Union, America en Cifras 1967, Situacion Cultural: Educacion
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high domestic liquidity more than offset weak demand of the private investment sector during 1970 to push the real growth rate to the highest level since the early 1960's. Good monetary management and production performances per-mitted the satisfaction of this demand without significant increases in prices. Foreign exchange reserves are at or near record levels. A comparable contribution from the balance-of-payments is in doubt for the coming year, however.

While Perú's new industrial and foreign exchange laws and regulations, and the Andean Pact foreign investment code have clarified the rules of the game somewhat, it remains to be seen if they are considered encouraging by foreign or domestic private investors. It is not yet clear that private investment will generate significant thrust for the economy in 1971. However, a moderately expansive budget, possibly some additional growth in domestic liquidity and ambitious public sector investment programs point to some growth in demand in coming months. The Revolutionary Mili-tary Government has gone a considerable way in its announced intention to restructure Peruvian society, but there are numerous reforms still expected."

The Inter-American Development Bank (1971) reported on the socioeconomic progress attained by Peru between 1960-1970. Special emphasis was given to recent economic events, including economic development trends, developing planning, mobilization of domestic resources; also, insitutional

reforms and social progress, including housing and urban development, health and environmental sanitation, education, rural development, labor situation, and social security.

Recent Economic Events

Economic Development Trends

In 1965-1969 the Peruvian economy grew at an average of 2.3 percent annually in real terms, which compares unfavorably with its performance in 1960-1964, when a rate of 6.9 percent was achieved. In 1961-1966, stimulated by rising exports and strong advances in agriculture, fishing, manufacturing, and construction, the gross national product increased at an average yearly rate of 6.4 percent, but as the country faced and endeavored to overcome serious fiscal, monetary, and balance of payments problems, the growth rate fell to 4.6 percent in 1967, 1.4 percent in 1968, and 1.7 percent in 1969.

With population expanding by 3.1 percent annually, per capita G.N.P. decreased by more than 3 percent between 1967 and 1969. An economic recovery in 1970, however, is expected to regain some of the lost ground and achieve gains similar to those in the early 1960's, exceeding 5 percent and perhaps approaching the planned goal of 7 percent.

Gross domestic investment fell sharply from 25.5 percent of G.N.P. in 1967 to 19.9 percent in 1968, and 18.7 percent in 1969. Private investment, affected by

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economic policy uncertainties, declined and continues at a low level, although the exact extent of the drop is not yet known. Government investment fell by about 19 percent from 1967 to 1969 under the fiscal austerity associated with the stabilization program, but an increase of more than 30 percent was planned for 1970. Although starting slowly, in 1970, the government investment program in the latter part of the year accelerated rapidly and was expected to come close to the planned goal.

The major uncertainty associated with private investment in 1970, and in the near future is this sector's reaction to the reform measures decreed by the government. Particularly important, and as yet unknown, is the reaction to the Industrial Law and Law of Industrial Communities promulgated in mid-1970, which provide for increasing worker participation in plant management through a 15 percent distribution of net profit to "industrial communities"--newly created workers' organizations--and an additional direct 10 percent profit distribution to workers.

In 1965-1969, manufacturing production expanded at an annual rate of 4.5 percent. Manufacturing was by far the most dynamic sector in the period and in 1966, surpassed agriculture, forestry, and fishing as the leading contributor to G.N.P. In 1960, agriculture, forestry, and fishing accounted for 22.5 percent of G.N.P., compared to 16.6 percent for manufacturing. In 1969, however, manufacturing represented 20.2 percent of G.N.P. compared to 17.0 percent

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for agriculture, forestry, and fishing. Manufacturing production grew by 5.0 percent in 1967, but fell considerably in the following two years, recording growth rates of only 2.4 percent in 1968 and 1.2 percent in 1969. In 1970, the growth rate is expected to rebound, possibly to 10 percent, as a result of increased processing of fish and agricultural products in the early part of the year and increased consumer demand in the final months.

Agricultural and livestock production lagged in 1965-1969, with virtually no growth during the period. The real value of agricultural, livestock, and forestry production in 1969 was barely equal to its 1962 value and was less than the value of production in several subsequent years. With population growing rapidly, the country was forced to increase the volume and value of agricultural imports, especially of cereals, meats, milk, and oils and fats. Total agricultural imports in 1969 stood at $137.6 million, or 20.4 percent of overall imports. Of that total, wheat represented $51.9 million, followed by livestock and meat at $35.7 million, and oil and fats, including butter, at $11.7 million.

The agricultural sector's stagnation resulted from numerous factors, the most important of which appear to be a distorted land tenure systems which impeded the economic utilization of available agricultural resources, the lack of adequate price incentives, and an insufficiently

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developed marketing mechanism. Aware of the land tenure
and marketing difficulties, in 1969, the Peruvian Government
decreed a sweeping agrarian reform law directed at correct-
ing the *latifundia* and *minifundia* problems and a broad water
rights law that declared all water resources to be public
property, and as such to be regulated according to produc-
tion requirements rather than at will by individual farmers.

In 1970 the agriculture, livestock, and forestry
sector was expected to show an increase of more than 5 per-
cent over 1969 levels, reflecting good sugar cane and rice
harvests as well as adequate growth in output of most other
products. The only major agricultural product expected to
show a decline in 1970 was cotton, owing largely to a con-
tinuation of a long-term trend to withdraw land from cotton
production.

Increased production of fish meal and fish oil in
the 1960's was of primary importance to Peru's balance of
payments during the period. In 1960 fish product exports
were valued at $51 million or 12.0 percent of total exports,
compared to $221 million, 25.5 percent of total exports, in
1969. Expectations for 1970 were for a further rise in
export value, perhaps to nearly $300 million, reflecting
a fish catch that will considerably exceed those in earlier
years, as well as higher prices for fish meal and fish oil.
Early in May 1970, as part of the government's comprehensive
reform program, a new state marketing organization--EPCHAP--
was created with sole authority to market fish meal and fish

oil products and to impose stiff penalties on anyone marketing these products independently. It is still too soon to evaluate EPCHAP's plans to achieve better and more stable prices for the Peruvian fishermen.

Next to fishing, the most important sector from the standpoint of foreign trade has been mining. Major metal exports--in order of importance, copper, silver, iron ore, lead, and zinc--in 1965 accounted for $281 million or 42.1 percent of total exports, whereas in 1969 they represented $456 million or 52.7 percent of the total. Higher world market prices accounted for a large part of the greater export value of copper, silver, and lead. In the cases of zinc and iron ore, however, volume increases were largely responsible for the improved performance. Iron ore increased in volume by 6.7 percent annually, compared to increases in value of 8.8 percent; in the case of zinc, exports increased in volume by 3.9 percent a year, while their value rose at a rate of 2.1 percent.

In an effort to accelerate the development of mineral deposits, in 1969, the government decreed that all companies holding unexploited concessions, as of June 1965, had to submit by the end of 1969 a schedule of operations for developing such concessions, and actually begin operations by April 1970 or forfeit them. Most schedules, however, failed to receive government approval, and the date for beginning mine development was postponed to May 1970, contingent on the acceptance of new plans.

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In April the government announced the general lines of its new mining policies, which included the creation of a new state mining enterprise--later established in October as Minero-Perú--more state participation in mining ventures, governmental take-over of international marketing of mine products, and the definition of refining activities as a State function. The inability to meet the government's timetables, or unwillingness to work under the new constraints, resulted in the reversion of a number of mining concessions to the State during 1970. These include such large deposits as Anaconda's Cerro Verde, ASARCO's Michiquillay, and several Cerro de Pasco concessions. At year's end few concessions remained in private hands. Concessions now under government control would require investments in the next ten years of well over $500 million in order to achieve the original planned rate of development.

In 1965-1969, the construction sector declined by 5 percent annually, particularly because of substantial cutbacks in 1967 and 1968, and no changes in 1969. Cotton, wool, lead, and petroleum were the only products to register slight declines in dollar earnings; on the other hand, sugar, zinc, and coffee increased slightly, while the other four major exports showed significant advances: copper earnings rose at an annual rate of 20.9 percent, silver by 10.2 percent, iron ore by 8.8 percent, and fish meal by 4.3 percent. Export earnings in 1969 were slightly below those of 1968, but expectations for 1970 were for a

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considerable increase, on the basis of higher volume and prices of fish products along with better metal prices, which were lower than in 1969 but still above the long-term trend.

Imports in 1965-1969 declined at an annual rate of 4.5 percent, but the trend was not as smooth as that of exports. After rising from $719 million in 1965, to $819 million in 1967, imports fell markedly, to $631 in 1968, and $601 million in 1969, reflecting the effect of the 1967 devaluation and the reduced demand for capital goods because of economic stagnation in those years. Low import levels continued in 1970 until late in the year, when they began to rise significantly.

The strong Peruvian balance of payments in 1960-1964 deteriorated in the following three years, with deficits on current account ranging from $138 million in 1965 to $283 million in 1967. In 1968, there was a sharp recovery in the current account deficit, which amounted to only $28 million, and in 1969, a surplus for a similar amount was recorded. Expectations in 1970 were for another small current account surplus.

Financing of the large current account deficits in 1965-1967 was highly dependent on official capital imports-- since private capital inflows have generally been low if not negative, except in 1967 when fairly large exporter credits and short-term bank loans were obtained. Net official

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capital inflows rose from $22 million in 1962 to $186 million in 1966 and to $169 million in 1967, but in 1968 and 1969 they fell to about $80 million.

After running small overall balance of payments surpluses from 1960 to 1965, Perú registered deficits of $24 million in 1966, $31 million in 1967 and $15 million in 1968. In 1967, however, a surplus of $37 million was recorded.

The net official foreign exchange position of the Central Bank followed the course of balance of payments changes and dipped to slightly over $33 million in 1967. The recovery in net reserves was especially sharp in May 1970, when a level of $269 million was attained, much of which is attributable to the foreign exchange regulations decreed that year, which prohibited any Peruvian national or resident to own foreign exchange except within strict government guidelines. Year end net position at the end of 1970 may have been considerably lower than indicated by the official statistics, given some evidence of an accumulation of still unprocessed requests for conversion of soles into foreign exchange.

Mobilization of Domestic Resources

Several measures adopted by the Peruvian Government in the past three years have changed the current domestic mobilization picture. One primary change has been the austerity program instituted by the present government.

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Central Government expenditures in real terms had risen almost continuously from 1960 to 1967, when real government expenditures were 132 percent above the 1960 level. In 1968, however, and again in 1969, real Central Government expenditures decreased approximately 4 percent each year. On the revenue side, real Central Government revenues in 1968 were about 2.2 percent above those of 1967; furthermore, in 1969 the increase was about 7.2 percent. Thus, the Central Government had increasingly large deficits through 1967, a year when the deficit amounted to nearly 20 percent of revenues. In 1968 the deficit was reduced to slightly more than 10 percent of revenues, and in 1969 there was a slight surplus. Prospects for 1970 were for another approximately balanced budget.

Revenues exceeded current expenditures from 1960 to 1963, but fell short from 1964 to 1968. In 1969, there was a large current account surplus, equivalent to about 9 percent of total Central Government income. In proportion to G.N.P. current revenues increased fairly steadily, from 15.5 percent in 1960 to 18.6 percent in 1969.

Measures adopted in 1968 to 1969 to correct fiscal imbalances affected the level of Central Government investment. As a ratio of G.N.P. those investments fell from 3.2 percent in 1966 to 1.7 percent in 1969. In real terms, the decline between 1966 and 1969 was more than 43 percent.

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Deficits in 1964-1967 were financed primarily through foreign financing of specific projects and general borrowing abroad, along with increased recourse to the Central Bank and a rising internal floating debt. In 1968, and more so in 1969, large portions of the floating debt were retired as the government came to rely increasingly on commercial bank credit.

Complete data for 1970 were not yet available early in 1971, but indications were that the 1970 record would be similar to that of 1969, except for the fact that because of increased tax collections Central Government capital outlays would increase significantly, reversing the 1968-1969 trend.

Private sector credit, rising 918 percent annually in real terms during 1961-1965, rose by only 3.5 percent a year in 1965-1967. Then it declined slightly in 1968, but began to rise again in 1969. Total private sector credit increased approximately 3 percent in 1969, but prospects for 1970 were for a further expansion of about 6 percent in real terms.

Stabilization measures since mid-1968 have reduced the rate of inflation significantly. Whereas the consumer price index rose by about 9.5 percent a year from 1961 to June 1967--and then rose by 19 percent from June 1967 to June 1968--the rate of increase fell to 8 percent in the twelve months ending June 1969, and was only 6.2 percent in the twelve months ending November 1970.

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The industrial reform laws and foreign exchange
regulations are among the changes instituted by the Peruvian
Government in 1970 which will have long-term repercussions
on internal resource mobilization. The foreign exchange
measures have meant not only a one-time increase in the
Central Bank net foreign exchange reserves, but are also
designed to prevent capital flight. To the extent that
capital flight has been important in Perú and that these
measures are functional, they will tend to add strength to
the domestic capital market. In the industrial reform laws
the government regulated an annual distribution of profits
to an "industrial community," whose members are the workers
of a given company; all of these distributed profits should
be reinvested, however, in the same or other industrial
plants. If private entrepreneurs continue to follow their
past saving and investing behavior, the new measures could
be expected to be translated into additional investments.
The attitude of the private sector toward the new measures
is still uncertain, however.

Institutional Reforms and Social Progress

Housing and Urban Development

According to the 1961 census, Peru's stock of nearly
2 million housing units included 953,000 in urban areas,
more than half of which were classified as deficient, as
were the vast majority of units in rural areas.

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Population shifts in the 1960's from rural areas and small towns to the country's major urban centers, particularly the coastal cities of Lima-Callao, Chimbote, and Ilo, have brought about a dramatic change in the urban-rural distribution. About 50 percent of the population today is urban, compared to only 44 percent in the mid-1960's. The shifts have resulted in extreme shortages in urban infrastructure, social services, and housing--reflected in the thousands of persons who have established themselves in squatter communities in virtually all major coastal towns. It is estimated that as much as 40 percent of Lima's population resides in squatter communities, now called "young towns," and the proportion is even higher in other centers.

During the 1960's, the National Housing Board (JNV) and the Peruvian Housing Bank (BVP) were created as the principal instruments for planning, executing, and financing housing programs. Both institutions cooperated with the National Office for Urban and Regional Planning (ONPU), which conducted research on demographic problems and promoted urban planning on a national scale.

Under the present government, numerous institutional and legal changes have been enacted, designed to arrive at rational and feasible programs for orderly urban development and for stimulating home construction and improvement. The Ministry of Housing has become the clearinghouse responsible

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for all facets of urban planning and implementation of programs, including coordination with private sector groups. The functions of ONPU and the JNV have been absorbed by the Ministry. Several new entities have been created since 1969, including the National Office for Development of Young Towns (ONDPJ), which is responsible for community improvement programs in squatter settlements.

Since beginning its activities in 1962, the BVP's capitalization has been substantially increased to stimulate low-income housing construction. Its resources, which amounted to 746 million soles in August 1969, were increased to 1,795 million as of August 1970, as a result of the transfer of funds from other financial institutions and certain private sources.[1] This will enable the BVP to assist the private and public sector in sponsoring large-scale housing construction for low-income families.

The Peruvian system of savings and loan associations, begun in the early 1960's, has had one of the most dynamic records in Latin America. Table 14 shows the evolution of the system in 1962-1970.

Between 1962 and September 1968, the JNV built about 37,500 housing units throughout Perú. Through 1970, the BVP reported it had built 4,650 housing units with the aid of an IDB loan for $12.58 million.

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[1] The current rate of exchange is 38.7 soles per "dollar-certificate."

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Table 14. Perú: Savings and Loan Associations: 1962-1969
        up to September, 1970

	1962	1969	1970 (Up to September)
Membership	11,344	289,506	348,213
Savings (millions of soles)	76.5	1,830	2,230
Loans for Housing (number)		23,809	27,034

Source: Inter-American Development Bank, Socioeconomic
        Progress in Latin America, 1971.

In March 1969, the Peruvian Government began to
promulgate a number of decrees constituting part of the new
organic law for the housing sector. These measures deal
with such aspects as low-cost housing; promotion of the
construction industry; ministerial resolutions on the con-
trol of housing developments; public sector sponsorship of
housing; construction licensing; expropriation of lands for
squatter community use; regulations on the construction
industry; legal dispositions on master plans and control
or urban development; the value of construction per square
meter; and expropriation involving third parties.

Perú has received extensive financial assistance
from international agencies for housing construction and
improvement programs. Between 1961 and 1968, some $50.2
million in IDB loans were extended to private and public

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sector agencies for housing purposes. Following the
devastating earthquake of May 1970 which destroyed all towns
in the Huaylas Valley and most buildings in Chimbote, the
IDB extended a $35 million loan for reconstruction activ-
ities in the affected area.

Health and Environmental Sanitation

According to 1961 census data, Perú's infant mortal-
ity rate was 93.2 per 1,000 live births, one of the highest
in Latin America. General mortality was reported at 15.4
per 1,000 inhabitants. Based on 1963 information, life
expectancy was estimated at 55 years at birth for the
general population. Principal causes of death are those
which have been reported consistently for the past decade:
infectious diseases, gastroenteritis, circulatory problems,
tuberculosis and other respiratory ailments, and heart
disease.

In 1968 Peruvian health authorities reported daily
per capita food consumption at 2,248 calories, which in-
cluded 51 grams of protein, some 17.9 of which were animal
in origin. These figures would signify a slight improvement
over 1965 levels, when FAO reported consumption to be 2,170
calories per capita daily.

In 1969, Perú had a total of 30,600 hospital beds,
4,600 of which were located in private health clinics and
hospitals. That year 6,870 medical doctors were practicing,
equivalent to a ratio of 1.0 per 1,000 inhabitants. There

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were also 4,110 registered nurses and 2,167 dentists practicing in the country. Most medical facilities and personnel are located in Perú's major urban areas, with Lima alone accounting for an estimated 60 percent.

There are numerous public sector entities in Peru dealing with environmental sanitation. In addition to various metropolitan areas which have their own autonomous agencies, the Ministry of Public Health, the Ministry of Public Works, and the Ministry of Housing all have divisions concerned with some facet of water supply and sewerage.

Estimates by the Ministry of Public Health for 1970 indicate that out of a total urban population of 6,549,000 inhabitants, some 3,864,000 (about 59 percent) were living in dwellings served with piped water. Similarly, 3.7 million urban residents (about 57 percent of the total) lived in homes with sewerage connections. In the rural sector, which encompassed 7,021,000 persons, 33 percent of those in towns with 400 to 2,000 inhabitants, and some 1 percent of those in villages with less than 400, had potable water services. In the same categories--towns with 400 to 2,000 residents and those with 400 or less--sewerage connections were found in homes occupied by 0.5 percent in the larger towns. On a national basis, some 35 percent of the total population had potable water and 27 percent had sewerage services.

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To improve and expand water and sewerage services, the Ministry of Housing has undertaken an urban environmental sanitation program designed to aid 11 cities, including Lima, Arequipa, Trujillo, Tacna, Piura, Ica, Chimbote, Chiclayo, and Cuzco. Out of the total of 114 projects under way, 34 are in Lima and 7 in Arequipa. As of June 1970, about 393 million soles had been invested in the national urban water and sewerage plan's first phase, with another 190.7 million allocated to the second.

The national urban water and sewerage program is being financed in part with an IDB loan extended in 1967 for $16,365,000. Similarly, there is a national rural water and sewerage plan for communities with populations between 400 and 2,000 inhabitants, which is being financed in part with IDB funds. During 1971, Ministry authorities plan to complete the second phase of the rural program.

The Ministry, through the National Office for Community Development, has begun to study the feasibility of potable water programs for communities with less than 400 inhabitants. Additionally, it is carrying out extensive studies and preparing plans for reconstruction and rehabilitation of water and sewerage plants in the areas affected by the May 1970 earthquake. The Ministry has programmed complete reconstruction over the 1971-1972 period.

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Education

According to the 1961 census, 38.9 percent of the Peruvian population was illiterate. This rate fell to about 32 percent in 1968, and to 23 percent in 1970, according to the Ministry of Education.

As a result of the country's expenditures in education, general school enrollments have increased at a rate several times that of the population. Primary schools matriculation for the 1964-1970 period is shown in Table 15.

Table 15. Perú: pre-primary and primary school enrollment: 1964-1970

Years	1964	1966	1968	1970
Primary:				
1	309,939	356,270	380,003	418,501
2	234,069	266,767	294,731	329,158
3	202,241	227,637	262,941	292,123
4	154,230	182,074	212,820	241,721
5	115,346	140,733	168,176	195,330
Total	1,015,825	1,173,481	1,318,671	1,476,833
Pre-Primary	523,763	558,880	752,550	605,466

Source: Ministry of Education, information sent to IDB, December 1970.

Enrollment in middle-level institutions following a six-year cycle also increased substantially over the 1964-1970 period (Table 16).

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Table 16. Perú: middle-level school enrollment: 1964-1970

	1964	1966	1968	1970
Public	192,385	292,552	392,617	498,313
Private	67,924	76,013	85,400	89,178
Total	260,309	368,565	478,017	582,491

Source: Ministry of Education, 1970.

The Ministry of Education has placed priority on increasing the growth rates for primary, middle-level, and secondary schooling in that order, with projected rates of 3.2 percent, 7.7 percent, and 15 percent respectively, for the 1970-1975 period. It is noteworthy that in 1970 nearly 100 percent of all children in the pre-primary school age bracket were attending classes.

In 1970, there were 119,600 persons teaching in primary, middle-level, normal, and high schools, excluding 14,800 teachers in special education or other services in the educational system.

Community Development Centers provide a free basic education as well as literacy classes for adolescents and adults. This system was created in 1969, and by February 1970, centers were in operation throughout the country. Currently, some 144,000 pupils are participating in literacy programs in 1,646 centers.

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Enrollment in institutions of higher learning has also increased dramatically in recent years. In 1967 there were 32 universities, compared with just 8 a decade earlier. In 1968, a total of 121,500 students were enrolled in these institutions, which represented an increase of 400 percent over 1958 level. Enrollments were reported at 31,900 in 1958, 66,400 in 1964, and 121,500 students in 1968.

In accord with reforms initiated in 1969 in Peru's universities, higher education is free for students whose family incomes are too low to afford a college education. Other students must pay tuition according to a graduated scale based on the family's ability to pay.

Since 1969, the government has undertaken a massive reform of Perú's educational system. Among major innovations is a provision to teach all citizens in their native language, including Quechua and Aymara. A major goal is to completely eliminate illiteracy. To accomplish this objective, the 1961-72 Central Government budget is allocating nearly one-third of operating resources and 5 percent of all investment expenditures to the Ministry of Education. The increase in investment funds is particularly sharp, since annual expenditures in this field in 1971-1972 will be almost five times greater than those in 1970.

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Rural Development

In 1963 Peruvian authorities surveyed 42 million acres of the 315 million acres constituting the national territory. Of the area studied, 20.8 percent consisted of arable land, 49.2 percent was natural pasture, 12.3 percent was woods and hills, and 17.7 percent was desert. Additionally, the survey revealed an extremely unequal land distribution pattern, in which about 83 percent of farm properties were smaller than 12.5 acres in size--and these occupied only 5.5 percent of the total area. Conversely, 0.2 percent of the number of farms were 2,470 acres or more in size and accounted for 69.7 percent of the land. In terms of the tenure system in Perú, it was found that an unusually high percentage of the land, amounting to 68.6 percent in 1963, was owned by the farmers working it. Land worked by tenants represented 13.2 percent, by communities 12 percent, and by sharecroppers and other users, 6.2 percent.

In 1964 the government enacted an agrarian reform law to raise rural employment and income, increase production, and improve productivity, through large-scale land redistribution. This law was superseded by a new agrarian reform statute issued in 1969, promoting essentially the same goals but by a more rapid and extensive reorganization of the entire national agricultural sector.

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According to the new law, holdings on irrigated coastal farmlands are limited to 123.5 acres in size and those on non-irrigated coastal lands to 370.5 acres. Grazing lands on the coast are limited to 3,705 acres and to 7,410 when not irrigated. Highland and jungle irrigated farm lands are limited to a range of 74 to 136 acres, depending on the department, and non-irrigated farmlands are restricted to holdings sufficiently large to sustain 5,000 head of sheep, or the equivalent in other livestock. Land holdings in excess of these ceilings are subject to expropriation, even in the agro-industrial complexes, which are treated as single economic units.

Between 1961 and 1968, some 8,400 families received confirmation of land titles or other guarantees of tenure from Peruvian agrarian reform authorities. During 1969 and 1970 as of September, this figure was increased several-fold, mainly owing to the designation of expropriated coastal sugar estates as cooperative holdings. According to the Ministry of Agriculture's Agrarian Reform Office, 70 families in 1969 and 149 in 1970 received lands from public holdings amounting to 1,855 acres. Distribution of land from private sources involved 10,567 families in 1969 and 18,213 in 1970, with 650,000 acres and 1,149,000 acres, respectively, included in the transactions. Confirmation of land titles or other forms of guaranteed tenure extended through diverse programs affected 200 families in 1969 and 100 in 1970, and involved some 10,000 acres.

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In terms of indemnification for expropriated lands, the government budgeted 191.8 million soles in cash and 254.4 million in bonds in 1969, and 518.6 million in cash and 4.3 billion in bonds in 1970.

Colonization programs in the 1961-1968 period affected 208,000 acres on which 4,700 families were settled. In 1969, 127 families were located on 7,500 acres, and in 1970, 1,068 families were settled on 37,900 acres.

As of August 1970, there were 23 agricultural cooperatives functioning in Peru, with a total membership of 6,787. Their capital amounted to 312.3 million soles. Other credit for agricultural activities is provided through governmental sources. About 35,700 loans were extended in 1969, and 14,000 in the first six months of 1970, valued at 5.2 million soles. These loans were made to 44,000 small-scale farmers, including 261 beneficiaries of agrarian reform programs.

Peruvian agricultural programs have received extensive financial assistance from international sources, including AID, the World Bank group, the Export-Import Bank, and the IDB. The IDB had approved loans totaling $42.2 million up to 1969, and authorized an additional $23.3 million loan in 1970. Many of the loans are being used for irrigation programs.

Labor Situation and Social Security

Primary responsibility for administering and enforcing labor legislation lies with the Ministry of Labor and Communications, which was given Cabinet rank in 1949. The Ministry has four directorates: Labor, Technical Affairs, Indian Affairs, and Administration.

There is also an Employment and Human Resources Service (SERH) which was established in 1962. SERH collects labor force and wage statistics, serves as an employment agency, and provides information on the labor market. It also prepares employment surveys and engages in manpower program planning.

Peruvian labor laws and the public administrative bodies which administer them operate under a hierarchy of legal norms that range from constitutional provisions to basic laws, organic laws, ordinary laws, decrees and resolutions. The labor legislation has never been codified, but since the early 1960's--and particularly under the country's present government--work has been progressing on establishing a general labor code.

Foreign employers are generally held to a higher labor-relations standard than Peruvian employers. Administrative measures by Labor Ministry officials are usually not necessary to achieve such standards, since foreign employers frequently set a standard that is followed by other enterprises.

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A May 1961 decree constitutes the basic law for the organization of labor. The law establishes the guarantee of free association without prior authorization, and public registration of unions as a basis for their representative activities.

Local unions generally affiliate with industrial, regional or ownership federations. Industrial federations are composed of unions of workers in the same industry; regional federations are those of the same geographic area, and ownership federations are unions of workers employed by the same firm. The federations in turn are usually affiliates of the Confederation of Workers of Perú (CTP).

The CTP is Perú's principal labor organization. The strongest and most influential federation within the CTP is the Federation of Bank Workers, followed by the Confederation of White Collar Workers of Perú, the National Sugar Workers' Federation, and the Textile Workers' Federation.

The Committee for Union Defense and Solidarity (CDUS) represents an attempt to unify all non-CTP unions and federations, including the Federation of Fishermen of Perú, which had some 20,000 members in 1968. The Christian Labor Movement of Perú (MOSICP) is composed of 25 minor unions. Two other small union groups, which remain unaffiliated, are the Federation of Civil Aviation Workers, with 5,000 to 6,000 members, and the National Federation of Light and Power Workers, with about 3,000 members.

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According to 1968 information, the CTP had a total of 371,000 members, with the largest representations as follows: National Federation of Office Employees, 110,000; the National Federation of Sugar Workers, 25,000; and the Federation of Textile Workers of Perú, 25,000. CDUS had a reported membership of some 98,000 members, with the largest number--some 50,000--belonging to the Federation of Civil Construction Workers.

Social security coverage in Perú includes provisions for old age, disability, death, and survivors, maternity and family allowances, and medical and hospitalization benefits. Coverage is compulsory or optional, the former class including persons of either sex under 60 years of age who customarily work for an employer, either natural or juridical, public or private; workers at home; apprentices; persons performing menial services; chauffeurs; port workers, and those in similar employment not otherwise covered; and workers employed by the government who perform services expressly listed in the general budget or under regular appointment.

Optional social security coverage is provided to persons under 40 years of age, other than common laborers, who are self-employed; private domestic service workers; persons who cease to be covered by compulsory insurance while still under 60 years of age; and insured members over 60 who continue to work.

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The National Social Security Fund handles financing
for the system. Contributions come from the insured worker,
the government, and the employer, as well as from a tax of
1 percent on cancellations or payments made by the govern-
ment, municipal councils, and state companies, excepting
payments on the external or internal debt, subsidies to
charitable and similar institutions, wages, emoluments,
pensions and salaries, and an additional 2 percent tax on
alcohol and alcoholic beverages. Information on the per-
centage of coverage of the system among the labor force is
not available.

The Problem of Demographic Growth

The Peruvian public is becoming increasingly aware
of the need for voluntary programs of family planning as a
prerequisite for development.

This growing concern was indicated by Centro de
Estudios de Población y Desarrollo (1970b) by reporting
on the more relevant opinions of some influential printed
media in Perú. Of special interest were the editorials
of newspapers like Correo and La Prensa of Lima. In
October 17, 1970, under the title of "A New Peruvian per
Minute," the editors of Correo expressed their concern for
the current national demographic growth. And for the sake
of clarification of some of the issues mentioned, Centro
de Estudios de Población y Desarrollo added some pertinent

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information. The first official reference, since the Armed
Forces Revolutionary Government came to power, was made by
the Minister of Agriculture in November 1968 by saying:
"Perú has sixty childbirths per hour. This explosive demo-
graphic growth keeps no relation with that of agricultural
production." Later the same month, the Minister of Finance,
indicated that ". . . the Gross National Product growth has
been impaired by the explosive population growth." The
following year, 1969, other cabinet members in referring
to demographic growth pointed out ". . . the masses of the
population are surviving at below human standards of living,"
"production for the domestic market has not increased at a
sufficient rate," etc.

In 1970, it was again mentioned by the authorities
that the problems of under-employment, malnutrition, and
demographic pressure on agricultural resources constitute
big challenges to the nation's scientists and leaders. It
was estimated that in 1970, every 50 seconds a baby was born,
that is every day 1,728 new Peruvians were born or 636,720
per year. But there is a death only every three minutes ten
seconds, which means that there were four new replacements
for every death.

All indications show that if current rates of popu-
lation growth continue in ten years the population will grow,
from 13.5 million now, to 18 million. And, by the year 2000
we will have 33 million people, in our same territory with

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no more agricultural land; Programa de Investigaciones para
el Desarrollo, Universidad Agraria (1969) reported that by
1980, agricultural land will be around 3,037,000 hectares
for about 18,587,000 inhabitants.

Those who think in the broad size of Peru's
territory, should also think that only 2 percent of the
territory was under cultivation in 1961; today this area
has not changed too much. The National Office for Evaluation
of Natural Resources (ONERN) has established the following
information.

Table 17. Classification of land in the Peruvian territory

Use	Hectares	Percent
Land not suitable for agriculture or forestation	48,576,985	37.9
Land suitable for intensive agriculture and other uses	10,995,172	8.6
Land suitable for permanent cultivation and forestation	35,701,210	27.8
Marginal land suitable only for grazing and forestation	32,748,565	25.7

Source: Centro de Estudios de Población y Desarrollo,
         Center for Studies of Population and Development,
         Boletin Informativo No. 18, Lima, Perú, 1970b.

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Per capita land area suitable for agricultural use
is 1,754 square meters, but it is still waiting for tech-
nical assistance and the credit necessary for increasing
its productivity.

Agricultural productivity is low, and even if the
"Green Revolution" and other expected miracles will help,
they will not alter by much that situation. During the past
few years, agricultural production has been increasing at a
rate of 2.8 percent while the population has increased at
3.1 percent. According to the March, 1970 labor report, "the
1967-69 agricultural gross domestic product decline of -0.8
percent must have affected more the level of under-employment
than of unemployment."

The consequence of all these reported facts has been
a constant pressure over our balance of payments and an ever
increasing dependency on food imports, in spite of government
efforts towards dynamic agricultural production. Like in
the case of meat and oils, the critical dilemma is either to
import food or to have empty shelves in the stores.

These new Peruvians will in time also demand housing,
schools, urban services, job opportunities, health, and
welfare conditions compatible not with today, but with higher
standards of living as those attained then by the industrial-
ized societies.

Faced with these facts of demographic growth, the
basic promise of the Long Term Development Plan, that is,

to double the standard of living in twenty years, appears
more as an ideal than as a realistic possibility if we go
by the mathematical data.

Nevertheless, some leftist economists reject the
desirability of a policy of responsible and deliberate
procreation, which is the basis for a population control
policy. Against it is argued the utopic feasibility of
speedy and continuous production growth, with rates of
increase never attained by any economy. Besides, they
ignore the fact that all "popular democracies" currently
show a lot lower rate of population growth than Perú.

On the other hand, the rising aspirations and the
compulsion of the comparisons mean that even if the birth
of each new Peruvian is a cause of joy, it is also an invi-
tation to serious thought capable of starting in Perú the
age of demographic reasoning, instead of the actual age of
dogma without foundation in reference to matters related to
our economic, social, and political fate.

The age of demographic reasoning will begin when
studies of the different sectors that should take into
account population growth will determine in a specific
demographic policy, if the rate of population growth should
be speeded up, maintained, or slowed down. In what regions,
agrarian zones, places, provinces or sectors of the country
should be adopted alternatively or simultaneously to each one
of the three demographic policies mentioned, and to which

groups and how should the government give its preferential attention? For Perú, the solution must be Peruvian, even if it would be necessary to study and propugnate what has been done in other times and in other places of the world, in order to organize and to establish scientifically and definitely our own population policy.

As early as 1965, the First National Seminar on Population and Development convened in Perú, reported Centro de Estudios de Población y Desarrolo (1966); a summary of their conclusions included:

1. In examining the pros and cons of a large population, it was concluded that it should be referred to the country's stage of development. The criteria of demographic density, ratio population/land area are misleading when referring to an underdeveloped society.

2. Among the hypothetical advantages for Perú of a larger population have been mentioned—a larger population will constitute more human resources, and a larger domestic market. But, such advantages will materialize only if labor can be trained, and if all that population can be effectively integrated in the short run to the domestic market.

3. The consequences of a high rate of population growth in an underdeveloped society, like Perú, will mean the following:

a. A population structure mainly of young and economically non-productive, with all types of demands on resources.

b. Heavy domestic migration to urban centers, overloading the city services.

c. The young population will increase pressure directed toward change and social mobility.

d. Economic and social problems will be multiplied as to impair developmental efforts.

e. Systematic reduction of the adequate man/land ratio.

4. The wide disparity of population distribution, simultaneously too heavily concentrated or too widely dispersed, can cause the following negative socioeconomic phenomena:

a. Increase migration to the urban centers.

b. Massive increase of marginal groups of unskilled workers, which impair the formation of skilled laborers and the use of modern techniques by industry.

c. Appearance of negative social phenomena, under-employment, clandestine and undesirable jobs, delinquency, lack of adaptation with the subsequent frustration and social conflict, diseases, etc. which cannot be effectively controlled.

5. The need to establish a policy of family planning should not hide the need for socioeconomic structural changes that will allow a better income distribution. Both factors are needed to speed up development.

6. The current socioeconomic structure has influenced population as to:

   a. Families tend to be larger in social sectors not integrated to the modern economy process.

   b. Family size is independent of belonging to rural or urban societies. Rural migrants from the Coastal region keep their reproductive habits for a long time after settling in urban slums.

   c. The migratory process is not only from rural to the urban centers but also to the centers of intensive primary economic activity.

   d. Migrants are mainly young people.

7. The slow growth of the agricultural sector has provoked the following negative demographic effects:

   a. Decrease in the nutritional standards of the low income groups, which is reflected in increasing social and pathological deficiencies, and the resulting consequences in the labor force.

   b. Heavy use of scarce foreign currency to import needed food products.

c. Rural migrants keep their reproductive habits in the cities with the resulting high growth rate of labor not directed to agriculture.

8. Government resources for housing construction are limited, so the private sector should be encouraged to build low income housing at planned locations. This will help to direct migrational flows toward desirable places.

9. Health improvement programs have an immediate effect on increasing productivity of the labor force. This positive effect together with the negative incidence as stimulant to the increased rate of population growth, indicates that reduction of health standards aimed to demographic control is ethically non-acceptable.

10. The current composition and structure of the labor force is not satisfactory to accelerate socioeconomic development. The effects of such population composition cannot be drastically altered in the short run. On the other hand, heavy migrational movements are provoking severe imbalances difficult to be measured.

11. There is consensus that education is the key instrument for preparing labor for development. Nevertheless, not at all levels has education been directed toward developmental goals:

a. College level education should be rationalized,
   by the universities themselves, so as to accom-
   plish the needs established by national develop-
   ment planning.

b. The lack of vocational orientation, and the
   traditional prejudice against craftsmanship
   training have caused imbalances at the inter-
   mediate level education. It is desirable to
   emphasize the scientific-mathematic training
   from the initial levels of education. More
   technical universities should be created, like
   S.E.N.A.T.I. for training intermediate level
   managers and foremen, and like E.S.A.N. for
   training of business administrators and profes-
   sional managers.

12. The emigration of highly skilled professionals is
    also probably high; this external brain drain of key
    human resources for development is undesirable.

13. Empirical data has shown a demographic explosion in
    Perú. Nevertheless, any decision affecting family
    size should respect the freedom, the human dignity
    and responsible parenthood. There is consensus that
    the rate of population growth should be reduced,
    which requires a reduction in births.

14. Investment in scientific and demographic research
    should have priority. There is a recognized need

for the creation of a National Research Council that should promote and coordinate research efforts. In reference to population matters:

a. The Center for Studies of Population and Development (C.E.P.D.) should support the organization of a heterogeneous group of scientists to study population problems.

b. An array of priorities should be established as to encompass the effect of demographic variables over social, economic, biologic, and medical factors.

Centro de Estudios de Población y Desarrollo (1970a) reported that the government of Perú did not have, nor did it support, any program or policy for family planning.

In the National Development Plan: 1971-1975, it is not specifically mentioned that any policy or program is directed towards family planning.

Impact of the Current Agrarian Reform

The need for agrarian reform in Perú has been recognized all along the republican era. Many governments have enacted at different times ill-implemented legislation on the matter, even when acknowledging its need.

Thorbecke (1966), after studying the macro-economic implications and the cost of financing agrarian process, was feasible from a fiscal standpoint if it was spread over a

ten year period. Also, it appeared, on the basis of
very limited information, that the burden of the indirect
costs of agrarian reforms could at that time be carried by
the government.

The limited extent, the lack of expediency and the
slow pace of implementation of law of Agrarian Reform No.
15037, enacted on May 1964, were among the reasons that
prompted the fall from power of the former Peruvian
government.

Strasma (1965) reported on the financing of Peruvian
agrarian reform. He commented that Law 15037 was too
generous with large landowners because it recognized the
commercial value of their holdings and even allowed them
to keep a large portion of land. Unfortunately, the author
indicated the law also included a project for financing with
foreign borrowed funds the buying of land. And, such a loan
would be disguised under the pretense of promotion of indus-
trial development.

A few months before the actual Revolutionary
Government came into power, Brady (1968) rported that
estimates of aggregative income distribution in Perú indi-
cated a relatively unequal distribution of income, compared
to more advanced economies.

There appears to be a general consensus that in
Latin American countries a movement toward greater income
equality is a social benefit, and a movement toward greater
income inequality is a social cost.

Policies which change the character of the ownership of agricultural land may or may not change the distribution of income. Agrarian reform can be successful in changing the pattern of income distribution to one of greater equality, only if those agricultural workers who are displaced by changes in land tenure are gainfully employed in other sectors of the economy. It is difficult to assess whether higher incomes for some workers coupled with greater unemployment for others is an increase or a decrease in aggregative welfare, but it certainly does not make for greater income equality. Policies that have affected the factors of production in the industrial sector have been essentially those which have led to capital intensive processes, together with a relatively low rate of growth of the required industrial labor force.

Fiscal policies that have been used by advanced economies to consciously or unconsciously distribute income more equally have centered around progressive income taxes. A progressive income tax takes a greater proportion of income from higher income groups than from low-income groups. But, the progressive income tax has not affected income distribution, much because there is a minor emphasis on the taxation of assets relative to incomes.

In Perú, where property incomes amount to more than a third of national income at factor cost, it appears unlikely that even an effectively enforced progressive income tax would change the distribution of income very rapidly;

therefore strong emphasis should also be placed on the taxation of assets.

The (unmeasured) evidence of significant unemployment and disguised unemployment in Perú in the face of a relatively rapid rate of economic growth, prior to 1968, points to "structural unemployment." The classical remedy is a series of policies aimed at upgrading the skills and techniques of the unemployed labor force.

The aforementioned author concluded that changes in fiscal policies, education, and training of the relatively unskilled labor force, together with an effective program of agrarian reform with sufficient emphasis upon the proper development of the industrial sector, is necessary, so that industry can be made capable of absorbing displaced agricultural labor.

Hunt (1969) studied distribution, growth and government economic behavior in Perú, indicating that the oligarchy's benefit from government action may derive from economic policy measures operating outside the budget, such as those determining exchange rates, exchange freedom, and tariff protection. The oligarchy's triumph is largely the negative one of keeping policies from being turned against it.

The same author explained that the oligarchy's favored economic position is created and maintained by its control over natural resources, particularly land, and by

its monopoly of contact with the world economy. The
oligarchy is the primary beneficiary of capitalism invasion
into a traditional society, and for its purposes it has
remained satisfied with a state that was merely permissive,
rather than directly augmenting of oligarchic income. To
the extent that the state's policies have given direct aid,
this has probably occurred mostly in police and judicial
administration rather than in economic and budgetary policy.
Viewed in this context, a proportional tax system in a
country with income distribution as unequal as in Perú seems
a substantial triumph for the upper classes. The oligarchy
seemed to be in little danger of attack through increased
tax progression. The dangers were increased substantially
when the radical-reformist military government came to power
in 1968, but even now, as the antioligarchy attack develops
a momentum never before seen in Peruvian history, it is
curious to see how lightly regarded is tax reform as a
weapon of attack. In the past the oligarchy retained its
property and simply had to mend its ways in labor relations.
The direct attack on ownership and uses of property, par-
ticularly land, is of more recent vintage. Various measures
attempted in the past were frustrated by ineffective imple-
mentation, but today's agrarian reform is on the march, and
prospects for implementation are decidedly better.

Shortly after coming into power, the actual Revolu-
tionary Government of the Armed Forces enacted Law No. 17716

of Agrarian Reform, reportedly the most ambitious ever attempted in South America. Three years ago 0.8 percent of the landowners held 83 percent of the arable land. Now, owners are allowed to keep only 370 acres; the rest will be paid for in 4 percent bonds maturing in 20 years.

Van de Wetering (1970) made a preliminary estimation of the impact of the Agrarian Reform Law on the rural development of Perú. Law No. 17716 will affect 1,086,958 Ha., which represents 45 percent of the arable land in the Coast and Sierra. The arable land affected under this law was 481,257 Ha., or 65.9 percent of the total arable land in the Coast. In the Sierra region, 605,701 Ha. or 35.8 percent of the total arable land was affected. Therefore, Law No. 17716 is more drastic than is generally believed. The areas included have variable economic value. The gross value of agricultural production concerned is 61 percent of the total value of agricultural production, corresponding to 67 percent and 54 percent, respectively, for the Sierra. In absolute value, the law includes s/. 9,300 million soles (at 1966 prices) of the agricultural production. Not all of it will be a transfer to the people favored by the agrarian reform; input costs must be subtracted. It was estimated that the potential transfer could be 30 percent of the agricultural production aggregate value or about s/. 2,986.5 million soles (at 1966 prices). Supposing that the program of agrarian reform were of total and immediate

application, this will result in the above mentioned trans-
fer, and its impact will be really impressive. Agricultural
production would increase by s/. 5,793 million soles or 38
percent over the 1966 basic year figure with a reasonably
quick program of land redistribution, and accounting for
some delays in reorganization of the rural economy, it
would be feasible to attain a 6 percent rate of growth in
agricultural production in the next seven years. If crop
and animal mixed production is adopted, the indicated rate
of growth could increase by more than 10 percent.

The incomes to the people favored by the agrarian
reform would increase by almost s/. 9,000 million soles.
Considering a constant rate of agricultural wages, approx-
imately s/. 2,200 million soles will be acquired by the hired
laborers. With the projected rate of increased agricultural
output in the provinces of Perú, there would be scarcity of
agricultural labor for hiring; probably, agricultural wages
would increase substantially.

The incomes of the people favored by the agrarian
reform could easily be reduced by some s/. 1,500 million
soles which would allow a more equitable distribution of
benefits, to all people directly working the land.

Agricultural employment during eight years would
increase 10.1 million men/days per year. The projected
increase in economically active agricultural labor in the
rural areas, during the same period, would be 12.8 million
men/days per year.

Probably the program of agrarian reform will benefit more the complementary provincial sector than the agricultural sector itself. In accordance with a growing gross provincial product, an increase in provincial employment opportunities of about 18 million men/days per year during eight years was projected. By the time this study was done, a finished estimate of labor for the provindical complementary sector was not available. Nevertheless, it was indicated that probably a quick and adequate implementation of the agrarian reform could absorb the remanent labor of the predominantly rural provinces of Perú. Therefore, it was that agrarian reform could be a mechanism for an integral provincial development.

On the basis of a macroeconomic model, the same author indicated that increases in the large landowners' incomes are generally not compatible with income increases for the people favored by the agrarian reform or for those working in the complementary rural provincial sector. This lack of compatibility would increase wherever the provincial economy is less integrated to the national economy.

A large share in the distribution of the agricultural product for the big landowners could stimulate an increase in agricultural output, but such an increase would be at the expense of smaller incomes to the people favored by the agrarian reform.

An increase in the exports of agricultural output
to the neighboring provinces, large urban centers or world
markets will tend to increase the incomes for all sectors of
the province's economy and of which will share the new land-
owners, the workers, and the big landowners. The growth of
the province's outside markets is the most efficient and
secure instrument for the general development of the prov-
ince. After land is redistributed, the main problem will
be to create markets for the provinces which do not have
them; or to create an export base large enough as to allow
a self-promoting provincial economy. Therefore, traditional
agricultural markets would be revamped in order to reduce
regional imbalances.

The optimal result of the agrarian reform in terms
of rural development will be attained in the proportion that
the favored people will consume what the province itself
produces, even if its outputs were mainly agricultural
products.

Agrarian reform could increase the agricultural
output surplus available for export outside the province,
even if this increase is relatively unimportant. For
those provinces with low commercial integration, the agrar-
ian reform process could reduce the surplus available for
export. Therefore, in the Coast, agrarian reform could
provoke an increased supply for the large urban centers;
its effect could be reversed in the Sierra. Because of

that possibility, the Sierra should be given top priority
for promotion as sources of supplies for the large urban
centers of the Coast.

On the basis of the macroeconomic model, if there
were a choice between a policy of distributing land without
financial payments, and a similar financial investment for
promotion of markets, the social benefits for all sectors
of the provinces and the urban population of the large
cities, show there are big advantages for a policy promoting
markets.

A year later Van de Wetering (1971) indicated he was
disappointed since the impact of Agrarian Reform was less
than he had expected. He explained that structural change
was not enough to eliminate poverty; productivity must also
be increased.

In this chapter a description was made of the cur-
rent socioeconomic characteristics of Perú. Included were
data on recent economic events, on institutional reforms and
social progress attained; the problem of demographic growth
and the impact of the recent agrarian reform were also
discussed.

A general delineation of the Peruvian poultry indus-
try will be attempted next on the basis of the scanty
scattered data available. The environmental characteristics
likely to influence the industry's performance will receive
priority.

CHAPTER VI

THE PERUVIAN POULTRY INDUSTRY

General: The P.I.D.U.A. Report

Programa de Investigaciones para el Desarrollo,
Universidad Agraria (P.I.D.U.A.) (1969) reported on Perú's
long term projections of demand for and supply of selected
agricultural commodities through 1980, and is perhaps today
the most comprehensive study completed and published. It
was considered appropriate to rely on their estimates of:

- Gross domestic income through 1980, by regions,
  urban and rural areas
- The population of Perú
- The demand for human consumption
- Income elasticities
- Domestic apparent demand for animal products
- Domestic supply of animal products
- Projected apparent deficits in the domestic supply
  of animal products
- Impact of a devaluation on food products.

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Gross Domestic Income Through
1980: By Regions, Urban
and Rural

Geographically, Perú is divided into three regions:
Coast, Sierra, and Selva, as shown in Figure 1, Appendix B.
Each region has different economic and ecological character-
istics.

From Tables A-3 and A-4 (Appendix A) it can be seen
that the substantial increase in Gross Domestic Income will
do little to diminish the traditional inequality in the
distribution of income by regions, or between urban and
rural areas.

Economic growth was largely restricted to the urban
centers of the Coastal zone accentuating regional imbalances
rather than eliminating them. The average per capita income
in the Coast was more than double the average per capita
income in the Sierra. The differences are even more marked
when considering per capita Gross National Product in urban
and rural areas. In 1964 the Gross National Product per
rural person equaled 2,865 soles, whereas the Gross National
Product per urban person equaled 13,058 soles.

The contrast between a viable economic future in
urban based occupations and the relative stagnation of per
capita earnings in agriculture has led to an accelerated
migration of rural people to the cities. Population move-
ments between census years reflect an acceleration of this
duality in the Peruvian economy. The mobility of Perú's

most ample resource, unskilled young labor, will be a continuing principal factor in transforming the traditional economy. Official planning documents, however, reflect the belief that economic growth should be shared more equitably between regions, and between urban and rural population groups. Public investment and expenditure plans propose, therefore, a juxtaposition of the resource allocation expected on basis of a complementary relationship between growth in private economic activity and public economic activities. Under this principle the government has relied heavily on public expenditure in agriculture as the main instrument in achieving a more equitable pattern of development.

The Agricultural Planning Office (OSPA) constructed a set of comprehensive supply projections which show a marked acceleration in gross agricultural production for food crops in general and for the Sierra in particular. These projections express in great numerical abundance the philosophy of what the National Development Plan hopes to achieve. The projections, however, do not correspond to a regional equilibrium of commodity flows. In the plan the rural demand would be increased for those products in which supply would expand relatively least (livestock products, fruits, and vegetables). On the other hand, rural demand would expand least in those products for which they are encouraged to increase their production (tubers, roots, and cereals) in order to purchase the other commodities.

Rural consumers would compete with urban workers for a limited domestic supply of livestock products, fruits, and vegetables, using as payment the marketable surplus in tubers, roots, and cereals. The Sierra would become a net importer of livestock products and a net exporter of cereals, which would be a reversal of traditional commodity flows. For the larger cities the direct price elasticity for all food equaled -0.08. Commercial margins for farm products are a multiple of the on-farm values. Consequently, market demand at the farm level is quite price inelastic for crops like tubers, roots, and cereals. The projected surplus demand for tubers, roots, and cereals would actually yield a decreasing cash income to the rural sector. Undoubtedly this would tend to defeat the government's effort to expand production beyond an economically justifiable limit.

The bulk of Gross Domestic Income growth is projected to be restricted to the urban areas. Rural per capita income growth is largely determined by the growth in value of agricultural production. Historical rates of rural income growth are close to zero. Assuming a 1 percent general productivity increase in agricultural production, rural per capita incomes increase only slowly, being virtually stagnant in the Sierra. These projections are not very optimistic. They offer little hope of having a measurable impact on rural poverty, particularly in the Southern and Central Sierra.

The Population of Perú

The demand for food and fiber is directly related to changes in the size of population and to a lesser extent its composition.

The data on population were obtained through the Fourth Peruvian National Census of July 2, 1961. It was estimated that the Peruvian population will grow at 3 percent annually between 1960-1964 and 1970, and at 3.1 percent annually between 1970-1980.

As mentioned previously, Perú can be divided into three natural regions. The composition and growth of population have been very different among these regions. From Table A-5 (Appendix A) it can be seen that the Sierra and Selva are predominantly rural. The rapid growth of population in the Coast and the Selva is fed by a sizeable rural migration originating in the Sierra.

Between 1960-1964 and 1980, the population of the Coast is expected to grow at 4.4 percent annually, as compared to 1.8 percent annually for the Sierra and 4.5 percent annually for the Selva.

The Demand for Human Consumption

Typical diets are quite different for the regions of Perú. Differential population growth among the three natural regions of Perú will therefore expand the demand for some food products well above the national rate of population growth (e.g., milk and meat), and the demand for other

products will expand well below the national rate of
population growth (e.g., potatoes and corn for human
consumption).

In the more developed countries regional differences
in per capita incomes are less pronounced. Both the rural
and urban population have equal access to a wide variety of
food products. This tends to create a homogeneous consump-
tion pattern throughout the country. In Perú, however, the
rural population consumes a substantial proportion of what
it produces. Generally a few staple crops constitute the
bulk of the rural diet, e.g., rice in the Coast, tubers in
the Sierra, and bananas in the Selva.

Table A-6 (Appendix A) shows indices of per capita
human consumption by products and by regions for Perú in
1964. Since there exists no official data series on the
regional characteristics of consumption, except for house-
hold consumption surveys, this information was expressed in
terms of gross annual consumption per capita per year. On
this basis indices of consumption relative to average
national consumption were derived.

The U.S.D.A. published in 1964 a food balance for
Perú, covering the three year average for 1959 to 1961. The
price of food showed substantial seasonal fluctuations,
which become very marked for individual foods such as tubers,
fruits, and vegetables. The proportion of expenditures on
individual food items should vary with the seasonal varia-
tion in prices.

Income Elasticities

P.I.D.U.A. (1969) studied income elasticities for Perú; they were derived on the basis of results of household expenditure surveys. Relationship between per capita expenditure on a product and per capita income was expressed in Engel curves.

Table A-7 (Appendix A) shows a comparison of linear Engel curves relating total per capita expenditure on food to total expenditure per capita, for six major Peruvian cities in 1964. The marginal propensity to spend for food varied from a low of 0.32 for Arequipa to a high of 0.57 for Cuzco. The average propensities to spend on food were uniformly larger than the marginal propensities to spend on food. This indicates the expenditure elasticities were smaller than unity, and that expenditure on food decreased as a percentage of total expenditure with increasing total expenditure per capita. The expenditure-income elasticity for urban areas was equal to 0.78. On an average 56 percent of the total expenditure was spent on food.

According to the National Accounts of the Central Reserve Bank (1966), the average per capita personal disposable income in 1963 equaled 5,585 soles. This concept equals the total expenditure per capita concept as used in the household surveys except for personal savings, insurance, interest payments on consumer credit, or gifts. The percentage share of total expenditure spent on food was 53.6 percent, and the corresponding expenditure-income elasticity

equaled 0.82. It is also interesting to note that the new cost of living index for Lima-Callao contains a group weight of 0.52 for expenditure on all food. Hence, it appears that the average structure of consumption as used in the cost of living index is representative of the nation's average for 1964.

The estimated average expenditure-income elasticity from Perú, while numerically large, does not differ much from similar estimates for other countries, developed or underdeveloped, with the exception of U.S.A., Canada, and Sweden. Stevens (1965) related the percentage of total food expenditures with the total private consumption expenditure per person for 35 countries yielding 65 observations. From this relationship he derived the expenditure income elasticity for all food of 0.73. The total expenditure concept used in the Peruvian household expenditure surveys excludes savings, interest payments, and donations, which are proportionately more important for the higher income groups. Therefore, the total expenditure income elasticity for food derived from household expenditure surveys are somewhat larger than that derived from series involving personal disposable income or total private consumption expenditure.

Comparison of the household surveys for Lima in 1934 and in 1964 indicated that the composition of the food budget has remained remarkably constant over time.

Table A-8 (Appendix A) shows the results of urban household surveys, with the income expenditure elasticities for each region and a weighted national urban income expenditure elasticity.

From Table A-9 (Appendix A), it can be seen that the cereals and derived products form an important expenditure group for all income levels, but their share in total food expenditures decreases rapidly with increasing income levels. The relative increase in food expenditure of fruits, vegetables, dairy products, and meats is largely at the expense of cereals. With an average per capita income of about 6,000 soles per year (approximately U.S. $140), the average consumer would spend 18.8 percent of his food budget on cereals.

Meats and meat preparations form an important share of the food budget in both low income and high income classes, as shown in Table A-10 (Appendix A). Generally with increasing per capita incomes, the share of expenditure on meats will increase, especially for the very low income classes. Beef dominates meat consumption in the Coastal cities. The interior cities are predominantly oriented towards beef consumption, but mutton is also important. Minor meats, such as chicken, pork, bacon, luncheon meats, and edible offal, are of little importance relative to total expenditure for meat, except in Lima. With a per capita income in 1964 of 6,000 soles, the average urban consumer

in Perú would spend 22 percent of his food budget on meats.
The price of beef is different between cities, with the
highest prices in the Coast and the lowest prices in the
interior. The price of mutton and beef are not very dif-
ferent, and existing price differences for meat between
cities probably stem from differences in quality. Beef
consumed in the Coastal cities is principally imported, and
when from local origin, the beef comes from feedlots, where
the cattle are fattened. Beef cattle in the Sierra are fed
on natural pastures and are of lower quality. Poultry meats
are hopefully intended to be substitutes for red meats.

Diets in the rural areas of Peru are strikingly
different from diets in the urban areas. Generally, the
rural diet is less adequate and less diversified than its
urban counterpart as shown in Table A-11 (Appendix A). The
data in Table A-12 (Appendix A) are slightly different than
the values in Table A-13 (Appendix A) published by FAO
(1966). In general, those figures suggest that the nutri-
tional average per capita intake in Peru is below ideal,
but not critically low.

The ideal diet for Peru, taking account of its
population structure and climatological conditions, should
be a weighted average of 2,410 calories per capita per day,
and 60 grams protein per capita per day.[1] This ideal diet

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[1]Obtained from Dr. Carlos Collazos Chiriboga,
Director of the Institute of Nutrition, Ministry of Public
Health, Lima, Peru, 1963.

will not be reached until 1975 for calories, and probably
not until 1980 for proteins. Collazos (1960) indicated that
an expansion in food production is plainly justified from a
nutritional point of view in the foreseeable future, espe-
cially when considering that the national average hides an
alarming incidence of malnutrition in the rural areas of the
Sierra, and the malnutrition of Perú's largest population
group, little children.

P.I.D.U.A. (1969) reported that in the Peruvian
case, and for the range of per capita incomes considered,
both the quantity of consumption and the per capita diet
will improve substantially with increasing per capita in-
comes. The calorie income elasticities are somewhat smaller
than the quantity income elasticities, as shown in Table A-14
(Appendix A). But such differences are small, and this indi-
cates that with an increasing per capita income, the per
capita intake of calories will increase substantially. The
protein income elasticities have no definite relationship
with the quantity income elasticities.

Income elasticity estimates in Table A-15 (Appendix
A) have been used in determining the effect of income growth
of the demand for food. Their principal characteristics are
that they are relatively large and generally larger in rural
areas than in urban areas.

Domestic Apparent Demand for
Animal Products

P.I.D.U.A. (1969) projected the demand for agricultural products through 1980. Their results on the gross requirements of major livestock products are included in Table A-16, and the annual rates of growth of the gross requirements for direct human consumption are shown in Table A-17 (Appendix A). Both are shown by major regions and with projections for 1970, 1975, and 1980.

The annual rate of growth of apparent domestic demand by product group varies from a low of 3.0 percent (1960-1964 to 1970) for meats and offals, to a high of 7.9 percent (1970-1980) for eggs, as shown in Table A-18 (Appendix A). The low rate of growth for meats is caused by recent devaluation impacts, since a large proportion of meats are imported. However, after 1970, the projected demand for meats and offals increases to 5.5 and 5.9 percent for the two succeeding five year periods. In general, the projected demand for all product groups increases faster than population growth. Large variations are indicated for individual products, for regions, and for rural or urban areas. The agricultural sector must have considerable capacity to expand production, and the adequate strategic decisions shaping the future production must be taken, if it is to meet this challenge. These considerations indicate that the funds allocated to the Agricultural Research and Promotion services should be increased considerably if the public sector wants to significantly increase yields.

Domestic Supply of Animal Products

The actual and projected production of livestock products are included in Table A-19 (Appendix A).

It has been proposed that the number of beef slaughtered will decrease each year, and at the same time, the carcass weight will increase. But, the devaluation of 1967 has led to an increase in number of animals slaughtered, including part of the younger breeding stock. Accordingly, the national production will continue to grow at a rate of 3.2 percent annually between 1962 and 1980.

Sheep production is virtually restricted to the Central and Southern Sierra. The existing sheep population is too large for the carrying capacity of the available natural pastures. Consequently, the optimum sheep population would call for a reduction. However, the mutton production will still grow at a rate of 3.2 percent annually between 1962 and 1980.

The potential genetic improvements, the rapid case of reproduction, and the growing availability of livestock concentrates offer promising returns for the public expenditure on research and promotion in hog production. Historically, domestic supply has kept pace with the rapidly expanding demand. A rate of growth of 6.6 percent annually will maintain the domestic self-sufficiency.

The production of goats is projected to grow at a 2.9 percent annual rate.

Llamas, alpacas, and vicuñas are primarily used for their wool, hide, and as beasts of burden. The consumption of meat is incidental in comparison with the foregoing purposes. No substantial increase in the consumption of their meat is expected. The number of animals slaughtered per year is projected to increase proportionately with the animal population.

Guinea pigs are particularly important in the Sierra, where they substitute for most other meats. Due to the local nature of consumption and the substantial elasticity of supply, it is expected that the production of guinea pigs would grow according to the rate of growth in demand.

The production of poultry meat has increased rapidly in recent years. The number of birds slaughtered is expected to increase from 42 million in 1966 to 140 million in 1980. The bulk of poultry slaughter is chickens, and only a minor quantity is accounted for by turkeys and ducks. The average live weight per bird slaughtered is projected to decrease from 1100 grams to 900 grams in 1980. This decrease is caused by the growing importance of broilers, which in Perú are slaughtered at an average of 800 grams carcass weight. Production is projected to increase from 21,100 metric tons in 1962 to 126,300 metric tons in 1980.

It is expected that the production of poultry meat will, in large part, substitute for the demand for red meats, particularly beef. However, such a substitution is possible

only if the price of poultry meat would decline with respect
to the price of beef. The price of beef to the Peruvian
consumer is determined in the international markets. If
the Peruvian Sol is overvalued, the consumer will find it
to his advantage to rely on imported beef. This situation
was rather typical in Perú in the years prior to devaluation.
If the price of chicken relative to the price of beef is to
decrease and still allow for normal profit margins in poul-
try production, then the cost of production must decline
rather rapidly. While such gains were enormous before 1967,
they cannot be expected to continue at that rate.

Projected Apparent Deficits in the Domestic Supply of Animal Products

As reported by P.I.D.U.A. (1969), the balance for
domestic apparent demand with national production is shown
in Table A-20 (Appendix A). The volume of meat imports
between 1960-1964 and 1980 will grow at 8.2 percent annually,
which represents a fourfold increase. The volume of beef
imports is projected to reach 74,300 metric tons in 1980,
satisfying 37.8 percent of the domestic apparent demand in
1980, as compared to 21.3 percent in the period 1960-1964.
Consequently, it is expected that Perú will increasingly
rely on international suppliers of beef. By the same token,
it is projected that Perú will become increasingly dependent
on international suppliers of fats, oils, milk and milk
products, wheat, and barley.

Imports of mutton and poultry are projected to reach levels not exceeding 1,000 metric tons each in 1980. The projected volume of imports of either meat is an insignificant proportion of the projected domestic apparent demand.

The volume of imports of edible offals is projected to increase fourfold between 1960-1964 and 1980. Virtually all imports of edible offal will be from beef animals, mainly hearts and stomachs.

Perú has been traditionally self-sufficient in egg production, except for a very small volume of hatching eggs. The projected apparent deficit in domestic production will reach 800 tons in 1980, an insignificant proportion of apparent domestic demand in that year.

The apparent deficit in domestic production is not necessarily translated into imports. A growing deficit in the domestic production of a given commodity will create pressures to increase the price to the consumer. The demand for food in Perú is fairly price elastic. An increase in the retail price of a given product will therefore cause an almost proportionate decrease in domestic production. Domestic production may also increase if the increase in price is of sufficient permanency to make additional domestic production profitable. Another alternative is that the public sector, confronted with a picture of growing food imports, will accelerate public investment in agriculture so as to achieve a greater degree of self-sufficiency in food production.

The incidence of consumption of imported foods is largely restricted to the urban areas. The government has consistently pursued a policy of keeping the retail price of such products as low as possible and in doing so subsidizing the wealthier sector of the Peruvian population.

Impact of a Devaluation on Food Products

Peruvian national income growth depends closely on sustained export growth. The bulk of Perú's exports consists of primary products to U.S.A. and Europe. Economic fluctuations in the latter countries cause a more than proportionate change in Peruvian export earnings, which in turn has a multiplicative effect for Peruvian national income growth. The Peruvian government is engaged in an ambitious program of social economic development. To finance this program the government must rely on a combination of domestic savings, external financing, or on a systematic expansion of bank notes. The balance of these components will vary somewhat with the party in power. In recent years the bulk of public investment has been financed through international loans and periodic emission of bank notes. With sustained growth in export earnings, sufficient reserves will be available to finance the imports of capital and consumer goods, as well as the burden on the public external debt. On the other hand, the almost permanent internal cost inflation erodes the profitability of

agricultural and industrial imports, given a stable exchange rate. After a number of years, either slackening in export growth or the decreased profitability of exports will create pressures for devaluation of the domestic currency.

Peruvian export earnings grew rapidly in the period 1950-1966, and, due to a succession of relatively conservative governments the frequency of devaluation, has been low, relative to other Latin American countries. The Peruvian Sol was devalued by 16 percent during the Odria government in 1953, by 21 percent by the Prado government in 1957-58, and by 45 percent by the government of Belaunde in 1967. When devalued, the Peruvian Sol becomes undervalued relative to the U.S. dollar. Consequently, the price of imported food products increases with devaluation. Perú's typical food imports (dairy products, wheat, beef, fats, and oils) are quite responsive to price changes. A devaluation therefore drastically cuts imports.

It might be hypothesized that increased prices for imported food products would substantially encourage domestic production, thereby substituting the imported product. P.I.D.U.A. (1969) explained that this effect might not be substantial because: (1) domestic industry will oppose increasing their prices for domestically produced import substitutes; (2) the government does not have the required solvency, nor conviction, to stimulate domestic production of substitutes through price subsidies to farmers (besides, it is politically committed to agrarian reform rather than

expanded agricultural production); and (3) the devaluation will cause a drastic change in the cost price relationship for export crops, and these will partly recover the average previously substituted for food crops. Furthermore, the periodicity of internal cost inflation followed by devaluation makes it difficult to obtain long range commitments from commercial livestock producers, even though in the short run livestock fattening may be profitable.

In general, the net effects of a devaluation on food imports depends on the response in domestic food production, income and population growth, and the price and income elasticities for domestic and imported food.

Some Laws Affecting the Poultry Industry

In attempting to improve the agricultural sector, the Peruvian government has enacted several laws, among them Law No. 16726 for Promotion and Development of Agriculture, passed in November 1967. Later some articles were modified by Law No. 16956, passed in March of the following year. Under such legislation it was declared of social interest and of national need to promote and develop the agricultural sector, especially the production of food products and the normalization of supply. The government was to accord its preferential attention on agreement with the national development plans.

Law objectives were considered to stimulate:

a. The agricultural production, through the increase in productivity, the expansion of cultivated land areas, and the reduction of costs of production.

b. The domestic food production, in sufficient quantities.

c. The production of agricultural inputs for other domestic industries.

d. The economical supply of inputs required for the agricultural industries.

e. The industrialization and preservation of agricultural products.

f. The appropriate marketing of agricultural products.

g. A better use of public and private economic resources.

h. The rational use and preservation of natural resources and indigenous species.

In order to promote agricultural activities, the government will give its support through tax incentives, credit, technical assistance, marketing, and industrialization.

As an incentive, exemption from all taxes for ten years beginning April 1968 was given to all agricultural production firms, industries of primary transformation, and agricultural products marketing firms.

Imports of agricultural products either processed or as raw materials or its substitutes will be subjected to payment of custom duties, and no exonerations will be granted as long as domestic supply is sufficient to satisfy demand.

No custom duties nor taxes will be levied on imports of new machinery, equipment, accessories, pumps, and other inputs for the agricultural industries, except when goods of similar technical characteristics are already being produced domestically.

For ten years industrial and commercial profits will not be taxable if they are reinvested in the agricultural sector of the Sierra or Selva regions. Only 50 percent of profits will be taxable--if reinvested in the agricultural sector of the Coast region.

Exports of coffee byond quota limits, wool and auchenidae fibers, textiles, and handcrafts will be exempted from domestic export taxes.

Government owned banks will provide credit to the agricultural sector. Private savings will be attracted to those banks, and privately owned banks are invited to provide credit for agriculture. Long term loans for capital investment are encouraged. Agricultural products stored in official facilities can be used as collateral for loans up to 80 percent of their current market value. For small and medium sized agricultural firms, interest on loans will not surpass 7 and 9 percent, respectively, if the purpose was food production.

Technical assistance will be associated with the supply of inputs, like synthetic fertilizers and guano. Cooperatives and trade associations will be encouraged and backed up.

Agricultural marketing should be improved. The Ministry of Agriculture will establish services for quantitative forecasting of crops, information on prices in the domestic and foreign markets, price trends, and water supply forecasts. The same Ministry is authorized to set up minimum prices for non-perishable agricultural staple foods. The supply and price of cottonseed meal will be regulated domestically. Imports of edible crude oils will be controlled by the government. Domestic producers will be protected from foreign dumping or unethical competition. Official quality standards will be set up for agricultural products.

The Supreme Decree No. 10 of April 1965, created the National Poultry Council as an advisory body in technical matters like evaluation of the current situation of the industry and its possibilities for expansion, to advise the government on poultry industry problems and its possible solutions.

The Supreme Resolution No. 412 of September 1965, was enacted to set up standards for import and marketing of poultry meat parts.

Law No. 15704 of June 1964 imposed a tariff of ten soles (about U.S. $0.22) per kilogram of imported frozen poultry meat.

Supreme Decree No. 125-A of September 1967 prohibits the sale and consumption of red meats for two days every week.

Supreme Decree No. 219-A of December 1967 nullifies the preceding decree, and instead prohibits the sale and consumption of red meats for only one day every week.

Supreme Decree No. 231-68-Ag/SG of November 1968 reestablished the prohibition of sale and consumption of red meats for two days, Monday and Tuesday, of every week.

The Agrarian Reform Decree Law No. 17716 was enacted on June 1969, which did not directly affect the poultry industry structure.

Supreme Decree No. 27-69-AP of May 1969, again established the prohibition of sale and consumption of red meats for only one day.

Supreme Decree No. 152-69 AP/DEC of August 1969 particularized that only beef could not be sold or consumed for one day a week, Tuesday. Meats from all other species were not prohibited.

In June 1969 Supreme Decree No. 009-701C-DS established that agricultural commodities of first priority, including poultry and eggs, should be sold at prices equal to those of December 31, 1969.

On March 1970, by Ministry Resolutions No. 531-71-AG and No. 532-70-AG, contracts between the Ministry of Agriculture and Instituto Veterinario de Investigaciones Tropicales y de Altura (I.V.I.T.A.), the Veterinary Institute for Research on Tropics and Altitude of San Marcos University, were approved to carry out research on poultry breeding in Huancayo (highlands) and Iquitos (jungle).

Law No. 18296 of May 1970 was enacted to modify Decree Law 17716. The new law includes among its dispositions an article which calls for distribution of 50 percent of net profits among regular workers by societies of persons owning rural properties. Limited liability companies are not allowed to own any land. In addition, private individuals owning land more than three times the size of an agrarian family unit (varies from 3 to 5 Ha., depending on the area in which they are located) must distribute 10 percent (increased to 20 percent by Decree Law No. 18366 of August 1970) of their gross annual profit among their regular workers. Nevertheless, according to the 1967 poultry farm census, most farms had an area below 1 Ha. of area.

On August 1970, by Ministry Resolution 2670-70-AG, the basic points regarding the technical and economic feasibility for the establishment of commercial poultry parks in the corn producing area of Casma (Department of Ancash) and Viru (Department of La Libertad) were approved.

On October 23, 1970, Decree Law 18443 deferred for six months the prohibition of importing New Castle and poultry bronchitis vaccines.

In December 1970, the government published the draft of the law for the development of livestock and poultry. This draft provides for a series of credit and promotional incentives including tax exemptions. However, the final law has not been released.

For 1971, it has been reestablished the prohibition of sale and consumption of red meats for two days, Monday and Tuesday, of every week, which should encourage poultry products consumption.

Labor laws impose heavy financial burdens on private enterprises. It was considered relevant for this study to briefly review the most important Peruvian legislation on that matter.

Decree Law No. 18471, enacted in November 1970, and later clarified by Decree Law No. 18912 passed in July 1971, established the worker's job stability in private firms and para-statal enterprises. Workers cannot be fired unless they incur in specific faults like irresponsibility on the job, provide maliciously false information to employer, mismanagement of property, to engage in parallel competitive endeavors, reveal secret industrial processes, repeated disobedience, drunkeness or the use of narcotics, unjustified absence for more than three consecutive days or five

not consecutive. Other accepted reasons for firing workers
are reductions or massive dismissal of all personnel which
should be authorized by the Ministry of Labor, due to tech-
nical or economical reasons, or acts of God. The employer
must justify the causes for firing workers.

By Decree Law No. 18445, passed in October 1970,
it was established that white and blue collar workers will
be paid triple salaries if they work during their yearly
legal 30 day paid vacation period.

Law No. 7505, Law No. 14460, and Law No. 19008
established that all firms must have at least 80 percent
Peruvian white and blue collar personnel, considered inde-
pendently. The same ratio must be kept for salaries paid.

Different legal documents have established that the
ordinary week of work for males over 18 years of age should
be eight hours per day, or 48 hours per week. Women and
minors should not exceed eight hours of work per day or
45 hours per week, and they cannot work at night. Overtime
should be paid at a minimum of 25 percent over the normal
wage, unless otherwise negotiated with the employees.

Statutory minimum salary and wages have been estab-
lished for two years by Law No. 14222 and regulated by
Supreme Resolution No. 075-TR of March 1970. Since most of
the poultry industry firms are located in the Department of
Lima, it was considered relevant to include the following
information:

	Minimum (Peruvian soles)

In the Province of Lima:

Employees (both sexes) salary/month	1980.00
Blue collars (both sexes) wages/day	66.00

In the Provinces of Chancay and Canete:

Employees (both sexes) salary/month	1320.00
Blue collars (both sexes) wages/day	44.00

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[a]Rate of exchange: 38.70 Peruvian soles per dollar (dollar certificate).

Bonuses should be given for cost of living and for seniority in the job; other bonuses, like for Christmas and Independence Day, are facultative to the private firm.

By Law No. 10239, all employees retiring or fired from a job will have a monetary compensation for the time they served the employer. They will be paid one monthly salary per year, or period over three months, they were on the job.

Law No. 8439 established that beginning in 1952, all blue collar workers when retiring or fired from a job will be paid the wages of 30 days per each year they were on the job.

Law No. 4916 established that in case of business mergers, sale, transfers, or rent, all workers will maintain their job privileges. The same law established that after every four years on a job, the employer must acquire a life

insurance for its employee, the premium of which must be equivalent to one-third of the total value of salaries earned in those four previous years.

Law No. 13724 provides for payment of 50 percent of the monthly salary to employees that become invalid by disease or accident.

Law No. 14069 concedes payment of 50 percent of the monthly salary to employees over 60 or 55 years of age for males and females, respectively. According to both Laws No. 13724 and 14069, payments will be made from the Fund for Pensions.

The main taxes to be paid related to salaries and social benefits are:

1. To salaries and wages: 2 percent stamp tax, paid half by employer and employee.

2. Indemnizations: 1 percent stamp tax.

3. Vacation: 2 percent stamp tax.

4. Employees share of profits: no taxes.

5. Bonuses: 2 percent stamp tax.

6. Advanced salaries: no tax.

7. Loans: 1 percent stamp tax.

8. Retirement pension: 1 percent stamp tax.

9. Blue collar's Social Security: 9 percent stamp tax, to be paid 6 percent by the employer and 3 percent by the employee.

10. Fund for blue collar's retirement: 4 percent stamp tax, to be paid half and half by employer and worker.

11. Employees Social Security: (a) Maternity and Disease Funds--6.5 percent of the salary up to s/. 12,000 per month, borne 3.5 percent by the employer and 3 percent by the employee, 2.1 percent for the salary fraction over s/. 12,000 per month to be paid by the employee; (b) Retirement Fund-- 3 percent of the salary, 2 percent to be paid by employer and 1 percent by employee.

12. National Fund for Health and Social Welfare: 3.5 percent of all payments for personal services to be paid by the employer.

13. National Service for Training of Industrial Workers: employers must contribute 1 percent of salaries paid.

14. Special Retirement Fund for Private Firm Employees: private employers with capital over two million soles must contribute 2 percent of their total monthly payments for personal services.

The New General Law of industries will be included in one of the following sections.

Poultry Production Firms

In Perú the development of the poultry industry
will have to face rather different environments in every
geographical region. More than the physical ecology, the
economic will be the hardest problems to solve. With the
help of modern technology the physical problems can be
solved at different costs. For each specific location a
complete new set of conditions will have to be studied if
successful enterprises are desired. Following is a general
description of the current state of the Peruvian poultry
production firms existing in the three geographical regions:
Coast, Sierra, and Selva.

Coast Region

The socioeconomic characteristics of this geographic
region have been described. Striking among them are the
higher current incomes per capita and also the greater rates
of its growth, providing the highest potential demand for
the relatively expensive animal protein foods. This region
also has the larger urban population concentrations with
the highest consumption potential of the country.

Most inputs for the poultry industry are produced in
this region ranging from baby chicks, fish meal, corn, feed
additives, vaccines, equipment, to technical assistance and
packing materials. Under such a framework, the poultry
producers have been developing enterprises in a wide variety

of sizes, efficiency levels, and managerial practices, but for easiness of discussion we will classify them into two types of firms: industrial farms and small farms.

Industrial farms.--The industrial farms are usually fairly large enterprises. They are located near to consumers, the large urban concentrations. The industrial farmers use hybrid specialized birds, with proper housing, sanitation and disease prevention practices, and adequate nutrition. In general, they are characterized by the economic efficiency of their decision making for production and marketing. Regardless of farm size, they usually have high labor productivity.

In Perú, even if an estimated 85 percent of the poultry feed market is in the hands of three big feed mills, there is no vertical integration. A few big producers work under loose contracts with supermarket chains and poultry processing plants.

In the Coast region farms located away from cities have the advantage of good roads, which lower their relative transportation costs. By the same token, breeder farms and hatcheries, which furnish the industrial farms with baby chicks, are located nearby. Technical consultants are readily available to keep farmers up to date with technological progress. In general, it can be said that the production phase is well on its way to growth.

Credit has been more readily available to large industrial farmers. This credit is not available to small farmers unless substantial collateral is provided.

The economies of scale obtainable in the production phase are limited by the optimum ratio of number of birds that one or two men can efficiently take care of. Most of the advantages for these industrial farms arise from the marketing phase, increased bargaining power for buying inputs or for selling products and specialization of functions.

Small farms.--In Perú small farms are usually a supplementary economic activity to agricultural enterprises. Nevertheless, there still exist a large number of small poultry farms which are the only agricultural source of income, even if some members of the family will eventually engage in other activities. The small Coastal poultry farms also enjoy the advantages of their geographic location, as mentioned for industrial farms. Because of their smaller than optimum size, the real costs of production are usually higher than technologically feasible. This is due mainly to: (a) sub-utilization of labor, (b) poor technology, (c) weak bargaining power for buying inputs and for selling products, (d) inaccurate market information, and (e) high costs of marketing.

Manning and Giron (1968) observed the economic performance of small poultry farms in a valley near Lima.

They commented that this type of farm, under the given marketing conditions, had some advantages, mainly because they would sell at retail their relatively small amounts of product, and by doing so, obtain better prices. In the author's opinion, time and labor employed in marketing activities could be better allocated to improve the production phase of the business. Under the current price schedules, small farmers were satisfied if their variable costs were covered. They were not considering, though, their costs of family labor, management, nor interest to their capital investment, and some not even depreciation of housing and equipment. Temporary, low cost type of housing on one hand, and the short cycle for producing broilers on the other, allows the small farmers to be in and out of business. They have more flexibility in that respect than industrial farmers who have invested heavily, namely the large producers of eggs and broilers.

Mortenson *et al.* (1956) explained some of the reasons why the small farmers persisted despite the increasing pressures from larger competitors. If a small flock is at all profitable, it supplements the farm income. Small farms utilize family labor that otherwise would be wasted. No financial records are kept on the flock, so the operator does not realize that he may not be making a profit. On many instances the income from the farm flock goes to the housewife and may be her only source of ready cash. Rate of investment is generally slow, going unnoticed to the farmer.

Sierra and Selva (Highlands and Jungle

The general socioeconomic characteristics of these geographic regions have been described elsewhere. Distinctive characteristics are the low current incomes per capita and the small rates of its growth. Except for a few towns, the population is widely scattered; the potential increase in consumption is therefore low. Both are difficult geographical regions. Roads, where existing, are not all-weather type, so transportation of inputs or poultry products, where possible, is expensive.

In the Selva, rivers provide the main, but also arduous and unsafe, means of transportation. Given the peculiar characteristics of the townships, the relatively small economically active population has determined the maximum farm size to be equivalent to a small farm of the Coastal region. Besides the inherent characteristics previously mentioned for small farms, producers must face higher input prices due to transportation from the Coast for bird stocks, feed, equipment, veterinary supplies, building materials, and fuel.

In the Sierra exist the communal system of farming between the Indians. The ownership of land is maintained by a collective body, so the concept of private property has little meaning. These socioeconomic entities could be advantageously employed for developing poultry, initially

to produce meat and eggs for local consumption and later for export to nearby towns.

Statistics on Poultry Farms

Reported statistics on poultry producing firms is rather incomplete and an effort has been made to integrate isolated reports in a comprehensive manner. Uriarte (1970) estimated that about 80 percent of the poultry market was concentrated in the Department of Lima (Coast). Most available statistics do not cover the rest of the country, except as very rough approximations. Bennsky (1971) reported that the forecast for 1971 poultry populations is 19 million, up 6 percent from the 1970 estimates of 18 million, and equal to the population in 1967, Perú's record. The production of poultry meat in 1971 is estimated at 50,000 metric tons, 9 percent above the 1970 production of 46,000 metric tons. Factors contributing to the increase include better commercial facilities, the two beefless days a week in Lima and several provinces, the expected continued shortage of beef in 1971, and lower bird mortality by infectious diseases. Production of eggs in 1971 may total 29,000 metric tons, an increase of 16 percent from 1970. Beef shortages are also turning consumers towards eggs.

Conestcar (1967) conducted a census of poultry farms in the Department of Lima. That year is considered as the record in poultry population. In reference to the legal status (ownership) of poultry producers, out of 727 poultry

farms counted, 82.94 percent had individual owners, 7.84 percent were private societies, and only 7.29 percent were corporations (Table 18). In relation to land tenure pattern of the poultry farms, 70.97 percent of the farms were owned and only 28.19 percent were on leased land (Table 19). Management of the poultry farms surveyed was in 81.84 percent of the enterprises done by the owner, who in most cases was only a practitioner with no formal training (Table 20). By the same token, poultry health care was in the hands of the owner on 81.56 percent of the farms (Table 21). Nevertheless, they get additional technical assistance from private concerns, mostly feed dealers' servicemen, in 69.17 percent of the farms. Only 6 percent of the farmers are getting additional assistance from public institutions (Table 22). In reference to the type of poultry housing, 83.22 percent of the farms had permanent type buildings, of which 42 percent were considered adequate. Only 11.28 percent of the farms had temporary type buildings, of which 61 percent were considered adequate (Table 23). Most farmers conduct poultry disease control programs for commonly occurring diseases (Table 24).

By the time the 1967 census was conducted, the farms had a poultry population of 4.22 million birds, the composition of which is included in Table 25. It is worthy of notice that turkeys and ducks constituted small populations.

Table 18. Reported legal status (ownership)
           of poultry producers (Department
           of Lima: 727 farms)

Poultry Producers	Percentage
Individual owner	82.94
Private society	7.84
Corporation	7.29
Other	1.92

Source: Convenio de Cooperación Tecnica-
         Estadística y Cartografia (CONESTCAR),
         personal communication, Poultry Farm
         Census: July-August, 1967, Lima,
         Perú.

Table 19. Reported land tenure pattern of the
           poultry farms

Land Tenure Pattern	Percentage
Ownership	70.97
Leasing	28.19
Others	0.16
Without information	0.66

Source: CONESTCAR, personal communication,
         Poultry Farm Census: July-August,
         1967, Lima, Perú.

Table 20. Reported type of management of the farms
          surveyed (Department of Lima: 727 farms)

Reported Type of Management	No. of Farms	Percentage
By Owner:	577	81.84
Professional	35	6.06
Technician	18	3.12
Practitioner	534	90.81
By Employee:	128	18.16
Professional	7	5.47
Technician	11	8.59
Practitioner	110	85.94
Without Information	22	

Source: CONESTCAR, personal communication, Poultry Farm
          Census: July-August, 1967, Lima, Perú.

Table 21. Reported type of poultry health care in the farms
          surveyed (Department of Lima: 727 farms)

Reported Type of Poultry Health Care	No. of Farms	Percentage
By Owner:	566	81.56
Professional	36	6.36
Technician	17	3.00
Practitioner	513	90.64
By Employee:	128	18.44
Professional	14	10.94
Technician	7	5.47
Practitioner	107	83.59
Not Defined	9	
Without Information	24	

Source: CONESTCAR, personal communication, Poultry Farm
          Census: July-August, 1967, Lima, Perú.

Table 22. Reported additional technical assistance received
by the farmers surveyed (Department of Lima: 727
farms)

Technical Assistance Received	No. of Farms	Percentage
From public institutions	40	6.01
From private concerns	460	69.17
No additional assistance	165	24.81
Not defined	38	
Without information	24	

Source: CONESTCAR, personal communication, Poultry Farm
Census: July-August, 1967, Lima, Perú.

Table 23. Types of poultry housing in the farms surveyed
(Department of Lima: 727 farms)

Types of Poultry Housing	No. of Farms		Percentage
Permanent Type:		605	83.22
Adequate	252		
Not Efficient	353		
Temporary:		82	11.28
Adequate	50		
Not Efficient	32		
Precarious		5	0.69
Without Information		35	4.81

Source: CONESTCAR, personal communication, Poultry Farm
Census: July-August, 1967, Lima, Perú.

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Table 24. Reported kinds of poultry disease control
           (Department of Lima: 727 farms)

Disease	Treatment (%)	Vaccination (%)
New Castle	0.15	91.81
Fowl Pox	0.33	95.55
Cholera	26.87	62.50
Chronic Respiratory	96.32	2.94
Coccidiosis	78.26	4.35
Leukosis	70.83	0.00
Typhoid	90.90	0.00
Pullorum	80.00	0.00

Source: CONESTCAR, personal communication, Poultry Farm
         Census: July-August, 1967, Lima, Perú.

Table 25. Composition of the reported poultry population
           (Department of Lima: 727 farms)

Composition of Poultry Population	No. of Birds		Percentage	
Broilers:		2,262,833		100.00
Hybrids	2,260,083		99.87	
Dual Purpose	2,750		0.03	
Commercial Layers:		1,397,603		100.00
Hybrids	1,098,485		78.60	
Dual Purpose	412,753		21.40	
Parent Stock		497,269		100.00
Grand-Brent Stock		20,600		100.00
Ducks		29,013		100.00
Turkeys		14,659		100.00
Total		4,221,977		

Source: CONESTCAR, personal communication, Poultry Farm
         Census: July-August, 1967, Lima, Perú.

Of broiler type birds, almost 100 percent were commercial hybrids. Of the egg type birds, almost 80 percent were specialized commercial hybrids, but still 21 percent of the birds were of the dual purpose type.

The reported data on broiler production and on commercial layers are included in Tables 26 and 27, respectively.

The Ministry of Agriculture (1971) reported that through its Direccion de Estadistica (Department of Statics), another census of poultry farms was conducted in December 1970. By the time the counting was done, farms had a population of a little over seven million birds. Of 1,108 farms counted, only about 80 percent were currently in production (Table 28).

In Table 29 a detail of the last census findings is included; farms specializing in only one type of poultry enterprise accounted for almost 85 percent of the number of farms and of birds on hand.

Table 26. Reported data on broiler production (averages
from 686,420 birds, Department of Lima)

Price paid per BB chick . . . . s/. 6.19 soles
Age at sale . . . .   8.86 weeks
Weight at sale, live . . . . 1.543 kg/bird
Weight at sale, dressed . . . . 1.409 kg/bird

Sale Arrangements: Percentage

Under firm contract 24.44
Occasional buyers 70.50
Both 5.05

Causes:

Infectious diseases 48.3
Accidents 21.4
Miscellaneous 2.2
Parasitary disease 1.2
Nutritional causes 1.0
Other (non-diagnosed) 25.9

Feeding: Percentage
                                                    of Birds

Commercial balanced feeds 96.57
In-farm mixed feeds 3.43

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Source: CONESTCAR, personal communication, Poultry Farm
         Census: July-August, 1967, Lima, Perú.

Table 27. Reported data on commercial layers (averages from
           326,893 layers, Department of Lima)

Price paid per sexed BB chick . . . . s/. 10.88 soles
Age at start of laying . . . .   21.67 weeks
Laying season . . . .   12.42 months
  In high production . . . .   4.38 months
  In low production . . . .   8.04 months

Egg production
  Number of eggs per bird . . . .   197.0 eggs
     During high production . . . .   89.87 eggs
     During low production . . . .   107.13 eggs
  Number of layers   326,893
  Number of eggs per 7 days   1,689,161
  Number of eggs per hen-day 0.73
  Weight of eggs per 7 days . . . . 111,471,185 grams
  Weight of eggs per hen-day . . . . . .   48.71 grams

Sale price per kilogram of eggs . . . . . . s/. 22.37 soles
Sold to:
  Intermediary . . . .   83.13 percent
  Final consumer . . . .   16.87 percent

Feeding:
  Commercial balanced feeds . . . .   94.24 percent of birds
  In-farm mixed feeds . . . .   5.76 percent of birds

	Number	Percent
Initial number sexed BB chicks	428,070	100.00
Mortality:		
Up to 20 weeks of age	72,569	16.95
Culled pullets	20,695	4.83
During laying period	9,980	2.33
(7.24% of initial number of layers)		

Source: CONESTCAR, personal communication, Poultry Farm
         Census: July-August, 1967, Lima, Perú.

Table 28. Poultry population and farms (Department of Lima, includes the provinces of Lima, Cañete, Canta, Chancay, Huarochiri, and Callao)

	Total	Percentage
Number of birds	7,123,906	
Total number of farms:	1,108	100.00
Active farms	881	79.51
Farms in rest	105	9.48
Abandoned farms	122	11.01
Total area of poultry housing	1,955,036 sq. meters	

Source: Poultry Farm Census: December, 1970. Dirección de Estadística, personal communication, Ministerio de Agricultura, May 27, 1971.

Table 29. Poultry farms by types of enterprise (Department of Lima, includes the provinces of Lima, Cañete, Canta, Chancay, Huarochiri, and Callao)

Type of Enterprise	No. of Farms	Percent- age	No. of Birds	Percent- age
Total	881	100.00	7,123,906	100.00
Commercial broilers	362	41.09	3,530,806	49.56
Commercial layers	349	39.61	1,571,379	22.06
Dual purpose birds	1	0.11	10,000	0.14
Breeders	30	3.41	527,305	7.40
Broilers and layers	106	12.03	785,425	11.03
Broilers and breeders	10	1.14	225,392	3.16
Layers and dual purpose birds	1	0.11	34,000	0.48
Layers and breeders	14	1.59	297,369	4.18
Broilers, layers, & dual purpose birds	2	0.22	28,780	0.41
Broilers, layers, & breeders	3	0.34	54,650	0.77

Source: Poultry Farm Census: December, 1970. Dirección de Estadística, personal communication, Ministerio de Agricultura, May 27, 1971.

Supply of Inputs

Poultry producing firms located in the Coast have easier access to inputs and at a lower cost, than do firms located in the Sierra or Selva. These comparative advantages are also more significant for farms located in the neighborhood of Lima. In or around Lima are located most of the suppliers of poultry production inputs, including building materials, hatcheries, feed mills, technical assistance, veterinary service, medicines and vaccines, equipment manufacturers, good quality labor, and sources of financing. It has been previously mentioned that the proximity to large cities represents an advantage for marketing their poultry products.

Credit

Private credit to poultry producing firms is fairly limited in Perú. Seldom will private commercial banks lend money to small poultry operators unless they mortgage real estate property. Maximum legal rate of interest that private banks can charge is 14 percent per year, but usually there are subtly hidden charges that raise the cost of poultry loans well above 20 percent. Normally private banks will not make long term loans.

Some short term financing, usually from 30 to 60 days, is provided to poultry producers by the feed mills. Otherwise price discounts are made for cash payments upon delivery of feed.

Bennsky (1971a) reported that the draft of a law for the development of livestock and poultry was made public by the Ministry of Agriculture in late 1970, so that it could be studied and discussed by interested parties. The draft, which consists of 40 articles, established a National Fund for the promotion of animal production, with an initial capital of U.S. $50 million (s/. 2 billion soles). The fund is to be used for financing investment in programs and projects for development of livestock, approved by the Ministry of Agriculture, and for granting credits to beneficiaries of the Agrarian Reform Law for the development of livestock. The fund will be administered by representatives of the Ministry of Agriculture, Ministry of Industry and Commerce and the Agricultural Development Bank. Financing is to be provided from the Ministry of Agriculture budget, credit raised locally or abroad, and from 25 percent of the receipts in cash for livestock and fixed assets expropriated and resold under the Agrarian Reform Law.

Incentives include tax-free reinvestment in livestock of 75 percent of annual profits of animal production firms in the first five years after promulgation of the law, provided reinvestment plans are approved by the Ministry of Agriculture, accelerated depreciation of up to 50 percent on fixed assets, tax-free capitalizing of reinvestment and increase in capital, all within the first five years after the promulgation of the law.

Reference was made earlier to Laws No. 16726 and
No. 16956 which established that government-owned banks
will provide credit to the agricultural sector. Private
savings will be attracted to these banks, and privately
owned banks are invited to provide credit for agricultural
activities. Long term loans for capital investment are
encouraged. For small and medium sized agricultural firms,
interest on loans will not surpass 7 and 9 percent, respec-
tively, if the purpose were food production.

Bennsky (1971b) indicated that loans to the poultry
industry by the Agricultural Development Bank during October
1967 to September 1968 totaled s/. 39.6 million soles, and
during October 1968 to December 1969 were s/. 58.6 million
soles. The dates are not comparable because the bank
shifted its reporting period. In the last reported period
s/. 46 million soles were distributed for short term poultry
loans, 6 million soles for medium term loans, and 7 million
soles for long term loans.

The Commission for Animal Production Policy (1970)
reported that poultrymen can get loans of variable amount,
repayment periods and type of interest either from the
Agricultural Development Bank or international institutions.
In analyzing the credit system of the Agricultural Develop-
ment Bank, they reported that for loans of over s/. 100,000
soles, only up to 20 percent of the value of the poultry
flock is accepted as collateral guarantee. Nevertheless,
for other species, up to 80 percent of their value is

accepted as guarantee. This situation occurs in spite of the fact that by law, it should accept first the value of the animals as guarantee, and only then ask for additional collateral; on the other hand, credit is given as "controlled" loans. Another problem faced by small and medium sized poultry firms is their lack of access to very short term loans, of the type for maintenance or survival, especially needed to face emergencies when the long procedure of attaining loans backed up by mortgages is not appropriate nor timely. Usually big poultry firms have a well established credit backed up by large fixed investment which is more readily mortgaged. The Commission concluded that it was desirable to establish a system of supervised credit for small and medium sized poultry firms, as to allow the Bank's acceptance of a higher valued poultry flock as collateral.

Breeding Stocks and Hatcheries

The Peruvian poultry industry is heavily dependent upon imports of genetically improved breeding stocks, mostly from the U.S., but also from Argentina, Brazil, Canada, and Mexico (Table 30). This dependency on foreign supplies of breeders represented for chickens almost 83 percent in 1967, dropped to 46 percent in 1968, and 56.45 percent in 1969 (Table 31).

Bennsky (1971) reported that the value of imports of poultry and products totaled U.S. $630,000 in 1970, up 29 percent from the U.S. $490,000 registered in 1969.

Table 30. Peru: number and value of poultry imports from
1967 to 1970, including country of origin

Description	Country of Origin	No. of Birds	Value (Peru Soles s/.)[a]
1967 Poultry Imports:			
Chickens, less than one week old, for breeding	Brazil	18,345	100,043
	Canada	64,640	1,654,585
	U.S.A.	475,176	17,381,962
	Mexico	1,300	21,019
Turkeys, less than one week old, for breeding	Canada	2,400	56,644
	U.S.A.	49,181	1,422,465
Other breeding birds	U.S.A.	14	3,090
1968 Poultry Imports:			
Chickens, less than one week old, for breeding	Argentina	6,150	355,791
	Brazil	9,200	835,097
	Canada	45,740	991,918
	U.S.A.	222,675	11,024,310
Turkeys, less than one week old, for breeding	U.S.A.	26,550	952,114
Poultry meat	U.S.A.	29,399 kg.	961,976
1969 Poultry Imports:			
Chickens, less than one week old, for breeding	Argentina	21,300	664,357
	Bolivia	30,500	141,643
	Brazil	13,800	1,258,750
	Canada	78,277	5,188,881
	U.S.A.	172,888	9,304,475
Ducks, less than one week old, for breed.	U.S.A.	1,240	46,837
Turkeys, less than one week old, for breeding	U.S.A.	39,050	1,473,203

[a]Rate of exchange: s/. 38.70 Peruvian soles per dollar
(dollar certificate).

Table 30--<u>Continued</u>

Description	Country of Origin	No. of Birds	Value (Peru Soles s/.)[a]
1970 Poultry Imports:			
Chickens, less than one week old, for breeding		412,256	19,659,600
Turkeys, less than one week old, for breeding		52,140	2,167,200
Eggs for reproduction (metric tons)		5 M.T.	309,600
Other eggs (including dried, powder) (metric tons)		1 M.T.	38,700
Egg yolks (metric tons)		66 M.T.	2,205,900

Source: Estadistica del Comercio Exterior: 1967-1969. Ministerio de Economia y Finanzas del Perú, Lima, Perú.

[a]Rate of exchange: s/. 38.70 Peruvian soles per dollar (dollar certificate).

[b]Poultry import data for 1970 from: Bennsky (1971).

Table 31. Numbers and types of chicken breeding stocks, imported and domestically produced

Year	No. of Breeders for Broilers[a]	No. of Breeders for Layers[a]	Total No. Reported	Imported Breeders[b] (No.)	(%)	Domestically Produced[b] (No.)	(%)
1966	429,000	71,000	500,000	--	--	--	--
1967	601,000	74,000	675,000	559,461	82.88	115,539	17.12
1968	543,000	72,000	615,000	283,765	46.14	331,235	53.85
1969	505,000	72,000	577,000	325,765	56.45	251,235	43.54
1970	Not Available	--	--	412,256	--	--	--

Sources: [a]Peruvian Poultry Association, Records: 1966-1969, Lima, Perú.

[b]Estadistica del Comercio Exterior, 1967-1969, Ministerio de Economia y Finanzas, Lima, Perú.

This increase was a reflection of the higher 1970 imports of baby chicks for breeding purposes, up 26 percent when compared to 1969 numbers. Eggs for incubation were also imported in 1970.

In Perú there are about 23 hatcheries of variable incubator capacity, most of them located in Lima. A list of the firms, their incubation capacity and potential market share is included in Table 32. There seems to exist sufficient competitiveness.

The Commission for Animal Production Policy of the Ministry of Agriculture (1970) estimated that currently existing hatcheries were working at 64 percent of their incubation capacity to supply all market needs of commercial baby chicks. They also explained that the preferential localization of hatcheries around Lima was due to the availability of air transport to most places in the country, plus the good roads of the region. On the other hand, breeding stocks, due to their high genetic specialization, require high quality inputs, which are also available around Lima.

The Peruvian Poultry Association has reported on the number of baby chicks produced for broilers and for layers during the past few years. Lately, 1967 was considered a record year, but 1970 production figures are higher, even when allowing for some data reporting inaccuracy (Table 33).

Table 32.   Hatcheries: most important plants in Perú

Name of Firm	No.	Incubation Capacity Eggs/3 Weeks	Potential Market Share (percent)
La Cadena S.A.		600,000	13.8
Avícola Hannan		600,000	13.8
Agropecuaria Sta Angela		480,000	11.0
Arbor Acres del Perú		350,000	8.0
El Cascajal		230,000	5.3
Tominaga Hnos.		180,000	4.1
El Cencerro		160,000	3.6
La Perla (Ica)		160,000	3.6
Aves Americanas		130,000	2.9
La Campera		126,000	2.9
Hobby Ranch		120,000	2.7
Avícola Chimu (Trujillo)		120,000	2.7
El Cortijo		120,000	2.7
Yen Cen (Ica)		100,000	2.3
Kimber Chick		80,000	1.8
San Jorge (Chiclayo)		80,000	1.8
Avícola Cajamarquilla		80,000	1.8
Fomento Avícola		80,000	1.8
Granja Homy		40,000	0.9
Others		500,000	11.5
Total		4,336,000	99.0

Source: Uriarte, Carlos, "Anteproyecto: Planeamiento y
Programación de la Producción de Carne de Ave Para
Lima," Dirección General de Promoción Agropecuaria,
Lima, Perú, 1970.

Table 33.   Perú: production of baby chicks, 1961-1970

Year	For Broilers	For Layers
1961	1,236,690	280,930
1962	5,245,830	1,119,365
1963	8,027,100	1,482,000
1964	10,600,930	2,478,675
1965	18,735,750	3,754,205
1966	23,188,050	3,828,695
1967	32,438,520	3,974,815
1968	29,345,200	3,054,311
1969	27,259,000	3,907,000
1970	33,381,000	4,340,000

Source: Peruvian Poultry Association, Records 1961-1970,
           Lima, Perú.

CONESTCAR (1967) reported some data on commercial hatcheries, indicating that they had 76.3 percent hatchability, and were selling 93.8 percent of hatched birds. Of all the baby chicks produced in that year, 58.9 percent were for broilers, 35.8 percent were of the table egg production type and only 5.3 percent were double purpose birds (Table 34).

Table 34.   Reported data on commercial hatcheries (averages
            from current lot of eggs set for incubation,
            Department of Lima)

Type of BB Chicks Produced	1966 (%)	1967 (%)
Meat type	55.9	58.9
Dual purpose	3.4	5.3
Egg production type	40.8	35.8

Number of incubators	123
Number of eggs set	303,620
Number of salable BB chicks	231,589
Hatchability (percent)	76.3
Number of BB chicks sold	217,243
BB chicks sold (percent)	93.8

Source: CONESTCAR, personal communication, Poultry Farm
          Census: July-August, 1967, Lima, Perú.

Feed Mills

        Among the expenditures incurred for poultry produc-
tion, balanced feed has the largest share of total costs.

        CONESTCAR (1967) reported that in the Department of

Lima, 96.57 percent of broilers and 94.25 percent of layers

were consuming commercial balanced feeds; therefore in-farm

mixed feeds represent only a small segment of the poultry

feed market (Tables 26 and 27).

        The demand for balanced feeds in Peru is satisfied

by domestic suppliers since there has been no imports in the

past decade.   Currently there are about twenty feed mills of

widely different sizes, the production of only ten of these plants has been officially recorded (Table 35).

Table 35. Most important feed mill plants in Perú

Name of Firm	Mixing Capacity (M.T./8 hrs.)	Potential Market Share (percent)
Nicolini Hnos. S.A.	150	26.6
Molinera St. Rosa Ltda.	120	21.3
Vitasa	120	21.3
Purina Perú S.A.	80	14.2
Sidsur	44	7.8
Molinos Takagaki S.A.	16	2.8
DYMSA	8	1.4
BONANZA	8	1.4
Cooperative Avicola No. 22	8	1.4
Molinos Limatambo	8	1.4
Total	526	99.6

Source: Uriarte, Carlos, "Anteproyecto: Planeamiento y Programacion de la Producción de Carne de Ave para Lima Metropolitana: 1971-1975, Dirección General de Promoción Agropecuaria, Ministerio de Agricultura, Lima, Perú, 1970.

The Commission for Animal Production Policy of the Ministry of Agriculture (1970) estimated that about 95 percent of the feed mills' current output was balanced poultry feeds. Four feed mills have large output capability and are producing over 80 percent of the poultry feed required. It was also reported that feed mills were producing at only 50 percent of their installed potential mixing capacity,

thus allowing flexibility for output expansion without large
fixed investment. In broad terms the feed production indus-
try is characterized by an oligopolistic structure of private
firms. They have a tremendous market power that in practice
allows them to determine desired qualities and prices. By
the same token, they enjoy oligopsonistic advantages in the
buying of domestically produced feedstuffs.

In the past few years the output of feed mills has
increased constantly, from 170,504 metric tons in 1963 to
335,499 metric tons in 1968 (Table 36). Nevertheless, it
was estimated that the industry had an installed potential
mixing capacity of 650,000 metric tons of feed per year in
1970. Of the total 1968 feed output, balanced poultry feed
accounted for 331,909 metric tons for a value of about 1,500
million soles. The value of inputs represented 90 percent,
while the added value was only 10 percent of the gross total
value. Geographically, 90 percent of Peru's production of
feed was originated in Lima, 6 percent in the northern part
of the country and 4 percent in the southern region. The
largest feed mills have warehouses and agents in other towns;
besides, there are feed mills located in Trujillo (North),
Arequipa (South) and Iquitos (Jungle) which supply the needs
of those geographic regions. The technology applied by the
large feed mills includes electronic computing of balanced
poultry diets, automatic in-plant weighing and mixing of
feedstuffs, private poultry research farms for testing new

Table 36. Reported balanced feed production, 1963-1968

Year	Metric Tons
1963	170,504
1964	175,484
1965	233,212
1966	283,715
1967	292,909
1968	335,493

Source: 1963-1966--"Situacion de la Industria Manufacturers
en el Perú 1966"; 1967-1968--Peruvian Poultry
Association, Records 1969.

formulas and current output quality. Most of the packing of
balanced poultry feeds was done in returnable cotton fabric
bags; today they have switched to non-returnable paper bags
and to bulk distribution for large farms with adequate feed-
bin capacity, except for the small feed mills that in some
instances still use the returnable cotton fabric bags.

As mentioned earlier, feed mills provide veterinary
field service and technical advice on husbandry, management,
and marketing to their customers. According to the 1967
poultry farm census, almost 70 percent of all farms counted
were getting this additional technical assistance in the
Department of Lima (Table 22).

The National Institute of Technical Standards
(I.N.A.N.T.I.C.) established the technical quality standards
and the Ministry of Agriculture, the regulations with which

the feed mills must comply in manufacturing poultry feeds.
The enforcement of such regulations has proven difficult
for the ill-equipped and under-manned government agencies.

The Department of Economic Studies of the Industrial
Bank of Peru (1967) reported on the 1966 structure of the
animal feed industry; included was information on the number
of employees, total value of wages paid, gross value of out-
put, value of all inputs used and its origin, and the value
added by the feed mills activities (Table 37).

Littlefield and Strang (1967) studied marketing in
Perú, including marketing of products for agricultural use.
Their research included the industry's environment, degree
of competition, marketing organization, product management,
advertising, personal selling, channels of distribution,
pricing, profits, and sales success. Their sample of the
industry of animal feed manufacturers was fairly small;
nevertheless, some of their reported observations are of
interest. In reference to channels of distribution, accord-
ing to their survey, direct selling from the manufacturer to
the farmer was considered the most important channel of dis-
tribution. Manufacturers choose their distributors on the
basis of which are the best merchants and their financial
strength. As a rule, manufacturers are not concerned with
how profitable their middlemen are. One of the feed mills
interviewed was an exception. This firm strived to make its
dealers profitable by installing business control systems
and practices which have proved profitable in many other

Table 37.   Structure of the animal feed industry, 1966

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Reporting firms . . . . .  . . . . . . . . . . . . . . . .      13
Number of people working  . . . . . . . . . . . . . . .       490
   White collar employees  . . . . . . . . . . . . . .        124
   Blue collar workers . . . . . . . . . . . . . . . . .      366
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	(Peruvian soles) (s/.)
Payments to workers	21,353,000
Salaries, to white collars	7,605,000
Bonuses	804,000
Wages to blue collars	12,601,000
Bonuses	343,000
Gross value of production	801,509,000
Value of inputs	694,427,000
Raw materials	641,401,000
Domestic	570,664,000
Imports	40,737,000
Packaging and other materials	46,287,000
Energy:	
Fuel	2,346,000
Electricity	4,398,000
Added value	107,082,000

Source: Department of Economic Studies, Banco Industrial
          del Perú, 1967.

countries. A dealer franchise for this firm's feed reportedly yields a 48 percent return on investment. In half of the firms surveyed there was an economic or legal relationship existing between the manufacturer and the distributor; the former sometimes owned part of the capital of a distributor. On the average manufacturers indicated to be relatively satisfied with their distributors performance. On the average the middlemen in this industry were reported to stock little merchandise in their warehouses. Manufacturers indicated that the products are difficult to store, because some of the merchandise is produced in bulk, and also that there is risk of damage if not stored in special warehouses. Poultry feed prices, as mentioned earlier, represent a significant cost item, around 65 percent of the total cost of broiler production. The Commission for Animal Production Policy of the Ministry of Agriculture (1970) reported that the average price per kilogram of broiler feed in 1965 was s/. 3.51 (soles), and in 1968 was s/. 5.55, or about 63.24 percent higher. They explained that of this price increase, approximately 40 percent was due to the 1967 national currency devaluation, and 60 percent was due to higher cost of feedstuffs, higher wages, and feed formulation quality improvements. They estimated that the real price increase was about 20 percent when adjusted for higher poultry productivity derived from improvements in feed quality.

Commenting on pricing practices, Littlefield and Strang (1967) indicated that production costs, prices of competitors, and tariff protection are the three factors used by firms to determine prices. In this industry some customers are said to get special discounts, usually for larger orders. As usual, the general manager is the major price decision maker, but the sales manager seems to have slightly more voice in the decision process than he does in other industries. On the average, respondent firms rated price competition in the industry as moderate.

On the average five respondents claimed gross profit margins at about 22 percent, considerably less than the 30 percent estimated by all firms answering their survey.

Net profit, expressed as profit after taxes as a percentage of invested capital, was only slightly lower than the overall average: 13.3 percent for the industry and 13.6 percent for all the firms.

These researchers indicated that apparently the firms were able to perform all the necessary business functions with a "skeleton" sales and administrative staff, thereby keeping costs down and net profit up. Considering the lack of competition, however, net profit was not considered particularly high. It was concluded that there was dissimilarity in the marketing strategies among the firms. The authors of the survey were disappointed when they found that firms were only moderately aggressive. Only a few firms were departing from the traditional strategies of

direct selling to consumers and pricing on a cost-plus basis. Eventually, they hoped, the few consumer oriented firms would have an effect on the rest of the industry.

These authors also concluded that the industry had a slightly lower than average sales success and were obtaining almost average rate of return on investment. These moderate performances may be accounted for by the average competition level reported, and the higher than average marketing aggressiveness of some firms. Although increased competition will hurt some of the marginal firms in the industry, it will be of extreme benefit to agriculture and the consumer.

For purposes of this study, it should be remembered that the reported survey was conducted five years ago, therefore industry characteristics may not have remained static. Nevertheless, more recent reports on the subject were not found.

Decree Law No. 18350, enacted in July 1970, is the new General Law of Industries, within which the feed mills must operate. As basic principles were declared, in order to warrant permanent socioeconomic development and economic independence, the preferential national interest should be devoted to permanent and self-sustaining industrial development, which is based upon First Priority industry and general mobilization of domestic resources. The law applies to industrial enterprises included within the industrial sector.

All industrial activities were accorded a priority and classified in four groups.

First Priority was given to:

a. Basic industries producing key inputs for productive activities. These include iron and steel metallurgy, non-ferrous metallurgy, basic chemicals, fertilizers, cements, and paper.

b. To specific industries producing capital goods and other key inputs for productive activities, like tools, machinery, electric equipment, parts, basic inputs, etc.

c. To enterprises involved in industrial technology, research, and industrial development.

Second Priority--in this group were considered all supporting industries, producing essential goods for the people, and goods and inputs for the productive activities:

a. Industries for social support, producing essential goods for satisfying primary needs of the population like food, clothing, housing, health, education, culture, recreation, and transport.

b. Sector supporting industries, producing goods and inputs for the productive activities such as agriculture, animal production, fishing, mining, energy, construction, industry, transport, and communications. Within this group were included the feed mills, also the egg drying plants, and

most products for building poultry houses, like bricks, ceramic sewage tubing, plumbing materials, electrical equipment, wire mesh, corrugated galvanized steel sheets, and packing materials.

Industries in the Second Priority group were given some tax incentives: for imports of capital and of inputs they will pay only 30 percent and 50 percent, respectively, of the established custom duties. As incentives for reinvestment up to 75 percent of their net rent can be reinvested tax free. As credit incentives the government banks will lend them at a preferential interest rate; amortization periods for capital goods will be from three to four years plus a year of grace. As administrative and technological incentives the industries in this group will have preferential support from the public sector for industrial infrastructure, commerce, financing, marketing of inputs and technological assistance. As incentives for decentralization all industries installed or to be located outside Lima and Callao will have additional tax advantages, i.e., in tax imports: 50 percent and 25 percent reduction, for capital goods and inputs, respectively. Besides 60 percent of their net profits will not be taxable. The five most efficient firms will be given an allowance of 20 percent non-taxable net profits for the two following fiscal periods.

Foreign capital participation has been also regulated by the law. Initially foreign wholly owned firms must
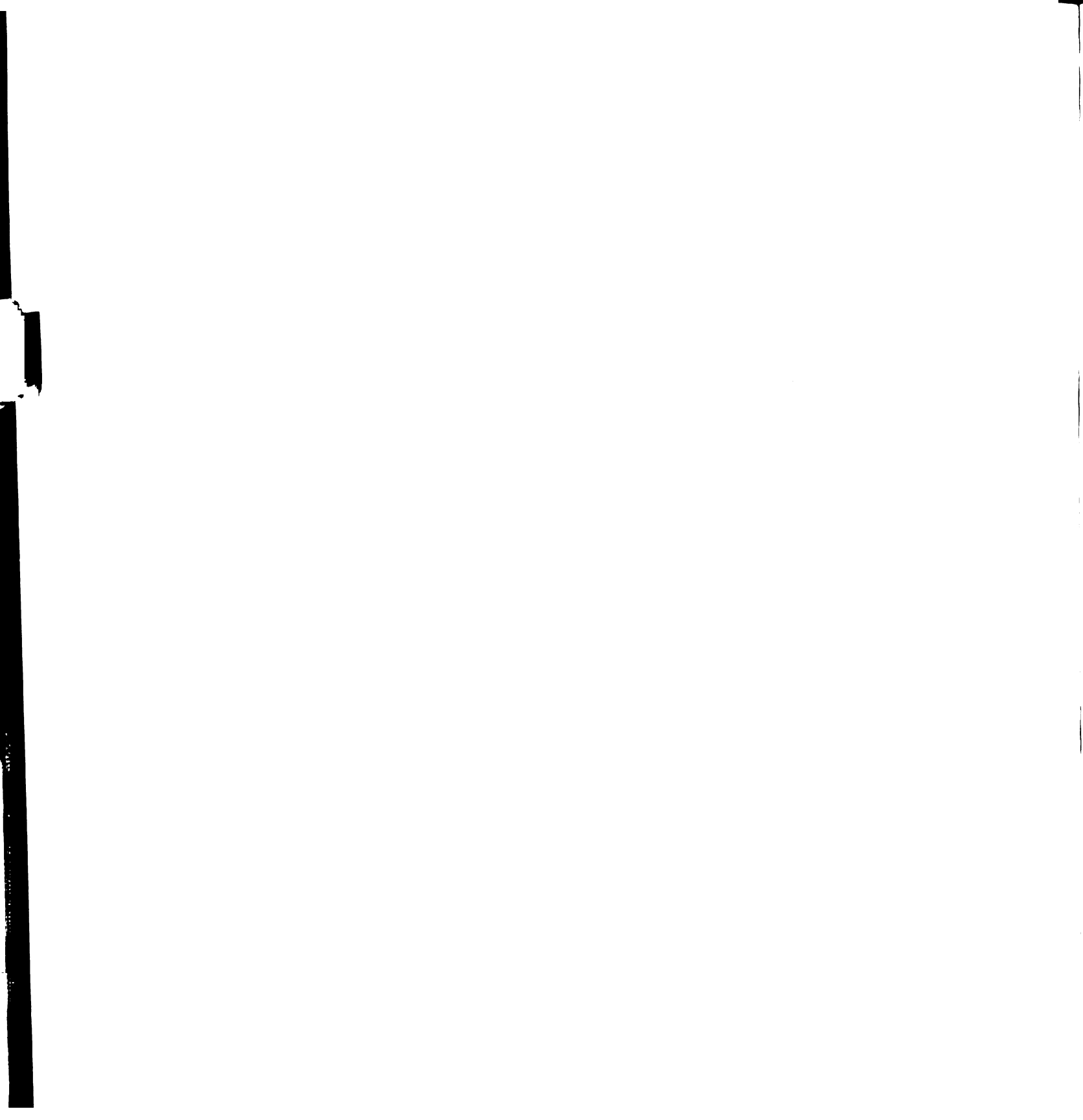
reduce participation to 33 percent. Initially combined participation of domestic and foreign capital, must allow for a 51 percent domestic ownership.

Workers participation was legislated in detail. All industrial firms will distribute among the workers 10 percent of net rent, half of it equally per individual, and the other half on the basis of amount of salary received during the year.

The Industrial Community was created by this law. It originates in an industrial enterprise, as representation of the full time laborers. The objective is the administration of the goods owned by that group and for its benefit. The patrimony of the Industrial Community will be set up progressively, by yearly deductions of 15 percent of the net rent of the industrial firm, which tax free will be reinvested in the enterprise itself. Whenever 50 percent of the capital of the firm is owned by the Industrial Community, all workers will individually own the stocks within the regulations established by law for Industrial Cooperatives. Profits will be distributed among the full time workers. The Industrial Community under no circumstances will be authorized to transfer title to the stocks nor to abdicate to their profits.

The law also created the Institute for Industrial Technology Research and Technical Standards, which was funded by direct contributions of 2 percent of the net rent

from industrial enterprises. The private firms have the choice to conduct the research themselves, otherwise the funds go to the mentioned Institute.

Sanctions were defined for infractions of the law, including unlawful competition and patent right violations. A whole set of regulations spelled in detail all other menial responsibilities.

Feedstuffs

Out of the total cost of balanced poultry diets, feedstuffs account for about 90 percent of that cost.

Most of the feedstuffs used are of domestic origin, except soybean meal; some additives like vitamins, minerals, antibiotics, antioxidants, and coccidiostats; and some grains that are imported when there is a deficit in domestic supply.

For discussion, some of the most important domestically used feedstuffs will be classified according to their main nutritional contribution to a balanced poultry diet. First will be considered the sources of energy, later the protein feedstuffs, and finally the mineral sources.

Feedstuffs Sources of Energy

Corn.--The Commission for Animal Production Policy (1970) reported that corn was the main crop of Peruvian agriculture; in reference to cultivated area it covered 362,400 Ha. and produced 590,575 M.T. in 1967. Total value of that output was s/. 1,488 million soles.

The cultivated area distribution and the average yields per hectare in the three geographical regions was reported (Table 38).

Table 38. Corn: cultivated area, average yields per geographical region, 1967

Geographical Region	Area (percent)	Yield (kilograms/hectare)
Coast	31	2770
Sierra	59	1070
Selva	10	1341
National average		1632

Source: Commission for Animal Production Policy, Ministry of Agriculture, Lima, Perú, 1970.

Corn output of 1967 was 100 percent above that of 1951. This increment was reportedly due, in part, to cultivated area expansion, which increased by 75 percent in that period. Crop yields improved because of the use of hybrid seeds and better managerial practices. Poultry feeds increased the effective demand for this grain. Table 39 shows the cultivated area and total output for the past years.

As a result of this sustained increase in domestic corn output, the volume of imports had been decreasing up to 1967. In 1968 due to a severe drought in the north of Perú, imports were increased to 60,000 M.T. (Table 40).

Table 39. Corn: cultivated area and total production,
1961-1967

Year	Cultivated Area (hectares)	Production (metric tons)
1960	253,242	228,870
1961	253,396	340,017
1962	274,260	358,274
1963	272,820	362,350
1964	346,940	502,580
1965	342,350	557,171
1966	354,920	581,000
1967	362,400	590,575

Source: "Implementacion a la Politica de Incremento de la
Producción y Desarrollo de la Avicultura,"
Committee of Poultry Policy of the Commission for
Animal Production Policy, Ministry of Agriculture,
Lima, Perú, 1970.

Table 40. Prices paid and use of corn in balanced feeds,
1964-1968

Year	Production (M.T.)	Imports (M.T.)	Total (M.T.)	Use in Feeds M.T.	(%)	Price (soles/kg)
1964	502,580	7,500	510,080	105,290	20.6	2.48
1965	557,171	15,670	572,841	139,927	24.4	2.50
1966	581,000	4,570	585,570	170,229	29.1	2.70
1967	590,575	6,000	596,575	180,000	30.2	2.80-3.50
1968	490,000	59,132	549,132	225,000	41.0	3.70-4.40

Source: "Implementacion a la Politica de Incremento de la
Producción y Desarrollo de la Avicultura,"
Committee of Poultry Policy of the Commission for
Animal Production Policy, Ministry of Agriculture,
Lima, Perú, 1970.

Yellow hybrid corn is the main ingredient in poultry balanced feeds; on the average it is used at a 50 percent level. Most of the yellow corn is produced in the Coast. Of this total output 48 percent is devoted to the preparation of balanced poultry feeds, 8 percent is directly used as grain to feed animals, 40 percent is utilized for human consumption mainly in the Sierra, and the other 4 percent is devoted to elaboration of corn by-products like starch, oil, and glucose.

The marketing of corn lately has been impaired somewhat by the lack of silos and appropriate warehousing facilities. Up to 1967 corn prices were directly determined by supply and demand in the open market, price per metric ton varied from s/. 2,200 to s/. 2,800 Peruvian soles. Beginning in 1967 an annual agreement was signed between the Corn Producers Committee of the National Agrarian Society and the Producers of Balanced Feeds, the feed mills, with the purpose of setting up prices and product specifications. During 1970 the average price for corn was around s/. 3.50 soles per kilogram, which was s/. 0.50 to s/. 1.00 above the price of imported corn.

Grain sorghum.--The raising of grain sorghum is increasing in Perú due to a fortunate combination of factors. This crop is less demanding in soil quality characteristics, it has a high yield per hectare, and it can be used in balanced poultry feeds.

The cultivated area with sorghum in 1966 was 2,015 Ha., with an approximate total output of 3,408 M.T., which is 1,690 kilograms per hectare. Ninety-eight percent of the sorghum production is concentrated in the northern Coast.

Marketing of this grain is done through the annual agreement between the Committee of Balanced Feed Producers and the Sorghum Producers Committee. Use is not widespread in poultry balanced feeds due to the limited supply.

Bennsky (1971) reported that in late 1970 some 5,000 M.T. of U.S. grain sorghum was authorized to be imported to supplement feed rations. Imports of corn and grain sorghum could increase to a 100,000 M.T. level in 1971 since producers of corn will shift to more profitable crops.

Wheat.--Perú is a net importer of wheat, today probably over 80 percent of the wheat consumed is imported.

Supreme Decree 271-69-AP enacted November 1967 indicated that wheat imports were increasing due to its use in balanced animal feeds and in direct human consumption, therefore both uses were prohibited. Only domestic wheat should be used for such purposes, which is on the average 20 percent more expensive than the imported.

In May 1970 the earthquake in Perú was the reason for the deficit in the domestic supply of wheat. Supreme Decree 289-70-AG enacted in September 1970 authorized the

consumption of 45,000 M.T. of imported wheat in balanced animal feeds. It is probable that whenever domestic supply of grains recovers, this authorization will be revoked.

Bennsky (1971) reported that in addition to a five year credit agreement ($4\frac{7}{8}$ percent annual interest rate) signed in July 1969 between Perú and Canada for the purchase of 200,000 M.T. of wheat, another three year credit agreement ($6\frac{1}{4}$ interest) was authorized by Decree Law on April 14, 1970 for the importation of an additional 200,000 M.T. Also some 80,000 M.T. of Australian wheat arrived during 1970 under an agreement signed on June 4, 1970. In addition, 30,000 M.T. of wheat from Australia was scheduled to arrive during first quarter of 1971 under a complementary agreement signed in late 1970. Reportedly, negotiations have started to import another 200,000 M.T. of Canadian wheat under a third agreement for delivery during June 1971 to May 1972, and 80,000 M.T. of Australian wheat for delivery July to December 1971.

Wheat milling by-products.--In the manufacturing process of wheat flour for human consumption, some by-products are obtained which are used in poultry feeds. Last year's availability of these feedstuffs was 150,000 metric tons.

Wheat bran and wheat shorts are used at levels of 5 to 10 percent in broiler and layer balanced feeds, and at levels of 10 to 20 percent in starter and grower balanced feeds for pullets with good results.

Animal fats and oils.--Fats are used as concentrated

sources of energy in commercial production of animal feeds.

The availability of beef tallow is fairly limited

in Perú and so is its used in animal feeds.

During the past few years Perú has begun researching

the use of hydrogenated fish oils in balanced poultry feeds.

The oil is extracted from the anchovy (Engraulis ringens)

and then processed and refined. Since Perú is the leading

producer of anchovy fish meal in the world, the complemen-

tary production of hydrogenated fish oil seems to have good

prospects. The industrial production of fish oils and the

volumes exported are indicated in Table 41.

Table 41. Fish oil: production and exports, 1966-1969

	1966	1967	1968	1969
	(metric tons)			
Total industrial production	146,708	291,819	392,280	N.A.
Total exports	89,485	195,968	323,380	141,070
Crude type	16,421	70,049	154,664	61,710
Semi-refined type	73,064	125,919	168,716	79,360

The use of hydrogenated fish oil in balanced poultry

feeds has shown good results when added at levels of 2 to 5

percent for starter diets, and at levels of 3 to 5 percent

in finishing broiler feeds. For layers this feedstuff has

been used successfully at levels of 1 to 3 percent. The

economic criteria for the use of fats in poultry feeds has been that if the fish oil price does not exceed 2.25 times the cost of corn it is profitable to replace the latter.

Vegetable fats and oils.--In Perú vegetable fats and oils are not used in balanced animal feeds, only for direct human consumption. These fats and oils will be mentioned here because of their importance as products associated with the potential production of cakes and meals sources of vegetable protein for animal feeding.

Bennsky (1971) reported that based on a steady production of cottonseed oil forecast for 1971 an import of 60,000 M.T. of edible vegetable oils (soybean oil or sunflower seed oil) will be required to fulfill domestic human consumption.

Feedstuffs Sources of Protein

Anchovy fish meal.--Statistics released by the Sea Institute indicated that in 1969 the catch of fresh anchovy in Perú amounted to 8,960,460 M.T. The fish meal produced from anchovy in 109 factories was 1,610,778 M.T. Domestic consumption of anchovy fish meal for balanced animal feeds was 39,999 M.T. of the type dried by direct flame. The production per year of fish meal is included in Table 42.

Quality and price variations of the anchovy fish meal in the domestic market has been one of the problems of the feed mills. The average price per metric ton was s/. 2550 soles in 1964, its range was from s/. 4000 to

Table 42.   Anchovy fish meal: production and exports,
            1965-1969

Year	Total Production (metric tons)	Total Exports[a] (metric tons)
1965	1,282,011	
1966	1,470,478	
1967	1,815,983	1,560,900
1968	1,922,020	2,083,200
1969	1,610,788	1,655,600

[a]Export figures larger than production were due to exports
of past years production stocks.

s/. 5800 soles in 1968, and varied between s/. 5500 and

s/. 7600 soles in 1969.   Domestic prices were determined by

the international market prices, and the seasonal scarcity

of fish meal during some months of the year.   Up to 1970

the marketing of this feedstuff was by direct agreement

between the producers of balanced poultry feed and the fish

meal manufacturers.

By Decree Law No. 18212, published in April 1970,

the government's Public Fishmeal and Fishoil Marketing Co.

(EPCHAP, Empresa Publica de Comercializacion de Harina de

Pescado), was established to market all fish meal and fish

oil.   According to this Decree Law, "it is the duty of the

State to regulate the processes of production and marketing

of the country's resources, in the public interest and for

the maximum benefit of the national economy."   Also,

"it is necessary to take measures which allow the ordering of the present system of marketing of fish meal and fish oil so as to rationalize and regulate the sale of this export commodity with the object of encouraging an activity which constitutes an important source of foreign exchange for the country." For that reason the intervention of the State in all phases of marketing of fish meal and fish oil was considered necessary.

Domestic prices per metric ton have been set at s/. 6,200 and s/. 6300 for anchovy fish meal with and without anti-oxidant, respectively. Rojas (1971) mentioned that research at the National Agrarian University, La Molina, has shown that good quality anchovy fish meal used at levels of up to 8 percent in balanced feed does not transmit fishy flavor to broiler meat. This problem appears at levels above 10 percent; female birds and the method of cooking are also relevant factors in the appearance of fish flavor. Therefore the main consideration for an increased use of anchovy fish meal in balanced poultry diets seems to be its cost.

Cotton seed meal.--One of the important sources of protein for ruminants but of lesser importance in monogastric balanced feeds. The quality of the Peruvian cotton seed meal does not allow its use at high levels in poultry feeding.

The availability of this feedstuff is about 85,000 metric tons per year, obtained as a by-product of the oil extraction process. Oil mills are located mainly in Lima, and in Piura in the north of Perú, and those are the sources of cotton seed meal.

The supply of cotton seed meal was not registered until 1965 when the Peruvian Association of Cattlemen (APG, Associación Peruana de Ganaderos) was authorized by the government to distribute nationally all cotton mill by-products. Probably due to its low domestic price, up to 1967 this feedstuff was exported to Europe and the United States of America. In 1968 cotton seed meal was declared an ingredient of utility and public need, and could not be exported. In the last few years the trend has been a reduction of cotton cultivated areas, and as a consequence the cotton seed meal production has decreased.

Table 43. Cottonseed meal actually distributed by the Peruvian Association of Cattlemen, 1965-1969

	1965	1966	1967	1969	1969
	(metric tons)				
Total Production	78,483	81,444	61,779	57,778	84,285

The price of cotton seed meal has increased from s/. 52.50 soles per "quintal" in 1967, to s/. 55.00 up to February 1969; beginning in March 1969 the price has been set at s/. 80.00 soles per "quintal" (1 "quintal equals 46 kg), or about s/. 1740 per metric ton of cotton seed meal of approximately 36 percent protein.

Other Sources of Protein

Soybean meal.--Domestic production is very small. Most of the imports of soybean meal come from Colombia and the U.S.A. This feedstuff is used almost exclusively in balanced poultry feeds; its price in the domestic market is that of the international market plus transportation costs.

Alfalfa meal.--The use in poultry feeds is mainly as a pigment to improve color of broiler's skin and egg yolks. Even if the protein content varies from 13 to 20 percent, the price does not allow its use as a protein source. Domestic production is increasing.

Meat meal.--Limited use is made of meat meal by Peruvian feed mills in balanced poultry feeds. Small volumes of meat meal were imported in the past few years.

Powdered skim milk.--All the powdered skim milk used in poultry feeds is imported.

Bennsky (1971a) reported that Perú has been given a U.S. $10 million credit by New Zealand for the purchase of dairy products over the next five years. The agreement signed December 3, 1969 was ratified April 28, 1970 by

Decree Law No. 18248. Estimated requirements for the first

year are at least 9,000 metric tons of skim milk powder and

3,500 metric tons of anhydrous milk fat. The contract

signed will cover 70 percent of Perú's import of these

products with a 10 percent tolerance. The loan agreement

was signed by the New Zealand Reserve Bank and Banco de la

Nación on behalf of their respective governments. The

credit will be repaid over a five year period in ten equal

half-yearly installments, the first of which falls due

December 31, 1975. However, repayment could be postponed

for a further five years. Credit for the first year is

interest-free, and set at $5\frac{3}{4}$ percent per annum thereafter.

The commercial contract was signed between the New Zealand

Dairy Board and the Public Corporation of Agricultural

Services (Empresa Publica de Servicios Agropecuarios). The

agreement also includes technical assistance, free of charge,

for regular short periods.

The Commission for Animal Production Policy (1970)

estimated the future demand of the poultry industry for

feedstuffs up to 1985 (Table 44).

Other Inputs

Vaccines.--Peruvian poultry producing firms use both

domestic and foreign produced vaccines. The diseases

against which poultry farmers vaccinated their flocks was

determined by the CONESTCAR, Poultry Farm Census conducted

in 1967, results of which are included in Table 24.

Table 44. Projected needs for feedstuffs, 1975-1980-1985

Feedstuff	1970	1975	1980	1985
	(metric tons)			
Yellow corn	178,080	281,484	430,455	690,055
Fish meal	29,205	46,163	70,591	113,186
Cotton seed meal	21,198	33,507	51,239	82,146
Soybean meal	5,187	8,199	12,536	20,097
Alfalfa meal	8,911	14,085	21,539	34,560
Sugar cane molasses	6,962	11,004	16,828	26,976
Wheat by-products	84,408	133,405	204,034	327,088
Bone meal	1,740	2,571	4,210	6,744
Oyster shell or calcium carbonate	9,782	15,460	23,643	37,902
Salt	870	1,375	2,103	3,372
Additives	1,740	2,751	4,207	6,744
Total	348,083	550,184	841,385	1,348,870

Bennsky (1971b) reported that according to the Peruvian Poultry Association, investment in poultry totals 2 billion soles (U.S. $50 million) and the annual loss due to New Castle and Mareck's diseases totals from s/. 100 to s/. 200 million soles (U.S. $2.5 to 5 million). They also stated that some 50 to 100 thousand breeding stock and two million baby chicks are lost annually due to diseases. Reportedly, locally produced poultry vaccines proved ineffective in most instances. For this reason, the decree which prohibits the import of poultry vaccines was lifted for six months starting October 1970. More effective disease control, therefore, was expected in 1971.

Government assistance.--Through different institu-
tions the Peruvian government assists the poultry industry
in different fields like promotion, sanitation, extension,
inspection, and control, besides the government's already
mentioned functions.

The Commission for Animal Production Policy (1970)
reported that the promotional activities are carried out
through the importation of breeders, machinery, equipment,
etc., and the widespread distribution of egg and type
commercial baby chicks especially to farmers in provinces
outside Lima. Sanitation activities are limited, spe-
cifically devoted to Pullorum control in breeder flocks.
Controls for other diseases are nonexistent at the moment.
Inspection and control activities are conducted at the
borders and international ports; only the number of birds
imported is verified and there is no adequate check up of
the veterinary certificates from foreign countries. Re-
search on management, nutrition, breeding, and production
is still at its beginning stages. Little economic support
has been given to institutions pioneering in those fields,
like the Universidad Nacional Agraria, la Molina, or the
Universidad Nacional Mayor de San Marcos. Extension
activities are rudimentary and very few printed materials
on poultry extension are available. The government does
not have any well equipped experimental poultry farms and
there is no efficient organism to plan, control, or advise
the poultry firms.

Marketing

Imports and Exports

During the past few years most of the poultry imports have been constituted of day-old birds for breeding purposes. Grandparent broiler stock, parent layer stock, and parent turkey breeder stock represent the bulk of imports. Some ducks and baby poults for meat have been also imported. Table 30 reports the imports for years 1967 to 1970 and the distribution by custom code description.

Bennsky (1971b) reported that most imports of poultry came from the United States. The value of imports of poultry and products totaled U.S. $630,000 in 1970, up 29 percent from the U.S. $490,000 registered in 1969. This increase was a reflection of the higher imports of baby chicks for breeding purposes in 1970. While a new increase of imports of breeding birds was forecast for 1971; no imports of poultry meat are expected.

The "freight on board" value of live poultry exported in 1970 was $8,500, down substantially from the U.S. $26,000 in 1969. During 1970 the export value of eggs totaled U.S. $1,900; this compares with U.S. $1,000 in 1969.

Consumption

Beef dominates meat consumption in the Coastal cities. The interior cities are predominantly oriented towards beef consumption but mutton is also important.

Minor meats such as chicken, pork, bacon, luncheon meats, and edible offals are of little importance relative to total expenditures for meat, except in Lima. Poultry meats are hopefully intended to be substitutes for red meats.

Bennsky (1971b) mentioned that it was forecasted that 50,000 metric tons of poultry meat will be consumed in 1971, 10 percent more than the 45,500 metric tons estimated for 1970. Due to beef shortages and increasing prices of beef since the mid-1970, consumers have turned to poultry meat. This situation is expected to continue for the remainder of 1971. The government continues to promote consumption of meats other than beef. The Minister of Agriculture in a recent television exposition urged the population to restrain their beef consumption habit in favor of poultry, pork, fish, or other domestically produced meats.

As reported by the Peruvian Poultry Association one of the main limitations for a higher expansion of poultry products consumption is the present local marketing structure. There is consensus that parallel to improvements in the production phase, the marketing activities should be organized and coordinated as to obtain an economically efficient system.

Supply and Marketing Channels

Perú's production of poultry and eggs is expected to be sufficient to meet local consumption demand in 1971 and no significant exports or imports of poultry products were forecasted.

Bennsky (1971b) reported that stocks of poultry meat at the end of 1971 are estimated to total 120 metric tons; that is the same volume as at the end of 1970. Despite the lower supply of beef and consequently a large availability of cold storage facilities, the poultry industry is not taking advantage of the situation because of the high actual demand for poultry meat.

The Commission for Animal Production Policy (1970) reported that in Peru there are three main ways of marketing poultry products, namely birds live or processed and unprocessed table eggs. Perhaps baby chick distribution should also be included in describing the marketing channels.

The marketing of live poultry is mainly on the basis of unitary bird size. Most live birds are sold in public markets under unsanitary conditions, except for a few specialized stores which have metalic cages with feeders and waterers. Outside Lima, this is the most prevalent method of marketing poultry.

Poultry meats currently marketed in Perú are mainly specialized broiler type birds, but old layers, turkeys, and ducks are also sold. The meat type breeder hens command a high price in the market, due to the unsatisfied demand originating from their use in typical Peruvian dishes.

The Peruvian Poultry Association estimated the poultry meat production for 1970 was approximately 52,797 metric tons in a communication sent to the Public Enterprise

for Agricultural Marketing on June 1970. In that same
communication it was estimated the percentage of poultry
meat marketed through the different channels as shown in
Table 45.

Table 45.   Poultry meat marketed through different channels,
            1970

Type of Outlet	Percentage
Municipal market	18
Specialized stores	8
Supermarkets	4
Chicken broiler restaurants	35
Popular markets	35

The marketing of processed birds has been rudimentary
and unsanitary. There has been a serious lack of coordina-
tion between producers, middlemen, and retailers. The
official regulations were inefficient or not enforced.
There was no refrigeration capacity to buffer variations in
supply and demand, with the resulting disequilibrium and
negative effect on prices. Recently some poultry processing
plants have been established in Lima. Sanitary conditions
and coordination of supply have improved somewhat. Never-
theless, grading and veterinary inspection are not practiced
yet. Transportation of birds from the production sites to
processing plants or to markets is technically difficient
and unsanitary.

Table eggs are marketed by kilograms in Lima and by the dozen in the interior of the country. Most of the output is marketed through wholesalers and a small percentage is sold directly by the producers to retail outlets. Table eggs normally are kept without refrigeration and sold unclassified.

Camino (1968) and Herold (1968) studied the quality of eggs marketed during the summer in Lima, concluding that overall the eggs were of low interior quality but that there were no economic incentives for improving it. They bought all eggs from four types of retail outlets, supermarkets, municipal markets, specialized stores, and corner stores. Exterior egg characteristics that were studied included egg weight, shell color, shell condition, and degree of cleanliness. Interior egg characteristics considered were albumen height, calculation of Haugh Units, determination of yolk color, blood spots, meat spots, and mottling.

Egg prices at the producer level are not stable; they tend to fluctuate substantially due to seasonal variations in both supply and demand. Supply varies especially due to lack of planning of the pullet replacement programs. Brown shell eggs command a higher wholesale and retail price than white shell eggs, due both to its higher production costs and the preferential demand for them.

Poultry meat prices, mainly broilers, tend to be fairly stable. There are nevertheless some peaks in demand that are due to national festivities, i.e., Christmas and

Independence Day. Also turkey meat demand shows a definite seasonal trend, higher at Christmas.

In general terms there are no adequate refrigeration facilities for broilers or for eggs. Some farmers have installed some minimum refrigeration capacity, which is not significant in regulating supply.

There are no official classifications for poultry products. Some farmers market their products by units (i.e., one broiler, a dozen eggs), and others by weight (i.e., eggs and meat by kilograms).

There is no officially reported information on prices. On the other hand, some farmers are not well integrated into modern society by mass communication media; few read newspapers or have attended an extension meeting, but most farmers have functioning radios. Most farmers rely on the product buyers for market information, but these assemblers are served by rather tenuous information networks based mostly on informal interpersonal communications, information influenced by their vested interest. Feed salesmen are among their most reliable sources of market information.

Distribution Channels

Wholesalers

Poultry Meat

An effort was made to describe the channels of distribution actually used in Perú simplifying them in an attempt to gain understanding of the process.

Large industrial farmers.--The large industrial farmers sell most of their production as dressed birds and only a small percentage alive. Nevertheless, their slaughter operations are generally rudimentary, unsanitary, and of small capacity. Operational inefficiencies arise from the facts that in order to slaughter all birds in one lot sometimes takes more than a week, lowering the efficiency of feed utilization by the birds of market age and sometimes selling them "overweight" by the market demand "standards." On the other hand large industrial farmers do not process by-products like feathers, offal, feet, and heads. Practically no chilling is done, and in this simple step of the processing they could legally (even under USDA standards) obtain 7 percent of body weight addition by moisture absorption. Shelf life of the dressed carcasses is very short due mainly to unsanitary processing, and insufficient chilling, besides of the fact that retailers do not keep the meat under adequate conditions.

The distribution of their production is made through the following channels:

1. Directly to retailers. Some large producers work under loose contracts with supermarket chains, institutional users (like hospitals and restaurants) and retailers. Few own a retail store.

2. Delivery to wholesalers. These wholesale-assemblers are a heterogeneous group ranging from large buyers with warehouses located in the cities, to farmers who buy products from their neighbors before going to local trading centers. Usually they own the transportation vehicle.

Most of the wholesalers do not store the product nor keep ownership of the product for more than 24 hours. Sometimes wholesalers never get to legally own the product, serving more as independent commission men in the selling process.

Small farmers.--The small farmers sell most of their birds alive to wholesaler-assemblers who pick up the product directly from the farm.

Other farmers take advantage of their relatively small quantities of production, and retail sale the birds dressed, and by doing so, they can get better prices. The time and effort devoted to this marketing activity could be better allocated to improve the production phase of their enterprises.

The CONESTCAR (1967) Poultry Farm Census indicated the ways in which broiler type chickens and old layers are marketed for meat in Lima (Tables 46 and 47).

Table 46. Marketing of meat type chickens by types of channel members (Department of Lima)

Sales To	Percentage	Kilograms	Average Price (soles/kg.) (s/.)
Consumers:	7.33	63,150	
Live bird	40.16	31,682	21.49
Dressed	49.83	31,468	28.62
Intermediaries:	92.66	798,212	
Live bird	89.16	711,727	20.48
Dressed	10.83	86,485	26.09
Total sales:	100.00	861,362	

Source: CONESTCAR, personal communication, Poultry Farm Census: July-August, 1967, Lima, Perú.

Table 47. Marketing of old layers for meat by types of channel members (Department of Lima)

Live Bird Sales	Percentage	Kilograms	Average Price (soles/kg.) (s/.)
To Consumers	2.9	19,728	25.61
To Intermediaries	97.09	659,386	21.72

Source: CONESTCAR, personal communication, Poultry Farm Census: July-August, 1967, Lima, Perú.

Table Eggs

Large industrial farmers.--Few of the large indus-
trial farmers classify eggs by size and sales are made
generally on a "case" basis.

Again, in eggs there are no specialized processors.
The distribution of their production is done by one of the
following:

1. Directly to retailers; sales are made mainly to
   supermarket chains and to institutional users.
   The marketing is also done by some farmers who own,
   in the cities, some retail stores specialized in
   selling eggs and sometimes dressed broilers.
   Usually they have some refrigeration facilities and
   use weight as a standard measurement for their sales.

2. Delivery to wholesalers. The selling procedure is
   very much the same arrangement as in broilers. The
   wholesale-assembler here is also a very heterogeneous
   group. The difference is that some of them keep
   ownership of the product for a longer time, some-
   times up to two weeks, generally without refriger-
   ation facilities.

Small farmers.--They sell very much like the small
broiler producers.

Incubation Eggs

About 90 percent of production is in the hands of strong franchised enterprises. Production and marketing is fairly efficient and well organized. The other 10 percent of the independent hatcheries, currently selling baby chicks, is on its way to disappearing. They are still a problem in causing surplus of supply because sometimes they produce the baby chicks without having a secured customer for them. Mostly, the independent hatcheries are selling to the small family type farmers, by peddling in their own vehicles. Quality of the stock they sell is usually very poor as compared to franchised bird strains, and naturally sells for less.

Comments: In general, for wholesalers of poultry products it can be said that small wholesalers do not have the scale of operation nor the resources to change their environment and thus continue to operate in the traditional distribution system. This causes distortions which force the consumer to pay more for lower quality products and forces prior channel members to operate with greater risks in terms of price fluctuations, spoilage loss, and higher mark-up in their products.

Unlike large retailers, large wholesalers do not seem to follow the same competitive practices and are thus not using their size and financial resources to gain competitive advantage. Rather, these large wholesalers are facing

a decreasing demand for their services with little positive
reaction.

The financing of the marketing channel members is
very much the same as described in the previous sections,
when referring to the ways of financing industrial farms.

Retailers

Generally the retail outlets for poultry products
carry more than one, or all types of poultry products in
most instances.

Retailers in Perú are organized in a similar fashion
than in most Latin American countries. Riley (1969) re-
ported a very good description by saying that retailers can
be thought of as being on a size-and-behavior continuum.
This spectrum begins with the small atomistic retailer, who
is more passive in the face of the changing environment than
the other retail groups. At the other extreme is the large
supermarket which, through management skill, not only
actively adapts to its environment but, through its deci-
sions, changes its environment to achieve increased market
participation. Generally, the larger the retailer, the more
educated and literate they were, the greater their salaries,
and the greater their assets in terms of selling space,
fixtures, equipment, and inventory. Hence, the larger
retailers have more opportunity and more alternative ways
to influence their environments. They are also more willing
to use their resources to better their businesses. The poor

may not have this opportunity, as their families need basic food and shelter. Further, the larger the retailers, the greater are the number of professional managers, and the higher the pay scale for both managerial and employee talent. The scale of operation clearly allows superior management and employees. Large retailers perceive a competitive environment which leads to pricing below market price and trying to sell for less than others of the same type. They also tend to buy more often on a price and quality basis, besides of being more innovative. The atomistic retailer is a relatively inert market operator who does little reacting on decision-making that influences his economic environment. Retailers do not seem to realize that their traditional system is in jeopardy from competitive changes. This lack of realism shows they are dependent decision-takers.

An effort was made to describe the different types of retail outlets actually used in Perú, simplifying them in an attempt to gain understanding of the whole process:

Corner grocery stores.--They are small retailers that carry a wide array of dry groceries and some canned foods. They also sell eggs at a high mark-up, having a wide variety in their sources of supply.

Stores specialized in poultry products.--Generally these are small stores, common in large cities. They sell eggs and dressed birds: broilers, dual-purpose hens, ducks,

and turkeys during season of heavy demand. They price as competitively as the supermarkets in most instances. Usually they sell eggs and poultry meat on a weight basis (kilogram).

Municipal markets.--Generally within each municipal market there is a section for meats and specialized locations for poultry among them. Poultry products are sold by weight at prices above those of supermarkets, usually lower quality eggs are generally displayed and sold in the dry grocery section. They generally sell eggs by the unit, that is, every egg is sold individually. The buyer is supposed to furnish the container when shopping. Price levels are similar to the corner grocery stores, in all outlets brown eggs get a premium price.

Supermarkets.--The main characteristic of this retail outlet is self-service. Poultry meats are sold in the meats section, either whole birds or pieces. Some stores sell frozen turkeys and ducks successfully, but frozen hens and broilers are "slow-movers." Eggs are sold either in dozen cartons (mainly the chain supermarkets) or in one kilogram plastic bags (independent supermarkets). Only when sold by the dozen are eggs classified by size, and there is no correspondence with U.S. classification. Some retail chains are integrated back to the producer level.

Other retail outlets.--Included in this group are: (1) Institutional users; i.e., hospitals, schools, and hotels. Institutions buy in most instances eggs and poultry

meat directly, under some sort of contract. (2) A *sui-generis* type of restaurant exists in Perú; that is, those specialized in selling charcoal-broiled chicken. These food outlets usually get their broilers directly from contractual arrangements with producers.

Processing Plants

Egg Processing Plants

Apparently there are no egg processing plants in operation in Perú. Most of the production of table eggs are sold as fresh; a small percentage is stored under refrigeration. Some intermediaries classify the eggs per unitary size, this classification is not related to U.S. standards. Usually brown eggs are sold separated from white eggs.

Poultry Meat Processing Plants

Previously it was indicated that in Perú, birds are sold alive in most of the country, only in Lima and a few other cities poultry is sold processed.

Lung (1971) indicated that, in the vicinity of Lima, there are in operation some poultry processing plants with different levels of sanitation and technology.

    a. "San Bosco" is located south of Lima in Lurin. It is a rudimentary slaughter house for poultry. Its capacity was estimated at approximately 200,000 birds per month, or about 7,700 per day.

b. "Hermanos Rodriguez," enterprise located east of Lima, in Santa Clara, is also a fairly rustic slaughter house for poultry. Estimated capacity is about 200,000 birds per month.

c. "Planta Procesadora Avicola S.A." is located some 30 kilometers north of Lima. Reportedly it has a maximum capacity of 50,000 birds per day, or 1.5 million chickens per month. It has been recently installed and has very modern equipment and refrigeration facilities. It was scheduled to start operating at about 50 percent capacity. Birds have been contracted and will be brought to the plant from as far as 40 kilometers to the East, 30 kilometers to the South, and 60 kilometers to the North.

d. Provisions have been made for a rendering plant to process poultry processing wastes, including feathers, blood, inedible viscera and condemned carcasses. Facilities for further processing of poultry meat are planned. Marketing of processed poultry is expected to be through: (1) intermediaries--10 percent; (2) direct sales under contract--50 percent; (3) sales to other cities--25 percent; and (4) the rest through retail outlets.

As yet there is no published information on the economic performance of any one of these firms. It is expected that this latter plant will improve the traditional commercial channels for poultry meat.

e. It has been projected and financing apparently has been approved for building a poultry processing plant similar to that previously described in (d). It is to be located south of Lima, in Pachacamac.

Prices

At the farmer level, prices received for poultry products show wide variations during the year. Variations are less pronounced for poultry meat than for table eggs. Within the egg market, brown shell eggs and large size eggs command a better price than white shell eggs or small size eggs.

Bennsky (1971b) reported that average retail prices of poultry meat and eggs in 1970 increased 13 and 7 percent, respectively, as compared with average prices of 1969; in spite of the Supreme Decree 009 701 C-DS of June 1969 which established that commodities of first priority, including poultry and eggs should be sold at prices equal to those of December 31, 1969. Moreover, while poultry meat prices increased to s/. 60.17 soles per kilogram, egg prices declined to s/. 29.00 per kilogram during January 1971. Continual increases registered in prices paid for beef have favored the increase of poultry meat and egg prices.

The monthly retail prices of poultry meat and eggs, as compared to beef and mutton meat are shown in Table 48.

Table 48. Perú's monthly average retail prices for protein foodstuffs in the Lima market, November 1969 to October 1970

Year	Month	Poultry Meat (price/kg.)	Eggs (price/kg.)	Beef (price/kg.)	Mutton (price/kg.)
		(Peruvian soles)			
1969	November	50.00	29.88	36.86	33.79
	December	51.25	29.88	37.09	34.67
1969	Year Average	48.19	32.42	36.86	31.62
1970	January	54.96	31.79	37.21	34.69
	February	56.03	33.95	37.34	34.75
	March	55.69	37.59	38.03	34.95
	April	55.50	38.78	38.29	35.20
	May	53.13	37.66	37.35	35.13
	June	51.63	38.13	37.31	35.39
	July	52.05	38.59	37.48	35.32
	August	52.25	37.97	37.54	35.35
	September	52.44	32.22	38.26	35.54
	October	55.78	28.31	40.38	36.78
1970	Jan.-Oct. Average	53.95	35.50	37.92	35.21

Source: Bennsky, Peru: Agricultural Situation, Annual Report, 1971.
Data obtained from Peru's National Office of Statistics and Census.

[a] Rate of exchange: draft dollar; 1969, s/. 43.57; January-Otober 1970 s/. 43.48/U.S. $1.00.

Information on volume of poultry products supplied monthly was not available.

In this chapter a description has been made of the current characteristics of the Peruvian poultry industry. The general environmental features likely to influence the poultry firm's performance were considered; also, some laws affecting the poultry industry, poultry producing firms' characteristics, the supply of inputs, and marketing peculiarities were examined.

An attempt to build a conceptual developmental framework for the Peruvian poultry industry will be made on the basis of some guidelines to be proposed in the next chapter. Such a framework should be flexible enough to be useful for future reference and guidance toward beneficial research areas. Most of the specific complex issues to be considered deserve a thorough research effort, sufficient for each to be the subject of a doctoral dissertation. Therefore, they will be discussed in general terms for the purpose of this braod perspective study.

CHAPTER VII

THE PROPOSED GUIDELINES FOR THE POULTRY INDUSTRY

TO CONTRIBUTE TO DEVELOPMENT OF PERÚ

The Situation

The information furnished in the preceding chapters
described the Peruvian environment. Within this milieu the
domestic poultry industry will have to be harnessed to con-
tribute to the national development goals defined by the
current government.

The government is politically committed to develop-
ment. Radical structural changes have been legislated and
are being implemented. Development planning was recognized
as absolutely necessary. The National Development Plan
proposed for the period 1971-1975 an average growth in Gross
Domestic Product of 7.5 percent per year. Consumption was
forecasted to grow at an average of 6 percent per year, and
population was estimated to grow at the current average of
3.1 percent. Nevertheless, a substantial improvement in the
standard of living of the marginal masses of the population
is expected. Therefore, sources for increased income would
be promoted.

Yearly average growing rates for the manufacturing and mining sectors were estimated at 12.4 and 5.7 percent, respectively, while the fishing and agricultural sectors were expected to grow at 4.8 and 4.2 percent, respectively. These different rates of growth will alter the basic structure of the Gross Domestic Product. The agricultural sector will reduce its share from 14.5 percent in 1970 to 12.4 percent in 1975.

Unless the projected volumes of investment are made, the production and employment goals will not be attained. A balance of payments dificit was recognized as a severe constraint to development activities. Foreign investment should play a key role in these efforts.

The agricultural sector objectives are: (1) to incorporate the rural sector to the economy, progressively reducing the rural-urban imbalance and the marginal rural masses; (2) increase rural incomes through the completion of the agrarian reform process; (3) increase production, as to substitute for the current food imports and to encourage exports; (4) improve the efficiency of the marketing system; (5) reduce rural under-employment through a better use of natural resources; and (6) promote rural population participation in decision making and income redistribution through cooperative organizations.

Perú is a net importer of food, such as wheat, red meats, dairy products, and fats and oils. Significant

amounts of agricultural inputs are also imported. Depen-
dence on foreign suppliers, balance of payment deficits and
unemployment could be alleviated if economically efficient
and competitive domestic production of those products or
substitutes could be attained. Effective demand for higher
cost better quality protein food will expand due to the
larger population and the expected increased incomes.

Poultry products are good substitutes for red meats.
With adequate technology and improved industry coordination,
costs of production could be lowered so as to supply poultry
products at prices attractive to potential consumers. Such
prices would also allow reasonable profit margins so as to
attract further investment and to secure continual harmonic
growth to firms in the industry. On the other hand, key
inputs for the poultry industry are or could be produced
domestically at competitive costs. Ecological conditions
present no unsurmountable problems. Marketing efficiency
could be improved in a reasonable length of time.

A description of the Peruvian poultry firms has been
attempted, including the characteristics and available sta-
tistical data of the poultry production firms. The supply
of inputs was depicted in detail, comprising credit avail-
ability, sources of breeding stocks, feed manufacturers,
feedstuffs, and others. Marketing activities were delin-
eated in broad terms due to the lack of more specific
information on imports, the marketing channels, the

processing plants and pricing of poultry products. Special attention was given to surveying some laws affecting the poultry industry and its socioeconomic environment, due to the importance of recent changes in the Peruvian legislation.

Grouping of Guidelines

In an attempt to get a wider base of opinion for deciding upon the guidelines to be proposed for the poultry industry, many people with field experience in Perú were consulted. Among them, Dr. Van de Wetering (1971), from the Iowa Universities Mission to Perú, suggested some broad issues of special interest which encompass many of the topics that were considered critical in this study. Those issues were followed as to systematically organize the proposed guidelines for the poultry industry to contribute to development of Peru, namely:

- Improved technology potentially transferable to the Peruvian poultry industry.

- The design of new entrepreneurial forms could help transfer some of the fruits of new technology to the workers.

- The poultry industry's improved technology can encourage expansion of the feedstuffs industry.

- The benefits of new technology can be distributed to consumers.

Improved Technology Potentially Transferable
to the Peruvian Poultry Industry

Development means more than a quantitative increase
in production. Increased output would in fact be more a
consequence of development than its essence. The real
problem of development is not to increase production, but
to increase the capacity to produce. This capacity ulti-
mately is inherent in people. It depends on people with the
outlook, knowledge, training, and equipment to solve the
problems posed by their own environment, understanding
environment in its social, political, economic, and eco-
logical characteristics.

Developed countries possess large amounts of tech-
nological knowledge, which potentially could be transferred
to the Peruvian poultry industry. But this transfer of
technology, though necessary, should not be considered as
an alternative to the development of local science. It is
obvious that it will be difficult for a developing country
without a science and technology capacity of its own, and
particularly without the trained people involved, to know
what useful technology exists elsewhere, to understand it,
to select it, to adapt, to absorb, and maintain or to
operate it. If a nation has built up its capacity in the
field of science and technology, it is also in a much better
position to utilize what exists elsewhere and will have the
ability to use transferred technology as the basis of further

innovations. These considerations indicate the fundamental need to build up indigenous scientific capability in Perú. On the other hand, the country is facing immediate and pressing problems which need solutions. Scientific and technological capabilities take time to be developed, even if there is a high level of economic commitment to the development of science. The only way to solve these problems in a reasonable length of time is to transfer technological and scientific resources from the advanced countries. Nevertheless, very seldom will an attempt of direct transfer from a developed to an underdeveloped economy of technology, of market structures, of institutions or of public policy be successful. The relevant environmental conditions will most likely always be different, so we must analyze the Peruvian situation very specifically if we intend to identify and exploit the opportunities for efficient transfer and adaptation of technology. The field is open for research in the solution of the problems of transfer of technology, not only including physical inputs, but also managerial systems. In the past few years the Peruvian poultry industry has adopted a multitude of technological advances. At present each poultry firm is at a different level of technology adoption. In general, the large Coastal enterprises are generally fairly advanced, whereas the smaller firms of the Sierra and Selva are less up to date.

Tobin and Arthur (1964) indicated that the broiler industry in the United States has been in a continuous and dynamic process of adjustment to a changing technology and to growing markets. On the other hand, it has been in an almost equally intense struggle with problems of instability of supplies and prices. The problems facing the Peruvian poultry industry are of a similar nature.

Technology, representing all physical operations and management, can be regarded almost as an independent variable. It changes over time, but usually in a single direction--toward greater efficiency and better final product. Changing technology is more of a trend factor, rather than a short-run unstabilizer, because its changes are likely to be gradual relative to the other variables. It may take several years before a technological change becomes common industry practice.

In the final analysis, the decision to adopt a new technology will be dependent on how profitable it is for the private entrepreneur. Very limited consideration is being given to socioeconomic costs for decision making. The analytical quantification of trade-offs between the advantages of the new technology and its negative effects on the socioeconomic environment of the host country, being difficult, is not done at all.

Technology has advanced very rapidly in the poultry-related fields. These scientific and technical developments brought with them operational and organizational changes,

which have been lowering production costs and transforming traditional poultry farming into factory type operations. These changes encompass processing and distribution, as well as farm production.

Breeding Stock Imports

Scientifically designed genetic research and breeding procedures, followed by performance testing and computerized analysis, have resulted in the development of highly efficient birds. The cost of creating this commercial line is tremendous, but worldwide franchised operations allow those commercial breeders to spread the research and testing expenses over a large number of birds than a small operation would.

The ready availability of genetically superior commercial birds with higher production potential has some implications for the Peruvian poultry industry.

- To face a continuous dependence on foreign suppliers with the associated obligation of royalty payments. Besides, there is a continuous outflow in the balance of payments; in Table 30 it is shown that in 1970, over 20 million soles (U.S. $500,000) were spent, which could be alleviated somewhat if only grandparent or great-grandparent breeding stock is allowed to be imported into the country.

- The superior quality and productive efficient performance of imported birds may offset the indicated disadvantages for the economy.

- To domestically develop a similar bird will take a long time and a large expenditure.

Poultry Nutrition Knowledge

Modern strains of birds are potentially far more efficient than breeds formerly exploited commercially. Their nutritional requirements must be satisfied precisely if biological and economic efficiency is to be attained. Many scientists have made great advances in basic nutrition, and poultry nutritionists have succeeded in applying such knowledge to developing balanced poultry feeds. With the aid of linear programming and electronic computation, balanced feeds that satisfy all nutritional requirements at a minimum cost have been created.

Most of the knowledge in poultry nutrition is available at low cost to underdeveloped countries. Nevertheless, the local people should be able to exploit it. In Perú, most of the large feed mills have highly trained technical personnel working in such problems. Research on the potential use of other domestically produced feedstuffs seems to be desirable since the number of available feedstuffs is fairly limited. The National Agrarian University is devoting some efforts to those areas of research, but additional funding is needed.

Quality analysis and control of feedstuffs and balanced diets are fields where local talent using foreign-developed technology could offer support to the private domestic industry.

Disease Prevention and Control

Large flocks were risky in early periods because disease outbreaks would frequently produce extensive losses. Vaccines have been developed for most major infectious diseases, parasites can be controlled fairly well, and disease outbreaks can be controlled in most instances.

For some time the Peruvian poultry industry was dependent on imported biological veterinary products. Domestic production has developed, experiencing the expected difficulties of growing into a scientifically sophisticated area. In a previous section some of the problems experienced have been mentioned. Because of patented industrial processes, the Peruvian pharmaceutical laboratories will have to rely partially on foreign originated research, some of it at high cost and some almost free. On the other hand, to locally conduct basic research is always expensive in terms of human talent availability, equipment, materials, and the limited size of the potential commercial market for their feasible output.

Still, there is not available in Perú a locally produced Marek's disease vaccine; at present severe losses are inflicted to the industry by this disease, and other control measures have had limited success. The cost of producing domestically such vaccines either under license or other patent arrangement as yet has not been determined.

Some foreign-owned pharmaceutical laboratories have installed production plants in Perú to supply the Latin American market. The ownership pattern and the regulations on profit remittances have been discussed elsewhere.

Management and Husbandry Techniques

During the past decade, many improvements have been made in husbandry techniques. Housing design, insulation materials, ventilation procedures, manure gathering and disposal, and other elements in poultry production have been improved through continuous research in the developed countries. Much of this knowledge is readily available for transfer to the Peruvian industry, warranted that its use will be profitable. Given the varying environmental characteristics to be found in the different locations and geographical regions of Perú, much work in adaptive research is necessary prior to direct transfer. By the same token, there are many different poultry husbandry techniques which should be field-tested in Perú before being commercially adopted; most of this knowledge is available at low cost. It has been mentioned earlier that poultry feed manufacturers are doing an effective extension job through their field servicemen. The official institutions should conduct research on managerial procedures adapted to the Peruvian farmer characteristics. Later on, the creation of cooperatives and the potential role for integration in the future of the poultry industry will be discussed.

Poultry Products Processing

The demand for convenience food items is now widespread in most large cities of the developed countries. Usually the production areas are away from the consumption centers, so most poultry products must be processed in a highly efficient manner to insure wholesomeness and extended shelf life. Health authorities are constantly watching over the processing plant's methods and products. In the highly competitive markets, processors cannot afford the damage that the lack of sanitation can cause to their products' image. On the other hand, they are working on very narrow profit margins so their technical and economic efficiency must be constantly improved if they are to remain competitive. These pressures have prompted the development of sophisticated processing technology, encompassing care at the farm, during processing, until the product reaches the final consumer.

In Perú the processing of poultry products is just beginning, and the quality standards are not too demanding. The possibilities for transfer of technology in this area are wide open. Some of the processes carry patent rights protection, but most techniques are available for transfer at low cost. Most of the equipment for processing, and the design of efficient processing plants, will have to be imported for the time being. In a subsequent section, we will discuss the effects of importing labor-displacing equipment.

Equipment Imports

Many poultry producing firms in the Coast of Perú are fairly mechanized; most of the equipment they use is imported. Only simple equipment is domestically produced; statistics are not available on types or quantities of equipment manufactured.

Reliable data on poultry equipment imports are not available in Perú. The import of labor-displacing equipment has been repeatedly criticized in the past. Modern poultry producing farms do not create much employment. Van de Wetering (1971) projected that the Peruvian poultry industry itself will only provide 150 new jobs between 1971 and 1975.

For instance, in less developed countries exist the paradox of using labor saving equipment in poultry farms, in spite of the high levels of unemployment and scarcity of foreign exchange.

Seagraves and Hardwood (1958) reported how to choose the best type of feeder to suit particular broiler farmers' needs. The two primary costs to consider should be cost of equipment and amount of labor. They indicated that trough feeders are cheapest, hanging feeders cost slightly more, and mechanical feeders cost from 1.5 to 2 times more per 1,000 birds. If no value is placed on labor, trough feeders should be the choice. In Perú, the statutory minimum wage for unskilled blue collar laborers has been set at U.S. $0.20 per hour; let's assume that skilled laborers are paid

$0.60 per hour. According to Seagraves and Hardwood's (1958) calculation of feeding labor required per bird, a hanging feeder would be least expensive up to about 11,000 broilers in one house, if U.S. $0.60 per hour is paid. Nevertheless, in Perú, even if wages are below that level, many mechanical feeders are being used in 10,000 birds' broiler houses. The reasons for this decision are the desire for prestige, managerial inexperience, reliability, and ready availability of imported equipment. In addition to these factors, the already mentioned government policies contribute to these choices of mechanical equipment. These policies include:

- Special foreign exchange provisions (U.S. dollar, certificate = 38.7 soles; draft = 44.3 soles).

- Low interest loans (7 to 9 percent versus commercial rate of 14 to 24 percent).

- Special tax privileges (accelerated depreciation).

All of these encourage capital intensity in spite of its frequent inappropriations under prevailing unemployment conditions.

Chenery (1970) indicated that on the issue of economic growth versus distribution of wealth, there is acceptance that development objectives must give greater weight to welfare increases for the poorer groups in the society, and that the government should not only be concerned with economic growth. Somewhere else it has been discussed that the possibilities of transferring income through fiscal measures are very limited in less developed countries; the

only significant means of improving the incomes of the poor
people is through the quality and quantity of employment
provided by the economic system. The distribution issue
then becomes a question of the nature of the trade off
between growth and employment. Few countries have tried
to implement policies that would favor the use of more labor
and less capital in production. The same author mentioned
that the generalization that high economic growth and high
employment currently provide the most reliable approach for
maximizing the welfare of the lower income groups, seems to
be supported by the experience of communist and capitalist
countries. He estimated that the optimistic yearly 6 or 7
percent growth targets are unlikely to prevent unemployment
from growing, which emphasizes the need for greater atten-
tion to the possibilities of substitutive labor for capital.

       Thorbecke and Stoutjesdijk (1970) studied the rela-
tionship between employment and output in Peru. They
reported that a strategy of land expansion and yield in-
crease without mechanization was attractive from the point
of view of employment creation and production growth within
agriculture, gross output as well as value added. However,
these authors indicated that if this alternative were to be
the best one of all grounds within agriculture, it was still
possible that the opportunity cost of the necessary public
and private funds to implement that strategy might be high
in the sense that higher returns for these funds could be

obtained outside of agriculture. It is not evident that
such conflict in fact exists, and even if it did, the
advantages of implementing a strategy of land expansion
and yield increase without mechanization, in terms of
employment creation, more equal income distribution and
balance of payments might well more than compensate the
possible slight output disadvantages. It should be remem-
bered that Peru is a very large net importer of food crops,
meat, and dairy products.

The same authors concluded that there is a need for
major structural changes more consistent with a "progressive
modernization" strategy than with a "crash modernization"
strategy. Rather than concentrating resources on the
modern sector and waiting until that sector has been able
to take over gradually the backward traditional sector, the
prevailing view is that these resources should be allocated
increasingly to the backward sector to help modernize it.
The major advantages of this development strategy are the
positive effects on overall employment and income distribu-
tion and rapid process of economic and social integration
between sectors.

According to the ILO (1970) report, the basic choice
of strategy is how much reliance to put on different sectors
as job providers. Neither the urban sector nor the agricul-
tural sector alone can create all the jobs that are neces-
sary. Policies can affect employment first by influencing
what is produced, and second by influencing how it is

produced. The first issue is essentially one of income distribution: steering consumer expenditure towards goods which require labor rather than capital or foreign exchange. Secondly, it is possible to influence choice of technique in favor of labor-intensive methods. In actual practice, many influences have operated to bias decisions in favor of mechanization. Some are psychological: the glamor of technical novelty disregarding its social and economic costs. Also some policies have encouraged labor-saving techniques. The exchange rate has at times been over-valued to an extent that amounted to a subsidy on imported capital goods. In Peru there are two rates of exchange: "Draft dollars," at about s/. 44.5 Peruvian soles per dollar, plus a 10 percent tax; "dollar certificate," at about s/. 38.7 Peruvian soles per dollar. These dollars are used for food imports, and for financing purchases of foreign machinery, equipment, and other required inputs.

Interest rates have been kept artificially low. Labor legislation and high wages paid in the modern sector have discouraged the hiring of new personnel. In a previous section some of the labor laws have been included which affect the poultry industry. These biases can be removed without necessarily raising costs and thus damaging the power of industry to face foreign competition, but decisive government action is needed.

In a recent study on technological transfer, labor absorption, and economic development, Pack and Todaro (1970) indicated that the choice of an appropriate technology for underdeveloped countries has been a major source of controversy. One fundamental issue is whether or not the available technology currently being produced in the advanced Western countries is appropriate for adoption in less developed countries. Given the relative abundance of manpower, poor countries may be undermining their own self-interest by indiscriminate adoption of the labour-saving equipment which has been created as the natural response of developed countries to their own labor scarcity and high cost. The economic rationale usually provided for the argument is that static efficiency requires the equilibrium of marginal rates of factor substitution and the implicit wage-rental ratio. Given the relatively low wage-rental ratios prevailing in less developed countries, this criterion would seem to imply the wisdom of adopting labor saving techniques.

The same authors indicated that the range of actual technological choice is limited by the fact that most new equipment is relatively capital-intensive and therefore undesirable from a social viewpoint. The older more labor intensive equipment is either no longer being produced or is limited in supply and expensive to maintain.

These authors further argued that, viewed in terms
of the dynamics of technological transfer, the forceful but
static argument that less developed countries might profit-
ably adopt used equipment to accelerate the process of
labor absorption emerges as somewhat myopic. Because, with
output growing and replacement as well as net investment
being required, even the extreme assumption that all gross
investment is satisfied by the continuous importation of
used equipment, would still imply an increasing divergence
between output and employment growth rates since the limited
supply of older equipment forces a switch to used equipment
of a later vintage with its lower labor coefficient.

In the opinion of Pack and Todaro (1970) in the pro-
cess of technological transfer, as long as the less devel-
oped countries have no control over the direction and speed
of technical change, the goals of industrial growth with
significant labor absorption will be exceedingly difficult
to realize. Given the structure of world trading patterns,
as long as capital goods production is concentrated almost
exclusively in developed countries, the relatively insignif-
icant demands of the less developed countries for these
goods will have only a negligible impact on both current
production decisions about the type of machine to be pro-
duced and, more importantly, on the direction that factor-
saving bias will take in the future. For these reasons Pack
and Todaro (1970) argue for the creation of domestic capital

goods industries in less developed countries in which production is geared to their own long-run technological requirements. They specifically propose that less developed countries should produce their own machinery, copying initially the earlier more labor-intensive designs of developed countries. This would provide the possibility of eliminating much of the conflict between output and employment growth while avoiding the important difficulty of designing new labor-using machinery. Although developed countries might have a comparative advantage in the production of such equipment, there are numerous reasons why they are unlikely to engage in such production. Among those reasons is the perception that markets of less developed countries are highly volatile due to political as well as economic instability. Since there is no market for this equipment in their own countries, and since the variance in expected returns is likely to be substantial, the costs of creating the necessary additional capacity may not be warranted, given the assured return from their domestic markets.

Apart from the advantages to be derived from the production of efficient, labor-intensive machines, other benefits could certainly be significant. Foreign exchange shortages frequently interrupt development programs resulting in either interruption in the investment program or a reduction in the current rate of production as intermediate imports are cut back. Assuming that the shortage results

from a foreign exchange gap rather than a savings constraint, the existence of domestic capital-producing capacity eliminates to an important extent the need to obtain foreign exchange in order to transform savings into real investment goods. Finally, the existence of a capital goods sector may constitute a necessary condition for changes in design which respond to domestic relative factor scarcities in the economy. The authors concluded that in the final analysis the long-run economic aspirations of less developed nations might depend largely on the successful adoption and continued growth of a domestic capital goods industry.

In the specific case of Perú, the limitation of a small domestic market for capital goods could be alleviated by the opening of the Andean Common Market.

The Design of New Entrepreneurial Forms Could Help Transfer Some of the Fruits of New Technology to the Workers

Development should be considered as expanding opportunities and the human capacities needed to exploit them, along with general reduction of mass poverty, unemployment and inequality.

It was considered that the design of new entrepreneurial forms could help transfer some of the fruits of new technology to the workers. Among them the vertical integration of industry functions and the creation of cooperatives could become valuable tools for the attainment of the stated development goals.

Integration

The poultry industries in more developed countries are increasingly becoming organized under some type of integration arrangements.

The current situation of the Peruvian poultry industry and what is expected of it in the future, indicate that efficiency should be improved if an economically strong industry is to develop. Perhaps one of the critical ways of attaining increased efficiency will be through systematic integration of the different stages of the industry.

This is one area where empirical research is needed, as to propose viable alternatives to the private sector for favoring integration. The objective of having an internationally competitive industry should not be forgotten in the threshold of the opening of the Andean Common Markets.

Tobin and Arthur (1964) indicated it was almost impossible to describe an integrator, except in the general terms of an entrepreneur who arranges, through ownership, contract, or other means, to control several steps in the process extending from broiler hatchery supply flocks through the processing stage. Usually integrators unify the planning, scheduling, and risk-taking functions through to the wholesale distribution of the end product.

Soule *et al*. (1960) mentioned that when two firms in successive stages of the flow of goods from natural resources to the final user come under a single management,

a market process in the course of this flow is eliminated from their relationship. Therefore, adjustment of the output of one stage to the input of the next falls under the influence of management and is no longer determined by the interplay of price, demand, and supply. The integrator, at his discretion, can distribute costs among the different stages rather than by market position and the balance of bargaining power. This is obvious when the successive stages or firms have come under a single ownership, less obvious, but often achieved when integration depends on contract. Backward vertical integration occurs when a firm at one stage assumes control of a firm or firms closer to the source of materials; forward integration occurs in the opposite direction. Horizontal integration is the joining of firms at any single stage.

Contracts must be of mutual benefit to all parties concerned. The degree of integration necessary is that which will result in each phase of the industry operating as near to maximum capacity as possible. The Commission for Animal Production Policy of the Ministry of Agriculture (1970) estimated that currently existing hatcheries in Perú were working at 64 percent of their incubation capacity to supply all market needs of commercial baby chicks. It was also reported that feed mills were producing at only 50 percent of their installed potential mixing capacity. These figures allow flexibility for output expansion without large fixed investment increases. In the 1970 poultry farm census

in the Department of Lima, it was determined that out of 1,108 farms, about 80 percent were active, 9.5 percent were farms in rest, and 11 percent were abandoned farms. CONESTCAR (1967) reported that about 10 percent of the farms were managed by professionals and technicians in the Lima area. This situation indicates that vertical integration or other informal means of vertical coordination should benefit both the poultry industry through cost minimization and final consumers through lowered prices.

At present very little formal contracting is done among the different stages of the Peruvian poultry industry. Among the reasons for this lack of coordination could be hypothesized:

- The insufficient financial solvency of any corporation as to have ownership of all the stages; so far, neither feed mills, hatcheries, nor processing plants have taken that initiative.

- The absence of entrepreneurship and managerial capability as for a firm to take the role of integrator through contracting or other means.

- Some supermarket chains have started integrating backwards, but only to supply a fraction of their total requirements of poultry products.

- By the same token, the new processing plants have integrated the parent breeding stock, the hatchery supply of baby chicks and the broiler grower.

Nevertheless, this process is only beginning at present.

- Profit margins for efficient enterprises, generally the big firms, could be large enough that they are unwilling to take more responsibilities in seeking additional benefits.

- The difficulty of trying to coordinate the activities of many too small independent firms at every stage of the industry.

- The additional problem represented by the characteristics of the firms' operators, like educational level (less than 10 percent have a college education), insufficient knowledge of the benefits to be derived from organizing the industry activities, lack of confidence on the behavior of other firm's operators and on the integrator.

- Empirical information on the industry and its environment is not available for planning purposes. Data are either not reliable, outdated, or too aggregated to be useful for business decision making in specific circumstances.

- Cost of capital has been fairly high in Perú; insecure investments are a big risk to take under such conditions.

- Lack of storage facilities in order to be able to buffer wide variations in supply or effective demand

that could occur; poor consumer acceptance of
frozen poultry.

- Large volumes of red meats are imported to the large
  urban centers, under government control. Poultry
  products are good substitutes for red meats; any
  disproportionate volume imported can hurt the
  domestic meat industry of beef, sheep, or poultry.
  This is especially true because of preferential
  rates of exchange allowed for food imports, in order
  to effectively subsidize urban consumers for polit-
  ical reasons. On the other hand, domestic costs of
  meat production are not internationally competitive,
  and traditionally the domestic industries have been
  protected by tariffs and other controls.

Under these circumstances the job of the integrator
becomes a difficult task. The formation of cooperatives to
group many small firms would help in simplifying the task of
coordination, plus the benefit of offering more security to
their incomes. Perhaps, if offered the alternative of inte-
gration, the small firms will take it, because of the
limited risk which would allow them a fair return for their
labor and investment in housing and equipment. They may
consider that the surrender of some managerial freedom is
a small price to pay for the advantages of integration.

Cooperatives

In the National Development Plan: 1971-1975, the Revolutionary Government of Perú conceptualized development as a process of deep transformation of the existing economic, social, political, and cultural structures. The present five year plan will be implemented after the recent reform in land tenure has taken place. The State now controls the financial mechanism, and the workers participation in decision making is deemed desirable. Nevertheless, the process of structural reforms is lagging behind the rapid institutional transformation as to allow a full activation of the economy and a consciously organized participation of the people. As generic development objectives for the intermediate period have been proposed: the attainment of effective participation of the masses in basic-issue decisions, through their organization in intermediate institutions like cooperatives and trade associations; rational participation of workers in the firm's profits in accordance with the levels of production and productivity; progressive participation of the workers in the managerial activities; encouragement and protection to the formation of new cooperative enterprises; and, to substantially increase job opportunities in the economic sectors, whenever compatible with economically efficient modern technology.

As means of implementing the objective of creation and regulation of new cooperative enterprises, the government enacted the Supreme Decree 240-69-AP in November, 1969.
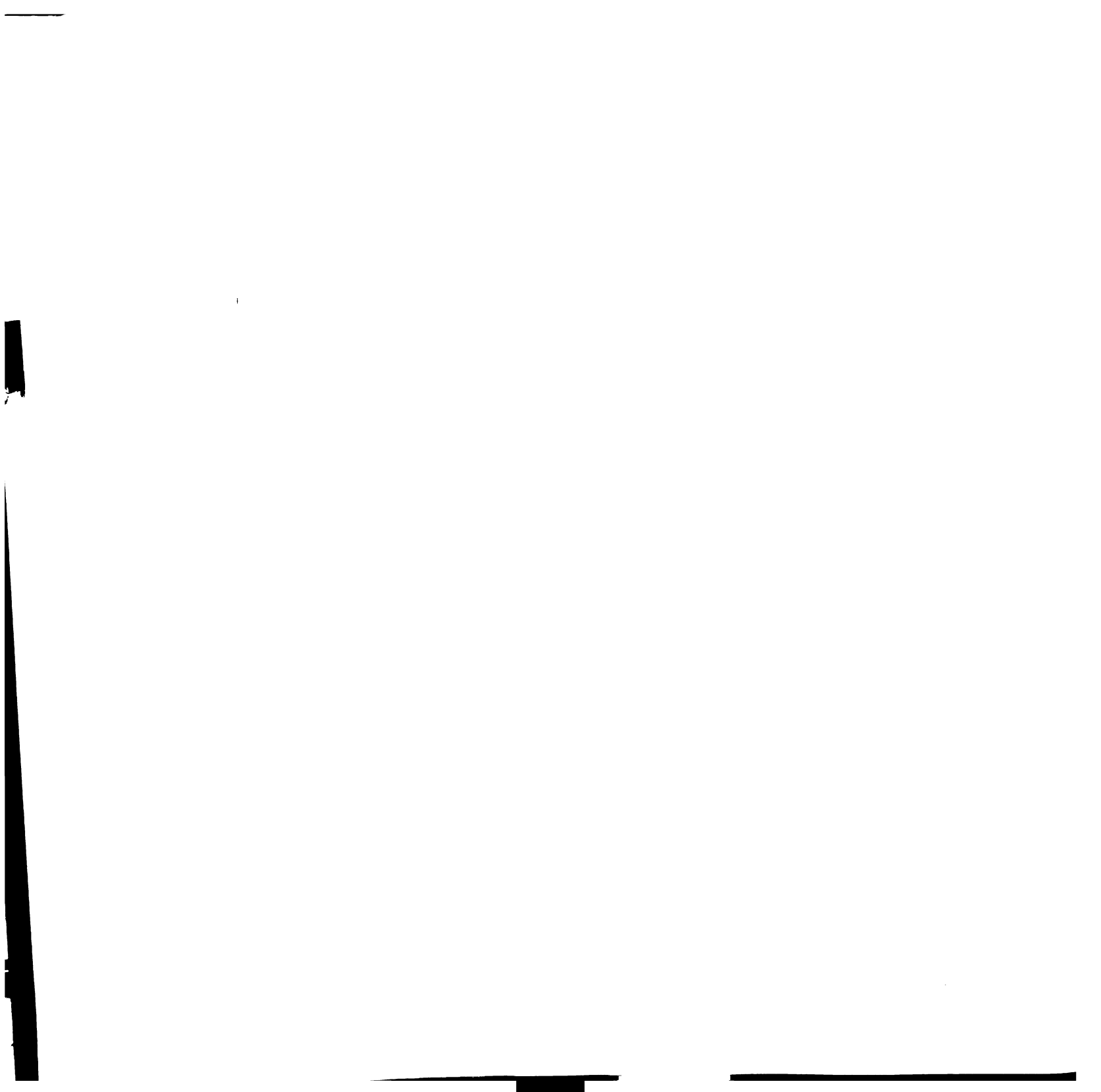
Four groups of cooperatives were considered: Agrarian, Communal, Centrals of Agrarian Cooperatives, and Agricultural Societies of Social Interest.

Agrarian cooperatives.--The Agrarian cooperatives could be of the following types: production, services, and integrators of parcels of agricultural land. The first two are of interest for the development of poultry related enterprises. In order to become a member of these cooperatives, it is required that each must be a farmer, or animal producer, who directly and personally exploits land located within the work area of the cooperative. The individual should not have conflicting interests or be in commercial competition with the cooperative. The individual should not belong to another cooperative engaged in similar endeavors.

The Agrarian cooperatives of production are indivisible units for joint exploitation, in which land, animals, buildings, crops, equipment and processing plants all belong to the unit, without individualizing member's ownership rights. These cooperatives will furnish the services required by the members. Objectives and ways of implementation were specified. The economic surpluses generated by joint work will be distributed among the members proportionally to the time worked by each one of them. The economic surpluses generated by services furnished by the cooperative to its members will be distributed

among them, in proportion to the volume of services used by each member.

The Agrarian cooperatives of services were created to provide their members needed services for agricultural exploitation and rural development. Objectives, ways of implementation, and distribution of economic surpluses are similar to those of production cooperatives.

Communal cooperatives.--The Communal cooperatives were created over the infrastructure of the former Indian Communities, plus all new areas given to them by the Agrarian Reform Law. These cooperatives will also be organized as indivisible units for joint exploitation of land, forests, animals, buildings, crops, equipment, processing plants, and other assets. These cooperatives could be for production or for services.

Centrals of Agrarian cooperatives.--Both the Agrarian and the Communal cooperatives will be integrated at Central organizations in order to provide them with services related to agricultural exploitation. Their functions are to provide inputs, marketing, and industrialization of output, to furnish credit and to arrange external financing, and to organize joint services for affiliated cooperatives. Perhaps the volume of output of a single Agrarian cooperative of poultry production may not allow it to take advantage of economies of scale in some operations, but this could be attained through the grouping of many small organizations under a Central of cooperatives.

Cost studies in other countries have shown that economies
of scale exist in egg-packing, feed milling, and chick
hatchery operation. That is, up to the limits of present
technology and at similar rates of utilization of potential
capacity, average cost per unit handled declines as plant
size increases. However, these potential economies of scale
can be achieved to the greatest extent in areas where the
density of production is greatest. The reasons for this are
that processing plants must consider both the implant costs
and the costs of hauling the product between plant and farms.
Large plants are feasible when hauling costs are low. In
Perú, the large commercial hatcherymen have become linked
with international franchised organizations which enable
the hatcheries to take advantage of the latest breeding
developments and of advertisement in international and
domestic publications. The relative size of the fixed
investment in incubators and equipment has made it desirable
for the hatcheries to expand volume as to cover the variable
cost and have a larger number of units over which to spread
the fixed cost.

It was mentioned earlier that large poultry produc-
ing firms and large feed mills are concentrated around Lima
and a few other cities. Milling and feed distribution costs
are related to the efficiency of the feed industry in an
area. Density and size of poultry producing units are
important in determining costs of distributing feed.

Combined milling and distribution costs are minimized

where a high density of production exists. For pick-up

or delivery operations, small lots are more expensive per

unit to handle. This higher cost is due to the logistic

time involved, the record keeping and billing operations,

and because the time involved in preparing to unload a

small lot is as great as for a larger lot. Where firms

are selling feed to unaffiliated producers, costs of adver-

tising and selling have historically been large in relation

to actual mixing and milling costs. Where coordinated pro-

duction, input-supplying, and market complexes exist, these

costs can be largely eliminated. Therefore, these are among

the advantages that could be attained through organizing

Centrals of cooperatives.

Agricultural Societies of Social Interest.--The

Agricultural Societies of Social Interest were created as

private cooperative enterprises of limited responsibility.

The objective of these organizations is to help their

members, who are the people favored by Agrarian Reform.

They can become cooperatives if they fulfill the legal

prerequisites.

Uriarte and Bellatin (1970) reported that, through

Resolution 2670-70-AG, enacted in August, 1970, the Ministry

of Agriculture approved the basic points regarding the

technical and economical feasibility for the establishment

of poultry parks in the corn producing areas of Casma and

Virú, on the northern coast of Perú. Basically, the pro-
posed poultry parks are integrated poultry cooperatives.
They have been located at the regions of corn production.
Among their functions are included balanced feed preparation,
poultry production, and marketing mainly for the local con-
sumption centers. By the end of 1971, the authors projected
that the poultry parks would start functioning, building one
stage at a time so as to help the new farmers learn the
trade. As yet no data were available on the progress of
these organizations.

Kinds of Group Action Needed
in the Poultry Industry

In Perú it seems beneficial for the industry to
encourage group activities. An attempt would be made to
identify the kinds and to mention the priorities for group
action. The latter will be a difficult task given the
already described situation of the poultry industry, and
especially due to the lack of reliable data of empirical
studies on costs and pay-offs of different types of
organizations.

Marketing organizations.--Through this business
entity farmers would sell their poultry products. Marketing
organizations should be perhaps the first type of group
action, because farmers could easily associate with them
in seeking to increase their returns through securing the
greatest possible prices for their products.

Processing associations.--Joint ownership by pro-
ducers would insure the processing plant enough volume to
operate at close to plant capacity year round minimizing
production costs. Product quality could be greatly improved
with its beneficial effect on increasing consumer acceptance.

Purchasing organizations.--Their objective will be
to reduce the price or improve the quality of the purchases
by its members.

The weak bargaining situation of the poultry
producers versus the input suppliers was mentioned earlier.
For instance, feed accounts for almost 60 percent of the
production cost of broilers; through group action, farmers
will gain purchasing and bargaining power. Perhaps later
farmers could engaged themselves in ownership and operation
of a feed mill.

Service organizations.--Farmers are in a very dis-
advantageous position versus the other members of the mar-
keting channel, among other reasons, due to their lack of
accurate reliable information. Through group action they
can attain from the government the appropriate legislation
and the monetary appropriations necessary for setting up an
efficient official information service. On the other hand,
they could operate it themselves.

Most lending institutions, private or public, are
less reluctant to make substantial loans with better types
of interest to groups than to individual farmers. Therefore,
through group action better credit could be attained.

Field service and advisory specialist personnel could be afforded by a group which would be excessively expensive for individual farmers.

Other services that can be obtained through group action are: legal advice on financial contracts, lower cost insurance as a group.

Conditions Necessary for Success

For any or all of the mentioned kinds of group action it is a more viable first stage to set them up as independent local associations. In this organization the people hold direct membership and are able to participate in the group affairs. The relatively small area of coverage and number of people involved mean that the opinion and action of each member can have influence. Because of their limited size and the capital available, these associations are limited in what they can do. Perhaps later on these local associations can join to form larger organizations to conduct product processing, purchasing, or to offer a wider array of services.

Volume of business.--A successful business operation requires that an adequate volume of business be secured and maintained. Gaining cooperation from the larger and more progressive farmers of each community would be easier because they can see more readily the long-run advantages of joining for group action. When comparing corporation versus cooperative type of associations, unless the one

man-one vote idea is set aside in favor of cumulative voting on the basis of business volume, the wealthier businessmen will be inclined towards the corporation type of association. That allows them to keep control of the organization; wealthy businessmen also control most of the supply, and from corporations they can expect to attain larger returns on their investment.

On the Coast of Perú, around the big cities, the personality and educational characteristics of the farmer will allow a rapid adoption of group action.

In the Sierra of Perú the situation is anticipated to be different because producers are widely scattered, and the unitary volumes of production are relatively low. They belong to different ethnic backgrounds, come from different social classes, and their lower levels of education make them difficult to organize. It would be difficult for them to view the cooperative as a long-run investment, difficult for them to understand that, even if the cooperative provides no better returns than farmers could get by selling individually, the very existence of the organization may be to their benefit. Producers will be less willing to participate in the activities and to exercise a voice in the management. Farmers cannot help in financing the association, because most of them are producing barely enough to make a living at the subsistence level. The Centro de

Investigacioues Sociales Económicas Políticas y
Antropológicas (1967) conducted a study in Puno relating
to the acceptance of the cooperative movement and concluded:

a. Cooperatives are unknown and non-existant in the
large part of the area under study. Membership
is very low indeed.

b. Where the cooperatives are known or already exist,
people normally do not appreciate them very much.
The main reasons for this lack of appreciation were
identified as:

- Distrust of fellow farmers.

- Distrust of administrations (corruption, power).

- A feeling that cooperative bureaucracy will lead
to worse results than are obtained so far.

- A fear that many will lose money because of the
greed and mismanagement of a few.

c. The small minority who hold a favorable opinion did
so manifestly because of:

- The possibility of buying and selling at better
prices.

- The possibility of obtaining credit.

- The quality of products obtained through
cooperatives is generally better than in the
open market.

- Cooperativism is a means of obtaining more
(or more rapidly and more easily) government
or entity aid.

- The possibility of ending exploitation by
  middlemen and money lenders.

d. A campaign in favor of cooperatives will probably
meet with only limited success. A small minority
(consisting almost entirely of the better educated
and better off) will welcome the idea and collab-
orate eagerly to avail themselves of this new
opportunity. The majority, on the other hand, will
stay aloof or will even be adverse to any program of
this kind.

In the light of the previous discussion, it is a
valid corollary to say that much effort should be devoted to
empirical studies to determine the economic feasibility of
attaining economies of large-scale operation in the pro-
jected organizations.

The goal of attaining adequate volume of business
can best be attained through the support of the large pro-
ducers who control most of the supply. A key consideration
is that growers must market all of their production, or buy
all of the inputs, or get all the production processed
through the cooperative or corporation organization. Mem-
bers should know that it is to everybody's benefit if the
plant is operated at full capacity to take full advantage
of potential economies of size. Efficient communication
should be established with all members as to get their full
support to the management policies for reinvestment, for

up-dating facilities, or for expansion. Also, members should be aware that the level of profits and patronage refunds may vary from year to year, and may even become negative. An attempt should be made to get the active participation of the most influential people of each community. The knowledge of the long-run benefits to all members will insure that in adverse situations of market prices or deficit of supply, the volume of business will not decrease by defection of members.

Another key consideration is to educate the associates, for them to be ready to meet competitive trouble likely to develop sometime in the existence of the organization.

In reference to this educational process in Perú, Olcese (1968) mentioned that it is vital for the agricultural development of a country that good research should be produced by trained people and that the knowledge gained from the research be communicated to the farmer in an effective way. The tragedy in developing countries lies in the failure to develop knowledge applicable to local conditions and in the lack of an effective mechanism of extension. The capital is often available when a farmer can prove his ability to use it, but when production and transmission of knowledge are inefficient, the possibility for improvement is remote.
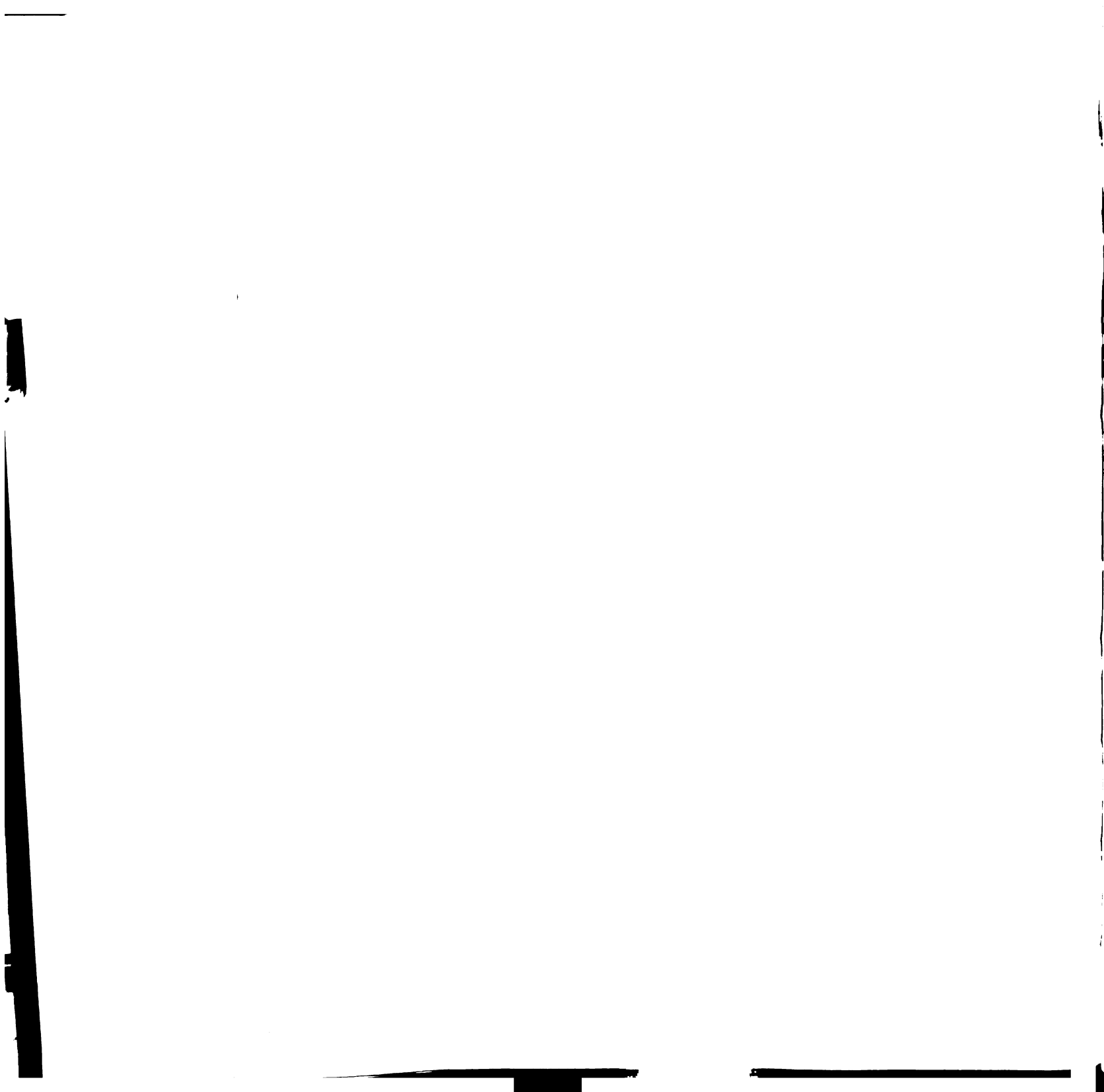
The mechanism of acquiring and transmitting knowledge involves three aspects that are closely interrelated: first, the training of people in agriculture at different levels; second, the acquisition of knowledge through research; third, the transmission of this knowledge from the research institutions to the farmers who are going to apply it. The Agrarian University of La Molina, in an integrated way, is helping to solve the multiple agricultural problems of Perú. At the same time, it is furnishing technological support to agricultural agencies of the government. The university has further influenced twelve other agricultural colleges in the country through direct technical cooperation. Efforts are being devoted to the training of future leaders for group action.

Getting adequate financing.--Usually the large and most progressive farmers will be more interested in supporting and joining group action organizations. Normally they are the wealthier in the community, and, consequently, the best locally available sources of financing. On the other hand, they can put up their credit ratings for getting loans for the organization with more chances of getting better terms and conditions when actually borrowing.

There exist some government lines of credit expressly designed for cooperatives, usually their terms are more favorable than those of commercial banks. It is extremely important to get adequate financing, because building an

efficient plant takes capital, and building less than an efficient plant invites failure.

Getting efficient high quality management.--In most developing countries, high quality managers are hard to get, and if available, they demand a high compensation. And Perú is no exception, so if the organization members want top quality managers, they must be willing to compensate and to properly motivate their managers.

Management is a key factor for the planning of development, adequate control of day to day operations, the setting up of policies flexible enough as to adapt to an ever-changing environment, not only economic, but also political and social.

Government role.--There is no doubt that the success of group action requires the government to assume a relevant role. The current Peruvian laws give their full support to group action as mentioned earlier.

Concluding remarks.--As concluding remarks, applicable to the future of group action in Perú, it is worthwhile to study the paper of De Loach (1962), who in judging the growth of U.S. farmer cooperatives, their obstacles, and opportunities posed the following questions:

    a. Is the effectiveness of agricultural cooperatives as economic instruments being reduced?

His answer was that modern technology, when combined with its intricate costly machines and the cost of establishing markets and procedures, has created an investment hurdle that is usually beyond the capabilities of most groups of farmers who might want to start a processing cooperative. Likewise, many small cooperatives that wish to expand are handicapped by their small membership base and their small volume of business, out of which capital reserves could be set aside for expansion. In other words, the real issue is whether any small processing and marketing firm, cooperative of profit-type, can survive under prevailing competitive conditions. If they do survive, most likely it will be because their members have no alternatives. Larger, well-established cooperatives should be able to compete with their profit-type counterparts, provided good management procedures are not subordinated to the idealistic notions of a board of directors.

It is sound to evaluate such considerations on the basis of empirical evidence for each economic environment, be it Perú or any other place where a broad range of efficiency in the marketing channel members can be found.

b. Can the competitive effectiveness of agricultural cooperatives be improved without some basic changes in their structure and operating policies?

Because of investment and cost barriers, many small cooperatives cannot fulfill their primary functions as efficiently operated farmer-owned businesses. Moreover, some unorganized farmers who would like to obtain some of the advantages of group action in processing and distribution are unable to do so. It would appear reasonable for the members of many small cooperatives and prospective members of cooperatives to study the feasibility of a greater use of collective bargaining techniques in dealing with buyers concerning product prices and other terms of sale. This procedure might remove the need for starting a new marketing cooperative or continuing to operate a small, inefficient plant for which there is little possibility for increasing its overall efficiency. Modern technology has raised the capital requirements for efficient farming. Therefore, any feasible reduction in the need for farmer investments in off-the-farm auxiliary processing and distribution businesses might open opportunities for on-the-farm capital improvements that otherwise would not be feasible.

This opinion will give us some more elements for analyzing, judging, and for a more intelligent decision-making process when facing the choice for group action.

The Poultry Industry's Improved Technology
Can Encourage Expansion of the
Feedstuffs Industry

In reference to agricultural and animal production the National Development Plan: 1971-1975 set up objectives, goals, programs for products of deficit domestic supply and programs for regulated products.

The objectives have been included in detail in a previous section. The goals set up were employment, production, investment, balance of payments, and others like agrarian reform, technical assistance, and supervised credit.

As production goals were forecasted a cumulative rate of growth of 4.2 percent for the period, which is expected would allow food import levels to remain about the same as in 1970. The expected output increase between 1970 and 1975 for the main agricultural products was shown in a previous table. Among them: poultry was expected to double its output; eggs were to increase by almost threefold; and beef, pork, and sheep were to increase output by about 50 percent each.

As balance of payments goals, it was forecasted that in spite of the policy of substitution of food imports, the increased domestic production will only reduce the gap in supply, so the import volume would remain about the same. The planned industrial growth would increase the demand for agricultural inputs, which would further increase total agricultural imports. Export values were projected to be

smaller than imports, therefore, the deficit in the balance of payments would increase.

In the programs for products of deficit domestic supply, the demand studies for wheat, fats and oils, meats, and milk when compared to the projected domestic supply showed that food imports would remain at 1970 levels. Nevertheless, these gaps could increase if the proposed production programs were not given top priority and the required budgetary implementation, or if weather conditions were adverse.

The programs for regulated agricultural products were directed towards satisfying the domestic demand for rice, corn, and poultry.

The Peruvian government is committed to increasing the domestic production of meats. The deficit situation has forced the imports of red meats. In 1975 the deficit of meats including beef, pork, and mutton, has been forecasted to reach 83,158 metric tons.

The National Development Plan: 1971-1975 proposed a program to attain increased meat production, which included the following activities:

- Improve prices for domestically produced beef, as to make profitable the cattle enterprises.
- To establish live cattle markets at the production areas, setting guaranteed minimum prices in order to eliminate those intermediaries which are not necessary.

- Set adequate prices of balanced feeds for cattle,
  as to encourage new feed lot enterprises.
- Increase the number of days per week during which
  it is forbidden to market beef meat, as to encourage
  the consumption of fish and poultry meats.
- The geographical areas which have comparative
  advantage for meat production will be supported as
  to increase supply efficiently.

P.I.D.U.A. (1969) reported that in Perú sheep production was virtually restricted to the Central and Southern Sierra. The existing sheep population was too large for the carrying capacity of the available natural pastures. Consequently, the optimum sheep population would call for a reduction in numbers.

Beef grown in natural pastures were competing against sheep, but most natural pastures in the Sierra have been appraised as already overgrazed, which means that the possibilities for expanding grass-fed cattle production is limited in that geographical region. Great hopes have been placed in the future increased beef output in the Selva region, which up to now is only potential.

P.I.D.U.A. (1969) reported that the livestock development plan pays particular attention to increasing pork production. The potential genetic improvements, the rapid rate of reproduction and the growing availability of feed concentrates offer promising returns for the public

expenditure on research and promotion in hog production. Historically, domestic supply has kept pace with the rapidly expanding domestic demand. It was anticipated that self-sufficiency can be maintained in the future.

The production of goat and auchenidae meat is relatively small. Guinea pigs are particularly important in the Sierra, where they substitute for most other meats. The livestock development plan does not include research and promotion programs for these species. P.I.D.U.A. (1969) reported that due to the local nature of consumption and the substantial elasticity of supply, it was projected that the production would grow according to the growth in demand.

The National Development Plan: 1971-1975, projected that fish supplies for direct human consumption will increase from 210,000 metric tons in 1971 to 600,000 metric tons in 1975, accomplished through a national exploitation of biological resources in the 200 mile territorial sea waters, the rivers, and lakes of the country.

In a previous section was discussed the fact that even with the projected increased output of these meats and fish, there still will be an unsatisfied effective demand which was proposed should be covered by substantial increases in poultry production.

It is to the benefit of the country to expand domestic areas devoted to profitable crops. The expansion of the poultry enterprises through the use of economically efficient

technology, will allow the development of a competitive and vigorous industry. An expanded effective demand for poultry products, as is expected in Perú, will in turn support a stable poultry industry. A secure market for balanced poultry feeds must encourage feed manufacturers to formalize future commitments for attaining sufficient supplies of feedstuffs. The ecological characteristics of Perú are favorable for a profitable increased output of some widely used feedstuffs.

The feedstuffs currently used in Perú as sources of energy in balanced poultry feeds include corn, grain sorghum, wheat and wheat milling by-products, animal fats, and oils.

In the National Development Plan: 1971-1975, it was indicated that the program for corn was directed towards covering the domestic demand that is expected to increase from 577,000 metric tons in 1971 to 762,000 metric tons in 1975. Poultry requirements will be about 281,484 metric tons in that year. Many activities for increasing corn output in Perú were proposed in broad terms. The support of genetic research to produce hybrids with the genes Opaque 2 and Starch 2 of high proteic quality and to educate consumers to increase the use of this grain were deemed important.

- Corn production technology should be improved as to decrease production costs and prices, which are still above those of international markets.
- Coordinate extension activities with the Agrarian Reform efforts to increase the use of certified corn

seeds especially in the Sierra region where yields
have the potential to be increased dramatically if
an appropriate package of inputs is provided, in-
cluding adequate land preparation, fertilizer,
insecticides, drying, storage, and transport
facilities.

- Support with supervised government's bank credit
  only those farmers agreeing to use certified seeds
  and the recommended package of inputs.

- Coordinate poultry feed and corn production activ-
  ities as to insure timely adjustments in demand and
  supply respectively. The formalized annual agree-
  ment signed between the corn producers and the
  manufacturers of balanced feeds, should be expanded
  to include future year's volume, base prices, and
  product specifications required by the feed mills.

- Direct the production and utilization of the large
  white starchy corn towards industrialization as
  precooked canned products, mainly for the wealthier
  urban consumers.

- There should be official supervision over the con-
  tractual agreements between corn producers and
  industrial manufacturers of animal feeds or corn
  derivatives.

- Grain imports should be limited to the minimum
  volumes necessary to cover the eventual deficits
  in domestic supply.

Grain sorghum is another feedstuff source of energy which is currently being produced in Perú. Intensive research efforts should be devoted to this crop, as to adapt available foreign varieties and technology to the Peruvian environment. At present this crop is not among the most profitable for the farmer, mainly due to lack of application of appropriate technology. A promotional program similar to that proposed for increasing corn output could substantially raise sorghum productivity, enterprise profitability and as a consequence stimulate an increase in total volumes supplied domestically. Unless secure markets are available, and currently applied technology allows for profits in grain sorghum production, farmers will not expand areas devoted to this crop.

At present most of the domestic production of wheat is devoted to human consumption. Overall Perú is a net importer of wheat, probably over 80 percent of the wheat domestically consumed is imported. Eventually, the government authorized the use of imported wheat on balanced poultry feeds. The National Development Plan: 1971-1975 forecasted a deficit of 705,000 metric tons of wheat for 1975, which would have to be imported. A package program was proposed for expanding total domestic output, including productivity, expanded areas improved marketing, and other activities. Special emphasis will be given to specified geographical areas. Nevertheless, the increased supply will

be devoted almost entirely to human consumption. Since milling of the grain will be done locally, the manufacturers of balanced poultry feeds will utilize all of the increased domestic supply of wheat milling by-products. A secure market for the by-products will reduce wheat production costs for human consumption, which in turn will stimulate domestic production of the grain.

The availability of animal fats and oils for manufacturing poultry feeds is very limited in Perú.

The use of hydrogenated fish oils in balanced poultry feeds and for direct human consumption is being encouraged in the country. With Perú being the world's leading producer of anchovy fish meal, the complementary production and increased use of hydrogenated fish oil seems to have good economical potential. The domestic availability of a low cost source of energy for poultry feed manufacturing should in turn allow a reduction in cost of poultry production. Lowered consumer prices for poultry products will in turn expand effective demand for them, stimulating a further substitution for red meats in the domestic markets.

Vegetable fats and oils are not used in balanced poultry feeds in Perú. They are only devoted to direct human consumption, since there is a large deficit in domestic supply.

The feedstuffs currently used in Perú as sources of protein in balanced poultry feeds include anchovy for meal, cottonseed meal, soybean meal, and other sources of relatively smaller importance.

Perú is the world's largest producer of anchovy fish meal. The total volume requirements of the poultry industry can be supplied domestically. Reportedly current problems of the poultry feed manufacturers are the quality and price variations of this feedstuff. In April 1970, the government's Public Fishmeal and Fishoil Marketing Co. (EPCHAP, Empresa Publica de Comercializacion de Harina de Pescado) was created which regulates the marketing practices and priority of fish products. Farsighted legislation has been enacted to improve the fishing industry's efficiency. It does not seem unrealistic to expect improvements in quality and reduced prices of fish products in the domestic market. These two factors were reported to be main problems for an increased use of these feedstuffs, fish meal and fish oil, in balanced poultry feeds. Anchovy fish meal and oil export prices are determined in the international markets. But to have a large domestic consumption market could buffer some unexpected glut in supply due to slowing of world's demand, alleviating abrupt drops in prices.

The quality characteristics of the Peruvian cottonseed meal does not allow its use at high levels in poultry feeding. In the past few years, the trend has been towards

a reduction of cotton cultivated areas. Nevertheless, the production of the extra-long staple cotton is expected to increase substantially due to the favorable international price situation. On the other hand, cottonseed oil production is an important source of edible vegetable oil for the Peruvian consumer. The by-product of oil extraction, the cottonseed meal, will indirectly depend on the international markets acceptance of Peruvian cotton staple. The domestic distribution of cottonseed meal is regulated by the Peruvian Association of Cattlemen. Traditionally top priority had been given to feeding beef and dairy cattle; only a secondary priority for supply of this feedstuff has been allowed to poultry feed manufacturing.

Domestic supply of soybean meal is very small, and devoted almost entirely to balanced poultry feed preparation. Future demands for this feedstuff are going to increase substantially for poultry feed mixing.

Domestic supply of oils and fats was not adequate in the past years, the deficit has been covered by increasing imports. The National Development Plan: 1971-1975, indicated that imports will continue to grow unless effective promotional programs for increasing production of oleaginous seeds were implemented. Besides further encouraging the use of fish oil for the manufacturing of hydrogenated fats for human consumption, the Plan proposes an increased cultivation of soybeans, peanuts, olives, and palm oil.

It was projected that by 1975 oil imports could be reduced approximately to half the 1971 levels. The economic feasibility of each of these crops deserve exhaustive analysis prior to an intensive promotional effort. For each geographical region of the country the environmental characteristics are different, and they should be tested by the government research institutions prior to encouraging private firms to expand cultivation of the aforementioned crops. Only if determined as profitable enterprises should they be promoted, otherwise some other solutions should be searched for.

Among the main problems reportedly faced by the poultry producers in their attempts for minimization of costs of production, the price of feed seems to be paramount, because of the large proportion that it represents out of the total production cost.

Domestic feed manufacturers blame the expensive prices they charge for balanced poultry feeds onto the scarcity and high cost of feedstuffs.

Great efforts will be devoted to satisfying the Peruvian deficit of edible oils, through the promotion of domestic oil sources. The increased production of oleaginous, after being processed for oil extraction will render by-products which are used in poultry feeding. Soybean meal and peanut meal are excellent sources of vegetable proteins which are less costly than animal protein for poultry feed

formulation. Therefore, an increase in domestic oil pro-
duction will simultaneously alleviate the poultry feedstuffs
deficit.

Another alternative in the short run could be to
import raw soybeans to be processed in Peru, reportedly
plant capacity of oil manufacturers is not being fully
utilized. The convenience of such action should be analyzed
as to the potential economic advantage of processing locally,
using plant, equipment, and Peruvian labor, plus the benefit
of having a steady supply of soybean oil and meal; versus the
outflow of foreign currency to be incurred if already pro-
cessed oil and meal would have been imported instead, with
a larger foreign value added due to further processing.

In summary, the implementation of a policy for pro-
motion of domestic sources of vegetable edible oil, mainly
soybeans and peanuts, will simultaneously alleviate the
deficit of vegetable protein feedstuffs for poultry feeding.
Oil imports could be reduced by 55 percent in 1975. The
reduced prices of domestically produced feedstuffs, would
in turn allow for a reduction in total costs of poultry
production. Accordingly, prices could be reduced for con-
sumers of poultry products. Effective demand for poultry
products would expand due to expected increased earnings to
the low income group of a rapidly growing population besides
the fact that reduced poultry product prices will be more
attractive to consumers. It is expected that a significant
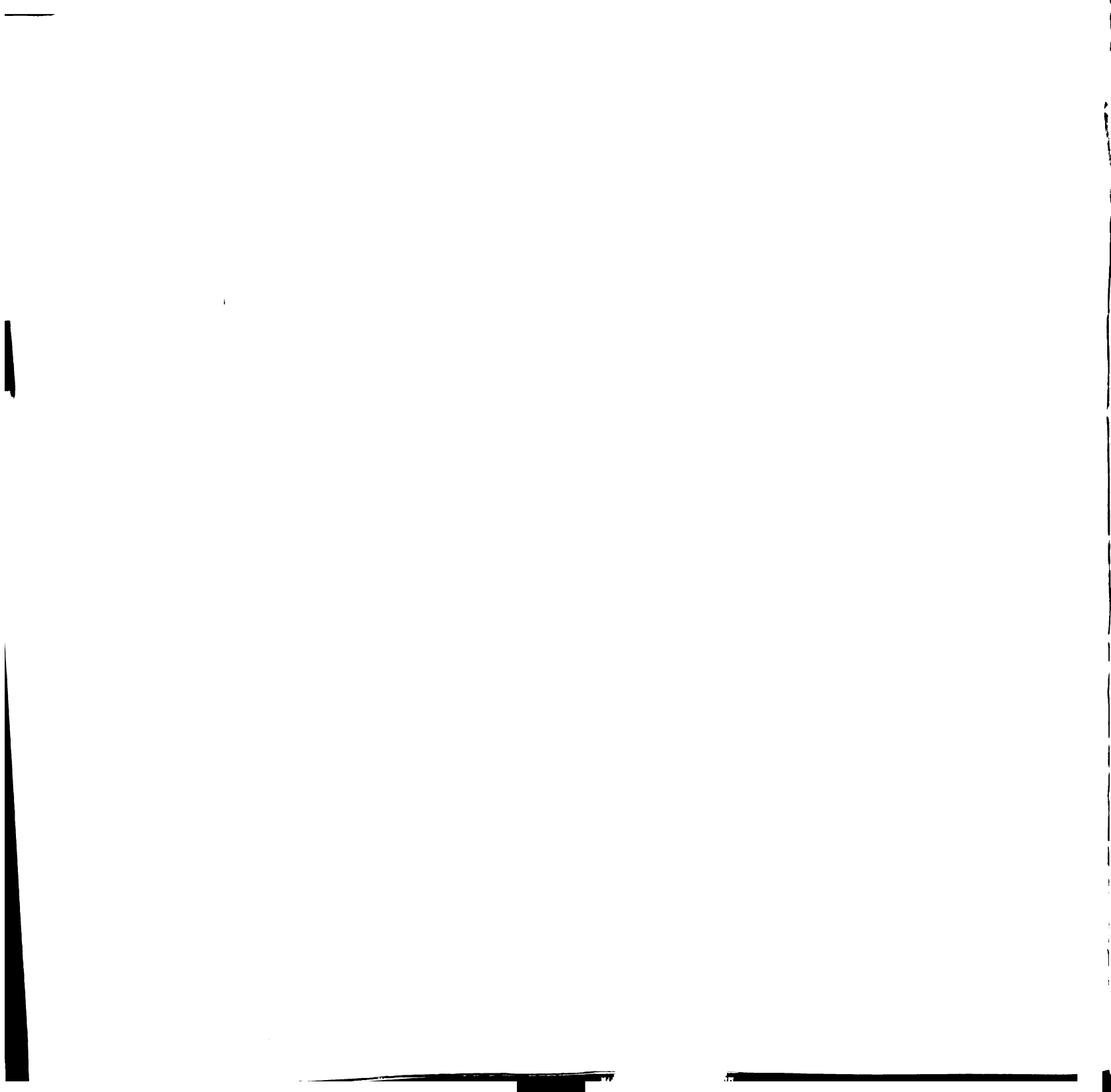
proportion of the red meats total volume demanded could be substituted for poultry products and fish consumption. The deficit in domestic supply of red meats could diminish, therefore the need for imports would be alleviated. The favorable effects on the balance of payments could be threefold: reduced importation of vegetable edible oils, lowered imports of vegetable protein feedstuffs, and decreased imports of red meats--which means savings in foreign currency, badly needed for investment in industrial equipment and other capital investments as discussed earlier. The quantification of this course of action would depend on the speed of its implementation and the government decision of favoring curtailment of imports.

As an illustration some rough estimates were made: even if the available information is too aggregate to allow an accurate calculation, a rough estimate was made of the hypothesized outflows of foreign exchange which domestic production could alleviate by 1975. The projected volume and value for imports of meats, oils, and fats, and future deficit feedstuffs like cottonseed meal and soybean meal were estimated. Two levels of reduction in total imports were assumed, 20 and 40 percent. In the former level, U.S. $7.1 million could be saved; in the latter level, roughly U.S. $14.2 million could be saved per year by 1975. In that same year the agricultural balance of payments deficit was forecast to be approximately $61.4 million (Table 49).

Table 49. Hypothesized outflow of foreign exchange which domestic production could alleviate for year 1975

For Year 1975	Projected Deficit in Domestic Production	Demand Not Satisfied	Projected Imports	Value of Projected Imports
	(thousands metric tons)			(million dollars)
Meats	83.2[b]	44.0	43.3	29.0[a]
Oils and Fats			22.2[a]	4.7[a]
Feedstuffs:[c]				
Cottonseed meal			12.5 }	
Soybean meal			8.2 }	2.1
Total				35.8
Assumption I	20% reduction of imports			(-7.1)
Assumption II	40% reduction of imports			(-14.2)

[a]Data from Table 10.   [b]Data from Table 12.

[c]Data from Table 44, including transportation charges.

The Benefits of New Technology Can
Be Distributed to Consumers

The National Development Plan: 1971-1975 projected that the Peruvian poultry industry would increase substantially its total output in the period. The proposed output increase will be attained through coordinated increment of the poultry population, plus the use of more efficient technology. It is not enough to increase output in an efficient manner, ways must be found to market poultry products efficiently in the interest of consumers as well as producers. Ways must also be found to meet the needs of those who can not pay full commercial prices for their food. Improved marketing will play a decisive role in sustaining the growth of the poultry industry. New high-yield technology would have limited impact on national economics if market systems and marketing facilities are inadequate to the increased load they will need to carry. Therefore, it is feasible that if market prices and facilities do not accommodate increased production and farmers find that there is no profit in high-yielding technology, increased production would be inhibited. It is apparent that there is room for improvements in the marketing efficiency of the Peruvian poultry industry.

In reference to the concept of marketing efficiency, Kohls (1968) indicated that marketing consists of those business activities that go into getting a product into the hands of consumers. The outputs of marketing are the

consumer satisfactions with the goods and services. The
inputs are the various resources of labor, capital, and
management that marketing firms use in the process.

Efficient marketing can be defined as maximization
of this input-output ratio. A change that reduces the
input-costs of accomplishing a particular job without
reducing consumer satisfaction with the output of goods
and services clearly would be an improvement in efficiency.
However, a change that reduced costs but also reduced con-
sumer satisfaction with the end product might actually
reduce marketing efficiency. Whether marketing costs are
great or small gives little or no indication of the effi-
ciency with which the marketing job is accomplished.

In the real world it is difficult to measure the
output of consumer satisfaction, which limits the use of
the concept of marketing efficiency. To overcome this,
marketing efficiency is usually subdivided into two dif-
ferent categories: (1) operational (technological) effi-
ciency, and (2) pricing (economic) efficiency.

Operational (technological) efficiency.--It was
assumed that the essential nature of consumer satisfaction
with the goods and services were to remain unchanged, and
focuses were on reducing the costs of marketing by using
technological know how.

Pricing (economic) efficiency.--Economic efficiency
is concerned with improving the operation of the buying,
selling, and pricing aspects of the marketing process so

that it will remain responsive to consumer direction through prices paid for the product. The reliability of this measurement is dependent upon at least three basic conditions:

a. The consumer must be provided with alternatives from which to choose.

b. The price tags on these choices must adequately reflect the costs of providing the different choices.

c. The differences in prices caused by varying consumer preferences must be reflected back through the marketing system.

More adequate market-news reporting and more accurate grading of commodities often will improve pricing efficiency. Many of the laws concerned with how business firms can price their goods, and the policing and control of monopoly, are also aimed at improving pricing efficiency.

Under some circumstances the improvement in operational efficiency might result in a decrease in pricing efficiency. For example, a new technological development may improve a firm's operational efficiency and permit it to grow very large. However, this growth might reduce the number of other firms in the field to the extent where consumers did not have adequate alternative choices left. Or, a proposal to require uniform grading of commodities to improve pricing efficiency might result in increased operational costs for the various firms.

In summary, the consumer should be provided with a marketing system using the best combination of resources which technology can provide at prices which reflect costs. The best measure of the satisfaction output of the marketing process is probably what consumers will pay in the market place.

The National Development Plan: 1971-1975 indicated that special attention would be given to marketing improvements during the period.

Among the causes of economic inefficiencies is the severe lack of reliable and timely information for planning the future marketing adjustments in the poultry industry.

Several authors have reported on the significance of poultry production cycles in forward planning (Larzelere, 1951; Tobin and Arthur, 1964), which allow some lead time for entrepreneurial decision making. Risks to poultry farmers can be reduced by providing more complete and better information through government reports and trade publications.

Tobin and Arthur (1964) reported that poultry biological considerations impose more or less fixed lead times, as in the case of the incubation of eggs, or the growing period of breeding chickens up to their egg-laying age, or of broilers up to market-ready weights.

Other time variables involve a span of production stretched over a period of time, like breeding hens, which normally lay eggs over about nine months time.

A certain amount of flexibility can be introduced in the length of time breeder hens are kept in effective production (i.e., the undersize "pullet" eggs are sometimes incubated if the demand for chicks is high, or the liquidation of a laying flock may be deferred beyond the normal age of approximately 14 or 15 months).

At the hatchery level there are also more or less fixed time lags, i.e., settings and hatchings of broiler eggs precede the pattern of marketing of finished broilers by something like 12 and 9 weeks, respectively.

At the parent stock or hatchery supply flock level there is more time flexibility, the hens can be kept in production for varying lengths of time.

The biological lead time suggested by the relationships just discussed is subject to a very important degree of looseness or flexibility.

The natural uncertainty factors, such as weather, disease, low hatchability, death losses, and the like, are seldom of major importance in their impact so far as fluctuations of total supply are concerned.

A second cause of looseness in the relationship of supply flock chick placements and later broiler or table egg quantities marketed is the element of human decisions. They are a major source of variations in poultry products supplies, but they also do provide important instruments for human control or modification of a cyclical pattern as it develops.

Another source of variation could arise from the statistical processes themselves, which influence decision makers and could lead to faulty action.

If demand for poultry products were entirely stable except for the seasonal variations in consumption, it is quite conceivable that adjustments in output to meet changes in demand could be accomplished with relative ease. There are other influential factors which indicate the importance of having and exercising flexibility in production flows in order to match changing demands as well as to stabilize the supply.

As indicated earlier, in Perú a very large proportion of the poultry enterprises start operations without a definite market being secured for their output. The main concern of farmers is with production efficiency and relatively little attention is given to future effective demand for their products. In the free market system, the matching of supply to demand depends upon individual business decisions. The lack or misinterpretation of information misleads individual decision makers, with the resulting lack of planned coordination of supply to effective market demand.

The mandatory reporting by poultry firms of accurate information to the government seems to be necessary. On that basis, it would be possible for government officials to issue timely forecasts useful for individual firm's decision making.

In a previous section, the need for estimation of future needs and supplies of poultry feedstuffs has been discussed. With this information, efficient coordination and faulty contractual agreements could be improved between feedstuff producers and feed manufacturers. The pricing of balanced poultry feeds could be checked very closely by the government. In order to counterbalance the market power of the large private feed manufacturers, government support should be given to the establishment of a few cooperatively owned feed mills. This action will entail some sacrifice of the expected improved operational efficiency of the existing feed mills, since reportedly they are not operating at full plant capacity. Nevertheless, this sacrifice would be a relatively small price to be paid towards improvement of the efficiency of the poultry feed pricing mechanism. On the other hand, the formulation of concentrates should be encouraged in order to reduce transportation costs and to increase the value of grains produced locally on each geographic area. The poultry feed concentrate includes proteic feedstuffs, vitamins, minerals, and additives; it represents from 30 to 45 percent of the completely balanced feed, mainly grains need to be added as sources of energy.

Some operational inefficiencies in the poultry subsector are as follows:

- In all geographical regions of Perú, most of the existing poultry firms are not up to date in available technology.

- In general, there are too many small firms, and such firm size is usually too small for attaining potential economies of size available with modern know-how.

- Poultry firms are generally poorly managed, and the technology of production, equipment, etc., being used are obsolete, with the exception of a few large industrial producers of the Coast.

- The sources and methods of financing are usually not favorable to the marketing channel members. With the exclusion of the entrepreneurs with substantial collateral, producers' associations or cooperatives could get government financing at very favorable conditions, considering the local capital market situation.

- Processing of poultry products, as previously reported, is just beginning.

- Feed production is controlled by an oligopolistic structure of private firms. They have a tremendous market power that in practice allows them to determine desired qualities and prices. At the same time, they have monopsonistic power in the buying of feedstuffs.

- There are no enforceable standards of quality; these include: feedstuffs, feeds, vaccines, drugs, poultry meat, and eggs, all of which constitute barriers to an efficient marketing system.

- Vertical integration or widespread contractual arrangements between the different stages of the marketing channels are seldom used. That leads to a very poor and inefficient coordination within the system.

- Labor productivity is very low, and even with the prevalent fairly low hourly wages, these factors of production end up being very expensive when other social benefits are considered.

- Most of the equipment and breeder stock utilized by the industry is imported, with the potential unfavorable effects discussed earlier.

- There is excessive waste along most of the marketing channels: at the producer level, the system of "all-in all-out" is just beginning to be used; before its adoption there were losses by diseases; poor feed utilization; inefficient use of housing, labor, management and capital.

- Along the distribution channel there are severe losses of quality and amounts of products due to lack of adequate refrigerated storage facilities. In the processing there is profit potential that is not being fully exploited.

- Even if there is very limited empirical data, it is apparent that there are unneeded distribution costs.

- There are many handlers which accomplish the same task repetitively in the marketing channel, without adding utility to the product.
- There exist wide variations in prices of the poultry products. This is due to cyclical variations in supply because farmers produce in accordance with expectations based upon various levels of prices and don't take into account forecasted levels of production and future effective demand.

All of the aforementioned problems need to be analyzed very thoroughly; the urgency of the day to day problems will most likely determine which of them will be given top priority. Unless these problems are solved, it would be difficult to distribute the benefits of new technology to consumers. A long run approach should be taken as to search for the potential solutions to the increasing problems of an industry which is expected will have rapid growth in the near future.

Riley *et al*. (1970) studied the food marketing systems in Latin America. They indicated that technological and institutional changes in production and distribution of foods could reduce food prices. The effects would be that for all income groups food expenditures would decline while non-food expenditures would increase. They pointed out that a reduction in food prices would have a significant stimulating effect on demand of non-food products.

The same authors hypothesized the adjustments that could occur if supplies of food and non-food were perfectly elastic, or if sufficient time elapsed for production to respond to increased demand, indicating that: "in a competitive economic system, the dynamics of change could begin with reduced food prices brought about through market improvements. This would increase real purchasing power, forcing prices back upward at retail, which, when reflected back to farmers and manufacturers would call forth expanded output. When this increased output reaches the market, prices would decline toward a new equilibrium resulting in lower consumer prices, and higher levels of output for both food and nonfood products." Riley *et al.* (1970) stressed that productivity increases in the processing and distribution stages can be just as important as productivity increases in farm production. In both instances, they said, there are secondary and tertiary effects on employment and income which are important in formulating development policies. In many cases, the development of a more stable and remunerative market has a strong stimulating influence on the adoption of new production technology. In their opinion this is undoubtedly a more important contribution to economic development than the short-run economic savings derived from a system evaluated within a static equilibrium framework.

CHAPTER VIII

SUMMARY

1. Understanding Development

Development means more than economic growth or simply quantitative increase in production. Development should be considered in the broad sense of expanding opportunities and the human capacities needed to exploit them, along with a general reduction of mass poverty, unemployment, and inequality.

Despite the vast amount of literature available on economic development, there has not yet been produced a unified, generally applicable, and operationally useful theory of development. The theoretical analysis of economic development attempts to show the interrelationship of changes in different economic magnitudes over time. Agricultural policies emphasizing modernization and increased production from the commercial farm sector without explicit attention to the creation of employment opportunities tend to widen income disparities. The policy that food should be produced by the cheapest and most efficient means, when viewed from the private interest of an individual firm, frequently means displacing people with machines. The professional analyst

will view the problem with decision making criteria appropriate to the private firm while ignoring the possible lack of correspondence between private and social costs and benefits. The manner in which increased production is achieved and the number of people who participate and reap some benefits in the process may be as important as the production increase itself.

The Gross National Product is not in and by itself the purpose of economic activity. It is only a proxy target. In less developed countries the flow of goods and services should not be considered as the sole purpose of the economic system, regardless of the composition and allocation of that flow. Relevant considerations are problems of health, illiteracy, lack of access to educational facilities, nutrition, high mortality, poor housing, unemployment, and income inequalities. One realistic approach would consist of evolving a workable and consistent form of social accounting that will systematically include economic, social, biological, and institutional information. The objective of development can be stated better in terms of the overall transformation of the economy and the society than in terms of the growth of inputs and outputs. Achievable rates of progress toward this goal depend to a large extent on the starting point. High economic growth and high employment currently provide the most reliable approach to maximizing the welfare of the lower income groups.

Classical economic theory attributes the function of efficient allocation of resources, between sectors and over time, to the market. In developing countries, there are imperfections of the market mechanism, and there are indivisibilities and externalities. Development planning becomes a means of ensuring consistency and coordination of allocative and investment decisions through which many advantages can be attained by developing countries.

An attempt has been made to establish an understanding of development, especially as it relates to the poultry industry.

2. The Peruvian Poultry Industry

The information furnished in preceding chapters described the current socioeconomic environmental characteristics of Perú. Within this milieu, the domestic poultry industry's future growth must be harnessed to contribute to the attainment of the national development goals, as defined by the current Revolutionary Government.

A description has been made of the poultry industry including breeder operations, broiler producing operations, and commercial egg producing operations. The supply of key inputs for the industry has been surveyed, encompassing credit availability, breeding stocks and hatcheries, feed manufacturers, feedstuffs, and other inputs like vaccines and government technical assistance to the industry. Very

little reliable information is available on the marketing of poultry products. Nevertheless, an effort was made to describe imports and exports, consumption, supply and marketing channels, existing processing plants, and reported prices for poultry products.

The National Development Plan: 1971-1975 will be implemented after the recent reforms in land tenure have taken place. Low income segments of the population have been favored, and their incomes are expected to increase. Income elasticity of demand for animal products reportedly is high at those income levels. Effective demand for higher cost, better quality protein food will expand due to the larger population, the expected increased incomes, and better education. Poultry products can capture a share of this expanded effective demand if priced competitively. Poultry meat supply was projected to be doubled, and egg supplies to increase by almost threefold in the five year period. During this anticipated growth process, the poultry industry should also contribute to the development efforts of the country.

3. Poultry Industry Developmental
Framework

The proposed guidelines for the poultry industry to contribute to development of Perú were grouped as follows:

a. There exists improved technology which is potentially transferable to the Peruvian poultry industry. The process of adoption of improved technology is a relatively slow process. Adaptive research for new technology needs to be an ongoing endeavor in Perú. Procedures for analytical quantification of tradeoffs between the advantages of the new technology and its negative effects on the socioeconomic environment of Perú should be worked out prior to widespread adoption.

b. The design of new entrepreneurial forms could help transfer some of the fruits of new technology to the workers. The Government of Perú conceptualized development as a process of deep transformation of the existing economic, social, political and cultural structures. A generic development objective for the intermediate period was the attainment of effective participation of the masses through their organization in intermediate institutions like cooperatives. It is proposed that the vertical coordination of industry functions and the creation of cooperatives could become a valuable means for the attainment of the stated development goals.

c. The poultry industry's improved technology can encourage expansion of the domestic feedstuffs industry.

It is to the benefit of the country to expand domestic firms devoted to profitable enterprises. The expansion of poultry enterprises through the use of economically efficient technology will allow the development of a competitive and vigorous industry. An expanding effective demand such as is projected for Perú, will, in turn, support a growing poultry industry. A secure market for balanced poultry feeds must encourage feed manufacturers to formalize future commitments for attaining sufficient supplies of feedstuffs. The ecological characteristics of Perú are favorable for a profitable increased output of some widely used feedstuffs.

The foreign exchange constraint for development oriented investments traditionally has been met largely through export increases, since the country has both the supplies of diversified exportable products and the markets for them. Nevertheless, the planned heavy need for foreign exchange could also be alleviated by substituting imports. The poultry industry's balanced expansion, through supplying the anticipated deficit of edible animal protein, can contribute to the nation's development efforts.

The favorable effects on the balance of payments could be threefold:

- Reduced importation of vegetable edible oils.

- Lowered imports of vegetable protein feedstuffs.

- Decreased imports of red meats.

The quantification of the effects of this course of action would depend on the speed of implementation, and the government decision of favoring curtailment of imports.

d.   The benefits of new technology can be distributed to Peruvian consumers.

It is proposed that improvements in the efficiency of the marketing of inputs for and of products of the poultry industry could benefit consumers. Technological and institutional changes in production and distribution of poultry products could reduce prices paid by consumers which could have a significant stimulating effect by further expanding effective domestic demand for poultry products and for non-food products, therefore, helping development efforts.

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APPENDIX A

TABLES

Table A-1. Normal variations in economic structure with level of development-level of G.N.P. per capita (U.S. dollars of 1964)[a]

	$50[b]	$100[b]	$200	$300	$400	$600	$800	$1000[b]	$2000
Accumulation:									
Gross national savings, as % of G.N.P.	9.4	12.0	14.8	16.4	17.6	19.3	20.5	21.5	24.6
Gross domestic investment, as % of G.D.P.	11.7	15.1	18.2	19.7	20.8	22.2	23.0	23.7	25.4
Tax revenue, as % of national income	9.8	12.7	16.7	19.5	21.8	25.3	28.0	30.3	28.0
School enrollment ratio	17.5	36.2	52.6	61.2	66.9	74.2	78.9	82.3	91.4
Adult literacy rate	15.3	36.5	55.2	65.0	71.5	80.0	85.4	89.4	93.0
Output Composition:									
Primary share of G.D.P.	58.1	46.4	36.0	30.4	26.7	21.8	18.6	16.3	9.8
Industry share of G.D.P.	7.3	13.5	19.6	23.1	25.5	29.0	31.4	33.2	38.9
Services share of G.D.P.	29.9	34.6	37.9	39.2	39.9	40.4	40.5	40.4	39.3
Utilities share of G.D.P.	4.6	5.7	7.0	7.7	8.3	9.1	9.7	10.2	11.7
Labor Force:									
Primary labor, as % of total labor force	75.3	68.1	58.7	49.9	43.6	34.8	28.6	23.7	8.3
Industrial labor, as % of total labor force	4.1	9.6	16.6	20.5	23.4	27.6	30.7	33.2	40.1
Services labor, as % of total labor force	20.6	22.3	26.7	29.3	31.7	35.8	39.2	42.2	51.6
Urban population, as % of total population	4.1	20.0	33.8	40.9	45.5	51.5	55.3	58.0	65.1
Trade:									
Exports of goods and services as % of G.D.P.	9.9	13.2	16.3	18.0	19.1	20.7	21.8	22.5	24.8
Imports of goods and services as % of G.D.P.	16.6	18.7	20.6	21.6	22.3	23.2	23.8	24.3	25.5
Primary exports as % of total exports	89.0	78.0	68.0	61.0	56.0	50.0	46.0	42.0	33.0
Primary imports as % of total imports	10.0	18.0	25.0	27.0	28.0	29.0	30.0	30.0	30.0

Source: Chenery, "Targets for Development," 1970.

[a] All values are computed from multiple regressions for a sample of about 100 countries over the period 1950–1965. The values shown apply to a country of 10 million population in the year 1960. Underlying data are taken from the IBRD, World Tables, December 1968. Further details are given in Chenery, Elkington, and Sims, "A Uniform Analysis of Development Patterns," 1970.

[b] Levels for 50, 100, and 1000 have been adjusted proportionately to total 100%.

Table A-2. A classification of development strategies of high growth countries

Country (1)	1950 GNP per Capita (2)	Population (1960) (3)	GNP Growth: 1951-1959 (4)	GNP Growth: 1960-1967 (5)	Population Growth (6)	Increase in P.C. GNP (1967/1950) (7)	Investment Ratio: 1950-1955 (8)	Investment Ratio: 1960-1965 (9)	External Finance (F/I): 1951-1959 (10)	External Finance (F/I): 1960-1967 (11)	Capital Output Ratio (12)	Primary Exports/GNP (1960) (13)	Trade Orientation (14)	Export Growth (1951-1959) (15)	Export Growth (1960-1967) (16)	Industrial Production: Ratio to Normal (1950) (17)	Growth (1950-1967) (18)	Primary Production Ratio to Normal (1950) (19)	Growth (1950-1967) (20)
A-Strategy: High Aid:																			
Israel	506	2.1	11.5	7.5	4.8	2.23	.310	.237	.68	.52	3.2	.061	M	21%	15%	1.28	8.3	.42	7.5
Taiwan	105	10.6	8.2	9.4	3.3	2.21	.138	.220	.37	.21	2.0	.103	M	7%	20%	1.22	15.2	.77	6.5
Jordan	106	1.7	8.8	8.2	3.1	2.00	--	.165	1.00	1.00	1.6	.145	B	15%	10%	.91a	n.a.	.40a	8.3
Greece	261	8.3	6.2	7.3	0.9	2.41	.177	.249	.46	.36	3.1	.084	B	12%	12%	.90	7.8	.93	5.0
Puerto Rico	441	2.4	5.5	8.1	1.5	2.52	.196	.252	.80	.79	3.3	n.a.	M	7%	10%	.90	9.7	.80	-1.0
Korea	99	24.7	5.4	6.9	2.8	1.48	.120	.164	.67	.63	2.7	.044	M	7%	27%	.80b	14.8	1.03b	5.9
Panama	313	1.1	4.4	8.5	3.1	1.56	.107	.191	.53	.29	2.4	.340	P	4%	9%	1.02	7.9	.80	4.9
B-Strategy: High Primary Exports:																			
Thailand	64	26.4	6.9	7.5	3.0	1.98	.181	.213	.13	.07	2.6	.171	P	2.7	12.7	1.08b	8.5	.91b	5.6
Trinidad	282	0.8	9.0	6.4	2.9	2.15	.229	.264	.24	.31	--	.630	--	10.8	12.7	.96	8.5	1.32b	6.4
Jamaica	293	1.6	8.3	4.5	1.8	1.50	.135	.217	.51	.21	3.3	.330	P	13.1	6.5	1.19b	7.9	1.32b	6.7
Malaysia	155	8.1	--	6.7	3.0	1.77	--	.172	.82	.13	3.2	.316	P	0.4	2.2	.58a	5.8	1.23a	2.6
Iran	156	21.5	--	7.8	2.7	1.60	--	.175	--	0.00	2.2	.202	P	--	9.9	--	10.8	--	n.a.
Nicaragua	190	1.4	5.7	6.8	3.1	1.64	.171	.189	.23	-.18	2.4	.261	P	10.2	9.2	--	7.1	--	4.9
Venezuela	537	7.3	8.3	4.2	3.8	1.51	.251	.172	.07	-.21	3.2	.310	P	8.3	0.7	--	10.9	--	6.0
Ivory Coast	181	3.3	--	19.1	2.6	--	--	.173	-.31	-.12	--	.312	P	3.6	11.5	.60a	n.a.	1.4a	-0.4
Iraq	172	6.9	5.8	7.2	2.8	1.49	.215	.259	-.11	-.13	--	.126	P	15.6	4.3	.71b	13.4	1.49b	5.8
Zambia	121	3.2	6.0	6.0	2.9	1.46	.240	.175	0.00	-.36	4.0	.454	P	--	--	.76b	15.9	1.53b	2.5
Rhodesia	151	3.6	6.7	5.3	3.2	1.38	.352	.175	.47	.02	3.6	.269	P	--	--	1.38b	5.9	.75b	3.8

C-Strategy: Moderate Capital Inflow:

Mexico	285	36.0	6.0	6.5	3.3	1.60	.130	.161	.09	.12	2.4	.078	B	5.5	5.4	.93	7.2	.90	4.3
Turkey	159	27.5	6.8	5.3	2.7	1.75	.166	.164	.14	.17	2.7	.022	B	5.2	7.0	.72	10.4	1.26	4.3
UAR	80	25.8	6.2	5.5	2.8	1.83	--	.142	--	.27	--	.169	P	0.0	3.0	.74	9.8	.81	4.2
Perú	183	10.0	4.7	6.5	2.7	1.74	.198	.203	.16	.08	4.2	.141	B	6.6	12.8	.95	7.8	1.02	3.2
Philippines	106	27.4	6.1	4.7	3.2	1.41	.119	.182	.19	.18	2.0	.143	P	2.8	9.0	.71	8.8	.90	4.1
Pakistan[c]	70	92.7	2.9	6.1	2.2	1.24	(.08)	.130	--	.25	(2.5)	.041	B	0.1	6.7	.58	16.2	1.13	2.8
Sudan[c]	63	11.8	4.3	7.3	2.8	1.49	.053	.113	-.15	.19	2.4	.184	P	7.3	2.6	.94[b]	7.0	1.15[b]	4.6
Nigeria[c]	54	--	3.5	6.0	2.1	1.44	--	--	-.20	.42		n.a.	B	6.8	5.3	.38	11.1	1.19	3.5

D-Strategy: Low External Dependence:

Japan	329	93.2	8.1	11.0	1.0	2.89	.252	.268	0.00	0.00	3.5	.010	B	16.6	12.6	.91[b]	11.2	.92[b]	4.0
Yugoslavia	233	18.4	8.9	6.6	1.2	2.55	.314	.375	--	--	--	.014	M	13.6	16.2	--	10.5	--	7.2
Spain	274	30.3	5.1	8.7	0.8	2.24	.179	.213	.06	.01	--	.066	B	--	15.3	1.06[b]	4.1	--	2.7
Bulgaria	269	7.9	8.8	7.3	0.8	2.22	--	.392	--	--	--	.045	M	14.6	15.2	--	13.7	--	10.0
Brazil	160	69.7	5.9	4.5	3.1	1.43	.135	.150	--	.09	--	.084	B	0.3	2.8	1.02	7.0	.81	5.5

Source: The basic data were compiled and circulated in December 1968 by the Economics Department, Comparative Data Unit, IBRD, under the title, World Tables. References are to that volume unless otherwise noted. The data came from U.N., IBRD Country Reports and national sources. The sample includes all countries having a growth rate of 5.5 percent or more in G.D.P. plus several borderline cases (see text).

*Explanations for columns follow on pp. 368-369.

[a]Columns 17 and 19: 1950 except 1960.

[b]Columns 17 and 19: 1950 except 1955.

[c]Countries having more than 50 percent of G.N.P. from agriculture in 1950.
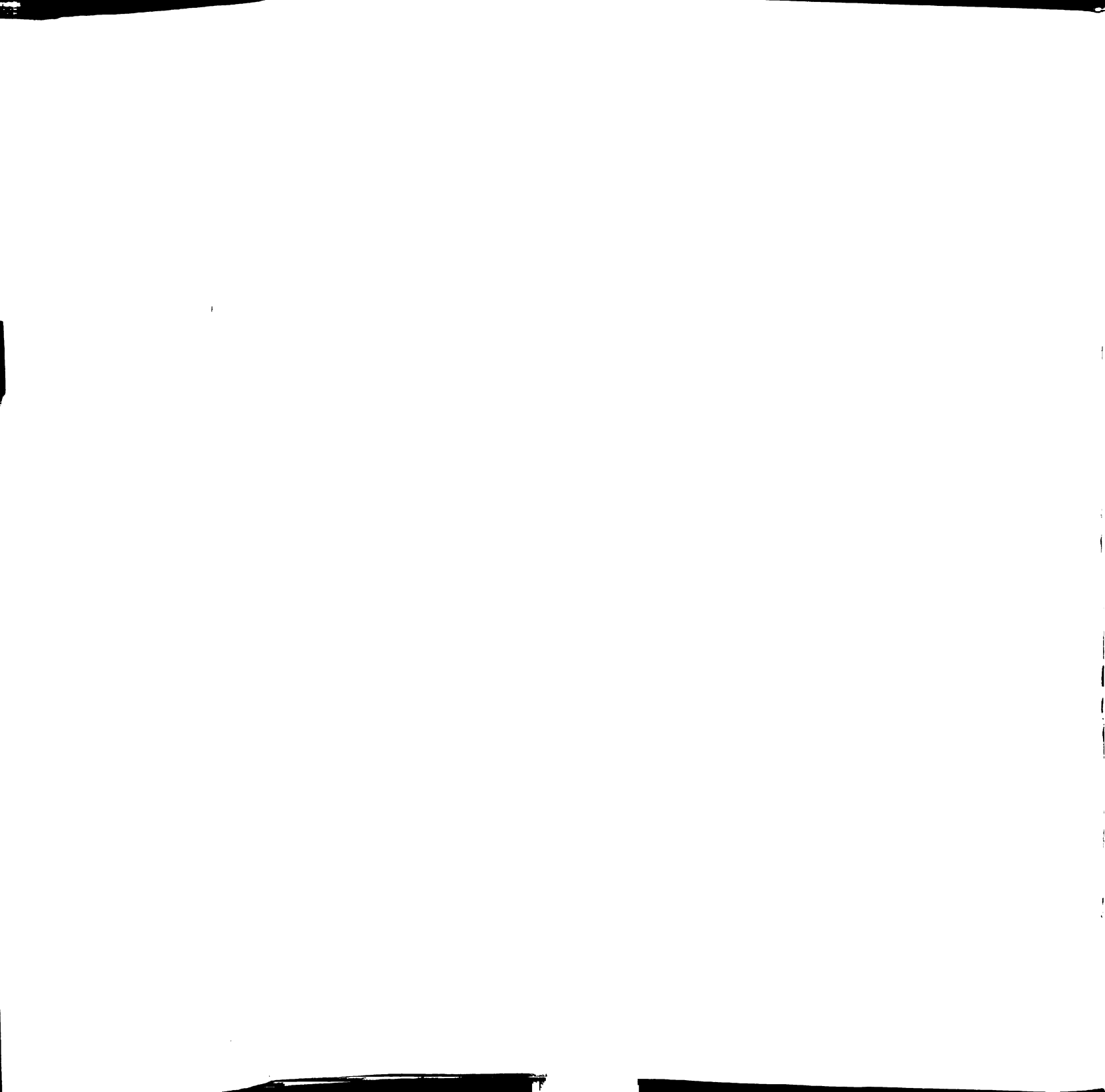
Explanations for Columns in
Table A-2

Col. 2:   1960 GNP per capita in 1964 U.S. dollars from
            Table IV, Col. 17.

Col. 3:   1960 (mid-year) population (Table II, Col. 1).

Cols. 4 and 5: Annual average growth rate of total gross
            domestic product: at constant market prices
            whenever possible, otherwise at constant
            factor cost (Table I, Col. 2).

Col. 6:   Annual average growth rate of population 1950-1967
            (Table I, Col. 1).

Col. 7:   Increase in per capita GNP 1950-1967 (Table IV,
            Col. 17).

Cols. 8 and 9: Investment ratios 1950-1955 and 1960-1967
            from Table IV, Col. 1 (gross domestic product)
            and Col. 2 (gross domestic investment).

Cols. 10 and 11: Balance of payments current deficit
            1950-1959 and 1960-1965, from Table V, Col. 8.

Col. 12:   Gross marginal capital-output ratio (Table III,
            Col. 16). Ratios were obtained by dividing the
            gross addition to capital stock in each period
            by the increase in GDP in the same period and
            averaging the two values.

Col. 13:   Primary exports/GNP. Percent primary of total
            value of exports, derived from U.N. Yearbook of
            International Trade Statistics. Primary exports
            were defined as food (0), unmanufactured tobacco
            leaf (121), inedible (2-266 synthetic fabrics),
            crude or partly refined oil (331), natural gas
            (341.1), oils and fats (4), wild animals (941).
            Percent exports of GDP is as taken from IBRD,
            Table III, Col. 4. Figures for Iran, Iraq,
            Trinidad, and Venezuela revised to include
            refined petroleum and petroleum products;
            Rhodesia and Zambia revised to include copper
            products.

Col. 14:   Trade orientation indicates the deviation from
            the normal proportion of manufactured goods and
            primary products in exports, as measured in
            Chenery and Taylor (1968). M = manufacturing
            orientation; B = balanced, P = primary orienta-
            tion.

Cols. 15 and 16: Annual average growth rate of exports
of goods and services from Table I, Col. 8.
These are defined to exclude factor and transfer
payments to and from abroad.

Col. 17: Industrial production: ratio of observed per-
formance to that predicted by factors included
in regression BT.

Col. 18: Annual average growth rate of manufacturing
production 1950-67 from Table I, Col. 7.
Generally computed from country indices of
manufacturing production published by U.N.
Statistical Office.

Col. 19: Primary production: ratio of observed performance
to that predicted by factors included in regres-
sion BT.

Col. 20: Annual average growth rate of primary production
1950-1966. Primary is defined as agriculture
plus mining. Percent shares of GDP were obtained
from Table IV, Cols. 6 and 7, and applied against
the IBRD total GNP (Table IV, Col. 16). To
extend the series, data were augmented with U.N.
figures for Jordan, Korea, Thailand, Jamaica,
Malaysia, Venezuela, Iraq, Japan, and Spain.

Table A-3. Projected annual geometric growth rates in Gross Domestic Income per capita, 1962-1970 and 1970-1980

| | Population | | | | | |
| | Urban | | Rural | | Total | |
Regions	1962-1970 (%)	1970-1980 (%)	1962-1970 (%)	1970-1980 (%)	1962-1970 (%)	1970-1980 (%)
Coast	3.9	4.1	2.0	2.1	3.5	3.6
Sierra	1.8	1.9	0.5	0.5	0.9	0.9
Selva	2.7	2.8	2.0	2.1	2.2	2.3
Republic	3.2	3.3	1.0	1.0	2.12	2.1

Source: Programa de Investigaciones Para el Desarrollo, Universidad Nacional Agraria, La Molina, Lima, "Perú--Long Term Projections of Demand for and Supply of Selected Agricultural Commodities Through 1980," June 1969.

Table A-4. The regional distribution of national income and
population in 1961

	Coast (%)	Sierra (%)	Selva (%)	Republic (%)
National income	65	30	5	100
Population	39	52	9	100

Source: Banco Central de Reserva, Cuentas Nacionales del
Perú, 1950-1965.

Table A-5. Perú: population by regions and by rural and urban areas, 1950, 1960, with projections (under Hypothesis II) for 1970, 1975, and 1980ᵃ

Region and Area	Population Totals/1,000 Persons						Percent of Total Population					
	1950	1960	1965	1970	1975	1980	1950	1960	1965	1970	1975	1980
Coast:	2,685	3,950	4,928	6,127	7,617	9,430	33.7	39.4	42.3	45.1	48.0	50.9
Urban	1,861	2,163	3,780	4,797	6,094	7,695	23.3	29.6	32.4	35.3	38.4	41.5
Rural	824	987	1,148	1,330	1,523	1,735	10.4	9.8	9.9	9.8	9.6	9.4
Sierra	4,694	5,193	5,615	6,073	6,522	6,948	58.9	51.8	48.2	44.7	41.1	37.5
Urban	1,267	1,573	1,791	2,041	2,296	2,557	15.9	15.7	15.4	15.0	14.5	13.8
Rural	3,427	3,620	3,824	4,032	4,226	4,391	43.0	36.1	32.8	29.7	26.6	23.7
Selva	590	882	1,107	1,386	1,730	2,149	7.4	8.8	9.5	10.2	10.9	11.6
Urban	140	241	323	430	567	746	1.8	2.4	2.8	3.2	3.6	4.0
Rural	450	641	784	956	1,163	1,403	5.6	6.4	6.7	7.0	7.3	7.6
Perú	7,969	10,025	11,650	13,586	15,869	18,527	100.0	100.0	100.0	100.0	100.0	100.0
Urban	3,268	4,754	5,837	7,199	8,875	10,895	41.0	47.4	50.1	53.0	55.9	58.8
Rural	4,701	5,271	5,813	6,387	6,994	7,632	59.00	52.6	49.9	47.0	44.1	41.2

Region and Area	Annual Geometric Growth Rates (Percent)						Percent of Regional Population					
	1950-60	1960-65	1965-70	1970-75	1975-80	1960-80	1950	1960	1965	1970	1975	1980
Coast	3.9	4.5	4.5	4.5	4.4	4.5	100.0	100.0	100.0	100.0	100.0	100.0
Urban	4.8	5.0	4.9	4.9	4.8	4.9	69.3	75.0	76.7	78.3	80.0	81.6
Rural	1.8	3.1	3.0	3.0	2.6	2.9	30.7	25.0	23.3	21.7	20.0	18.4
Sierra	1.0	1.6	1.6	1.5	1.3	1.5	100.0	100.0	100.0	100.0	100.0	100.0
Urban	2.2	2.6	2.6	2.4	2.2	2.5	27.0	30.3	31.9	33.6	35.2	36.8
Rural	0.5	1.1	1.1	1.0	0.8	1.0	73.0	69.7	68.1	66.4	64.8	63.2
Selva	4.1	4.6	4.6	4.6	4.4	4.6	100.0	100.0	100.0	100.0	100.0	100.0
Urban	5.6	6.0	5.9	5.7	5.6	5.8	23.7	27.3	29.2	31.0	32.8	34.7
Rural	3.6	4.1	4.1	4.0	3.8	4.0	76.3	72.7	70.8	69.0	67.2	65.3
Perú	2.3	3.1	3.1	3.1	3.1	3.1	100.0	100.0	100.0	100.0	100.0	100.0
Urban	3.8	4.2	4.3	4.3	4.2	4.2	41.0	47.4	50.1	53.0	55.9	58.8
Rural	1.2	2.0	1.9	1.9	1.8	1.9	59.0	52.6	49.9	47.0	44.1	41.2

Source: Alberto Cataldi, "Proyeccion de la Problacion total per sexe y grupos quinquenales de edad, 1960-1980," DNEC, Unidad de Analisis Demografico, Documento de Trabajo.

ᵃExcludes jungle Indian population.
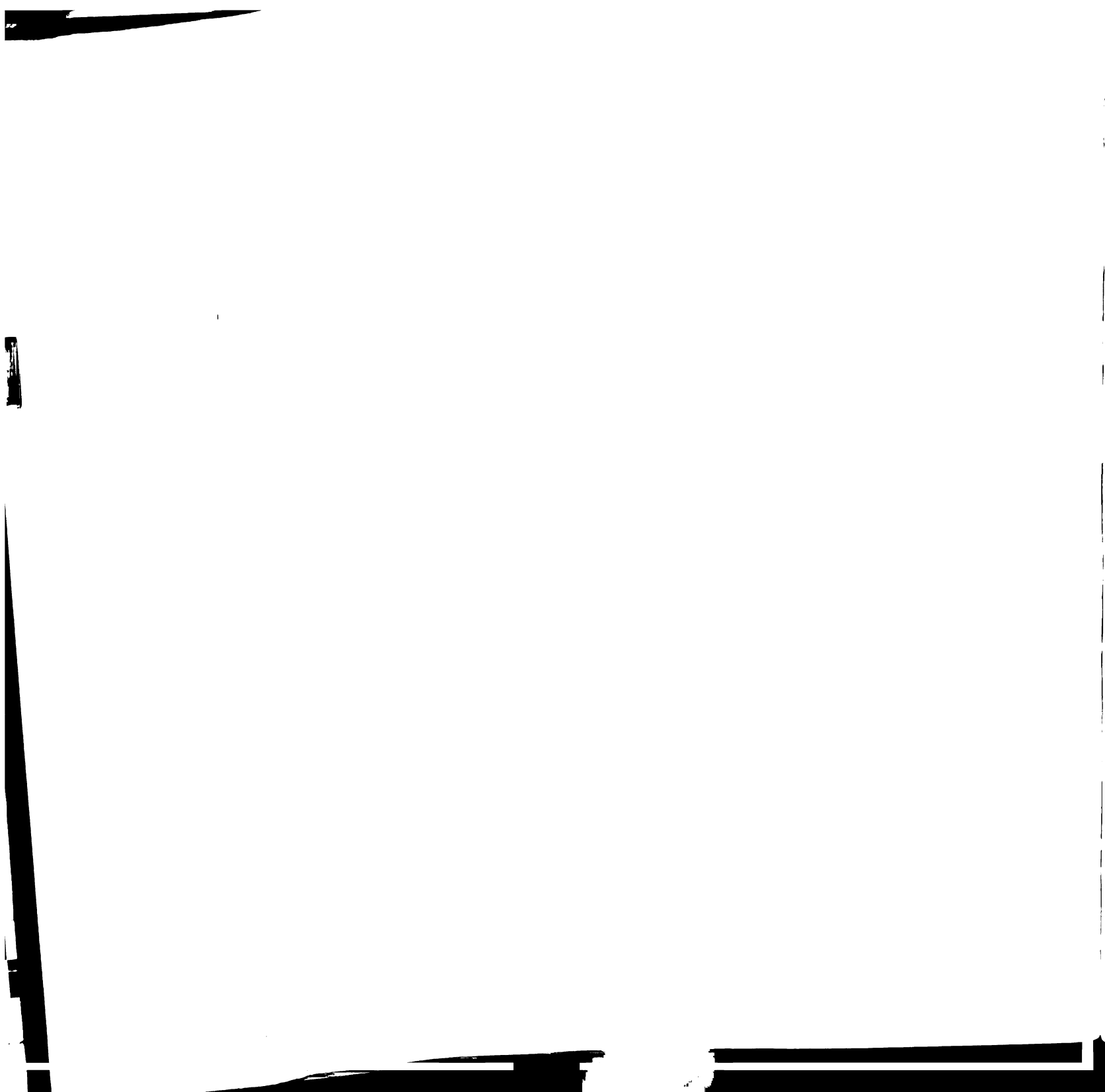
Table A-6.   Indices of per capita human consumption by products and by regions, Perú, 1964

Products	Costa Rural	Costa Urban	Costa Total	Sierra Rural	Sierra Urban	Sierra Total	Selva Rural	Selva Urban	Selva Total	Perú Rural	Perú Urban	Perú Total
Cereals and Derivatives:	99	118	114	100	100	100	39	58	45	92	109	100
Rice, milled	167	193	187	6	109	35	68	195	106	40	168	100
Barley	--	--	--	272	--	72	--	--	--	71	--	100
Corn	25	21	22	237	25	178	6	19	10	173	22	100
Quinua-canahua	--	--	--	209	162	196	--	--	--	148	48	100
Wheat	96	128	121	64	175	95	47	31	42	67	136	100
Tubers and Roots:	44	47	46	162	100	145	116	15	86	137	61	100
Potatoes	30	33	32	184	137	171	--	5	2	135	62	100
Sweet potatoes	185	163	168	--	235	66	--	--	--	31	174	100
Manioc	97	62	70	--	24	7	1007	92	732	142	52	100
Olluco	198	190	192	--	176	49	--	--	--	33	175	100
Oca	--	--	--	2689	5	1937	--	--	--	1937	1	100
Beans and Pulses:	92	62	69	85	110	92	341	128	277	118	80	100
Peas	--	264	207	--	127	36	--	--	--	--	208	100
Lentils	--	218	171	--	127	64	--	--	--	--	208	100
Chick peas	--	274	215	--	105	29	--	--	--	--	208	100
Horse beans	--	--	--	--	--	--	--	--	--	--	--	100
Broad beans	--	--	--	--	100	28	--	--	--	--	--	100
Other beans	--	--	--	--	--	--	--	--	--	--	--	100
Fresh Fruits:	43	91	81	--	99	28	705	291	580	95	105	100
Bananas	42	74	67	--	74	21	791	411	677	106	94	100
Lemons	12	257	204	--	110	31	--	105	32	2	204	100
Oranges	123	121	121	--	120	34	525	22	374	86	115	100
Fresh Vegetables:	54	112	99	54	276	113	12	63	27	49	155	100
Tomatoes	241	325	307	--	334	94	2	219	67	40	321	100
Onions	137	148	146	25	258	90	27	29	28	44	174	100
Peppers	94	64	71	47	267	108	141	282	183	67	137	100
Cabbages	--	--	--	--	--	--	--	--	--	--	--	100
Carrots	--	--	--	--	--	--	--	--	--	--	--	
Garlic	224	77	109	10	279	85	35	331	124	49	152	100
Sugar:	138	140	140	21	233	80	12	122	45	181	167	100
Meats:	87	136	125	37	154	70	167	142	158	61	142	100
Beef	89	186	165	--	162	45	112	150	223	29	177	100
Pork	42	88	78	--	24	7	814	396	688	109	87	100
Mutton	111	16	37	144	223	223	--	11	3	121	77	100
Goat	185	--	40	93	--	67	--	--	--	97	--	100
Poultry	--	313	245	--	--	--	--	123	37	--	209	100
Auquenidos	--	--	--	100	--	72	--	--	--	71	--	100
Guinea pig	--	--	--	100	--	72	--	--	--	71	--	100
Offals	267	63	107	--	357	100	99	--	69	57	147	100
Eggs:	62	197	168	--	134	38	185	80	153	33	171	100
Milk & Deriv.	79	146	131	6	226	68	73	9	54	26	162	100
Fats and Oils:	117	190	174	21	141	55	34	40	36	39	167	100
Oil	18	246	197	--	125	35	60	23	49	49	197	100
Fat	586	158	151	--	4	1	--	3	1	97	103	100

Source: P.I.D.U.A., Computed by the Grupo de Oferta y Demanda, 1969.

Table A-7. A comparison of linear Engel curves relating total per capita expenditure on food to total expenditure per capita for six major Peruvian cities, 1964 (expenditures in 1964 soles)

	Lima	Chiclayo	Arequipa	Cuzco	Huancayo	Iquitos	All Urban
Average total expenditure	6547	3516	4730	3857	5547	4240	4739
Per capita average total food expenditure	3391	2117	2786	2310	2945	2417	2661
Per capita marginal propensity to spend for food	.36	.47	.32	.57	.44	.39	.44
Average propensity to spend for food	.52	.60	.59	.60	.53	.57	.56
Average expenditure income elasticity for food	.70	.78	.54	.95	.83	.68	.78

Source: P.I.D.U.A., Computed by the Grupo Oferta y Demanda, 1969.

Table A-8. Results of the urban household surveys: income expenditure elasticities and relative importance of expenditures, 1965

Expenditure Group	Coastal Region		Sierra Region			Selva Region	Weighted National Urban Income Expenditure Elasticity
	Lima	Chiclayo	Arequipa	Cuzco	Huancayo	Iquitos	
	Percent of Expenditure	Percent of Expenditure	Percent of Expenditure	Percent of Expenditure	Percent of Expenditure	Percent of Expenditure	
Food and Beverages:	100.00	100.0	100.0	100.0	100.0	100.0	.81
Cereals & derivatives	17.60	26.3	19.1	19.5	20.7	17.9	.47
Meat and preparations	26.31	23.2	30.5	27.2	20.0	28.0	.94
Seafood	3.89	4.7	1.9	0.9	2.5	6.4	1.03
Fats and oils	6.97	6.8	4.7	4.7	5.9	6.7	.87
Dairy products & eggs	12.34	8.9	8.6	7.8	11.0	8.9	1.25
Fresh vegetables	7.18	7.4	6.3	9.0	11.7	5.9	.86
Tubers	4.46	3.8	9.3	11.5	6.0	2.7	.53
Fresh fruits	5.30	4.3	4.9	3.5	5.8	8.0	1.43
Pulses & derivatives	2.84	3.1	1.5	0.7	2.3	3.9	.75
Canned fruits & vegetables	0.35	0.1	0.2	0.2	0.4	0.08	2.94
Sugar, salt & spices	4.41	5.0	5.24	6.7	5.4	6.6	.57
Non-alcoholic beverages	4.15	4.2	2.6	3.2	3.6	2.9	.84
Alcoholic beverages	1.89	1.3	1.72	3.3	1.6	0.25	.76
Consumption outside home	2.25	0.6	2.8	1.5	2.4	2.0	.90
Other foods	--	0.3	0.5	0.3	0.7	0.2	1.87
Housing and Furniture:	100.00	100.0	100.0	100.0	100.0	100.0	1.07
Rent	51.24	30.5	42.4	42.9	36.0	35.1	1.33
Taxes	0.23	0.4	0.6	0.7	0.8	0.3	1.20
Municipal utilities	2.41	1.9	0.9	0.4	3.0	1.4	1.07
Lights and fuel	13.74	26.2	17.5	24.1	18.4	24.3	.69
Cleaning & maintenance	12.20	18.7	15.7	13.4	18.6	18.3	.89
Household fabrics	3.99	5.2	5.5	4.5	6.5	4.9	.98
Kitchen utensils	2.25	2.6	2.3	2.9	2.2	2.2	1.01
Kitchen equipment	4.74	4.3	4.2	3.2	3.3	3.6	1.27
Furniture	6.21	6.8	6.9	4.4	7.8	4.9	1.40
Other	2.93	2.9	3.9	3.5	3.3	3.6	.98
Clothing:	100.00	100.0	100.0	100.0	100.0	100.0	1.07
Cloth, tailoring & clean.	13.56	19.9	25.0	23.5	1.51	42.8	1.31
Men and boys clothes	45.51	44.5	42.2	40.9	43.5	27.5	1.06
Women and girls clothes	38.63	33.7	31.4	34.7	39.8	28.7	1.16
Infant clothes	2.27	1.9	1.4	0.9	1.6	1.0	.64
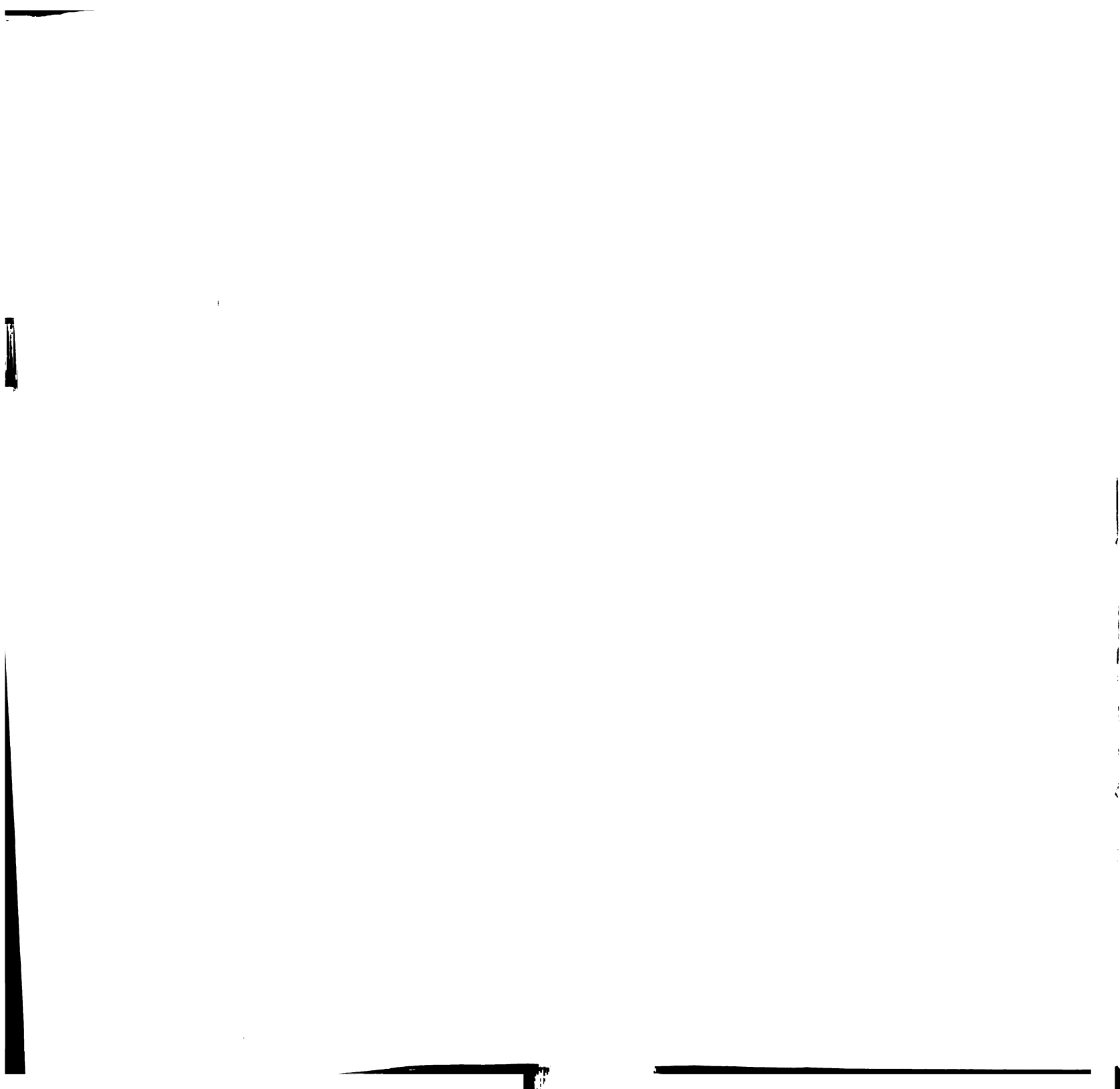
Table A-8--Continued

Expenditure Group	Coastal Region		Sierra Region			Selva Region	Weighted National Urban Income Expenditure Elasticity
	Lima	Chiclayo	Arequipa	Cuzco	Huancayo	Iquitos	
	Percent of Expenditure	Percent of Expenditure	Percent of Expenditure	Percent of Expenditure	Percent of Expenditure	Percent of Expenditure	
Other:	100.0	100.0	100.0	100.0	100.0	100.0	1.30
Health care	10.27	10.7	7.1	13.1	7.8	14.4	1.04
Personal hygiene	22.66	28.3	20.9	22.4	21.4	27.4	1.03
Recreation	16.82	21.6	14.5	20.6	24.5	16.5	1.60
Tobacco and coca	5.09	5.9	5.4	6.2	5.0	8.3	1.40
Transportation	19.66	8.8	14.1	11.5	11.0	7.5	1.11
Automobiles	1.79	0.5	0.7	0.1	1.5	1.8	2.40
Gas, oil and maintenance	2.26	1.0	1.1	--	1.7	1.0	3.57
Communications	0.68	1.0	1.3	2.0	1.5	1.3	1.50
Education	12.89	19.5	17.4	18.8	15.5	14.2	.91
Other	8.82	2.7	17.4	5.3	10.1	7.6	1.86

Source: P.I.D.U.A., Computed by the Grupo Oferta y Demanda from Urban Household Surveys taken by the Direccion Nacional de Estadistica y Censos in 1965, 1969.

Table A-9. Percentage of total food budget spent on cereals and derived products according to per capita income levels by cities, 1965

Income per Capita 1964 soles	Lima (%)	Chiclayo (%)	Cuzco (%)	Arequipa (%)	Huancayo (%)	Iquitos (%)	Weighted Urban Average (%)
1,000	35.8	43.1	26.6	38.0	33.4	32.8	35.2
3,000	23.3	28.0	20.8	23.8	24.2	20.3	29.8
5,000	19.3	23.0	18.6	19.1	20.8	16.3	20.0
7,000	16.6	20.2	17.3	16.1	18.8	14.1	17.6
9,000	15.6	18.2	16.6	14.9	17.5	12.6	16.4
11,000	14.5	16.9	15.6	13.7	16.5	11.5	15.3
13,000	13.6	15.8	15.1	12.7	15.7	10.7	14.4
15,000	12.9	15.0	14.6	12.0	15.0	10.0	13.8
17,000	12.4	14.2	14.2	11.2	14.5	9.5	13.2

Source: P.I.D.U.A., Computed from household expenditure survey data by the Grupo Oferta y Demanda, 1969.

Table A-10. Percentage of total food budget spent on meats and preparations according to per capita income levels by cities, 1964

Income per Capita 1964 Soles	Lima (%)	Chiclayo (%)	Cuzco (%)	Arequipa (%)	Huancayo (%)	Iquitos (%)	Weighted Urban Average (%)
1,000	15.2	19.0	15.6	33.0	13.2	23.6	16.8
3,000	23.1	21.7	21.2	30.2	15.0	25.3	21.8
5,000	24.2	23.2	24.7	28.9	15.8	26.1	23.3
7,000	25.1	24.2	27.1	28.1	16.4	26.7	24.3
9,000	25.7	25.0	29.5	27.6	16.9	27.1	25.2
11,000	26.2	25.5	30.8	27.1	17.2	27.4	25.8
13,000	26.6	26.1	32.3	26.8	17.5	27.7	26.4
15,000	27.0	26.5	33.6	26.4	17.8	28.0	26.9
17,000	27.3	27.0	34.9	26.2	18.0	28.2	27.4

Source: P.I.D.U.A., Computed from household expenditure survey data by the Grupo Oferta y Demanda, 1969.

Table A-11. Average annual per capital consumption of selected food groups in urban and rural areas according to the nutritional surveys of the Ministry of Health, 1960

Location	Region	Department	Area	Year	Families	Cereals	Roots Tubers	Sugar	Eggs	Milk Products	Fats and Oils	Meats	Beans	Fresh Fruits	Fresh Vegetables	Calories	Proteins
Tumbes	Coast	Tumbes	Urban	1955	39	127.9	39.2	24.3	2.6	100.7	12.8	51.1	10.4	107.2	40.5	2228	63
Pampa Grande	Coast	Tumbes	Rural	1955	82	89.3	29.3	15.5	--	--	7.1	23.2	15.5	47.4	15.8	1577	39
Ciudad y Campo	Coast	Lima	Urban	1953	39	142.3	77.8	19.5	3.7	86.1	17.8	37.5	7.6	26.6	59.6	2836	72
San Nicolas	Coast	Lima	Rural	1953	33	112.1	51.1	23.0	--	43.0	8.4	20.7	14.3	4.6	18.4	1838	45
Carquin	Coast	Lima	Rural	1951	62	121.7	54.9	35.2	2.1	34.6	11.6	17.1	5.3	27.6	24.1	2067	87
Tacna	Coast	Tacna	Urban	1954	93	137.4	85.9	33.9	3.5	179.3	15.4	14.6	5.0	29.9	55.1	2658	78
Pachia	Coast	Tacna	Rural	1954	30	155.7	73.5	27.2	--	75.6	12.7	59.0	--	--	58.0	2577	75
Calana	Coast	Tacna	Rural	1954	31	176.7	81.1	33.4	2.2	96.7	11.9	51.4	--	--	37.5	2680	78
Vicos	Sierra	Ancash	Rural	7-1952	40	113.4	103.0	2.7	--	--	1.6	--	25.1	--	3.4	1686	54
Vicos	Sierra	Ancash	Rural	2-1953	37	98.5	254.5	3.3	--	--	1.7	--	8.6	--	6.5	1612	41
Recayhuanca	Sierra	Ancash	Rural	2-1953	14	126.9	216.0	3.8	--	7.6	1.2	--	7.8	--	11.6	1925	53
Chalan	Sierra	Cuzco	Rural	12-1951	43	128.7	56.7	2.7	--	--	--	--	9.8	--	12.3	1340	34
Chalan	Sierra	Cuzco	Rural	6-1953	39	110.8	171.1	3.3	--	--	5.6	--	11.8	--	3.6	1593	37
Puno	Sierra	Puno	Urban	1955	38	89.4	429.3	27.8	3.7	105.1	8.9	91.0	.4	22.4	29.6	2204	66
Paucarcolla	Sierra	Puno	Rural	1955	33	112.7	354.7	13.7	--	--	2.8	47.6	--	--	6.9	1818	40
Iquitos	Selva	Loreto	Urban	1954	40	50.8	15.4	23.4	1.3	28.7	1.5	36.7	14.4	53.7	19.3	1627	47
Yurimaguas	Selva	Loreto	Rural	1952	33	43.8	61.2	4.5	4.0	6.8	3.5	43.0	25.2	215.0	5.9	1892	59
Mendoza	Selva	Loreto	Rural	1954	72	47.3	202.3	--	4.9	--	2.2	41.3	51.3	191.4	3.4	2722	77
Republic[a] 1960-1964	x	x	x	x	x	104.4	150.7	27.7	1.7	66.3	6.1	23.9	9.4	85.7	40.6	2179	52

Source: P.I.D.U.A., Ministerio de Salud y Assistencia Publica, Lima, Peru, 1960, 1969.

[a] Average for the Republic computed for those products only which were also enumerated in household surveys.

Table A-12. Perú: calorie and protein equivalent of the direct human consumption, 1960-1964 with projections for 1970, 1975, and 1980

Product Group	1960-1964 Calories[a]	1960-1964 Proteins[b] Total	1960-1964 Proteins[b] Animal	1970 Calories	1970 Proteins Total	1970 Proteins Animal	1975 Calories	1975 Proteins Total	1975 Proteins Animal	1980 Calories	1980 Proteins Total	1980 Proteins Animal
Total	2,175.07	51.98	19.58	2,310.37	53.89	19.66	2,442.76	57.30	21.59	2,617.99	61.89	24.35
Cereals and derivatives	820.09	18.76	--	882.41	20.20	--	912.18	20.88	--	955.55	21.87	--
Tubers and roots	406.43	5.43	--	407.33	5.45	--	409.98	5.48	--	417.50	5.58	--
Beans and pulses	82.19	5.28	--	87.93	5.65	--	92.20	5.93	--	97.41	6.26	--
Fresh fruits	117.37	1.35	--	127.40	1.48	--	145.99	1.70	--	168.82	1.97	--
Vegetables	30.78	1.03	--	31.92	1.07	--	34.91	1.17	--	38.73	1.30	--
Sugar	288.55	--	--	320.64	--	--	342.00	--	--	367.18	--	--
Meats and offals	96.18	8.75	8.75	95.34	8.67	8.67	106.64	9.69	9.69	121.85	11.08	11.08
Eggs	6.20	.48	.48	8.72	.68	.85	10.90	.85	.85	13.71	1.07	1.07
Milk and derivatives	119.05	6.05	6.05	115.36	5.84	5.84	133.33	6.75	6.75	156.11	7.90	7.90
Edible fats and oils	143.80	0.02	--	168.89	.02	--	190.20	0.02	--	216.7	.03	--
Others[c]	64.43	4.83	4.30	64.43	4.83	4.30	64.43	4.83	4.30	64.43	4.83	4.30

Source: P.I.D.U.A., Computed by the Grupo Oferta y Demanda from Tables 39 and 40 using FAO conversion coefficients, 1969.

[a] Number of calories per day and per capita.

[b] Grams of protein per day and per capita.

[c] Includes: fish, nuts, cocoa, seeds, alcoholic beverages, and various others. Figures for 1970-1975 and 1980 were assumed to be the same intakes per capita of the base year, because information was unavailable and it is a relatively small percentage of the total.

Table A-13. Net supply per caput: food, calories, protein, 1962-1963

	1960-1962			1963		
	Net Food Grams per Day	Calories per Day	Protein Grams per Day	Net Food Grams per Day	Calories per Day	Protein Grams per Day
Cereals	263	958	25.5	235	843	23.0
Potatoes + starchy foods	482	391	6.8	358	381	6.2
Sugar + sweets	72	290	--	75	292	--
Pulse nuts + seeds	27	97	5.8	26	95	5.6
Vegetables	236	52	3.3	229	53	3.2
Fruits	202	85	1.1	189	87	1.0
Meat	69	133	9.7	69	130	9.7
Eggs	6	8	0.6	6	8	0.6
Fish	19	30	3.6	20	32	4.1
Milk	110	70	3.9	108	68	3.8
Fats + oils	21	184	0.2	18	163	0.1
Total		2,300	60.5		2,150	57.3
Animal proteins			18.0			18.3

Source: Production Yearbook, Tables 129, 130, 131, Vol. 20, FAO of the United States, Rome, 1966.

Table A-14. Average income elasticities for six rural areas by commodity groups[a]

Commodity Group	Tacha			Tumbes			Iquitos			Vicos			Puno			Yurimaguas		
	E_q	E_c	E_p	E_q	E_c	E_p	E_q	E_c	E_p	E_q	E_c	E_p	E_q	E_c	E_p	E_q	E_c	E_p
Cereals	.20	.16	.16	.30	.30	.31	.44	.22	.12	.60	.54	.49	.19	.10	.07	.84	.65	.62
Tubers and roots	.45	.38	.32	.68	.66	.71	.07	.07	.36	.77	.68	.44	.29	.08	.16	.14	.11	.22
Beans and pulses	n.a.	n.a.	n.a.	.99	.85	.81	.45	.42	.38	n.a.	n.a.	n.a.	.57	.17	-.02	.52	.53	.50
Fresh vegetables	.88	.63	.65	1.01	.96	1.00	.62	.63	.93	.95	.55	.62	.71	.47	.45	.70	.59	.67
Fresh fruits	.99	.93	.93	1.36	.91	.83	.89	.72	.86	§	§	§	1.54	1.26	1.20	.37	.31	.41
Sugar	.35	.33	0.00	.24	.26	0.00	.44	.30	0.00	1.83	1.65	0.00	.32	.25	0.00	.72	.75	0.00
Fats and oils	.87	.61	.04	1.06	1.09	0.00	1.37	1.33	.42	.60		.54	.76	.49	0.00	.71	.82	0.00
Milk	.48	.47	.46	1.53	1.59	1.51	.98	1.37	1.58	§	§	§	.69	1.03	1.04	3.58	3.25	3.71
Dairy products	.66	.58	.50	1.14	.88	1.05	1.10	1.17	.94	§	§	§	.52	.72	.46	1.54	1.55	2.04
Meats	1.23	1.17	1.11	1.25	1.09	1.31	1.33	1.38	1.08	2.69	2.51	2.48	.56	.45	.51	§	§	§
Fresh fish	.99	.88	.87	.03	.15	.07	.21	.30	.29	§	§	§	.20	-.02	-.01	.31	.11	.31

Source: P.I.D.U.A., Computed by the Grupo Oferta y Demanda from the data provided by the Nutritional Surveys of the Ministry of Health, 1969.

[a] E_q = quantity income elasticity; E_c = calorie income elasticity; E_p = protein income elasticity; § = the number of families purchasing this item were very few; n.a. = not available.

Table A-15. Expenditure/income elasticities and quantity/income elasticities for region food products by regions and by rural, urban areas of Perú

Food Product	Coast Urban E_e^b	Coast Urban E_q^c	Coast Rural E_e	Coast Rural E_q	Sierra Urban E_e	Sierra Urban E_q	Sierra Rural E_e	Sierra Rural E_q	Selva Urban E_e	Selva Urban E_q	Selva Rural E_e	Selva Rural E_q	Perú Urban E_e	Perú Urban E_q	Perú Rural E_e	Perú Rural E_q	Perú Total E_e	Perú Total E_q
Cereals and Derivatives:	.43	.34	.47	.37	.48	.38	.70	.55	.34	.27	.98	.77	.51	.40	.68	.53	.58	.46
Rice, milled	.26	.20	.37	.30	.37	.30	.96	.75	.16	.13	1.07	.84	.27	.21	.58	.46	.34	.27
Barley	--	--	--	--	--	--	.77	.60	--	--	--	--	--	--	.77	.60	.77	.60
Corn	--	--	--	--	.19	.15	.77	.60	--	--	.98	.77	.19	.15	.77	.60	.70	.55
Quinua-Canahua	--	--	--	--	.51	.40	.52	.41	--	--	--	--	.51	.40	.52	.41	.51	.41
Wheat	.64	.50	.73	.57	.64	.50	.63	.49	.64	.50	.69	.54	.64	.50	.65	.51	.64	.50
Tubers and Roots:	.52	.45	.78	.68	.43	.37	.61	.53	.76	.66	.16	.14	.47	.41	.58	.50	.54	.47
Sweet potatoes	.54	.47	--	--	.52	.45	--	--	--	--	--	--	.53	.46	--	--	.53	.46
Oca	--	--	--	--	--	--	.51	.44	--	--	--	--	--	--	.51	.44	.51	.44
Olluco	.47	.41	--	--	.43	.37	--	--	--	--	--	--	.48	.40	.51	.44	.46	.40
Potatoes	.52	.45	.50	.43	.43	.37	.50	.43	.76	.66	--	--	.41	.40	.50	.43	.49	.47
Manioc	.47	.41	.79	.68	.37	.32	--	--	.76	.66	.16	.14	.49	.42	.79	.68	.70	.61
Sugar	.54	.27	.49	.24	.64	.32	1.00	.50	.50	.25	1.40	.72	.60	.29	.70	.35	.60	.30
Eggs	1.00	1.00	1.00	1.00	1.00	1.10	1.50	1.50	1.00	1.00	1.50	1.50	1.00	1.00	1.00	1.05	1.00	1.00
Milk and Derivatives:	1.00	.79	1.60	1.58	1.33	1.02	3.27	2.50	1.25	.96	3.93	3.00	1.16	.89	2.90	2.21	1.50	1.18
Fats and Oils:	.88	.53	.51	.31	.89	.54	1.07	.65	1.06	.64	1.18	.71	1.01	.61	.79	.48	.96	.58
Vegetable oils	.96	.58	--	--	1.44	.87	--	--	1.41	.85	1.17	.71	1.06	.64	1.17	.71	1.06	.64
Vegetable fats	.41	.25	.51	.31	--	--	--	--	.89	.54	--	--	.42	.25	.51	.31	.46	.28
Lard	--	--	--	--	.45	.27	1.07	.65	--	--	--	--	.45	.27	1.07	.65	.74	.45
Meat:	.91	.74	1.31	1.25	.87	.71	1.97	1.60	.85	.69	2.26	1.84	.90	.73	1.97	1.60	--	1.00
Mutton	.61	.50	--	--	.87	.71	1.97	1.60	--	--	--	--	.84	.68	1.97	1.60	1.54	1.25
Pork	--	--	--	--	--	--	--	--	.78	.64	2.26	1.84	.90	.73	.78	.64	.82	.67
Beef	.94	.77	1.31	1.25	.87	.71	--	--	.94	.77	2.26	1.84	.92	.75	1.89	1.54	1.07	.87
Offals	.31	.25	--	--	.31	.25	--	--	.31	.25	.31	.25	.31	.25	.31	.25	.31	.25
Poultry	.91	.74	1.31	1.25	.87	.71	1.97	1.60	.85	.69	2.26	1.84	.90	.73	1.97	1.60	--	1.00

Table A-15—Continued

Food Product	Coast Urban E_e[b]	Coast Urban E_q[c]	Coast Rural E_e	Coast Rural E_q	Sierra Urban E_e	Sierra Urban E_q	Sierra Rural E_e	Sierra Rural E_q	Selva Urban E_e	Selva Urban E_q	Selva Rural E_e	Selva Rural E_q	Perú Urban E_e	Perú Urban E_q	Perú Rural E_e	Perú Rural E_q	Perú Total E_e	Perú Total E_q
Beans and Pulses:	.48	.40	.96	.80	.86	.72	1.00	.85	.30	.25	.62	.52	.62	.52	.86	.72	.77	.64
Green peas	.48	.40	--	--	--	--	--	--	--	--	--	--	.48	.40	--	--	.48	.40
Lentiles	.48	.40	--	--	--	--	--	--	--	--	--	--	.48	.40	--	--	.48	.40
Chick peas	.48	.40	--	--	--	--	--	--	--	--	--	--	.48	.40	--	--	.48	.40
Beans	.48	.40	.96	.80	.86	.72	1.00	.85	.30	.25	.62	.52	.54	.45	.96	.80	.54	.45
Broad beans	--	--	--	--	.43	.36	1.00	.85	--	--	--	--	.43	.36	1.00	.85	.60	.50
Horse beans	.48	.40	--	--	--	--	--	--	--	--	--	--	.48	.40	--	--	.48	.40
Fresh Vegetables:	.88	.66	1.10	1.10	.81	.61	1.13	.85	1.14	.86	.93	.70	.98	.74	1.18	.89	1.02	.77
Onions	.88	.66	1.10	1.10	.81	.61	1.13	.85	1.14	.86	.93	.70	.98	.74	1.18	.89	1.02	.77
Tomatoes	.88	.66	1.10	1.10	.81	.61	1.13	.85	1.14	.86	.93	.70	.98	.74	1.18	.89	1.02	.77
Fresh Fruits:	1.33	1.00	1.77	1.25	1.37	.97	2.18	1.54	.58	.41	.42	.30	1.27	.90	.52	.37	.89	.63
Oranges	1.33	1.00	1.77	1.25	1.27	.90	2.18	1.54	.58	.41	1.13	.80	1.36	.96	1.29	.91	1.33	.94
Limes	1.22	.86	--	--	1.56	1.10	2.18	1.54	.58	.41	--	--	1.26	.89	--	--	1.26	.89
Apples	1.64	1.16	--	--	1.63	1.15	2.18	1.54	--	--	--	--	1.64	1.16	--	--	1.64	1.16
Bananas and plantains	.93	.66	1.77	1.25	1.21	.85	2.18	1.54	--	--	.14	.10	.76	.54	.25	.18	.48	.34

Source: P.I.D.U.A., Computed by the Grupo Ofserta y Demanda using available household expenditure surveys, 1969.

aElasticities refer to human consumption only.

bE_e refers to expenditure income elasticity.

cE_q refers to quantity income elasticity.

Table A-16. Gross requirements for direct human consumption of major livestock and
derivatives and fats and oils by major regions for 1960-1964, with projections
for 1970, 1975, and 1980

	1975											
	Coast			Sierra			Selva			Perú		
Products	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
	(thousand metric tons)											
Meats and Offals	194.1	28.5	222.6	54.2	44.2	98.4	21.9	76.2	98.1	270.2	148.9	419.1
Principal meats	154.2	16.7	170.9	35.3	13.9	49.2	19.3	69.9	89.2	208.8	100.5	309.3
Beef meat	81.5	10.7	92.2	22.4	--	22.4	6.0	12.4	18.4	109.9	23.1	133.0
Pork meat	26.2	2.8	29.0	2.3	--	2.3	11.7	57.5	69.2	40.2	60.3	100.5
Mutton meat	2.4	3.2	5.6	10.6	13.9	24.5	0.3	--	0.3	13.3	17.1	30.4
Poultry	44.1	--	44.1	--	--	--	1.3	--	1.3	45.4	--	45.4
Minor meats	8.6	6.9	15.5	11.2	24.7	35.9	--	--	--	19.8	31.6	51.4
Guinea pigs	--	--	--	6.2	11.0	17.2	--	--	--	6.2	11.0	17.2
Alpaca meat	--	--	--	1.2	7.3	8.5	--	--	--	1.2	7.3	8.5
Llama meat	--	--	--	0.3	2.2	2.5	--	--	--	0.3	2.2	2.5
Goat meat	5.6	6.9	15.5	3.5	4.2	7.7	--	--	--	12.1	11.1	23.2
Offals	31.3	4.9	36.2	7.7	5.6	13.3	2.6	6.3	8.9	41.6	16.8	58.4
Beef	16.3	2.1	18.4	4.5	--	9.5	1.2	2.5	3.7	22.0	4.6	26.6
Pork	2.4	0.1	2.5	0.1	--	0.1	1.1	3.8	4.9	3.6	3.9	7.5
Mutton	0.3	0.6	0.9	2.3	4.7	7.0	--	--	--	2.6	5.3	7.9
Poultry, giblets	9.9	--	9.9	--	--	--	0.3	--	0.3	10.2	--	10.2
Goat	2.4	2.1	4.5	0.8	0.9	1.7	--	--	--	3.2	3.0	6.2
Eggs	32.3	1.9	34.2	6.0	--	6.0	1.0	5.1	6.1	39.3	7.0	46.3
Milk, Cow Goat & Derivatives	709.6	86.0	795.6	134.7	218.1	352.8	19.9	9.1	29.0	864.2	313.2	1177.4
Cow milk & derivatives	653.6	57.2	710.8	126.6	193.0	319.6	19.9	9.1	29.0	800.1	259.3	1059.4
Milk, industrial use	195.7	--	195.7	13.8	--	13.8	--	--	--	209.5	--	209.5
Fresh milk	180.9	18.6	199.5	36.3	26.7	63.0	10.4	3.9	14.3	227.6	49.2	276.8
Butter	157.2	13.8	171.0	33.3	18.4	51.7	8.4	3.9	12.3	198.9	36.1	235.0
Cheese	119.8	24.8	144.6	43.2	147.9	191.1	1.1	1.3	2.4	164.1	174.0	338.1
Goat milk	56.0	28.8	84.8	8.1	25.1	33.2	--	--	--	64.1	53.9	118.0
Edible Fats & Oils	84.7	8.8	93.5	16.0	9.9	25.9	2.6	5.2	7.8	103.3	23.9	127.2
Edible oils	59.5	0.6	60.1	9.6	--	9.6	0.7	2.6	3.3	69.8	3.2	73.0
Fish oil	8.8	0.1	8.9	1.4	--	1.4	0.1	0.4	0.5	10.3	0.5	10.8
Cottonseed oil	41.2	0.4	41.6	6.7	--	6.7	0.3	1.8	2.1	48.2	2.2	50.4
Other	9.5	0.1	9.6	1.5	--	1.5	0.3	0.4	0.7	11.3	0.5	11.8
Edible fats	25.2	8.2	33.4	6.4	9.9	16.3	1.9	2.6	4.5	33.5	20.7	54.2
Lard	16.1	2.5	18.6	6.1	9.9	16.0	1.9	1.7	3.6	24.1	14.1	38.2
Cottonseed	9.1	5.7	14.8	0.3	--	0.3	--	0.9	0.9	9.4	6.6	16.-

Table A-16--Continued

Products	1980											
	Coast			Sierra			Selva			Perú		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
	(thousand metric tons)											
Meats & Offals:	274.9	35.6	310.5	63.1	44.1	107.2	31.3	110.1	141.4	369.3	189.8	559.1
Principal meats	220.5	21.6	242.1	42.1	15.0	57.1	26.7	101.8	124.5	290.3	138.4	428.7
Beef meat	119.7	13.9	133.6	26.7	--	26.7	8.7	18.1	26.8	155.1	32.0	187.1
Pork meat	33.0	3.6	36.6	2.7	--	2.7	16.7	83.7	100.4	52.4	82.3	139.7
Mutton meat	3.6	4.1	7.7	12.7	15.0	27.7	0.4	--	0.4	16.7	19.1	35.8
Poultry	64.2	--	64.2	--	--	--	1.9	--	1.9	66.1	--	66.1
Minor meats	10.6	7.9	18.5	12.1	23.3	35.4	--	--	--	22.7	31.2	53.9
Guinea pigs	--	--	--	6.5	11.4	17.9	--	--	--	6.5	11.4	17.9
Alpaca meat	--	--	--	0.9	5.4	6.3	--	--	--	0.9	5.4	6.3
Llama meat	--	--	--	0.2	1.6	1.8	--	--	--	0.2	1.6	1.8
Goat meat	10.6	7.9	18.5	4.5	4.9	9.4	--	--	--	15.1	12.8	27.9
Offals	43.8	6.1	49.9	8.9	5.8	14.7	3.6	8.3	11.9	56.3	20.2	76.5
Beef	23.9	2.8	26.7	5.3	--	5.3	1.7	3.6	5.3	30.9	6.4	37.3
Pork	3.2	0.1	3.3	0.1	--	0.1	1.5	4.7	6.2	4.8	4.8	9.6
Mutton	0.4	0.7	1.1	2.6	4.9	7.5	--	--	--	3.0	5.6	8.6
Poultry giblets	13.1	--	13.1	--	--	--	0.4	--	0.4	13.5	--	13.5
Goat	3.2	2.5	5.7	0.9	0.9	1.8	--	--	--	4.1	3.4	7.5
Eggs	49.5	2.4	51.9	7.4	--	7.4	1.5	7.2	8.7	58.4	9.6	68.0
Milk, Cow, Goat & Derivatives	1042.6	115.1	1157.7	165.5	241.9	407.4	29.7	14.7	44.4	1237.8	371.7	1609.5
Cow milk & derivatives	960.3	76.6	1036.9	155.5	214.1	369.6	29.7	14.7	44.4	1145.5	305.4	1450.9
Milk, industrial use	287.5	--	287.5	16.9	--	16.9	--	--	--	304.4	--	304.4
Fresh milk	265.8	24.9	290.7	44.6	29.6	74.2	15.5	6.3	21.8	325.9	60.8	386.7
Butter	231.0	18.5	249.5	41.0	20.4	61.4	12.5	6.3	18.8	284.5	45.2	329.7
Cheese	176.0	33.2	209.2	53.0	164.1	217.1	1.7	2.1	3.8	230.7	199.4	430.1
Goat milk	82.3	38.5	120.8	10.0	27.8	37.8	--	--	--	92.3	66.3	158.6
Edible Fats & Oils	119.7	9.2	128.9	19.4	10.5	29.9	3.7	6.7	10.4	142.8	26.4	169.2
Edible oils	84.0	0.6	84.6	11.6	--	11.6	0.9	3.3	4.2	96.5	3.9	100.4
Fish oil	12.3	0.1	12.4	1.6	--	1.6	0.1	0.5	0.6	14.0	0.6	14.6
Cottonseed oil	58.3	0.4	58.7	8.2	--	8.2	0.4	2.3	2.7	66.9	2.7	69.6
Other	13.4	0.1	13.5	1.8	--	1.8	0.4	0.5	0.9	15.6	0.6	16.2
Edible fats	35.7	8.6	44.3	7.8	10.5	18.3	2.8	3.4	6.2	46.3	22.5	68.8
Lard	22.6	2.6	25.2	7.0	10.5	17.5	2.7	2.2	4.9	32.3	15.3	47.6
Cottonseed	13.1	6.0	19.1	0.8	--	0.8	0.1	1.2	1.3	14.0	7.2	21.2

Source: P.I.D.U.A., 1969.

Table A-17. Annual geometric rate of growth of the gross requirements for direct human
consumption of major livestock and derivatives, and fats and oils, by major
regions, 1960-1964 to 1970 and 1970 to 1980 (percent)

Products	(1960-64)-1970											
	Coast			Sierra			Selva			Peru		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
	(percent)											
Meats and Offals	4.2	3.3	4.1	1.0	-0.9	0.1	5.4	6.4	6.4	3.5	3.8	3.2
Principal meats	3.9	2.0	3.8	0.9	1.8	1.2	5.9	6.6	6.5	3.3	5.2	3.9
Beef meat	1.8	3.2	1.9	-0.5	--	-0.5	1.4	4.3	3.3	1.2	3.7	1.6
Pork meat	7.7	5.4	7.4	3.8	1.8	3.8	7.5	7.6	7.6	7.4	7.4	7.4
Mutton meat	6.7	2.9	4.3	3.8	1.8	2.6	5.8	3.9	5.8	4.3	2.0	2.9
Poultry	7.7	--	7.7	--	--	--	717	--	7.7	7.7	--	7.7
Minor meats	4.3	2.8	3.6	-0.1	-2.8	-2.0	--	--	--	1.5	-1.9	-0.8
Guinea pigs	--	--	--	0.9	0.8	0.8	--	--	--	0.9	0.8	0.8
Alpaca meat	--	--	--	-6.2	-6.2	-6.2	--	--	--	-6.2	-6.2	-6.2
Llama meat	--	--	--	-7.6	-6.2	-6.4	--	--	--	-7.6	-6.2	-6.4
Goat meat	4.3	2.8	3.6	5.2	3.2	4.0	--	--	--	4.5	3.0	3.8
Offals	5.8	4.0	5.6	3.1	4.8	3.8	6.8	4.4	5.1	5.2	4.4	5.1
Beef	6.0	2.9	5.6	3.1	--	3.1	6.6	4.5	5.4	5.2	3.5	5.0
Pork	6.0	2.9	4.9	3.1	1.0	3.1	6.6	4.5	4.7	5.9	4.2	5.0
Mutton	--	--	--	2.8	7.1	5.6	--	--	--	2.8	7.1	5.6
Poultry giblets	6.0	--	6.0	--	--	--	6.6	--	6.6	6.1	--	6.1
Goat	4.2	10.4	6.5	4.3	-2.5	--	--	--	--	4.2	3.7	4.0
Eggs	8.7	4.9	8.4	4.5	--	4.5	8.5	6.9	7.0	7.7	6.4	7.5
Milk, Cow, Goat, and Derivatives	3.6	4.8	3.8	0.0	1.5	0.9	4.4	7.0	5.1	2.9	2.6	2.7
Cow milk and derivatives	3.4	5.0	3.5	-0.2	1.5	0.8	4.4	7.0	5.1	2.7	2.5	2.5
Milk, industrial use	3.4	--	3.4	0.0	--	0.0	--	--	--	0.0	--	0.0
Fresh milk	3.4	5.0	3.6	-0.1	1.5	0.6	4.3	7.0	4.3	2.7	2.9	2.7
Butter	3.4	5.0	3.6	-0.1	1.5	0.6	4.0	7.0	4.5	2.7	3.0	2.7
Cheese	3.4	5.0	3.6	-0.6	1.5	0.6	4.2	6.1	4.8	2.0	1.9	1.9
Goat milk	6.7	4.5	5.9	3.6	1.4	1.8	--	--	--	6.2	2.8	4.3
Edible Fats and Oils	6.6	3.1	6.1	3.7	1.3	2.6	7.6	4.6	5.4	6.1	2.5	4.6
Edible oils	7.3	3.5	7.2	4.2	--	4.2	8.1	5.3	6.6	6.8	2.8	6.7
Fish oil	8.4	4.5	8.2	5.2	--	5.2	9.1	9.0	9.0	8.0	3.7	7.8
Cottonseed oil	7.1	3.5	7.0	4.1	--	4.1	8.1	5.3	6.1	6.6	5.2	6.5
Other	6.7	0.0	6.9	4.1	--	4.1	8.1	5.3	7.0	6.6	2.8	6.4
Edible fats	5.2	3.1	4.5	2.6	1.3	1.8	6.3	3.7	4.6	4.7	2.2	3.6
Lard	4.8	2.4	4.3	3.0	1.3	1.8	5.8	3.9	4.6	4.3	1.8	3.2
Cottonseed	5.8	3.5	4.9	--	--	--	--	--	--	5.8	3.5	4.9

Table A-17--Continued

Products	1970-1980											
	Coast			Sierra			Selva			Perú		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
	(percent)											
Meats and Offals	7.0	4.3	6.7	3.1	0.0	1.7	7.4	7.7	7.5	6.2	4.8	5.8
Principal meats	7.4	5.3	7.2	3.6	1.6	3.1	7.5	7.8	7.7	6.9	6.6	6.8
Beef meat	8.0	5.3	7.6	3.6	--	3.6	7.8	7.8	7.8	7.0	6.6	6.9
Pork meat	4.7	5.3	4.7	3.6	--	3.6	7.4	7.8	7.7	5.9	7.7	6.7
Mutton meat	6.9	5.3	5.9	3.6	1.6	2.5	7.5	--	8.4	4.2	2.2	3.1
Poultry	7.8	--	7.8	--	--	--	7.5	--	7.5	7.8	--	7.8
Minor meats	4.2	2.8	3.6	0.9	-1.9	-1.1	--	--	--	2.3	-1.0	0.2
Guinea pigs	--	--	--	0.9	0.8	0.8	--	--	--	0.9	0.8	0.8
Alpaca meat	--	--	--	-6.2	-6.2	-6.2	--	--	--	-6.2	-6.2	-6.2
Llama meat	--	--	--	-7.6	-7.2	-7.6	--	--	--	-10.7	-7.1	-7.6
Goat meat	4.3	2.8	3.6	5.2	3.2	4.1	--	--	--	4.5	2.9	3.7
Offals	5.8	3.2	5.6	2.8	0.9	2.8	6.3	4.4	5.0	5.2	2.5	4.5
Beef	5.8	3.2	5.6	2.8	--	2.8	6.3	4.4	5.0	5.3	3.8	5.0
Pork	5.8	3.2	5.2	2.8	--	2.8	6.3	4.4	5.0	--	4.3	5.1
Mutton	5.8	3.2	5.2	0.9	0.9	0.9	6.3	--	6.3	5.8	--	--
Poultry giblets	5.8	--	5.8	--	--	--	6.3	--	6.3	5.8	--	5.8
Goat	5.8	3.2	6.4	2.8	0.9	--	--	--	--	5.1	2.5	3.9
Eggs	8.9	4.8	8.6	4.4	1.6	4.6	8.4	7.1	7.2	8.1	6.5	7.9
Milk, Cow, Goat, and Derivatives	8.0	6.0	7.8	4.2	2.1	3.0	8.3	10.2	8.8	7.4	3.3	6.3
Cow milk and derivatives	8.0	6.0	7.9	4.2	2.1	3.0	8.3	10.2	8.8	7.3	3.1	6.5
Milk, industrial use	8.0	--	8.0	4.2	--	4.2	--	--	--	7.7	--	7.7
Fresh milk	8.0	6.0	7.8	4.2	2.1	3.3	8.3	10.2	8.8	7.3	4.0	6.0
Butter	8.0	6.0	7.8	4.2	2.1	3.5	8.3	10.2	8.8	7.3	4.3	6.9
Cheese	8.0	6.0	7.7	4.2	2.1	2.6	8.3	10.2	9.7	6.9	2.7	4.8
Goat milk	8.0	6.0	7.3	4.2	2.1	2.6	--	--	--	7.5	4.1	5.9
Edible Fats and Oils	7.2	0.9	6.5	3.9	1.0	2.8	7.6	5.4	6.1	6.7	1.8	5.7
Edible oils	7.2	1.0	7.1	4.0	--	4.0	8.0	5.4	5.7	6.7	4.2	6.6
Fish oil	7.0	1.0	6.8	3.3	--	3.3	7.4	5.4	4.6	6.3	4.6	6.2
Cottonseed oil	7.2	1.0	7.1	4.0	--	4.0	7.4	5.4	5.6	6.7	4.1	6.6
Other	7.2	1.0	7.2	4.0	--	4.0	7.4	5.4	5.6	7.0	4.6	6.8
Edible fats	7.2	1.0	5.5	4.0	1.1	2.1	8.0	5.4	6.4	6.5	1.5	4.4
Lard	7.0	1.0	6.0	2.8	1.1	1.7	7.4	5.4	1.8	5.9	1.4	3.7
Cottonseed	5.8	3.4	4.7	3.3	--	3.3	--	--	--	5.7	3.4	4.7

Source: P.I.D.U.A., 1969.
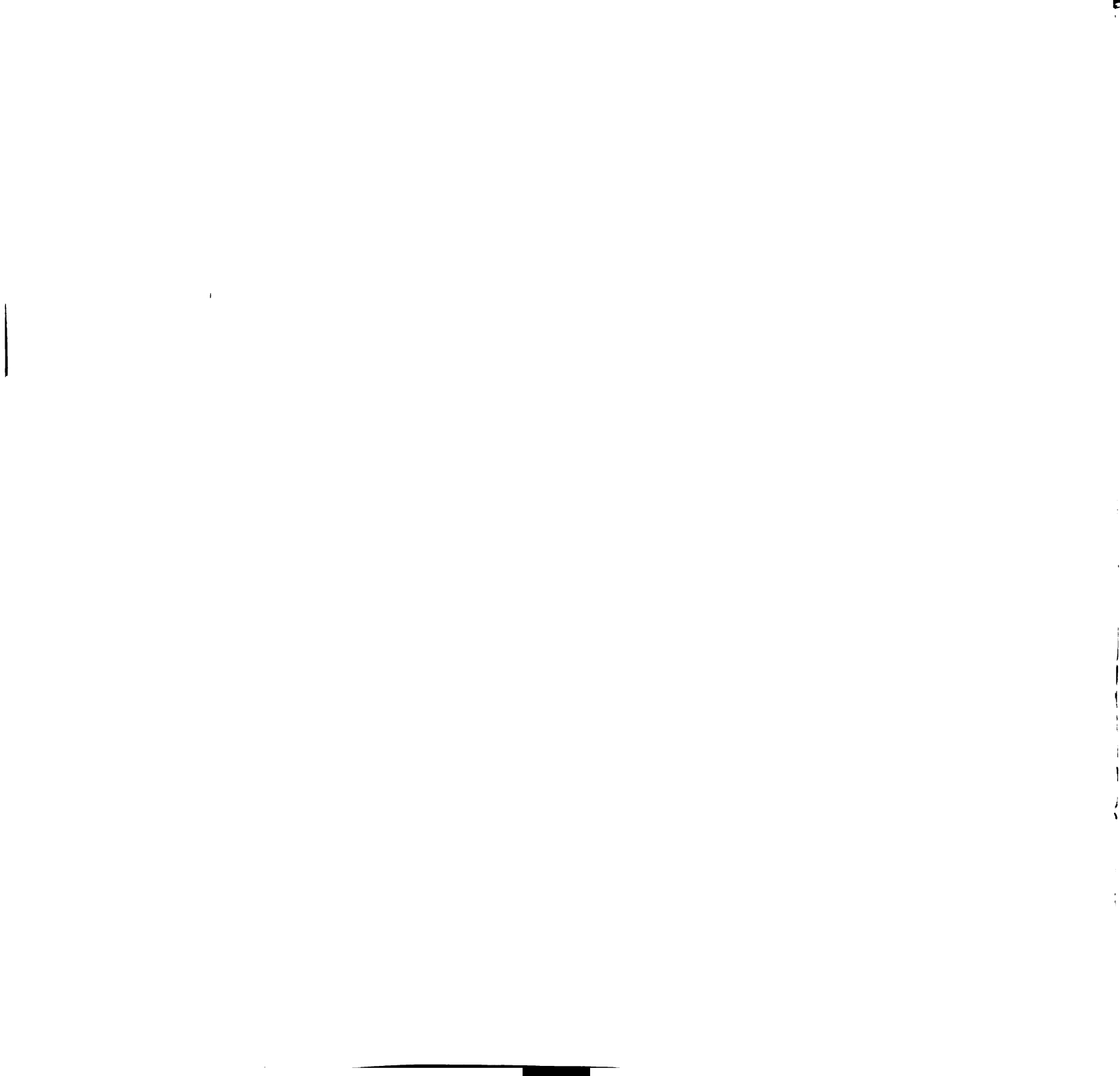
Table A-18. Perú: annual geometric growth rates of projected domestic apparent demand 1960-1964 to 1970, 1970 to 1975, and 1975 to 1980

	Annual Geometric Growth Rates of Domestic Apparent Demand		
Product Group	1960-1964 to 1970	1970-1975	1975-1980
Cereals and derivatives	4.9	5.5	6.0
Tubers and roots	3.1	3.3	3.5
Beans and pulses	3.9	4.2	4.3
Fresh fruits	5.7	5.9	6.1
Fresh vegetables	4.8	5.7	5.3
Sugar	4.6	4.8	5.1
Meats and offals	3.0	5.5	5.9
Eggs	7.6	7.9	7.9
Milk and derivatives	7.4	6.1	6.4
Edible fats and oils	7.6	6.1	6.2

Source: P.I.D.U.A., Computed by the Grupo Oferta y Demanda, 1969.

Table A-19. Actual and projected production of livestock products from 1950 up to 1980

(thousand metric tons)

Year		Meats						Edible Offals						Sub-Products					
		Beef	Mutton	Pork	Kid	Auquenidos	Poultry	Beef	Mutton	Pork	Kid	Poultry	Other Species	Cows Milk	Goats Milk	Eggs	Sheep Wool	Alpaca Wool	Llama Wool
1950																			
1951																			
1952																			
1953																			
1954		49.5	25.3	14.1	7.2	6.6	7.6						20.6	376.9		5.1	10.0	2.9	0.4
1955														377.9	38.5	5.0	10.0	2.8	0.4
1956														380.0	41.6	5.4	9.5	2.6	0.4
1957														378.6	60.8	5.9	8.0	2.3	0.3
1958														380.5	88.8	6.1	9.0	2.3	0.3
1959		66.4	25.7	25.1	21.0	10.4	8.2						21.8	385.0	86.8	7.5	10.0	2.3	0.3
1960														418.8	68.7	11.6	11.0	3.2	0.3
1961														436.7	69.9	12.1	10.8	3.3	0.3
1962														452.8	71.9	12.6	10.7	3.4	0.3
1963														485.3	73.2	13.4	10.7	3.6	0.3
1964		63.2	24.6	39.2	14.2	14.8	22.3						21.9	498.5	72.3	14.3	11.0	3.8	0.3
1970	A	89.2	26.5	71.4	20.3	15.9	32.7	17.8	16.7	6.6	5.2	8.1	17.3	600.1	99.8	32.9	12.8	4.3	0.3
	B	100.5	36.0	71.4			57.7	15.9	7.4		5.0	14.7		553.4	94.8	29.3	12.8	4.3	0.3
1975	A	104.7	31.0	100.3	21.9	17.4	47.2	20.9	7.8	8.6	5.4	11.9	17.6	713.8	96.6	48.2	13.4	4.8	0.3
	B	111.0	43.5	100.3			87.5	17.4	7.8			22.7		622.3	96.6	47.0	13.4	4.8	0.3
1980	A	122.5	36.7	133.4	26.0	18.8	69.0	24.5	9.3	11.5	6.5	17.4	18.2	847.8	104.1	69.6	14.8	5.3	0.3
	B	114.5	53.3	133.4			126.3	17.9	9.0			35.1		685.3	104.1	73.9	14.8	5.3	0.3

Source: P.I.D.U.A. (1969), 1950-1964 Annexo Estadistica, Oficina de Planeamicato, Ministerio de Agricultura, Lima, Perú, 1965, Projection A by Grupo Oferta--Demanda, Universidad Agraria, La Molina, 1967; Projection B from "Plan Ganadero," Oficina Sectorial de 'Planificacion Agraria, Ministerio de Agricultura, Lima, Perú, 1967.
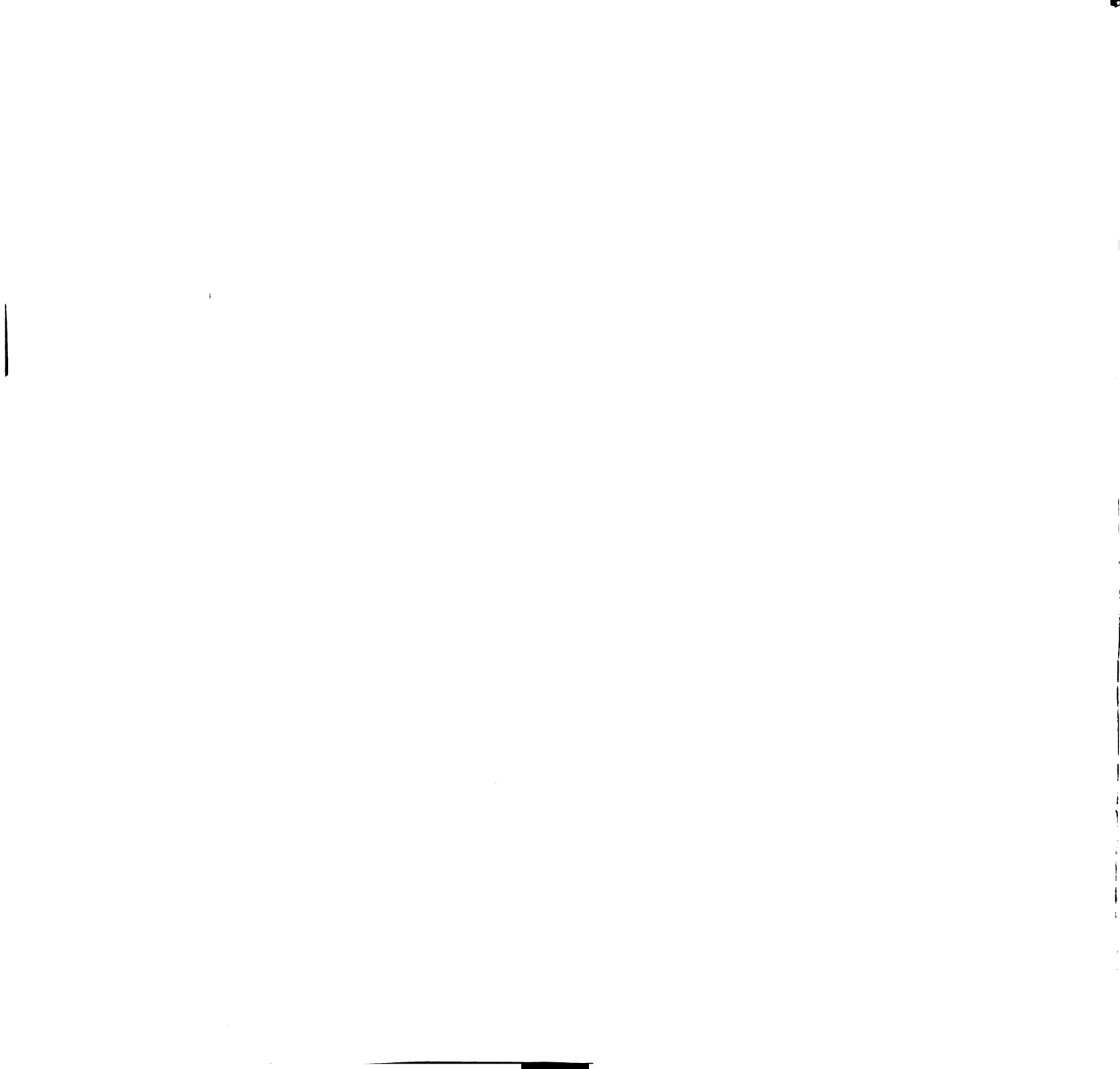
Table A-20. Perú: balance of domestic apparent demand with national production for major livestock products for 1960-1964 with projections for 1970, 1975, and 1980

Products	1960-1964				1970			
	Domestic Apparent Demand	National Production	Imports	Exports	Domestic Apparent Demand	National Production	Potential Import Requirements	Potential Exports Available
					(metric tons)			
Principal Meats:								
Beef	83.3	69.5	18.8	--	100.1	89.2	10.9	--
Pork	43.1	42.6	0.5	--	76.4	71.4	5.0	--
Mutton	21.9	20.6	1.3	--	27.5	26.5	1.0	--
Poultry	21.1	20.2	0.9	--	32.8	32.1	0.7	--
Minor Meats:								
Guinea pigs	16.3	16.3	--	--	17.4	17.3	0.1	--
Alpaca	19.5	19.5	--	--	12.1)	15.9	--	--
Llama	6.2	6.2	--	--	3.8)		--	--
Goat	15.1	15.1	--	--	20.3	20.3	--	--
Offals:								
Beef	17.7	13.9	3.8	--	20.1	17.8	2.3	--
Pork	4.3	4.3	--	--	6.3	7.1	--	0.8
Mutton	5.2	5.2	--	--	7.6	6.7	0.9	--
Poultry giblets	5.1	5.1	--	--	8.1	8.1	--	--
Goat	3.8	3.8	--	--	5.2	5.2	--	--
Eggs	18.6	18.4	0.2	--	33.3	32.9	0.4	--
Milk, Cow, Goat, and Derivatives								
Cow milk and derivatives	687.1	456.4	185.47	40.2	831.4	600.1	231.3	--
Milk, industrial	119.4	71.0	48.4	--	152.1	56.0	96.1	--
Fresh milk	175.4	151.5	23.9	--	217.0	208.6	8.4	--
Butter	148.8	64.3	84.5	--	178.0	58.2	119.8	--
Cheese	243.5	214.5	29.0	--	284.3	277.3	7.0	--
Goat milk	71.3	71.3	--	--	99.8	99.0	--	--
Edible Fats & Oils								
Edible oils								
Fish oil[a]	4.6	4.6	--	--	8.4	8.4	--	--
Cottonseed oil[b]	23.4	23.4	--	--	38.6	28.9	9.7	--
Others	5.6	--	5.6	--	9.0	--	9.0	--
Edible fats								
Lard[c]	29.2	10.1	19.1	--	39.6	16.6	23.0	--
Cottonseed[b]	8.5	8.5	--	--	12.4	11.0	1.4	--

[a]The figure of domestic apparent demand that appears in this table is the result of decuction of industrial use from Table 44, because it is not considered for edible purposes.

[b]It was derived from supply hypothesis number two for cotton production.

[c]It was included in the figure of domestic apparent deman

Table A-20--Continued

(metric tons)

Products	1975 Domestic Apparent Demand	1975 National Production	1975 Potential Import Requirements	1975 Potential Exports Available	1980 Domestic Apparent Demand	1980 National Production	1980 Potential Import Requirements	1980 Potential Exports Available
Principal Meats:								
Beef	139.9	104.7	35.2	--	196.8	122.5	74.3	--
Pork	105.6	100.3	5.3	--	146.8	133.4	13.4	--
Mutton	32.0	31.0	1.0	--	37.7	36.7	1.0	--
Poultry	47.9	47.2	0.7	--	69.7	69.0	0.7	--
Minor Meats:								
Guinea pigs	18.1	18.1	--	--	18.1	18.1	--	--
Alpaca	8.9	8.9	--	--	6.9}	7.8	--	--
Llama	2.6	2.6	--	--	1.9}		--	--
Goat	24.3	24.3	--	--	29.2	29.2	--	--
Offals:								
Beef	28.0	20.9	7.1	--	39.3	24.5	14.8	--
Pork	8.1	8.6	--	--	10.6	--	--	--
Mutton	8.4	7.8	0.6	--	9.1	9.3	--	0.2
Poultry giblets	10.8	11.9	--	1.1	14.3	17.4	--	3.1
Goat	6.6	6.6	--	--	7.9	7.9	--	--
Eggs	48.7	48.2	0.5	--	71.4	69.6	1.8	--
Milk, Cow, Goat and Derivatives:								
Cow milk and derivatives	1,121.9	713.8	408.1	--	1,536.1	847.8	688.3	--
Milk, industrial	--	--	--	--	--	--	--	--
Butter	--	--	--	--	--	--	--	--
Cheese	--	--	--	--	--	--	--	--
Goat milk	131.5	96.6	34.9	--	175.3	104.1	71.2	--
Edible Fats & Oils								
Edible oils								
Fish oil[a]	11.4	11.4	--	--	15.8	15.8	--	--
Cottonseed oil[b]	53.3	31.0	22.3	--	73.5	37.6	35.9	--
Others	12.4	--	12.4	--	17.1	--	17.1	--
Edible fats								
Lard[c]	43.2	23.2	20.0	--	53.1	30.9	22.2	--
Cottonseed[b]	16.9	11.8	5.1	--	22.4	14.3	8.1	--

Source: P.I.D.U.A., Computed by Grupo Oferta y Demanda, 1969.
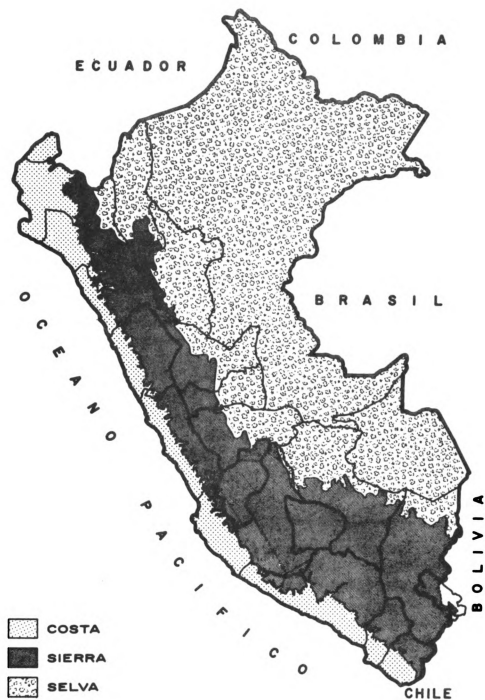
APPENDIX B

GRAPHICAL REGIONS OF PERU

FIGURE 1. GRAPHICAL REGIONS OF PERÚ