INSTITUTE FOR DEVELOPMENT STUDIES

UNIVERSITY COLLEGE, NAIROBI.

Discussion Paper No. 75

ENTREPRENEURSHIP AND ECONOMIC DEVELOPMENT

John R. Harris

May, 1969

<u>Entrepreneurship and Economic Development</u>

John R. Harris

Scholars concerned with problems of economic deve-
lopment have tended either to ignore the entrepreneur or to
enshrine him as the prime mover of the economic universe.

This dichotomy in approach is hardly surprising since
conventional economic theory assumes -- and in the absence
of a central planning board, requires -- the presence of
profit maximizing entrepreneurs, calculating profits with
lightning speed and unerring precision. Indeed, the entre-
preneur in this schema is not easily identified with flesh
and blood, but is rather a <u>deus ex machina</u>. This is not to
deprecate economic theory but merely to agree with Baumol
that while the theory of the firm is useful for many purposes
it leaves no room for treating entrepreneurship in other
than a trivial way. /4 7

On the other hand, many social scientists have had
occasion to observe that in some underdeveloped economies
there appears to be a lack of response to economic incentives.
They have turned to psychological or sociological explanations
for the emergence (or lack of emergence) of entrepreneurial
groups. /38,147 Hagen expresses the position quite well when
he states that "In a traditional society in which nothing
has yet occurred to change traditional personality and
culture, an increase in the size of the market or in the
flow of saving available is not apt to have a great effect
in inducing continuing change in technology." /2 2 7

The purposes of this paper are two. First, to present
a conceptual framework for analyzing relationships between
social, political, and economic variables; entrepreneurship;
and economic growth. And secondly, to present some empirical
findings from Nigeria.

Although many definitions of entrepreneurship have
appeared in the literature, a common thread running throughout
the various discussions is that the entrepreneur is a decision
maker.[1] It seems most useful to identify enterpreneurship
with the function of making decisions with regard to levels
of production and productive techniques (the "what" and "how"
of elementary economics) rather than solely with individuals.
As such, the function may be carried out by an individual
or by a group. It may involve producing novel goods, or

finding new means of producing familiar goods -- this is
innovational activity. It will usually involve creating
additional productive capacity prior to undertaking pro-
duction -- thus bearing considerable risk. It may involve
expansing production along familiar lines -- yet imitative
activity too requires decision making. The actual decisions
made in any economy will range from difficult to easy, from
"once in a lifetime" to routine. However nice it would be
to distinguish between important and routine decisions,
between innovation and imitation, it is virtually impossible
to draw a dividing line that is operationally satisfactory,
because the decisions made in any economy form a continuum
and any division is at best arbitrary.[2]

The tasks that must be performed by entrepreneurial
units if decisions are to be effective include: perceiving
productive opportunities, gaining control over other factors
of production, organizing productive facilities, and in
some cases managing the continuing operation of the operation
of the productive facilities.[3] It may be desirable to
separate the last task from the others but, again, it is
in practice difficult to separate management from decision
making.

The ralationship between entrepreneurship and economic
development should at once be apparent. Other things being
equal, an economy with a larger supply of effective decision
makers will make better use of its potential resources since
they will be combined more efficiently and will be used
for more productive purposes. (This is the principal
argument of Hirschman. /27_7) It is also clear that for
a given level of entrepreneurial resources an economy will
achieve higher levels of output if it has greater endowments
of resources and potential opportunities for growth are more
favorable.

One way to attack the problem analytically is to treat
entrepreneurial resources as a factor of production. This
has been suggested by Harbison /23_7 and has been worked
out in some detail by Harris. /24, ch.2_7 As between
conventional factors, there are relationships both of
substitutability and complementarity between entrepreneurship
and other factors. Following from a standard production-
function approach, demand for entrepreneurial resources can

be derived as a function of price and a supply function for
the factor can be specified. Such a model leads one to
consider factors affecting both the demand for and supply
of entrepreneurship. Broadly speaking, economic factors
determine the "demand" for entrepreneurship while social
and psychological forces along with economic factors determine
the supply. Some interesting propositions can be derived
from the comparative static and comparative dymanic properties
of such a model that are parallel to familiar propositions
relating to accumulation of conventional factors such as
capital or labour. [24, ch 2].

However such a model fails to come to grips with the
difficult problems of imperfect markets and uncertainty.
On the basis of casual empiricism, one is inclined to believe
that the market for entrepreneurial services is particularly
imperfect. Individuals who were "fustest with the mostest"
appear to reap rewards in excess of what could be considered
rent for superior skill alone. Luck plays at least some
part.[4] In our definition of entrepreneurship, the first
function listed was the perception of opportunities; this
is a necessary and important function only if information
concerning opportunities is limited and imperfect. It is
the fact that entrepreneurial decisions are necessarily
taken under conditions of uncertainty that makes the study
of entrepreneurship interesting.

With a production-function approach, one can identify
equilibrium quantities and prices determined by the inter-
sections of demand and supply curves only if a single price
prevails for all units of the factor. If instead, one
wishes to consider a heterogeneous group of projects, each
with a different rate of return, it is possible to determine
neither how many of these projects, nor which ones will be
exploited without specifying some mechanism for linking
particular entrepreneurial units with specific projects.[5]
Therefore it is desirable to formulate a model which expli-
citly takes into account the complications of non-homogenous
projects, imperfect information, and risk.[6]

Consider the objects of entrepreneurial decisions to
be discrete projects which, if implemented, have the effect
of increasing total output.[7] They may require new investment
or may consist solely of reorganizing existing productive
structures. Each project can be completely described by its

attributes which include expected payoff, variance of expected payoff, length of payoff period, necessary scale of operations, technical complexity, etc.[6] Thus, each project can be considered to be a bundle of attributes denoted by a vector

$$(1) \qquad X_j = X_j \ (x_1, \ x_2, \ \ldots, \ x_k)$$

where X_j is the jth project and the x_i's are scale values for each of the k attributes, representing a point in a k-dimensional attribute space. The x_i scales will be constructed so that a *state with* higher value *will* be preferred to a state associated with a lower value. Thus we assume that a higher expected payoff, a lower variance of expected *payoffs* (risk), less technological complexity, and smaller scale of operation will always be preferred to their opposites.

Entrepreneurial functions are performed by decision units which may be individuals, households, or organizations, each of which is assumed to be able to order all attribute bundles according to the relations $X^0 P X$ or $\overline{X^0 P X^1}$, (the first meaning X^0 is preferred to X^1, the second meaning X^0 is not preferred to X^1).[9] Following conventional consumer theory, transitivity is assumed; that is, $X^0 P X^1$ and $X^1 P X^2$ implies $X^0 P X^2$. These two assumptions (or axioms) together imply a total ordering of the entire set of attribute bundles (projects) by each decision unit. Let us also assume a continuous, order preserving, monotone function, $u^k(X)$, such that $u^k(X^0) \geq u^k(X^1)$ if and only if X^0 is ordered before, or on the same level as X^1 by the kth decision unit ($X^0 P X^1$ or $X^0 P Z^1$ and $\overline{X^1 P X^0}$). These assumptions imply the existence of a system of indifference surfaces, which are assumed to be convex to the origin.[10]

In a world of imperfect information, no decision unit is able to ascertain the full universe of potential alternatives. Instead of choosing between all possible alternatives, a decision unit usually is faced at any one moment with a single opportunity for which a decision to act or not act must be made.

Let us assume that each decision unit determines some critical indifference surface u_c. We then define the set A_k such that if $X_j \in A_k$, $u^k(X_j) \geq u_c^k$ *where u_c^k* is the critical indifference surface and A_k is the action set of the kth decision unit.

The following simple, but not implausible, decision rule can be postulated: if the kth decision unit perceives a potential project X_j, it will be acted upon (exploited) if $X_j \in A_k$; if $X_j \notin A_k$ it will not be acted upon. Figure 1 depicts the action set of the kth individual projected onto a two dimensional plane (all other attributes being of specified and unchanging value). For purposes of illustration, x_1 can be the expected profits and x_2 an inverse function of the variance of the expected profits, hence a measure of risk. The action set, A_k, is represented by the shaded half-space, containing all projects such that $u^k(X_j) \geq u^k_c$. Hence, if either projects X_i or X_j (which have associated levels of preference, u^k_i and u^k_j respectively, each $> u^k_c$) were to come to the attention of the kth decision unit, they would be exploited. If X_o (associated with $u^k_o < u^k_c$ were to be perceived as a potential opportunity, it would not be exploited.

The position of the u^k_c's depend on several factors including preferences, access to resources, skills, a subjective notion of the nature of opportunities that are likely to arise in the future, and on projects already being exploited by the decision unit. That is, a decision unit will decide not to exploit a project because it finds the particular project unattractive per se, because it thinks something better will be available in the future, or because its resources are already fully extended. Therefore a complication arises if X_j and X_i were observed simultaneously by decision unit k. It is clear that X_j would be preferred to X_i in such a case, but X_i also lies in the action set. Exploitation of X_j will most likely alter the position of u^k_c because organizational and resource constraints exist for most decision units. One way to handle the problem is to assume that decisions are made seriatim. X_j is exploited, u^k_c shifts and X_i is exploited depending on whether or not it lies within the new A_k. Perhaps a more satisfactory approach is to consider three mutually exclusive projects; X_i, X_j, and a new project X_l which consists of simultaneous exploitation of X_i and X_j. It has frequently been pointed out in the literature that a complex of projects may afford possibilities of internalization of externalities and pooling of risks, hence the complex is different from the sum of its parts. The decision unit then chooses the one alternative that it ranks highest.

Another possible line of inquiry would be to introduce explicitly a cost of searching for alternatives and explore the conditions under which a decision unit will pay to obtain additional information. However, this promising approach will not be pursued further in this paper.[10b]
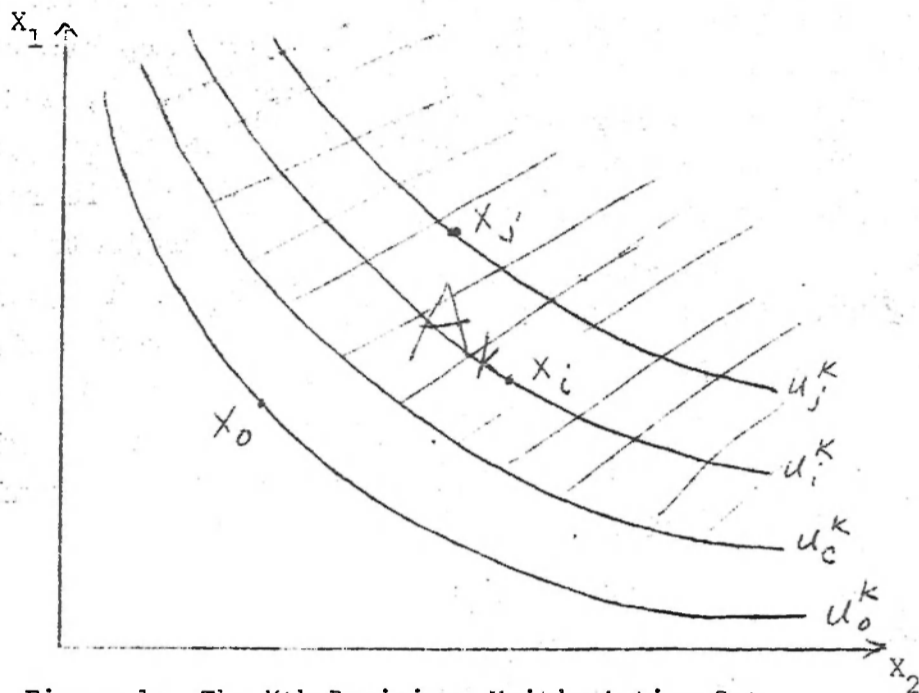

Figure 1: The Kth Decisions Unit's Action Set

In this model, the exploitation of a project depends on the configuration of the u_c^k's, the constellation of potential projects, and whether or not decision units perceive the potential projects. So far the problem has been received from the standpoint of the individual decision unit. Since economic growth is related directly to the number and kinds of projects exploited in a period of time, it will be useful to examine the model from the standpoint of the economy as a whole.

Suppose that the economy consists of $\underline{n}$ decision units and at a particular moment there exist $\underline{m}$ potential projects. What is the chance that any particular project will be exploited? We can write

$$(2) \quad N(X_j) = \sum_{k=1}^{n} \theta_k \qquad \theta_k = 0 \text{ if } X_j \notin A_k$$
$$\theta_k = 1 \text{ if } X_j \in A_k$$

where $N(X_j)$ is the number of decision units which would be willing to exploit the jth project if they became aware of its existence. A simple and not unreasonable assumption is that the probability that the jth project will be exploited will be a positive function of $N(X_j)$, the flow

of information, and the intensity of search for projects by decision units. This can be written as

(3) $\quad p(X_j) = p_j/\bar{N}(X_j), \underline{I}/, \quad 0 \leq p_j \leq 1, \quad \partial p_j/\partial N_j > 0, \quad \partial p_j/\partial I \geq 0,$

where $p_j(X_j)$ is the probability of the jth project being exploited, and I is a variable representing both information and intensity of search by the decision units.

Therefore, expected increase in national output can be written as

(4) $\qquad E(\Delta Y) = \sum_{j=1}^{m} p_j E(\Delta Y_j),$

where E stands for expected value $E(\Delta Y_j)$ is the expected incremental output if project j is actually exploited, and p_j is the probability of its being exploited. It's important to note that while the p_j's are normally dependent on private profitability, the $E(\Delta Y_j)$'s reflect social profitability. (If public sector decision units explicity consider social profitability as their decision criterion, some modification of the model may be required.) It is apparent that the expected rate of economic growth will be greater, the larger are the number of projects, the incremental output associated with each, and the p_j's. In turn, the p_j's will be larger, the greater are the N_j's, the better the network of information, and the more intensive the search by decision units for projects.

Figure 2 shows the relationship between p and one attribute, x_1, which might be taken to be expected profit With the population of decision units and their (not identical) u_c^k's given, and for constant values of all other attributes, p_o is seen to be monotone increasing function of x_1. That is, _ceterus paribus_, the higher is the expected return, the greater is the probability that any project will be exploited. Similar reasoning can be extended to other attributes. This follows from the assumption that there is unanimity among decision units in ranking the order of preference of each attribute and that the u_c^k's are not identical. (If the u_c^k's were identical, N_j would jump from 0 to $\underline{n}$ at $u(X_j) = u_c$.)
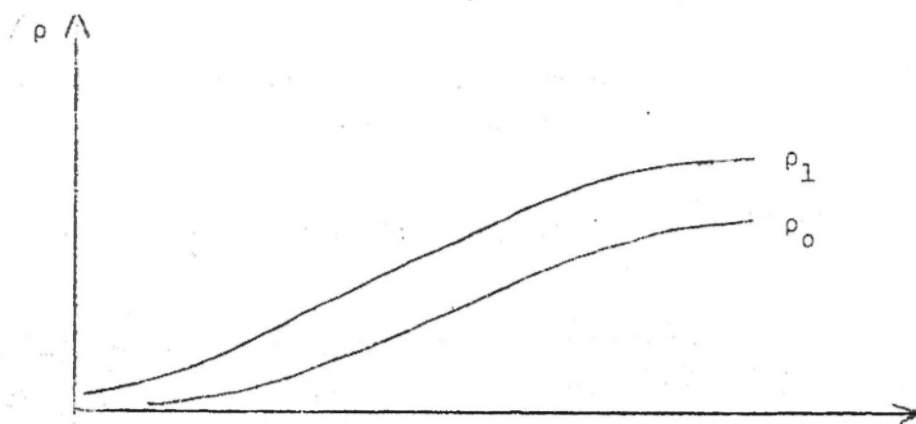
Figure 2: Probability of Exploitation as a Function of Project Attribute X_i

An increase in the number of decision units, a shift towards the origin of some of the u_c^k's, an improvement in the information system, or an increase in the intensity of search will shift the function upwards, say from p_0 to p_1.

So far it has been implicitly assumed that all decision units hold identical expectations of profitability, risk, complexity, etc. with regard to a particular project if they become aware of it at all. This, of course, begs the important question of how subjective views of the characteristics of a project are formed. Psychological studies of cognition and perception indicate that different individuals will hold widely divergent opinions about the objective characteristics of any object.[11] However, it is beyond the scope of the present study to deal with this important matter. If the individual estimates of an attribute of a project are randomly distributed, the qualitative characteristics of this model are unaffected if the X_j's reflect the mean values of the attributes. Alternatively, the problem can be avoided by assuming that there is an "objective" value of each attribute which is reflected in the vector X_j, and systematic underestimation or overestimation of an attribute by a decision unit is reflected in the position of its u_c. For instance, the u_c of a decision unit which is consistently optimistic about expected returns will lie closer to the origin in the x_1 ("objective" expected return) direction than it would in the absence of optimism. This kind of assumption is necessary to locate projects in the attribute space and define the $N(X_j)$'s.

However, decision units will differ not only on their subjective appreciation of objective reality, but the latter will also differ among units. Any particular project will

be more profitable for decision units with greater organi-
zational skill or more favourable access to resources than
for less favored decision units. Risk is appreciably
diminished for decision units that are more diversified
or that possess more accurate information about processes
and markets. To the extent that a decision unit possesses
general advantages, potential profitability will be enhanced
or risk diminished for any project that it considers. Such
differences may be accomodated through shifting their u_c's
closer to the origin; the relative positions of projects
in attribute space is unaffected.

In this model, economic factors such as factor supplies,
technology, effective demand, foreign trade possibilities,
prices, and institutional arrangements, can be viewed primarily
as determinants of the X_j's. Changes in any of these variables
will change the values of one or more attributes of any given
project. Inventions will create new potential projects and/or
shift the position of existing projects in attribute space.
External economies will be reflected by exploitation of one
project shifting the position of other project vectors, or
by the definition of a composite project which will have a
vector different from the sum of the component project vectors.

Projects which are dissimilar to presently exploited
opportunities will involve a high degree of risk, Ceteris
paribus; hence, innovation can be considered as exploitation
of high risk projects. It is then apparent that the act of
innovation will reduce the risk component of similar projects
although it may either increase or decrease expected profit.
Thus, imitative entrepreneurship can be viewed as exploitation
of less risky projects, and within this framework, it is
obvious that there will be more imitators than innovators in
any population of decision units.

Similarly, social and psychological variables will
affect the position of the u_c^k's. Changes in personality or
societal values will become manifest through changing decision
unit preference structures; "favorable" changes will shift
the u_c^k's toward the origin in the expected return, payoff
period, and risk dimensions. Changes in factor prices, hence
in attractiveness of alternative occupations, will also
shift the u_c^k's in these same dimensions. Education and
occupational experience will shift the u_c^k's in the techno-
logical complexity and organizational scale dimensions.

The development of an organized capital market (or
other credit institutions) will have the effect of shifting
the u_c^k's toward the origin in the scale of operations
dimension; decision units will be enabled to exploit
projects of large scale from which they had been precluded.
If prestige is an operational attribute of projects (e.g.,
industry more prestigious than trade or agriculture), changes
in societal values will be reflected in shifts of the X_j's
in this dimension. Increased intensity of search for entre-
preneurial opportunities arising from changed personality
or social values, or an imprived information system will be
reflected through a shift in the p_j's for any given set of
X_j's and u_c^k's.

The qualitative characteristics of this model are
quite similar to those of a model in which entrepreneurship
is treated as a factor or production within a production
function framework. For the most part, variables that
affect the demand for entrepreneurship in the one affect
the X_j's (opportunity set) in the other; variables deter-
mining the supply of entrepreneurship in the one determine
the $N(X_j)$'s in the other. However, the model developed
here explicitly introduces risk, imperfect information, and
a probabilistic approach to matching entrepreneurial units
with specific projects. In addition, it deals with hetero-
geneity of projects and entrepreneurial units in a more
satisfactory manner.

Models of this sort are useful to the extent that they
provide a coherent framework within which entrepreneurship
can be investigated. They avoid a single factor approach to
economic development and help one to identify separately
variables affecting the supply of and demand for entrepre-
neurship (or alternatively, the set of opportunities and the
responsiveness to such opportunities).

This framework is capable of accomodating many different
experiences. Papanek has reported a high rate of industrial
growth in response to economic incentives in Pakistan where
conditions for a vigorous entrepreneurial response seemed
relatively lacking.[12] In Greece there has been a long
tradition of vigorous entrepreneurship, yet, according to
Alexander, industrial growth has been disappointing because
of problems in the economic structure.[13] We can also think
of examples such as the United States and England in which

both the economic environment and entrepreneurial supply were conductive
to rapid growth and of Burma where both factors seem prejudical to
growth.

In a somewhat similar vein, Papanek has aptly pointed out that

"The development of industrial entrepreneurs results from the
interaction of three forces -- the strength of economic incen-
tives; the values, institutions and political situation in the
society as a whole; and the motivations of the potential
entrepreneurs. The more favourable for the development of
industrial entrepreneurs one or two of these factors, the less
favourable can be the other one or two without affecting the
results".[14]

II.

The problem at hand is to derive propositions from the model
that are capable of empirical test.

(each to be taken as a ceteris paribus statement)

One group of hypotheses/flow directly from particular project
attributes and assumed preferences with respect to these attributes, and
to determinants of the information variable. (The term "industry" refers
to groups of projects having rather similar attribute values.) They are:

(1). The rate of expansion will be higher in industries yielding higher

current profits. The underlying assumption being that

expectations adapt to realizations.

(2). The rate of expansion will be higher in industries with less complex

technology.

(3). The rate of expansion will be higher in industries in which economies

of scale are not great, hence requiring less complex organization and

capital.

(4). The rate of expansion will be highest in industries in which tech-

nological communication between the country and the rest of the

world is most easily facilitated.

(5). Innovations will be relatively rare but successful innovations will

be copied quite rapidly. This process will drive down profits on

similar projects and the rate of adoption will be slowed. This

proposition rests on two assumptions. First, demonstration reduces the

subjective element of risk associated with a similar project and, second, information about a project existing in the country or region is more readily available than is information about similar projects existing only outside the country or region.

A second group of hypotheses are based on factors that should systematically shift critical indifference surfaces of some decision units either through affecting expected values of profit, skills and resources, or attitudes towards some attributes. In particular, the possession of certain skills and managerial abilities by a decision unit will make any project that it undertakes more profitable than if the same project were taken by another decision unit less well endowed. Also, convexity of critical indifference surfaces (more accurately, convex action sets) implies that projects characterized by large scale, high risk, or technological complexity will be undertaken only if they have differentially high expected profits. Therefore, propositions relating to decision units' critical indifference surfaces in the scale, risk, and complexity dimensions can be converted into propositions relating to expected profits. (Expected profits and realized profits are assumed to be positively correlated through operation of an adaptive expectation mechanism.)

These hypotheses (also to be taken as _ceteris paribus_ statements) are:

(6). Entrepreneurial performance will vary among ethnic groups, since ethnicity is usually considered to reflect differences in social structure, sanctions, and child-rearing practices which in turn condition an individual's (or group's) attitudes towards risk and affect modes of interpersonal relationships within an organization. These factors will also affect social and occupational mobility which are also determinants of the critical indifference surfaces.

(7). Entrepreneurs (or decision units) with high levels of formal education will be found to be earning high profits on the projects they have exploited. This follows from the assumption that education contributes to general organizational, managerial, and technical skills as well as to particular skills which affect the ability to undertake large and complex projects. Education and willingness to take risk may be

correlated; superior access to information may also reduce subjective risk.

(8). Entrepreneurs (or decision units) with greater experience will be found to earn high profits on projects they have exploited. The argument here is parallel with the previous one with regard to formal education. Experience should be considered both in terms of years and in the useable relevance of the particular experience for imparting useable skills and knowledge.

(9). Entrepreneurs (or decision units) that have innovated will earn differentially high profits. This is based on convexity of the action set.

(10). Entrepreneurs (or decision units) with access to credit or other sources of capital in sizeable amounts will earn higher profits than those who lack such access. This is based on the notion that access to capital is an important determinant of the critical indifference curve in the scale of operation dimension which is in turn related to profit through convexity of the action set.

(11). Entrepreneurs (or decision units) with good political connections will earn differentially high profits. This proposition is based on the fact that political connections are important for gaining access to resources, credit, and markets on favourable terms.

We now want to confront these theoretical implications with facts from Nigeria.

III

The data used in this paper were collected through interviews with 269 Nigerian firms during 1965. For several reasons the sawmilling, furniture, printing, rubber processing, and garment making industries were selected for intensive survey. Several other industries including beverages, lime making, bone crushing, pipeline welding, metal working, electrical equipment, transport equipment, gramaphone record pressing, brick making, sign making, perfume blending, and tanning, in which only a very few indigenous firms with more than 20 employees existed, were also included in the survey.[15] Appendix I contains several tables which describe the

characteristics of the respondent firms. Our best estimate is that
this sample includes more than 90% of Nigerian-controlled firms with
more than 20 employees in these selected industries and more than 30%
of those firms with more than 10 and less than 20 employees.[16]

Mrs. Mary P. Rowe conducted all of the interviews in the Lagos area
while I did all of the interviewing outside of Lagos. Each of the inter-
views was based on a prepared questionnaire using open-ended questions,
and included questions about the history, activities, and current financial
structure of each firm; management structure; sources of capital and
technical information; future plans; special obstacles which had been
encountered; and a detailed biography of the founder or principal decision
maker in each firm.

IV

Evidence from detailed studies of the sawmilling, furniture, rubber
processing, printing, and garment making industries is consistent with
the first five hypotheses. /24,chs IV - VIII; 26 7 Large numbers of
Nigerians have been highly responsive to economic opportunities and
incentives within the limits imposed by their particular technical,
commercial, and managerial skills. Industries characterised by relatively
high profits, simple technologies, and low investment thresholds have been
expanded rapidly - more rapidly, in fact, than would appear to be
economically optimal since most are working at rather low levels of capacity
utilization. On the other hand, there has been relatively little private
African participation in large-scale industrial activities which have been
undertaken by expatriates and to an increasing extent by governments.
The pattern of rapid adoption of successful innovations with attendant
decline in profits has been striking in Nigerian industries and is consis-
tent with hypothesis (5). Contacts with overseas firms have been important
in determining the speed of expansion in rubber processing industries,
while expansion of sawmilling and printing firms accelerated sharply after
the establishment of Nigerian branches by equipment suppliers. These
branches offer excellent service and training in use of their equipment as
well as information and technical advice.

V

Propositions (6) - (11) each posit a systematic relationship between observed profitability of firms and observable characteristics of decision makers. (In the theory these characteristics are associated with decision units which may consist of several individuals while in the propositions these are characteristics attributable to individuals. Since the sample consists of firms dominated in almost all cases by a single individual this presents no particular problem. If the sample had included many multi-person decision units, definition and measurement of characteristics would have had to have been modified considerably.)

First, it might be useful to specify the form of the posited relationships more precisely. Each of the propositions should be interpreted as a _ceteris paribus_ statement. A particularly simple form of the relationships arises if one assumes that the characteristics are independent of each other and that they affect the dependent variable, profitability, in an additive manner. This can be written symbolically as:

(5) $Pr = C + a_1 \, Ind + a_2 \, Eth + a_3 Ed + a_4 Exp + a_5 \, Inov + a_6 \, Res + a_7 \, Pol + u$

where Pr is profitability, C is a constant, Ind is specific industry or regional effects, Eth is ethnic group membership, Ed is education, Exp is relevant experience, $Inov$ is innovational activity, Res is access to resources, Pol is political involvement, and u is a random error term. This is, of course, an extremely simple specification of the hypothesized relationships, but it does provide a useful and convenient starting point. The next problem is to devise operational definitions of each of the variables and to specify how they are to be measured.

Unfortunately, although the theory suggests some general qualitative relationships, there is little _a priori_ basis for choosing the precise ways in which the variables should be measured. Therefore, one is forced to experiment with alternative measures to determine how sensitive the analysis is to choice of measure. Of course, such a procedure contaminates the results and reduces the extent to which one can claim to have tested the hypotheses.

The appropriate measure of profits in this model is of economic profit -- earnings in excess of opportunity cost of all employed and owned factors. Thus it is an amount of profit rather than a rate, and can be viewed as a return to entrepreneurship or organization. However, it was impossible to obtain satisfactory data on profit from all of the firms in the sample.

However, our survey showed quite conclusively that retained earnings was by far the most important source of capital for expansion; thus it is likely that in Nigeria, the growth of firms and profits are closely related. Therefore, in the regressions I have experimented with various measures for the dependent variable. First, present size of firm, measured by employment or value of assets in both natural and logarithmic forms, have been used. This specification gives one measure of growth of the firm which is then regressed on a set of independent variables. Secondly, a direct measure of an average compound rate of growth of employment has been used as a dependent variable (a similar measure of growth of assets was used which gave similar results but is not reported here). Finally, we constructed a rather arbitrary and subjective measure of "success" of firms which attempted to take direct account of profitability as well as growth of the firm. None of the measures are ideal, but there is reason to believe that they provide at least a partial measure of the "true" depends dependent variable, profit.

The data consist of observations of particular establishment[5] but at least some of the variables such as education and experience should affect the profits of any undertaking by a particular decision unit. It may well be the case that a very successful entrepreneur maximizes his total entrepreneurial profit by diversifying his activities among several establish- ments. And it may also be that he uses profits from one enterprise to finance rapid expansion of some other enterprise. Therefore, the growth of any particular establishment controlled by him may be a poor indicator of the profitability of that establishment and of his total entrepreneurial profit. It has also been argued by Kilby and Schatz [29] [44] that dispersal of activity over several businesses has been carried to an

irrational extent by many Nigerian entrepreneurs. Both considerations lead one to expect that the measures of growth should be related positively with the proportion of the entrepreneur's assets devoted to the establishment included in the sample; therefore this has been included as an independent variable in the regressions.

The first five hypotheses all suggest that there may be systematic differences in profitability between industries. Therefore it seems appropriate to include dummy variables (equal to 1 if the observation is from the industry, otherwise to capture specific industry effects. The rubber processing industry in Nigeria is exceptional in having the largest of the Nigerian-owned firms. The dummy variable for this industry is included in all of the regressions -- none of the other industry dummies was significant.

Ethnicity is taken into account by including dummy variables for each of the major ethnic groups. However, only the variable representing the Ibo group proved to be significant; therefore all others have been dropped from the regressions.

The education variable is more straightforward. We have information concerning the number of years of formal education computed by each respondent. At various times we used the years of education in natural and logarithmic forms, a four level classification, and a dummy variable equal to one if the entrepreneur completed six or more years of education and zero otherwise.

Experience is dealt with by a number of variables. First, the age at which an entrepreneur founded his business provides a measure of the number of years of prior experience. Secondly, dummy variables were included to reflect previous experience in trading or clerical work. (Dummy variables for craft experience or farming were not significant and were dropped.)

Innovation is handled rather easily by a dummy variable equal to 1 if the firm represented some form of innovation and zero otherwise.

Approximately 20 per cent of the firms were classified as innovational where innovation refers to establishing a new process, product, marketing method, or business practice in the region.

Access to resources is represented by dummy variables equal to one if more than 25 per cent of initial or expansion capital was raised through loans. Size of the firm at time of founding provides another measure of resource availability. The final variable, political activity is included as a dummy variable taking its value according to whether or not the entrepreneur has been actively involved in party politics.

Tables One and Two present the results of several alternative forms of the regression analysis. Some relationships appear to vary systematically between Lagos and the rest of Nigeria. Therefore separate regressions were run and are reported here. The degree of explanation provided by the regressions is greater for each group taken separately than it is for the combined sample.

Table 1

Regression Coefficients - Non-Lagos Respondents Only

Dependent Variable	(1) PEMP	(2) LPEP	(3) PAST	(4) LPAS	(5) CGE	(6) EVAL
Indep. Variable						
C	-26.3873	2.4115^d	-61.6675	.7782^b	.0313	3.2218^d
IEMP	1.2266^c	.0179^c	.1575^d	.0113^c	.0000	-.0036
RUBB	41.6476^d	.6123^d	59.6017^d	.0113^d	.0424	.7428^c
AITB	2.7965^b	.0291^a	2.7182^c	-.0018	.0133^c	.0502^a
IBO	18.9913^c	.3866^d	6.7849	.2286^a	.0847^d	.3978^b
OEDD	-19.5933^b	.0381	-12.0381^a	.0299	-.0176	.1909
AGE	.3617	.0045	1.0433^c	.0201^c	-.0003	.0035
SCLR	9.9740	.0518	10.0794	.4379^b	.0022	.0942
STRD	21.2099^c	.0351	14.9882^b	.3934^b	.0246	.3387^a
INOV	23.5940^d	.4481^d	35.7540^d	.6861^d	.0282	.3999^b
ILN	1.1026	-.1690^a	8.7053^a	.0196	-.0352^a	.1566
EXLN	50.7555^d	.6605^d	31.5162^d	.7651^d	.0983^d	.9107
POL	12.7545	-.0903	15.4667^b	.2448	-.0449^c	-.0236
N	101	101	101	101	101	94
R^2	.5723	.5163	.5209	.4699	.2815	.2777
F	9.8160	7.8303	7.9749	6.5021	2.8738	2.5960
d.f.	12,88	12,88	12,88	12,88	12,88	12,81
Sig	p<.01	p<.01	p<.01	p<.01	p<.05	p<.05

^{a} t>1.0 ^{c} t>1.6

^{b} t>1.3 ^{d} t>2.0

Notes to Table 1:

Definitions of Variables

Dependent Variables:
PEMP = Current number of paid employees
LPEP = Natural log of PEMP
PAST = Present Value of Fixed Assets in Thousands of Pounds
LPAS = Natural log of PAST
CGE = Annually compounded rate of growth of employment in the firm since founding
EVAL = An index of subjective evaluation of the success of the firm based on growth and profitability (scale ranges from 1 for unsuccessful to 5 for very successful)

Independent Variables:
IEMP = Initial number of paid employees (at time of founding)
RUBB = Dummy variable = 1 if firm is in rubber processing
AITB = Percent of entrepreneur's total assets invested in this firm (measured in intervals of 10%)
IBO = Dummy variable = 1 if entrepreneur's native language is Ibo
OEDD = Dummy variable = 1 if entrepreneur has had six or more years of formal schooling
AGE = Age at which entrepreneur founded this firm (measured in five-year intervals)
SCLR = Dummy variable = 1 if entrepreneur's previous occupation was trading
INOV = Dummy variable = 1 if innovations have been initiated within this firm
ILN = Dummy variable = 1 if entrepreneur received 25% or more of initial capital through loans
EXLN = Dummy variable = 1 if entrepreneur received 25% or more of expansion capital through loans
POL = Dummy variable = 1 if entrepreneur has been active in politics

Note: the F test reported for each regression represents a test of significance of the entire regression against the null hypothesis that the value of the dependent variable is equal to its mean.

Table 2

Regression Coefficients - Lagos Respondents Only

Dependent Variable	(7) PEMP	(8) LPEP	(9) PAST	(10) LPAS	(11) CGE	(12) EVAL
Indep. Variable						
C	54.2856^c	3.2749^d	49.8406^d	2.1447^d	$.2514^d$	4.8240^d
IEMP	.3296	$.0101^c$	1.3693^c	$.0165^c$	$-.0059^d$	$-.0098^a$
RUBB	---	---	---	---	---	---
AITB	-1.1583	-.0069	-1.0764^a	$.0436^b$	.0030	-.0063
IBO	4.4605	.1217	-2.4655	.0878	$.1640^d$	.1915
OEDD	2.9872	-.1413	.0406	$.3009^c$	.0069	-.0656
AGE	$-.9438^c$	$-.0152^d$	-1.1935^d	-.0234	-.0012	$-.0176^d$
SCLR	22.7442^c	.1538	1.3124	.1158	-.0242	.0414
STRD	-14.133	$-.3647^c$	-17.1518^c	-.2568	-.0209	$-.2957^a$
INOV	17.7283	$.5421^d$	11.7844^a	$.8909^d$	$.0934^c$	$.6107^d$
ILN	10.1562	.1212	-1.5650	$.2680^a$	-.0033	$.2301^a$
EXLN	7.0136	$.4782^d$	9.3941^b	$.6516^d$	.0232	$.6070^d$
POL	45.9320^d	$.5253^d$	33.7134^d	$.7823^d$	.0295	.3599
N	166	166	164	164	166	160
R^2	.1295	.2496	.3128	.3194	.1926	.2094
F	2.0833	4.6570	6.2925	6.4357	3.3408	3.5650
d.f.	11,154	11,154	11,152	11,152	11,154	11,148
Sig	p<.10	p<.01	p<.01	p<.01	p<.05	p<.01

$^a t>1.0$; $^b t>1.3$; $^c t>1.6$; $^d t>2.0$

Notes to Table 2:   Same as for Table 1.

Tables I and 2 present the results of two sets of regressions -
one for the non-Lagos firms and one for the Lagos firms (Lagos is the
capital and largest city in Nigeria) - using six different dependent
variables and a common set of indepenent variables for each set of
observations.

As expected, the coefficients of the dummy variable representing the
rubber industry (including crepe processing and tyre retreading) were
large and, in most cases, highly significant (there were no rubber process-
ing firms in Lagos). The rubber processing firms started on a large scale
and have been highly profitable but have grown less rapidly than some
others because of limitations on raw materials inputs, hence the coefficient
is somewhat smaller and not significantly different from zero when rate of
growth (CGE) is the dependent variable.

Initial employment is a significant determinant of the present size
of firm, measured either in terms of employment or assets, although the
absolute size of the coefficients is fairly small. It is interesting to
note, however, that initial size is not significantly related to either
rate of growth or the index of success (EVAL) which reflects both growth
and profitability.

Firms which had been innovational were larger, had grown faster, and
were more profitable than others, in conformity with prediction. In all
cases, the coefficients were positive, relatively large, and in almost
all cases statistically significant. However, one cannot jump directly to
the conclusion that returns to innovation are high since we have data only
on innovators who were successful. The incidence of innovational failure
cannot be estimated from the data at hand.

One of the crucial tests of the theory outlined earlier involves the
importance of psychological or sociological variables as reflected in
ethnicity. In earlier regressions, groups of dummy variables for the
five ethnic groups for which I had data (see table I.6 for numbers of
Yoruba, Ibo, Edo, Ibibio, and Hausa - the dummy for Yoruba was omitted in
each case) were included. There was a serious problem of multicollinearity
between Edo and Rubber Processing, and the coefficients of variables other

than Ibo were never significant. Hence, in this group of regressions I
adopted a different specification, including only the dummy variable for
Ibo. In the non-Lagos regressions its coefficient was positive, fairly
large, and statistically significant in almost all cases, suggesting that
Ibo entrepreneurs were more successful than others. This is exactly what
the existing psychological and ethnological data would predict.[17]

However, there is an identification problem. All but two of the forty
Ibo entrepreneurs in this group had their businesses in the Eastern Region.
Hence we cannot differentiate between the hypotheses that Ibos are more
successful entrepreneurs and the alternative hypothesis that economic
opportunities were more attractive in the East. The Lagos data provide a
better test, since there the structure of opportunities (except for any form
of discrimination) is identical; there we see that the coefficients of the
Ibo variable are much smaller (except for growth) and not statistically
significant although they are still positive in all cases. The high
coefficient for growth of employment requires explanation, since it is at
variance with the rest of the findings. One plausible hypothesis is that in
Lagos there is particularly strong pressure for Ibo entrepreneurs to provide
employment for relatives as an element of social (or family) obligation.
Thus, increases in employment would reflect increasing levels of "transfer
payments" to relatives more than increase in the "real" size of firm. But
this still reflects relatively high profits.

Other variables which might be expected to influence psychological
attitudes of entrepreneurs such as father's income, status, or education
were not significant in any of the regressions in which they were included.
Certainly, the hypotheses that ethnicity or family background affect attitudes
towards entrepreneurship cannot be rejected, but neither do these findings
lend strong support to them. The confounding of ethnicity and opportunities
must be considered and, furthermore, if the psychological effects are
those of conditioning attitudes towards engaging or not engaging in entrep-
reneurial activity, one might expect little significant variation within
a group of individuals, all of whom had engaged in such activity.

The next group of variables (OEDD, AGE, SCLR) reflect various kinds of
experience or skill which should affect the ability of an individual to perform

successfully as an entrepreneur. The evidence with respect to these
variables is ambiguous.

Several forms of the education variable were tried since there is no
obvious a priori specification. Years of formal education, logarithmic
and exponential functions of years of schooling, various orderings of
levels of academic achievement (none, some primary, primary completed,
some secondary, secondary completed, post-secondary, etc.), and a dummy
variable equal to one if the entrepreneur had completed six or more years
of formal schooling were tried. The results were not sensitive to the
specification of this variable - the dummy variable form is used in the
reported regressions.[18] The coefficients of the education variable, however,
are rather puzzling. In the non-Lagos observations, they are statistically
significant only in two cases in which the sign is negative and all positive
values are both small and not significant. There is a change of sign between
natural number and logarithmic specifications of the size of firm variables
(employment or assets), suggesting that a few very large firms in which the
entrepreneur had less than six years of formal education give rise to the
negative coefficient.

What are we to make of this curious result? Does it mean that resources
devoted to education are being wasted in Nigeria? It is far from clear
that there should be a very strong relationship between small-scale entrep-
reneurial performance and formal education. Undoubtedly literacy can be
useful, but successful entrepreneurs are in a position to hire clerks who
can read and interpret written material to them. Arithmetic ability is
useful to an entrepreneur, but many illiterate traders seem able to carry
fairly elaborate arrays of numbers in their heads. In fact, much of what
passes as formal schooling may even be detrimental, since there is excessive
emphasis on rote learning - creative ability tends to be squelched. I
wouldn't want to push this argument too far since as businesses become of
larger scale and of greater technical complexity, skill which are normally
acquired through formal education will become important to entrepreneurs.
I have argued elsewhere that two other factors are important in explaining
this phenomenon. First, other kinds of education (apprenticeships, on-job

training, self-improvement courses carried out through correspondence,
and learning by doing) are important substitutes for, and in technical
areas far superior to, formal schooling.[19] Secondly, a compensatory
mechanism is probably operative. Formal schooling is required for
advancement in the high-paying and secure civil service. Several of the
most successful entrepreneurs stated that they were deterred from entering,
or advancing in, the civil service because of their lack of formal qualifica-
tions, and they indicated a strong motivation to prove to all that they
could succeed in spite of this handicap.[20] It is also possible that in
this sample, formal education and basic ability are inversely correlated.
This would occur if, at higher levels of education, good students were
offered permanent jobs, leaving only the bottom of the class to enter
entrepreneurial careers while bright and energetic individuals, denied an
opportunity for further schooling, turn to business as the best available
alternative.

Interesting differences appear between Lagos and the rest of the country
with respect to the importance of three other variables that reflect other
kinds of occupational experience. There is evidence that large-scale
entrepreneurs in other developing economies come predominantly from trading
backgrounds, while the earlier industrialists come from backgrounds in
craft activities and tend to remain small-scale operators.[21] In Nigeria
previous employment in clerical or government jobs seem also to be impor-
tant sources of entrepreneurial talent, although the majority of industrial
entrepreneurs come from craft backgrounds. Coefficients of the dummy
variables for trading or clerical and government experience (STED and
SCLR) are positive; the coefficients for trading experience are higher
and more often significant than those for clerical experience when the
dependent variable is number of employees – the relative magnitudes of
the coefficients are reversed when the natural log of number of employees
is substituted as the dependent variable, suggesting that former traders
control a sizeable number of the very largest firms. But both backgrounds
account for larger than average firms.[22]

In Lagos, former traders control <u>smaller</u> and less successful than average firms, while entrepreneurs with experience in clerical or government work are well ahead of the rest. The obvious explanation is that the requirements for success are different in Lagos (the Federal Capital) since government contracts and favors loom much more important.

This is also borne out by observing similar differences in the coefficients of the dummy variable reflecting political involvement (POL) which are positive, large, and significant in Lagos, and negative or not significantly positive outside of Lagos. It also may well be that part of the effect attributable to clerical experience is actually accounted for by the education of such individuals, although the simple correlation coefficient between the two variables is only .09.

The other variable which should reflect experience is the age at which the entrepreneur founded his business (AITB). It would appear reasonable to expect that individuals starting businesses at later ages would have had more years of relevant experience in other activities, hence the sign of the coefficient should be positive. Most of these coefficients for the non-Lagos firms are positive, and some reach the .05 level of statistical significance, while in Lagos most of them are negative. In either case, the absolute magnitudes are relatively small. Again, it may be that in Lagos political connections are more important than specific experience or that the experience gained is not relevant to entrepreneurial success.

The final three independent variables reflect ability to gain command over resources. Initial loans (ILN) reflect the ability of an entrepreneur to obtain credit for establishing a firm, while the second variable (EXLN) reflects the ability to obtain credit for expanding an existing firm. The third variable, political involvement (POL), has already been mentioned, but suffice it to say that in the Nigerian context prior to 1966 it seems plausible that capital, raw materials, or sales might be available on more favorable terms to an individual with political connections.[23]

Both in Lagos and elsewhere the coefficients of ILN are small, vary in sign, and are seldom statistically significant. Since capital markets are

highly imperfect and there are practically no large personal fortunes to
be drawn upon in Nigeria, one would expect a considerable advantage to be
obtained by individuals with access to credit which would enable them to
start firms on a larger scale. In almost all cases, even where credit was
obtained, individual savings were by far the most important source of
venture capital. There is widespread feeling among Nigerian entrepreneurs
that the virtual absence of credit institutions willing to lend to them
presents a serious obstacle to industrial development. Yet these data
suggest that individuals without access to credit have done as well as
(or even better than) others. This is quite consistent with observation
I have made elsewhere stating that for industries of the kind represented
in this sample (simple technology and low investment thresholds), capital
was probably not a serious obstacle since a firm could start on a small scale
and grow through reinvested profits. However, the coefficients of the

$$[26]$$

EXLN term suggest that availability of loans for expansion purposes has
been extremely important. This may be partly misleading. Again, the
preponderant source of capital for expansion has come from reinvested profits.
The role of loans may be to allow expansion at a more rapid pace than would
otherwise be feasible (although the negative coefficient of this term in
regression (5) and the small coefficient in regression (11) may cast doubt
even on that). It is more likely that given the Nigerian institutional
structure, the direction of causality is reversed. That is, firms which
can demostrate their success are more likely to obtain loans from banks
or equipment suppliers. Also, there is some tendency for loans to substitute
for reinvestment and many of the most successful (and accumulation minded)
entrepreneurs professed an aversion to using credit. On the other hand,
firms in shaky condition (frequently with substantial excess capacity) are
the ones which most actively seek loans and complain loudest about the
lack of credit facilities. We can establish statistical association but
not causation!

    I have previously alluded to the possible misspecification of this model
in the regressions reported. Table 3 presents the results of three alternative
specifications for the non-Lagos respondents. Equation (1) is the same one

Table 3

Alternative Regression Specifications - Non-Lagos Respondents

Dependent Variable	(13) PEMP	(1) PEMP	(14) PEMP
Indep. Variable			
C	18.5097	-26.3873	-23.1768
IEMP	1.3880[c]	1.2266[c]	1.2082[c]
RUBB	---	41.6476[c]	37.5077[c]
IBO	---	18.9913[c]	20.9468[c]
OEDD	---	-19.5933[b]	-17.9048[b]
OED	-6.6446[c]	---	---
AGE	-.0454	.3617	-.2839
SCLR	24.4358[c]	9.9740	14.9467[a]
STRD	30.6296[c]	21.2099[c]	26.5268[d]
ILN	---	1.1026	4.4398
EXLN	51.0237[d]	50.7555[c]	51.9236
AITB	---	2.7965[b]	2.8973[b]
POL	3.6061	12.7545	14.6460[a]
INOV	28.1704[c]	23.5940[c]	---
N	101	101	101
R^2	.5298	.5723	.5515
F	12.9600	9.8160	9.9523
d.f.	8,92	12,188	11,89

[a] $t > 1.0$; [b] $t > 1.3$: [c] $t > 1.6$; [d] $t > 2.0$

Notes to Table 3: Same as for Table 1, except that OED is own education, scaled 1 if none, 2 if some primary, 3 if primary completed, 4 is some secondary, 5 if secondary completed, 6 if post-secondary education.

reported in Table 1, while Equations (13) and (14) are specified some-
what differently. In particular, Equation (14) regresses present employ-
ment on the same independent variables except innovation as (1). The
degree of explanation is about the same in the two versions, although
an F test indicates that the addition of innovation is statistically
significant. Comparing the two equations, it is apparent that the
relative importance of the independent variables is not much changed.
Almost all of the coefficients become larger, suggesting that most of
them are also related to innovation, but that multicollinearity between
innovation and any one of them is small (no simple correlation coefficient
exceeded 0.1). None of the previous interpretations is drastically
affected.

A comparison between Equations (1) and (13) indicates that there is
not a great deal to choose between the explanatory powers of the two
relationships, although (1) is slightly better. Variables which appear
in both equations are of the same sign and approximate magnitude (with
the exception of AGE which is not significant in either case). However,
(1) is preferable because it includes additional variables which our
theory suggests should be of some importance. Special conditions in the
rubber processing industry (RUBB), receipt of loans for founding the
business (ILN), the degree of dispersal of entrepreneurial effort (AITB),
and the effect of Ibo ethnicity (IBO) are accounted for. The form of
the education variable is different in the two equations but has negative
sign in both and the difference in magnitude merely reflects the
different scaling of the variable (other regressions indicate little
difference between the two formulations). Controlling for the specific
conditions in the rubber industry and of Ibo ethnicity accounts for the
lowering of the coefficients of clerical and trading occupational
experience and of innovation.

VI

In this paper I have attempted to provide a framework for thinking
about entrepreneurship and economic development in a more systematic
manner than has been common. In particular, the theoretical apparatus

provides an explicit way of considering the interplay between psychological, social, and economic variables and avoids resorting to a single-factor explanation. In addition , non-homogeneity of projects and imperfect information are accommodated. While few, if any, of the implications of this model will come surprise anyone who has thought about the problem in more conventional economic terms, these results can only be obtained from the usual theory of the firm by making many intuitatively plausible but ad hoc and non-rigorous modifications.

Also an attempt has been made to test some implications of the model with Nigerian data by use of ordinary least squares regression analysis. While none of the R^2's are particularly high (ranging from .13 to .57), they do represent statistically significant degrees of explanation. Given the necessarily crude measures of entrepreneurial performance and of the various socio-economic independent variables, these results are rather encouraging.

Indeed, in such cross section data one would hardly expect a high degree of explanation. [36] Much of the literature on entrepreneurship has emphasized the importance of psychological variables which shape the attitude of individuals towards undertaking entrepreneurial activity. We could hope to capture these effects only insomuch as they were systematically influenced by ethnicity or father's position in society - ethnicity is confounded with regional variations in the structure of opportunities, and the various measures of father's position are never statistically significant. Furthermore, it may well be that the appropriate comparison is between entrepreneurial and non-entrepreneurial groups, while our data "allow comparison only between entrepreneurs varying in degree of success. Certainly entrepreneurial performance depends on individual differences that cannot possibly be accounted for in toto by a few imperfectly measured socio-economic variables.

However, willingness to engage in entrepreneurial activity is not enough - there must also be an ability to respond to opportunities and this is influenced by specific kinds of experience and institutions which enable individuals to gain command over resources. This analysis is

- 80 -

somewhat more successful in illuminating such factors.

Alternative specifications of the regression model provide some

insight into the nature of the relationships. Fortunately, the coefficient

estimates are rather robust, suggesting that the conclusions drawn are

quite insensitive to errors of specification.

Two lines of further research effort are indicated. First, it would

be extremely useful to have appropriately matched control groups of

entrepreneurial and non-entrepreneurial individuals in order to test

important hypotheses regarding motivational factors and secondly, the

regression model should be extended to take account of specific interaction

terms.

Appendix I

The tables in this appendix show the composition of the sample of firms included in the analysis of Sections III and IV.

Table I.1

Distribution of Firms Interviewed

Industry	No. Interviewed by Harris	No. Interviewed by Rowe	Total
Sawmilling	36	29	65
Furniture	16	18	34
Rubber Processing	10	0	10
Printing	16	32	48
Garment Making	6	24	30
All other industries	17	65	82
Totals	101	168	269

Table I.2

Distribution by Number of Employees of Firms Interviewed

Number of Employees	No. Interviewed by Harris	No. Interviewed by Rowe	Total
10 or less	5	31	36
11-15	11	39	50
16-20	12	25	37
21-25	10	12	22
26-30	11	13	24
31-40	10	15	25
41-50	9	4	13
51-75	8	10	18
76-100	11	8	19
101-200	7	4	11
201-300	6	3	9
301-500	1	0	1
more than 500	0	1	1
Totals	101	165*	266*

* Data were not available from three firms.

Table I.3

Distribution by Value of Assets of Firms Interviewed

Value of Assets (£ Nigeria)	No. Interviewed by Harris	No. Interviewed by Rowe	Total
Less than £100	3	16	19
£1001-5000	17	69	86
£5001-10,000	24	26	50
£10,001-20,000	18	23	41
£20,001-50,000	25	20	45
£50,001-100,000	7	5	12
more than £100,000	7	5	12
Totals	101	164*	265*

*Data were not available from four firms.

Table I.4

Distribution by Type of Organization of Firms Interviewed

Type of Organization	No. Interviewed by Harris	No. Interviewed by Rowe	Total
Proprietorship	41	95	135
Partnership	14	43	57
Private Limited Company	42	30	72
Public Limited Company	4	0	4
Totals	101	168	269

Table I.5

Regional Distribution of Firms Interviewed

Region	Number of Firms
Lagos metropolitan*	168
West**	35
Mid-West	16
East	39
North	11
Total	269

*includes some parts of the Western region
**not including those parts in the Lagos metropolitan area

Table I.6

Distribution of Entrepreneurs Interviewed According
to Ethnic Group (Tribe)

ETHNIC GROUP	NUMBER
Yoruba	172
Ibo	58
Edo	24
Ibibio, Efok, and Ijaw	5
Hausa	7
Other	3
TOTAL	269

FOOTNOTES

* This research has been supported at various points by the SSRC/ACLS

Foreign Area Fellowship Program, The Northwestern University Council for

Intersocietal Research, the Nigerian Institute of Social and Economic

Research, The Alfred P. Sloan School of Management Computation Facility

at M.I.T., and the Rockefeller Foundation.

I have benefited greatly from the comments and suggestions on earlier

drafts by George Dalton, Matthew Eddl, Everett Hagen, J.R.T. Hughes, David

Miller, Frank Mitchell, and Harold Williamson Sr. Jerome Rothenberg

suggested the particular theoretical approach for which I am extremely

grateful and Mary Rowe collaborated in collection of data in Nigeria.

However, remaining errors are my sole responsibility.

Parts III-V are based heavily on an earlier paper /25/ and Part I

is based on part of Chapter II of my dissertation /24/.

1. The literature is extensive, but the main lines of approach can be
found in Schumpeter /45/, Knight /30/, and Cole /15/. Other important
works include /16/, /19/, /20/, /31/, /33/, and/43/.
2. See the typologies proposed by Danhof quoted by Brozen /8/, Cole /16/,
Hughes /28/, and Alexander /2/.

3. This definition follows closely that of Harbison's "organization" /23/
or Hirschman's "ability to make development decisions" /27/.

4. Greenhut /21/ argues that profits are a functional, not a residual,
return to entrepreneurship. However, he attributes all differential
returns to decision makers as reflecting differential skills. To a
large extent this is true, but he seems to go too far.

5. If a single authority or decision-making unit undertakes all invest-
ment in the economy, there is no problem. In that case, outlined by
Chenery /13/, "The related decision rule is to rank projects by their
SMP /Social Marginal Product/ and go down the list until the funds to
be allocated are exhausted. Alternatively, any project having an
SMP above a given level can be approved."

6. I am indebted to Jerome Rothenberg for suggesting this approach.

7. Note that projects which involve producing a given output at lower
cost than existing methods will release factors of production. It
is tacitly assumed that these factors will find alternative employment.
In an economy with unemployment, adoption of such as project could
lead to lower output through income effects. ΔY_j is defined as the
incremental output associated with the exploitation of the jth project.
There is no reason why ΔY_j cannot be negative.

   Also not that only new projects (including expansion of existing
production units) are being considered in this model. Thus the sum
of the ΔY_j's is the change in output arising from the exploitation of
new project.

8. This approach is similar to that employed by Lancaster /32/ in describing the choice set of a consumer.

9. This follows recent works on the managerial firm, e.g. Marris /37/ and Williamson /46/, which postulate a utility function for the firm.

10a. This notation and argument follows Pearce /42/.

10b. "For one, the actor /entrepreneur/ does not really know all the alternatives: he must find them out, and for this purpose, a period of search is necessary. Secondly, the actor does not know all the consequences, and has neither the time nor the skill to figure them out." P. Lazarsfield, quoted by McClelland /38/ p. 237.

11. Two papers by Campbell, /11/ /12/, provide particularly interesting treatments of perception in a cross-cultural context.

   The need for identifying individual's subjective probabilities is mentioned by Arrow /3/. However, this is necessary only if we are concerned with the choice itself, distinct from the consequences of the choice for the economy according to Georgescu-Roegen /18/. By concentrating on the probability of a project being exploited within the economy rather than on the probability of a particular decision unit's exploiting a project, our neglect of the perception problem is justified.

12. See /40/

13. See /1/

14. See /41/

15. The principal problem encountered was an absence of information concerning the universe of indigenously woned manufacturing establishments. Although an industrial directory had been prepared for the Ministry of Commerce and Industry, it was incomplete, inaccurate, and nationality of ownership of firms was not indicated. Hence, it seemed reasonable to concentrate on specific industries which were known to have a high degree of Nigerian participation, wide geographical distribution, and a range of firm sizes. One could easily gain information about the existence of competitive firms from respondents, thereby giving quite accurate coverage of those industries.

16. Footwear and baking were the only major industries omitted which satisfied the above criteria for inclusion. These were deliberately excluded because comprehensive industry studies, P. Kilby, /29/ and E.W. Nafziger, /39/ had been recently undertaken and their results were available.

17. The relevant ethnological literature is reviewed and hypotheses regarding n-achievement levels tested by Levine /34/.

18. See Table 3 for an alternative specification of the education variable.

19. Harris, /24/, Chapter IX. See also A. Callaway, /9/, /10/, discussions of non-formal education. S Bowles /5/ presents estimates of returns to education in Northern Nigeria which are positive and quite high.

20. See T. Geiger and W. Armstrong, /17/, Chapter II and Appendix I.

21. See A. Alexander, for a good review of this literature /2/.

22. Two rather different specifications are plausible. One is to keep
the entire set of dummy variables relating to a single conceptual
variable (e.g. prior occupation) and to test the significance of the
entire set by means of an F test, not paying attention to the
significance of any single dummy variable alone. However problems of
artificial multicollinearity arise from including large numbers of dummy
variables in regression. C. Lin, /35/ suggested an alternative approach
which would compress the dummy variables into a single vector for each
effect, allowing estimation of both a constant and complet. sets of
effects for each underlying variable. Unfortunately, problems arose
with the procedure and it had to be abandoned. The alternative specifica-
tion adopted in the regressions reported in this paper is only to include
those particular dummy variables which are "important" in the sense that
they are dignificantly dissimilar to the other dummy variables in the
group (e.g. rubber processing is quite different from all of the other
industries which show less variation among themselves).

23. See Henry Bretton, /6/ and /7/, 81, 82.

REFERENCES

/1/ Alexander, A.P., Greek Industrialists (Athens: Center of Planning and Economic Research, 1964).

/2/ Alexander, A.P., "The Supply of Industrial Entrepreneurship," Explorations in Entrepreneurial History, Second Series (Winter 1967), 136-49.

/3/ Arrow, K., "Utilities, Attitudes, Choices: A Review Note," Econometrica (1958), 1-23.

/4/ Baumol, W.J., "The Entrepreneur in Economic Theory," American Economic Review (May 1968).

/5/ Bowles. S., "The Efficient Allocation of Resources in Education," Quarterly Journal of Economics (May 1967).

/6/ Bretton, H., Power and Stability in Nigeria (New York: Praeger, 1962).

/7/ Bretton, H., "Political Influence in Southern Nigeria," in H. Spiro (ed), Africa: The Primacy of Politics, (New York: Random House, 1966).

/8/ Brozen, Y., "Entrepreneurship and Technological Change" in Williamson & Buttrick (eds.), Economic Development (Englewood Cliffs: Prentice-Hall, 1954).

/9/ Callaway, A., "School Leavers and the Developing Economy of Nigeria," "Conference Proceedings of the Nigerian Institute of Social and Economic Research (December 1960)

/10/ Callaway, A., "Nigerian Indigenous Education: The Apprentice System," ODU, University of Ife Journal of African Studies, (July 1964).

/11/ Campbell, D.T., "Social Attitudes and Other Acquired Behavioral Dispositions," in KOCH (ed.), Psychology: A Study of Science, VI, Investigating Man as Socius, (New York: McGraw-Hill, 1963).

/12/ Campbell, D.T., "Distinguishing Differences of Perception from Failures of Communication in Cross-Cultural Studies," in Northrup and Livingston (eds.), Cross-Cultural Understanding: Epistemology in Anthropology (New York: Harper & Row, 1964).

/13/ Chenery, H., "Comparative Advantage and Development Policy" in Surveys of Economic Theory, V. II, (London: Macmillan, 1965).

/14/ Cachron, T.C., "Role and Sanction in American Entrepreneurial History," in Change and the Entrepreneur, (Cambridge: Harvard University Press, 1949), 153-76.

/15/ Cole, A.H., "An Approach to the Study of Entrepreneurship," Journal of Economic History (Supplement 1946).

/16/ Cole, A.H., Business Enterprise in its Social Setting. (Cambridge: Harvard University Press, 1959).

/17/ Geiger, T., and Armstrong, W., The Development of African Private Enterprise, (Washington D.C.: National Planning Association, 1964).

/18/ Georgescu-Roegen, N., "Choices, Expectations, and Measurability," Quarterly Journal of Economics (1954), 503-36.

/19/ Gerschenkron, A., "Social Attitudes, Entrepreneurship and Economic Development", Explorations in Entrepreneurial History (Oct. 1953).

/20/ Glade, W., "Approaches to a Theory of Entrepreneurial Formation," Explorations in Entrepreneurial History: Second Series (Spring 1967).

/21/ Greenhut, M., "The Decision Process and Entrepreneurial Returns," Manchester School (Sept. 1966).

/22/ Hagen, E.E., On The Theory of Social Change (Homewood Ill: The Dorsey Press, 1962).

/23/ Harbison, F., "Entrepreneurial Organization as a Factor in Economic Development," Quarterly Journal of Economics, (August 1956).

/24/ Harris, J.R., "Industrial Entrepreneurship in Nigeria," (unpublished Ph.D. dissertation, Northwestern University, 1967).

/25/ Harris, J.R., "Socioeconomic Determinants of Entrepreneurial Success in Nigerian Industry," (presented to the Washington Meetings of the Econometric Society, Dec. 1967 and abstracted in Econometrica, (Supplement, May 1968).

/26/ Harris, J.R. "Entrepreneurship in Nigerian Industry," in Eicher and Leidholm (eds.) Growth of the Nigerian Economy (East Lansing: Michigan State University Press, 1969).

/27/ Hirschman A.O., The Strategy of Economic Development (New Haven: Yale University Press, 1958).

/28/ Hughes, J.R.T., The Vital Few: American Economic Growth and its Protagonists (Boston: Houghton Mifflin, 1965).

/29/ Kilby, P., African Enterprise: The Nigerian Bread Industry, (Stanford: The Hoover Institution, 1965).

/30/ Knight, F.H., Risk, Uncertainty and Profit, (New York: Harper & Row, 1965; First edition, 1921).

/31/ Kunkel, J.H., "Values and Behavior in Economic Development," Economic Development and Cultural Change (April 1965).

/32/ Lancaster, K., "A New Approach to Consumer Theory," Journal of Political Economy (Dec. 1966).

/33/ Landes, D., "French Entrepreneurship and Industrial Growth in the Nineteenth Century," Journal of Economic History (May 1949).

/34/ LeVine, R., Dreams and Deeds (Chicago: University of Chicago Press, 1966).

/35/ Lin, C., "A New Approach to the Use of Dummy Variables in Regression Analysis," (Unpublished S.M. thesis, Massachusetts Institute of Technology, 1966).

/36/ Marris, P., "The Social Barriers to African Entrepreneurship" (Nairobi: Institute for Development Studies, Staff Paper No. 61, mimeo., 1968).

/37/ Marris, R., The Economic Theory of "Managerial" Capitalism, (London: Macmillan, 1964).

/38/ Mc Clelland, D.C., The Achieving Society, (Princeton: Van Nostrand, 1961).

/39/ Nafziger, E.W., "Nigerian Entrepreneurship: A Study of Indigenous Businessmen in the Footwear Industry," (Unpublished Ph.D. dissertation, University of Illinois, 1967).

/40/ Papanek, G., "The Development of Entrepreneurship," American Economic Review (May 1962).

/41/ Papanek, G., "Government and Private Enterprise in Pakistan" (Unpublished manuscript, Harvard University, 1964).

/42/ Pearce, I., A Contribution to Demand Analysis, (Oxford, 1964).

/43/ Sawyer, J., "The Entrepreneur and the Social Order: France and the United States," in W. Miller (ed.), Men in Business (Cambridge: Harvard University Press, 1952).

/44/ Schatz, S.P., Development Bank Lending in Nigeria: The Federal Loans Board (Ibadan: Oxford University Press, 1964).

/45/ Schumpeter, J.A., The Theory of Economic Development, (Cambridge: Harvard University Press, 1949, first German Edition, 1912).

/46/ Williamson, J., "Profit, Growth and Sales Maximization," Economica (Feb. 1966).