GRADUATES OF NATIONAL UNIVERSITIES IN CENTRAL AMERICA

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This is to certify that the

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ABSTRACT

GRADUATES OF NATIONAL UNIVERSITIES
IN CENTRAL AMERICA

by Samuel Kirkwood Yarman, Jr.

The five Central American countries began twenty years ago to cooperate closely to achieve greater economic unity and progress. Since economic development not only provokes, but only comes after, social, political, cultural and educational changes, such changes ought to be anticipated by the light of present institutional organization.

The five national universities enjoy strong direct and indirect power in these largely illiterate nations: most of the national leaders (aside from the military) have been universitarios--university students--or are graduates. It was proposed to study the graduates, not only to ascertain their characteristics, but to use the information for insight into the administration and organization of their alma maters.

An ecological, cross-disciplinary approach was applied to the cross-cultural and cross-national data acquired, which are comparable with reference to specific points in time for the 1,133 graduates of the National Universities of Costa Rica, Guatemala and Nicaragua, who formed the population for the study.

Types of data and representative specific items included:

A. Personal data--sex, age, civil status, number of dependents;

B. Educational--high school attended, year of first enrollment, year of graduation, degree, 2nd or 3rd degrees, changes of faculty, and calendar years attended;

C. Financial--scholarships held, average annual undergraduate income and its source, number of present positions and total income in 1963; and

D. Opinion-eliciting questions about undergraduate preparation, problems of the university, improvements and services that could be made.

Delineating the actual population of graduates was difficult, since university records were incomplete; and there were difficulties in delimiting the specific population to insure a proportional representation for selected aggregate components of the general population. The population represents 17.00 percent of the total known graduates (1941-1963); half of the graduates were graduated after 1954; and the Physical, Medical and Social Sciences are represented by 18.00, 28.51, and 43.49 percent, respectively. Costa Rican graduates numbered 598, Guatemalans 303, and 202 were from Nicaragua.

The graduates did not enter the university until age 19; and 70.80 percent came out of the public schools. More than a quarter of the graduates had some sort of university financial aid, although it

averaged only five percent of their annual undergraduate income. As a group, these students needed less time than their colleagues to graduate.

The graduates invested 1.46 calendar years to complete one academic year of study. The result of this mean "time-and-a-half" was that Economists needed 10.4 calendar years to graduate, Lawyers 9.1 (more than Medical doctors), and Engineers 8.0. In not one sub-group studied--university, faculty, field of training, period of training--did more than half of the graduates earn their degrees within the proscribed academic time (or with but one "extra" invested calendar year). There has been a decided, upward accelerating trend in the last 15 years in the number of calendar years spent by undergraduates toward their degrees.

After graduation, 99 percent of the graduates worked in the professional field for which they were trained; nearly fourteen percent worked also outside their field. Over thirty percent pursued post-graduate studies, and a quarter hold two or more university-level degrees (of which half are in the Medical sciences).

The graduates' Mean 1963 Income was $5,218, an increase of 348.58 percent over the average of their undergraduate income. Graduates who worked solely in their professional field had the highest percent of income increase, although those graduates who also worked outside their field reported the highest actual 1963 incomes.

Central American Economists and Medical professionals appear to be highly valued, monetarily: Educators--teachers and professors--,

lowly valued. Teachers in this study reported a mean 1963 income of $1,476: the Economists' mean was $7,778, greater by 427.02 percent than the teachers. Teachers in Costa Rica, graduates of the Faculty of Education there (which produced more than half of all its university's graduates 1950-63), do not even earn half the mean amount reported by all Costa Rican graduates.

In general, the universities graduate a ratio of three and a half percent, graduates to matriculants. Far too few teachers, agronomists and economists are produced. Presently planned academic programs are unrealistic re the actual number of years the graduates must spend for their degrees.

In the opinion of the graduates, improvements were called for to alleviate two serious university problems, the lack of sufficient economic resources and the need of a well-prepared, full-time teaching staff. Courses in professional specialization were requested by three-fourths of the graduates.

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By

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CHAPTER 1

INTRODUCTION

"The Ancient and Royal Kingdom of Coathemala, Sovereignty Perpetual of His Highness Charles I, Arch-diocese Eternal of His Holiness Pope Clement VII" (as reads in Spanish the reproduction of an old scroll at the University of San Carlos, Guatemala), extended in the 16th, 17th and 18th centuries from what is now the southern Mexican states of Yucatan, Chiapas and Campeche, in the north, southward through lush tropical valleys, majestic mountain ranges, and broad costal plains, to that peak of Darien in Panema where Balboa, not Keats' Cortez, first gazed upon the Pacific Ocean. Modern Central America contains five independent countries, Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua, and each supports an autonomous national university.

The University of San Carlos of Guatemala was founded in 1676, and the other four early in the nineteenth century--Nicaragua, 1812, El Salvador, 1841, Costa Rica, 1843, and Honduras, 1847. All five national universities until recently followed traditional European organization and administration--dispersed, strong separate faculties; weak central administration; triparte all-university governing board (faculty, graduates, students)--and produced a relatively small graduate body, prepared chiefly in the professional areas of Law, Medicine and the Humanities. Changes in curriculum since 1940 have meant a growing number of graduates in Education, Engineering and Pharmacy.

All five universities enjoy strong educational, economic and political power in their respective countries. In nations largely illiterate, most of the national leaders (aside from the military) have, at one time or another, been universitarios--university students--and, as such, influenced by their alma mater. To be a university student is automatically to be among the nation's select, since but one of every thousand in the population progresses so far, and to be a graduate, a Licenciado or Doctor, means even higher status and prestige. Since universitarios or graduates occupy a great number of the nation's economic, social and political positions, the national institutions of higher learning influence greatly the future of the Central American people.

Statement of the Problem From a distance, a forest is a forest, a mountain a mountain, a jungle a jungle. Only upon close inspection can one determine the type of forest, mountain or jungle, and this may be done not only by analyzing the trees, rocks or under-growth, but by studying the characteristics of the inhabitants, and in the case of humans, ascertaining their opinions concerning their milieu.

The five Central American countries began some twenty years ago to cooperate more closely in an effort to achieve greater economic progress. One of the crucial tasks of economic development is to determine the conditions under which human resources will be forthcoming for the new productive goals which the developing economy sets itself. Lucian W. Pye recently wrote:

> In most developing societies there is room...for general studies of the social and economic groups which are politically important or which appear potentially significant. For many years there has been the need for more systematic

> case studies of such groups as students, intellectuals, journalists...and...more formally established organizations.[1]

It is a fact that underdeveloped countries need not only industries but also other political, social and educational innovations. Many times the institutions of these countries need renovation before new processes or activities are introduced. Since economic development not only provokes, but only comes after, social, political and cultural organizational changes, such changes ought to be anticipated by the light of present institutional organization.

It was therefore proposed to study the graduates of the national universities of Central America to determine their personal, socio-economic and professional characteristics, (1) as of the present (1963), and (2) while they were in school as undergraduates: and to ascertain the graduates' opinions about (1) the adequacy of the university preparation, (2) the present problems of the university, and (3) the improvements and services in the university they deem necessary or worthwhile.

The Purpose of the Study The purpose of the study is to aid in the understanding of Central American universities by analyses of data concerning the graduates, and to provide basic information relative to the following questions:

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[1]Lucian W. Pye, "The Developing Areas: Problems for Research" in Studying Politics Abroad, Robert E. Ward, et. al., Little, Brown and Co. (Boston, Mass., 1964), pp. 20-21.

1. What kinds of persons are graduates?
   a. What proportion of the graduates
      (1) are female?
      (2) were from public, or private, high schools?
      (3) were "part-time" or "full-time" students?
   b. How was their university education financed?
   c. What was the principal source and average amount of their annual undergraduate income?
   d. In what professional fields were the graduates prepared? What was the length of their academic programs? How many calendar years did they invest before they earned their degree or title?
   e. What do the graduates do after graduation?
      (1) What kind of work? How many different positions?
      (2) What was their income in 1963? What amount of increase did this represent over the undergraduate income?
2. How do the graduates view their university education? How efficiently do they think they were prepared?
3. What do the graduates consider to be
   a. the major problems of the university?
   b. the improvements necessary in their alma mater?
   c. the services that should be offered by the university?
4. How efficacious are the universities in the production of graduates? In the efficiency and effectiveness of production?

Importance of the Research No form of international study aimed specifically to obtain answers to such questions has yet been attempted in Central America. And no extensive, adequate data concerning their own graduates exist at any of the five national universities.

This study provides the first set of comprehensive data on the graduates of the universities, which, according to the international agreement on educational unification of the Organization of Central American States (ODECA), "ought to actively participate in the planning of Education..." (Article 11), assisting in its evaluation "in a manner that will permit establishing a relation between the economic and human resources that are destined for education, and its production" (Article 13).[2]

Planning must include evaluation, and since part of the evaluation of any university, or of higher education in general, ought to be an examination of university graduates, this study, which contains voluminous new data both national and regional in scope, should serve to stimulate further institutional research.

To some extent, a cross-disciplinary approach has been applied to the cross-cultural and cross-national data here presented. In the study of social organization, the ecological approach, as Otis Duncan and Leo Schnore have pointed out,[3] is not merely composed of "studies of the environment in strictly geographic terms... or exercises in

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[2]ODECA (Organización de los Estados Centro Americanos), Boletín Informativo, (San Salvador, El Salvador, Agosto, 1962) Mimeograph, pp. 3-4.

[3]Otis Dudley Duncan and Leo F. Schnore, "Cultural, Behavioral and Ecological Perspectives in the Study of Social Organization", The American Journal of Sociology, Vol. LXV (Sept., 1959), pp. 132-146.

formal demography." It is also concerned with the concept "of a population as a system with emergent properties" to be viewed in its "collective adaptation...to its environment...".

A population, an environment, and the technological development thereof and therein, are important concepts of human ecology, and they may be treated territorially and temporally to provide convenient and invariant reference points for the observation and study of social organizations. The data on the population of university graduates in Central America should form part of the background material for future, more specific studies of bureaucracy, stratification or urbanization in the area. Researchers attacking the problem of power groups in organizational studies could also use the information, since the body of educationally "elite" university graduates, as presently organized in the three countries studied, constitute distinct power groups.

Review of the Literature In any review of literature dealing with Latin America, Franklin Parker's writings and bibliographies must be consulted. In the PHI DELTA KAPPAN of January, 1964, he wrote of "U.S. Doctoral Dissertations Dealing with Latin American Education", stating that of 269 dissertations,

> Few were critical of class structure and institutional status quo; few dealt with university reform or the influence of the universitarios in social, economic and political improvement. Few dealt with education for economic diversity and few were comparative studies of catalytic factors which...enable people to leap forward.[4]

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[4]Franklin Parker, "U.S. Doctoral Dissertations Dealing with Latin American Education", Phi Delta Kappan, January, 1964.

Five of these studies provided some background material for the present study, although but one of them touched upon university graduates in Central America:[5]

1. Robert Clark Aden in "Teacher Training in Guatemala" found that it was inadequate and unrelated to the needs of the people;
2. George H. Herrick in "American and Spanish-American Literature in Californian and Central American Higher Education", 1960, analyzed the content and teaching method in survey courses in four institutions of higher education in Central America;
3. Luis Beltranena-Valladares in "Attempts to Form a Union of Central America", 1947, discussed a plan of education including the organization of a Central American university;
4. Juan Espendez-Navarro in "A Critical Appreciation of the Educational Programs of Central America", 1941, surveyed and compared all levels of education in all five countries, covering just the period 1930-1940; and
5. Solomon Lipp in "The University Reform in Hispanic America", 1949, included Costa Rica and Guatemala in his analyses, and concluded with five weaknesses of university education: too much "cultural" emphasis, excessive professionalism, excessive governmental control, lack of national awareness, and a narrow social and ethic student base.

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[5]Complete bibliographical data on these dissertations may be found in the Bibliography of this study.

There do exist various papers, reports and documents which pertain in some way to university graduates in Central America. The university registrars in Costa Rica and Guatemala have published bulletins containing data on the number of graduates produced, and the degrees earned from the several facultades. Similar data can be obtained from the University Secretaries at the other institutions. Yet these data go back no further than 1941 (in the case of Costa Rica), and are incomplete re sex, degree or faculty origin of degree. No university has significant personal, occupational, professional, or post-graduate academic data on its graduates.

Source of the Data The data used in this study were gathered while working at IIME (Instituto de Investigaciones y Mejoramiento), in Guatemala City, Guatemala. IIME, the Institute for Educational Research and Improvement, is jointly operated by the University of San Carlos, Guatemala, and Michigan State University. As a hypothesis-generating study, this thesis can be considered alone, but should be read in the context of all the IIME research and publications pertaining to higher education administrative problems in Central America, the most relevant of which are listed in a bibliography.

The graduates are of the Spanish-American cultural and Ladino or Meseta Central regional traditions, coming from families in the population components of the Emergent Middle, Local Upper, and Cosmopolitan classes--using the terminology of a proposed classification of Central American people first suggested by Richard N. Adams.[6] The

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[6]Richard N. Adams, "Cultural Components of Central America", American Anthropologist, Vol. 58, Oct., 1956, pp. 881-907.

specific population of graduates to be studied--as representative[7] a selection of university graduates as possible at this time--will be treated in the aggregate and sub-divided to obtain its emergent academic, demographic, economic and occupational properties.

The aggregate approach--framed neither in terms of the individual nor of value systems--holds great promise for exploring problems of university organization. By studying demographic, occupational, territorial, financial and academic aggregates of its graduates--a university's product--the university can analyze its own administration and organization--the machine which produces the graduates.

Scope of the Study The study is limited to the graduates of the national universities of Costa Rica, Guatemala and Nicaragua. The University of El Salvador did not participate, and there was no way to verify the adequacy or reliability of the responses from Honduras.

The data were drawn from a four-page questionnaire (in Spanish) which was sent to all known graduates of the three national universities with the cooperation of university officials and the graduates' colegios, or professional associations.[8] Some 1,300 responses were received, of which 1,133--or approximately 17.00 percent of all known graduates of the three universities--are represented in the study. It was possible to verify, through university and colegio records, back

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[7]Excluded are Central American nationals who may have attended their national university at some time but who were graduated only by a foreign university. Many upper class residents were educated abroad, hence are not represented here.

[8]A colegio is an occupational coalition, one of several organization properties that the graduate "population" has evolved and sustained in the process of adaptation to its environment.

to the years 1953 in Nicaragua, 1949 in Guatemala and 1941 in Costa Rica, that over two-thirds of the responses came from actual graduates. It was assumed that all responses did, since the professional associations provided the mailing lists of accredited members which were used. The accuracy of the data was likewise assumed, since no comparable data existed for confirmation, and since the respondees, the academic and intellectual elite in each country, had been assured that their answers would be confidential.

A copy of the questionnaire, a list of all degrees, diplomas and titles offered in 1963 by the universities (158 in total), and other pertinent documents are included in the Appendices.

Overview of the Study There will be three major parts to the study: the characteristics of the graduates; their opinions concerning relative university matters; and the efficacy of university production. The overview of the entire study is as follows:

A. Chapter Two--Methodology

B. Chapter Three--Characteristics of the Graduates in 1963

C. Chapter Four--Characteristics of the Graduates as Undergraduates

D. Chapter Five--Post-Graduation Activities of the Graduates

E. Chapter Six--Opinions of the Graduates

F. Chapter Seven--Summary of Conclusions

G. Bibliography

H. Appendixes

Some of the data already shown are findings of the present study, yet have not been indicated as such. It was felt that the methodology of selecting the specific population should be emphasized, rather than the originality of data, only with which the methodology could be employed. The data used in the delimitative analyses originated with the present investigation.

In subsequent chapters, findings are given in either number and/or percent, in tables and graphs, as the results of comparative calculations and Chi-square analyses. The data are comparable with reference to specific points in time for the graduates of the national universities in each of three Central American countries--Costa Rica, Guatemala and Nicaragua. The study is intended primarily to be hypothesis-generating in nature.

CHAPTER TWO

METHODOLOGY OF THE STUDY

Sources of Data

There are two major sources of information about university graduates in Central America: university records and records of the several faculty-related professional associations.[9] University records may be centralized, as in the Registrar's Office in Costa Rica (since 1950) or Guatemala (since 1961); they may be dispersed among all the different colleges that make up the university, as they are in Nicaragua, and were in the other two universities before their records were centralized. Many gaps appear in the records kept by colleges and professional associations through the years; and neither record system reflected occupational or financial data of the graduates, nor solicited their opinions on university matters.

The professional associations maintain fairly up-to-date files on their present membership, but the data therein is considered privileged and confidential. Several association secretaries indicated that they have very little personal data on their members, and practically no financial or academic information.

Since these two sources could provide, at best, only rough numbers of graduates in any given year, and incomplete information on degrees earned or the sex of the graduates, it was decided to design a questionnaire that would elicit from the graduates the data needed, and to

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[9]Comparable in the United States to such organizations as State Bar, Medical or Dental Associations.

put the questionnaire in their hands, using the membership lists kept by the professional organizations.

Design of the Instrument

Data In the design of the instrument Encuesta de graduados, a copy of which is included as Appendix A, several problems of construction arose. In the selection of data, first the kinds of data desired had to be defined; then an estimate had to be made of the possible extent to which the graduates would provide accurate and reliable responses. The following types of data and representative specific items illustrate what was solicited:

A. Personal data--sex, age, civil status, dependents;
B. Educational data--high school attended, year of first college enrollment, year of graduation, degree, 2nd or 3rd university degrees, other universities attended;
C. Financial data--scholarships while in school, average annual undergraduate income, source of such income, number of present incomes, total income in 1963; and
D. Questions eliciting opinions about--undergraduate courses, problems of the university, improvements and services which the university could undertake.

Problems There was also a problem of phrasing the questions with a "tolerance" for some language variation, so that the graduates would interpret the questions as desired. Even though Spanish is the official language in all Central American countries, there exist, as between British and American English, slight differences from country

to country in the denotative or connotative meaning of common words. For example, the word graduado itself may mean only a person who has studied and earned a degree from the specific national university, or it may be used to include graduates from other "recognized" universities who have been academically "incorporated" into the national body of university graduados. Again, high school may be either escuela "media" or "secundaria"; ocupación means type of work as well as specific position within a type; and curso may be interpreted not only as a specific course but as a plan of study including several courses. Spanish-speaking university professors from each of the three countries were consulted, and their judgment was relied upon in the precise wording of all questions so as to evoke the most accurate and reliable responses.

In regard to the accumulation of financial data, and the subsequent coding of responses, two problems had to be considered in the construction of easy-to-answer questions: the selection of ranges of incomes useful in both national and regional interpretation, and the accommodation of those ranges to differing national currencies.

Currency conversion In the economic analyses made from the financial data, each medium of exchange--colones (Costa Rica), quetzales (Guatemala), and cordobas (Nicaragua)--was converted to a common monetary standard, the United States dollar. Since these Central American currencies have had a standard relationship to the U.S. dollar for some length of time, it was deemed that the undergraduate financial data presented by graduates who left school some time back would not overly distort comparisons made with data from more recent graduates.

Nevertheless, even though the three currencies were easily converted into a common denominator, this does not mean that other important economic factors--changing wage scales, instability of government, diversification of economy--were worked into the analyses to equalize the income factor. Such factors are very difficult to isolate and measure even in a large-scale economic study, and impossible to achieve in a limited study of this scope.

Should Central Americans wish to re-convert the financial figures from the tables for the purpose of local study and analization, the following equivalencies were used:

$1.00 (U.S.) = 6.625 colones in Costa Rica
= 1.00 quetzal in Guatemala
= 7.1 córdobas in Nicaragua.

Coding The responses to the questions were to be transferred to IBM cards; the ease with which answers could be coded and classified was therefore a further consideration in the construction of the data collection instrument.

Verification and Validation As indicated earlier, no comparable data exist in Central America which would serve to test the reliability of the graduates' responses to the questionnaire. Existing university and professional association records helped to insure as far as possible that only bonafide graduates would receive and return the questionnaire. Returns were verified by checking them against the total numbers of graduates from each faculty, each year, in each university, since 1953. In no case did the number of replies from one sub-group exceed the true

total of graduates comprising that group. In this manner, more than half of the replies could be validated.

No item was included in the instrument without a thorough prior review by Central American university personnel of the propriety, wording, purpose, and interpretation of the question. For those questions dealing with opinions, a cross-cultural, international panel of university personnel was utilized to classify hundreds of different answers into a dozen or so major categories.

Distribution Questionnaires were mailed to graduates, under the official ranking privilege of the universities, with three official covering letters, one each from the Director of IIME, the Rector of the appropriate university, and the Secretary of the relevant professional association; each letter requested the graduate's cooperation in a study considered of vital concern to the university and the nation.

Population Graduates from the National Universities of Costa Rica, Guatemala, and Nicaragua are represented in the study. Two national universities in Central America are excluded from this study: the University of El Salvador and the National Autonomous University of Honduras. In El Salvador, the University was undergoing a reform movement under its new rector, and declined to participate in the study. In Honduras, two factors mitigated against the possibility of getting adequate data: an internal reorganization revolving around the establishment of a Faculty of General Studies, and an external political problem with the national government. Although some questionnaires were sent to graduates in Honduras, the returns were inadequate for use.

Extent of Official Data on Population The national universities of Costa Rica and Guatemala have central registrar's offices, although in Guatemala only since 1961. The registrars encountered some opposition in establishing their offices: historically the several faculties of Latin American universities have considered themselves independent, registering their own students, collecting their own fees, and keeping their own records. Because the creation of a central administrative office to do "their" job was felt by some officials to be an encroachment upon that independence, at times there was outright non-cooperation with the registrars, some faculty officials letting the registrar know that he was to keep records only "from then on". Even where there was cooperation, the inadequacies of prior record systems or of record-keeping minimized the usefulness of data provided to the registrar by a faculty's secretary.

Nevertheless, the registrars at Costa Rica and Guatemala have been able recently to publish "official" data about graduates and matriculants from their universities, back to the years 1950 in Guatemala and 1941 in Costa Rica. These data are adequate re the sex, faculty and year of graduation of graduates during those years. Data in regard to the undergraduate career pursued, and the actual degree or title conferred, are incomplete.

In 1963, there was no registrar's office at the National Autonomous University of Nicaragua. Upon request, nevertheless, the Secretary General of the University was able to obtain (from six of the eight colleges) data which permitted him to compile a list of graduates, by name and faculty of graduation, for the years 1953-1963, as well as

Table 2.1

National Universities of Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua
MATRICULANTS AND GRADUATES, 1950-1963: BY UNIVERSITY AND FACULTY, WITH RELATIVE PERCENTAGES

FACULTIES OR SCHOOLS	NATIONAL UNIVERSITIES														
	COSTA RICA (1950-63)			EL SALVADOR (1953-62)			GUATEMALA (1950-63)			HONDURAS (1953-61)			NICARAGUA (1950-63)		
	MAT.	GRAD.	%	MAT.	GRAD	%	MAT.	GRAD.	%	MAT.	GRAD	%	MAT.	GRAD.	%
Agronomy	1,828	180	9.8				1,432	24	1.7						
Architecture[1]							1,102	none	-						
Dentistry	1,230	146	11.9	1,038	76	7.3	2,156	84	3.9		12		1,204	26	2.2
Economics[2]	5,697	72	1.3	2,620	10	0.4	9,597	106	1.1		14		910		
Education[3]	4,783	1,643	34.4										533	none	
Engineering	2,305	147	6.4	4,066	80	2.0	9,927	231	2.3		66		1,390	33	2.4
Fine Arts/Music	3,173	31	0.9												
Humanities[2]				2,045	14	0.7	5,152	165	3.2				145		
Journalism[2]													120		
Law	3,866	320	8.3	5,249	119	2.3	15,118	457	3.0		235		4,521	409	9.0
Medicine[4]	93	none	-	2,707	198	7.3	10,845	572	5.3		140		4,683	290	6.2
Microbiology[5]	265	50	18.9												
Pharmacy	1,744	181	10.4	1,243	73	5.9	2,894	149	5.1		61		1,062	86	8.1
Science/Letters[6]	15,381	123	0.8												
Social Service[7]	671	6	0.9				45	none	-						
Veterinary Med.[8]							546	7	1.3						
TOTAL	41,036 (36,253)[9]	2,899 (1,256)	7.1 (3.5)	18,968	570	3.0	58,814	1,796	3.1		528		14,568 (12,860)[9]	844 (844)	5.8 (6.6)

Source: Office of the Registrar in Costa Rica and Guatemala; Office of the Secretary General in El Salvador, Honduras, and Nicaragua. Notes are on page 19.

Notes to Table 2.1

[1]Founded in 1959.

[2]Data on graduates in Nicaragua unavailable.

[3]Costa Rican data to 1956 from the old School of Pedagogy. Guatemalan education matriculants and graduates are included in the Humanities. Nicaraguan faculty founded in 1962.

[4]School in Costa Rica founded in 1961. Trained midwives not included in the number of graduates of any university.

[5]There were graduates in Microbiology before there was a School of Microbiology. The matriculation total covers only the years 1957-63, i.e., since creation of the faculty, but the number of graduates is for the period 1950-63.

[6]Includes data from the old Schools of Science, and Philosophy and Letters.

[7]In Costa Rica, founded in 1956. In Guatemala, matriculants are for 1963 only.

[8]Founded in 1957.

[9]The three figures in parentheses for Costa Rica are for all schools except the Schools of Pedagogy and Education, and for Nicaragua only for the five faculties for which data on graduates is available.

matriculation data since 1950. These data also are incomplete concerning the undergraduate major pursued and the degree or title earned.

The numbers of graduates 1950-1963 from the five national universities in Central America are shown in Table 2.1. The number of graduates is compared to the number of matriculated students, by university and faculty, in order to give an idea of the relatively small percent of students who become graduates. The year 1950 is the earliest year for which it is possible to compare matriculants to graduates for the three universities included in this study.

In the fourteen-year period 1950-1963, the University of Costa Rica has converted 7.1 percent of its matriculants into graduates, the University of San Carlos of Guatemala 3.1 percent, and the National Autonomous University of Nicaragua 5.8 percent. However, as suggested in the notes to the table, the total university figures for a given university may be misleading. The recently-created Faculty of Architecture in Guatemala, for example, had no graduates prior to 1964, yet its enrollment is included in the total, and in the derived percentage for its university; similar distortions are produced by including the School of Medicine in Costa Rica (first enrollment in 1961) and the Faculty of Education in Nicaragua (1962). To get a more accurate picture of graduate production in each of the three universities under study, it is best to exclude those schools or faculties (1) which have been in existence too short a time to expect reasonable production, or (2) for which there are no comparable data. The percent of graduates to matriculants for each university would then be as follows:

	Matriculants	Graduates	%
Costa Rica[1]	40,272	2,893	7.2
Guatemala[2]	57,121	1,789	3.1
Nicaragua[3]	12,860	844	6.6
Total	110,253	5,526	5.0

[1]Does not include the Schools of Medicine or Social Service.

[2]Does not include the Faculties of Architecture or Veterinary Medicine, or the School of Social Service.

[3]Does not include the Faculties of Economics, Education, Humanities, or Journalism.

Yet even here figures are misleading. A glance at faculty-by faculty production shown in Table 2.1 indicates that one school in Costa Rica, Education, has graduated 34.4 percent of its students since 1950, while another, Science and Letters (including graduates of the old Schools of Science, and Philosophy and Letters), has graduated only 0.8 percent. The more nearly true percent for that university, then, is 3.5 percent (all schools except Medicine, Social Service and Education). If we may assume that the percent of graduates to matriculants in the areas of economics and humanities in Nicaragua is about the same as that for those areas in Costa Rica and Guatemala (1.3, 1.1, 0.9, and 3.2%), then the 6.6 percent figure for Nicaragua would fall to the level of the other two national universities.

There are other data about graduates which pertain to this presentation of population: the University of Costa Rica has official data on graduates before 1950--back to the year 1941. Since there are no

matriculation data for that ten-year period, those graduates--1,123 in all--were not included in Table 2.1. However, they form part of the total known general population of graduates, and are included in all tables and relevant calculations that follow.

Delimitation In Table 2.2, the general population is shown in relation to the number of responses received to the instrument and to the final specific population. In this study, the term "general population" refers to all graduates from the National Universities of Costa Rica, Guatemala and Nicaragua for whom the Registrar and/or the Secretary General had official record as of 1963. The term "specific population" refers to those of the above general population whose response to the questionnaire is used in this study. In Table 2.2 and other tables, the plus (+) sign indicates a probable number of additional graduates, and a minus (-) sign a probable lower figure.

There were 1,180 responses considered possible to use. They were reduced to a specific population of 1,133 by eliminating the Honduras responses, and by not including any responses from *incorporados*. (An *incorporado* is not a graduate *per se* of the particular national university; his degree from another institution has been recognized and "incorporated" into the national body of professionals--a legal procedure necessary prior to professional practice.)[10] Of the 1,133

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[10]In Central American countries, the national university licenses professionals to practice, a public responsibility normally discharged by a state agency in the United States.

Table 2.2

National Universities of Costa Rica, Guatemala, Honduras, and Nicaragua
GENERAL GRADUATE POPULATION, QUESTIONNAIRE RESPONSES, AND THE SPECIFIC POPULATION

University	GENERAL POPULATION			SPECIFIC POPULATION	
	Known graduates and period of accurate data available	Responses		Number of Replies actually used	Percent of all known graduates
		Number	Possible to use		
Costa Rica[1]	4022+ (1941-1963)	606	604	598	14.86-
Guatemala[2]	1796+ (1950-1963)	365	364	333	18.54-
Nicaragua[3]	844+ (1950-1963)	247	241	202	23.93-
Honduras[4]	528+ (1952-1961)	102	47	-	-
TOTAL	7190+	1311	1180	1133	17.00-

[1]Includes 42 graduates from the Schools of Fine Arts, Music, and Social Service, none of whom replied to the questionnaire.

[2]Includes seven graduates from the Faculty of Veterinary Medicine, of whom none replied. The Faculty of Architecture is not represented, there being no graduates prior to 1964.

[3]Does not include the Faculty of Economics or the Schools of Education or Journalism. Since no replies were received from the graduates of these faculties, it was assumed either that those professional associations did not mail out the questionnaires, or that, as in the case of the School of Education (established 1962) there had been no graduates.

[4]Over one-half of the responses from Honduras were from the Faculty of Law; more than half of all replies were sufficiently incomplete to be unusable; and eleven replies were from graduates not of the national university but of the national teacher-preparation normal school, "Francisco Morazán." For these reasons, and to keep the sample from being distorted, the National Autonomous University of Honduras was not included in the study.

SOURCE: Registrars' Offices, Costa Rica and Guatemala; Secretary Generals' Offices, Nicaragua and Honduras.

graduates, 598 represent Costa Rica, 333 Guatemala, and 202 Nicaragua. The proportions by country within both the general and specific populations are as follows:

P O P U L A T I O N

Country	General #	General %	Specific #	Specific %
Costa Rica	4,022+	60.38-	598	52.78
Guatemala	1,796+	26.95-	333	29.39
Nicaragua	844+	12.67-	202	17.83
TOTAL	6,662+	100.00	1,133	100.00

Delimitative Analyses The two populations were analyzed in two ways for two purposes:

1. Graduates were sorted by three periods of time--"Old Grads" (1900-1953), Middle Graduates (1954-1958), and Recent Graduates (1959-1963)--to facilitate a check against official university records for validation of response; and
2. The graduates were divided roughly into three major areas of undergraduate training--the Physical, Medical, and Social Sciences--to facilitate later analyses of university productivity as well as validation of response.

Comparisons of the general and specific populations using these two analyses are shown in Tables 2.3 through 2.7.

A comparison of the general and specific populations in Table 2.3, by the period of graduation, illustrates that, of the nine cells (three universities times three periods), the smallest response was

Table 2.3

National Universities of Costa Rica, Guatemala and Nicaragua

GENERAL AND SPECIFIC GRADUATE POPULATIONS: BY PERIOD OF GRADUATION AND BY MAJOR AREA OF UNDERGRADUATE TRAINING, WITH PERCENTAGES

Period of Graduation / Area of Training	Population and Percent	GRADUATES AND RESPONDENTS, EACH NATIONAL UNIVERSITY			
		Costa Rica	Guatemala	Nicaragua	Total
1900-1953[1]	General	1823 +	406 +	201 +	2430 +
	Specific	295	148	119	562
	%	16.17-	36.45-	59.20-	23.12-
1954-1958	General	915	588	315	1818
	Specific	145	91	37	273
	%	15.85	15.48	11.75	15.02
1959-1963	General	1284	802	328	2414
	Specific	158	94	46	298
	%	12.31	11.72	14.02	12.34
TOTAL	General	4022 +	1796 +	844 +	6662 +
	Specific	598	333	202	1133
	%	14.86-	18.54-	23.93-	17.00-

[1]Official university data are either not available or not verifiable before 1954 in Nicaragua, 1950 in Guatemala, or 1941 in Costa Rica; for this reason the number of graduates for the period 1900-1953 is indicated as plus (+) an unknown number of additional graduates, and the percentages as minus (-), indicating a probable lower figure. In like manner, the data for the three science areas are so indicated.

Table 2.3 (con.)

Period of Graduation / Area of Training	Population and Percent	GRADUATES AND RESPONDENTS, EACH NATIONAL UNIVERSITY			
		Costa Rica	Guatemala	Nicaragua	Total
Physical Sciences	General	418 +	255 +	33 +	706 +
	Specific	114	73	17	204
	%	27.27-	28.63-	51.52-	28.90-
Medical Sciences	General	468 +	812 +	402 +	1682 +
	Specific	78	137	108	323
	%	16.67-	16.87-	26.87-	19.20-
Social Sciences	General	3136 +	729 +	409 +	4274 +
	Specific	406	123	77	606
	%	12.94-	16.87-	18.83	14.18-

11.72 percent in Guatemala, 1959-63. The largest was 59.20- percent, the "Old Grads" in Nicaragua. However, all of the percentages for the period 1900-1953 are "artificial" because the exact number of graduates before 1954 is unknown. It is interesting, though, to notice that for this period the percentages progress downward from Nicaragua through Guatemala to Costa Rica (56.20 to 36.45 to 16.17 percent) as the earliest data of reliable data recedes in time (1954 to 1950 to 1941).

The figures for the Middle and Recent Graduates (1954-58 and 1959-63) are "real"; that is, the actual number of graduates and responses from those graduates. For these graduates, the response by university was 13.78 percent in Costa Rica, 13.31 percent in Guatemala, 12.91 percent in Nicaragua, and 13.49 percent overall (see Table 2.4). If the graduates in the last ten years responded at the rate of 13.49 percent, and the high "artificial" percent of response from the "Old Grads" seems to fall into perspective in relation to the passage of time, then it is reasonable to assume that all graduates responded to the instrument at approximately a 13 percent rate.

As shown in Table 2.3, slightly more than half of the specific population graduated in the last ten years (571 vs. 562), thus providing modernity and validity to later analyses of graduates' opinions and monetary reports.

In Table 2.3, the general and specific populations are also divided into three major areas of undergraduate training--the Physical, Medical and Social Sciences. A further division by university produces nine cells for comparison. All of the general population figures here are "artificial", i.e., probably plus (+) an additional number of actual graduates.

The highest percent of response (Nicaragua, Physical Sciences, 51.52 percent) came from the smallest general population sub-group, while the lowest percent (Costa Rica, Social Sciences, 12.94 percent) represents the largest sub-group. This is a common arithmetical phenomenon; an inverse ratio between possible and actual responses from a sub-group. In this study, the more graduates, the lower percentage of response; the fewer graduates, the higher percentage of response. The important factor is that the 12.94 percent figure compares favorably to the overall 13.49 percent response from all graduates in the last ten years.

The inordinately large number of Social Science area graduates in Costa Rica is due to the success of the School of Education there. That school has produced some 2,500 graduates (mostly elementary school teachers) since 1941, roughly 61 percent of all graduates in Costa Rica during this period of time.[11] The 12.94 percent response from Social Science area graduates in Costa Rica represents an actual number of 406 respondents in the specific population, approximately 67 percent of that portion of the specific population from the University of Costa Rica (598)--a figure comparable to reality.

The total specific population in Table 2.3 includes 28.90 percent of all "known" graduates in the Physical Sciences, 19.20 percent of those in the Medical Sciences, and 14.18 percent from the Social Sciences. Within both the specific and general populations, the percentages are as follows:

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[11]Derived from data provided by the Registrar, University of Costa Rica.

Area	General		Specific	
	Graduates	%	Graduates	%
Physical Sciences	706+	10.60-	204	18.00
Medical Sciences	1682+	25.24-	323	28.51
Social Sciences	4274+	64.16-	606	53.49
TOTAL	6662+	100.00	1133	100.00

Since the general population figures are "artificial" in nature, it may be that, were the actual number of graduates known, the percent of graduates in each science area would more nearly approximate the percents within the specific population. The latter may represent the proportions more nearly true in 1963, since in recent years (as seen in Table 2.5) the universities have been producing a higher percent of Physical and Medical Science area graduates, in keeping with their nations' emphasis on industrial and economic development.

Tables 2.4 and 2.5 only contain population data about graduates 1954-1963. For this period, the actual numbers of graduates from the three national universities under study are known. All figures, therefore, are "real". For the three universities, the specific population averaged 13.49 percent of the general population, a figure mentioned earlier to establish the possible validity of response from the "old grads".

When the graduates since 1953 were grouped by area of undergraduate preparation, the smallest sub-group was the Medical Sciences in Guatemala--9.77 percent, specific to general population. The

Table 2.4

National Universities of Costa Rica, Guatemala and Nicaragua
GENERAL AND SPECIFIC GRADUATE POPULATIONS--1954-1963: BY PERIOD OF GRADUATION AND MAJOR AREA OF UNDERGRADUATE TRAINING, WITH PERCENTAGES

National University	Population	Period		TOTAL	Area of Training		
		1954-58	1959-63		Physical	Medical	Social
Costa Rica	General	915	1284	2199	242	278	1679
	Specific	145	158	303	50	42	211
	%	15.85	12.31	13.78	20.66	15.11	12.57
Guatemala	General	588	802	1390	215	655	520
	Specific	91	94	185	45	64	76
	%	15.48	11.72	13.31	20.93	9.77	14.62
Nicaragua	General	315	328	643	22	323	298
	Specific	37	46	83	10	37	36
	%	11.75	14.02	12.91	45.45	11.46	12.08
TOTAL	General	1818	2414	4232	479	1256	2497
	Specific	273	298	571	105	143	323
	%	15.02	12.34	13.49	21.92	11.39	12.94

Table 2.5
National Universities of Costa Rica, Guatemala and Nicaragua
GENERAL AND SPECIFIC GRADUATE POPULATIONS--1954-1963: PROPORTIONS BY MAJOR SCIENCE AREA OF UNDERGRADUATE TRAINING

Area	General		Specific	
	Graduates	%	Graduates	%
Physical Sciences	479	11.32	105	18.39
Medical Sciences	1256	29.68	143	25.04
Social Sciences	2497	59.00	323	56.57
TOTAL	4232	100.00	571	100.00

largest was 45.45 percent, Physical Sciences in Nicaragua--high because 10 of the 22 actual graduates responded to the questionnaire. The specific population contains 21.92 percent of all Physical Sciences graduates in the last ten years, 11.39 percent of the Medical Science graduates, and 12.94 percent from the Social Sciences. Within the specific population sub-group of graduates 1954-1963 (Table 2.5), the Physical Sciences account for 18.39 percent, Medical Sciences 25.04 percent, and the Social Sciences 56.57 percent--slightly higher percentages for the Physical and Social Sciences than in the total specific population, and lower for the Medical Sciences.

The full known general population and the full specific population used in the study are broken down in Table 2.6 into ten areas of undergraduate study, and by university. The percent of specific to general population for each area is included.

Table 2.6

National Universities of Costa Rica, Guatemala and Nicaragua

SPECIFIC AND GENERAL GRADUATE POPULATIONS: BY FIELDS OF PROFESSIONAL TRAINING AND UNIVERSITY, WITH PERCENT OF SPECIFIC TO GENERAL POPULATION

Field of Prof. Training[1]	Specific Population				% of all Graduates	General Population			
	C.R.	Gua.	Nic.	Total		Total	C.R.	Gua.	Nic.
Agriculture	66	6		72	27.91	258	234	24	
Dentistry	17	19	7	43	15.36	280	170	84	26
Economics	31	32		63	34.05	185	78	107	
Education	242	6		248	9.96	2488	2427	61	
Engineering	48	67	17	132	29.46	448	184	231	33
Law	96	80	77	253	19.55	1294	428[2]	457	409
Medicine or Microbiology	11	95	87	193	21.16	912	50	572	290
Pharmacy/Chem.	50	23	14	87	18.01	483	248	149	86
Science and Letters or Humanities	37	5		42	13.68	307	203[3]	104	
Veterinary Medicine					00.00	7		7	
TOTAL	598	333	202	1133	17.00	6662	4022	1796	844

[1]Does not include Architecture, since no one had graduated from that college in Guatemala prior to 1964. Other omissions are as noted.

[2]Includes 7 graduates from the School of Social Service, none of whom responded.

[3]Includes 35 graduates in Fine Arts and Music; none replied to the questionnaire.

The areas of undergraduate professional training are listed in Table 2.6 in alphabetical order. Below, they are presented in order of the percent which the specific population sub-groups represent of the general population sub-groups:

Economics	34.05%	Pharmacy	18.01%
Engineering	29.46%	Dentistry	15.36%
Agriculture	27.91%	Sci./Letters	13.68%
Med./Microbiology	21.16%	Education	9.96%
Law	19.55%	Vet. Med.	0.00%

Veterinary Medicine, of course, is not represented in the study, and has been included in this chapter on methodology only as a legitimate, specialized area of undergraduate training. As such, the seven graduates who form part of the general population were included in the Medical Sciences in earlier analyses. Those graduates in Fine Arts, Music, and Social Service from Costa Rica are likewise included in the general population and the analyses by major science areas.

Aside from Veterinary Medicine, the only area of undergraduate training which falls below a ten percent proportion is Education--9.96 percent. However, the 2,488 Education majors in the general population form the largest general population sub-group, and we have seen that an inverse ratio between possible response and percent of response is a common occurrence. The Education graduates comprise 37.37 percent of the whole general population, as seen in Table 2.7. As noted earlier, the large number of Education graduates is attributed to but one Faculty in all of Central America--the School of Education in Costa Rica. At other national universities in Central America, the area of Education ranks very low in the production of graduates. Within the specific population, Education represents 21.89 percent, second only to Law

(22.33 percent), which at all national universities in Central America is the area of first or second rank in production.

It was decided, then, that the 9.96 percent figure, which the specific Education population represents of the general Education population, was not too low in relation to the size of that particular general population sub-group; nor was it felt that the 21.89 percent which Education represents within the specific population was high, considering that Education majors represent 37.37 percent of the general population. In fact, the relative importance of Education majors within the specific population seems to be a balancing position between the non-production of Education major graduates at all national universities save one, and the fact that over one-third of the total known general population <u>are</u> graduates in the field of Education.

The areas of undergraduate training are listed in Table 2.7 in three groups, the areas which comprise the Physical, Medical, and Social Sciences. Below they are ranked in order of the percent which they represent within the two populations.

General		Specific	
Education	37.37%	22.33%	Law
Law	19.43	21.89	Education
Medicine/Microbiology	13.70	17.03	Medicine/ Microbiology
Pharmacy/Chemistry	7.26		
Engineering	6.75	11.65	Engineering
Science and Letters, or Humanities	4.62	7.68	Pharmacy/Chemistry
		6.35	Agriculture
Dentistry	4.21	5.56	Economics
Agriculture	3.88	3.80	Dentistry
Economics	2.78	3.71	Science and Letters, or Humanities
Veterinary Medicine	0.02	0.00	Veterinary Medicine

Table 2.7

National Universities of Costa Rica, Guatemala and Nicaragua
SPECIFIC AND GENERAL GRADUATE POPULATIONS: PROPORTION REPRESENTED BY EACH AREA OF UNDERGRADUATE TRAINING

Area of Undergraduate Training	POPULATION			
	General		Specific	
	#	%	%	#
Agriculture	258	3.88	6.35	72
Engineering	448	6.73	11.65	132
Dentistry	280	4.21	3.80	43
Medicine or Microbiology	912	13.70	17.03	193
Pharmacy or Chemistry	483	7.26	7.68	87
Veterinary Medicine	7	0.02	-	-
Economics	185	2.78	5.56	63
Education	2488	37.37	21.89	248
Law	1294	19.43	22.33	253
Science and Letters, or Humanities	307	4.62	3.71	42
TOTAL	6662	100.00	100.00	1133

Not considering for the moment the Education area graduates in the two populations, three of the top four areas in both populations are Engineering, Law, and Medicine--the traditional three "prestige" courses of study in Latin American universities--followed by Pharmacy, a surprising fourth, considering that most authorities on higher education in Latin America would have predicted that Economics would have a higher ranking. In fact, the low 2.78 percent which Economics area graduates represent of the total 6,662 general population believes that area's relative importance in the mythology of Latin American university thinking. It is true that matriculation in faculties and colleges of Economic studies is very high in Latin American universities, yet graduation, as evidenced in this analysis, is extremely low--so low as to be of

great import to the universities and national ministries planning the economic development of this geographic area.

In summary, this study of university graduates from three Central American national universities is based upon data from 17.00 percent of the total known general population--1,133 of 6,662 graduates. No incorporados are included; over half of the specific population were graduated since 1953; and the Physical, Medical and Social Sciences are represented by 18.00, 28.51, and 53.49 percent of the respondents, respectively. The specific population includes the following percents of all known graduates:

Graduates by Period		Graduates by Major Area of Training	
1900-1953	23.12-%	Physical Sciences	29.90-%
1954-1958	15.02	Medical Sciences	19.20-
1959-1963	12.34	Social Sciences	14.18-

Graduates from Costa Rica comprise 52.78 percent of the specific population, and graduates from Guatemala and Nicaragua 29.39 percent and 17.83 percent, respectively.

CHAPTER THREE

CHARACTERISTICS OF THE GRADUATES: IN 1963

From the data provided by each graduate it is possible to look at him as he might have appeared in "snapshots" taken at three different periods of his life: (1) in the year 1963, (2) when he was an undergraduate, and (3) sometime between his graduation year and 1963. The three "photographic" observations of each graduate, and the composite pictures created from those observations, furnished a convenient and invariant set of reference points for analyses which may further studies of social organization in Central America.

Summary of the Characteristics As of 1963, the "average" graduate of the three national universities of Costa Rica, Guatemala and Nicaragua was male, 37.5 years old, and married; he had 5.2 dependents, including himself.

His academic record is as follows: after graduating from a public, non-co-educational high school in the capital district, he enrolled at the university at age 18.9; he did not change his program once enrolled, pursued no other post-secondary studies while in college, and did not receive any official university economic aid; he majored in an area of the social sciences, investing 7.5 calendar years to complete a program of 5.4 academic years, and he was 26.4 years old when he was graduated. During the last three years as a student his mean annual income was $1,163.

In the 11.1 years that have followed his graduation, the "average" graduate has not studied further toward an advanced degree. He has

engaged in but one professional practice or activity; in 1963, his total mean income of $5,218 was derived, in 83.96 percent of the cases, from just one occupational position. The "average" graduate's 1963 income represented a 348 percent increase over his mean annual undergraduate income.

This and the next two chapters will present the characteristics of the graduates in more detail. The data and the analyses will be used to raise a series of questions pertinent to higher education in Central America. Either to the graduate or to the university which granted the degree, what efforts were involved, what problems were faced, what was the result of a university education?

In this chapter, a demographic picture of the graduates is shown, and the amount and sources of their 1963 income are analyzed. The following are among the questions considered: What kinds of people are being graduated? What is their sex? Age? Civil status? In what professional fields do they work? What did they earn in 1963? How many different sources of income did they have? Are they working in the professional fields areas for which they were professionally prepared? What is the monetary value of a university education to the graduates of different fields? What economic status does the teaching profession hold among the graduates?

Demographic Data The graduates of the national universities of Guatemala and Nicaragua are predominately male--96.70 percent and 98.02 percent respectively. In Costa Rica, however, women comprise 42.14 percent of the graduate body. This, of course, is because the majority

of graduates in Costa Rica are from the School of Education, where matriculation and graduation are overwhelmingly female. The influence of the women graduates from Costa Rica in this study is evident also in the overall averages for present age, civil status and number of dependents, as seen in Table 3.1

Table 3.1
National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES: SEX, AGE, CIVIL STATUS AND NUMBER OF DEPENDENTS IN 1963

CATEGORY		UNIVERSITY			
		Costa Rica	Guate-mala	Nica-ragua	Total
Number		598	333	202	1133
Sex	Male #	346	322	198	866
	Male %	57.86	96.70	98.02	76.43
	Female #	252	11	4	267
	Female %	42.14	3.30	1.98	23.57
Age--average		34.8	40.1	40.7	37.4
Civil status in percent	Married	66.39	86.19	83.17	75.20
	Single	25.59	9.61	9.41	18.01
	Divorced	2.34	1.50	1.98	2.03
	Widowed	0.33	0.30	0.49	0.35
	Other or N.R.	5.35	2.40	4.95	4.41
Dependents--average		4.7	5.8	5.6	5.2

The average graduate in Costa Rica is nearly six years younger than his counterpart in Guatemala or Nicaragua, 34.8 vs. 40.4 years; 25.59 percent of the Costa Rican graduates are unmarried, compared to less than ten percent from the other two universities; and they have an average of one less dependent. Since graduates from the universities of Guatemala and Nicaragua present almost identical data in regard to sex, age, civil status and dependents, in Costa Rica the sex factor, seven men to five women graduates, must be the variable which accounts for (1) the lower average age, (2) the 17-20 percent fewer married

graduates, (3) the higher number of divorced graduates, and (4) the lower number of dependents found among graduates from that university.

This is verified when those factors are analyzed by a sex distribution of the Costa Rican graduates, as in Table 3.2.

Table 3.2
National University of Costa Rica
GRADUATES: AGE, CIVIL STATUS AND NUMBER OF DEPENDENTS IN 1963, BY SEX

	Men	Women
Number	346	252
Average Age	37.1	31.5
Civil status in percent		
Married	80.92	46.43
Single	12.72	43.25
Divorced	2.02	2.78
Widowed	-	0.79
Other or N.R.	4.34	6.75
Dependents--Average	5.6	3.5

The male graduates from the University of Costa Rica average 3 to 3.6 years younger than the graduates at the other two schools, while the female graduates from Costa Rica are 8.6 to 9.2 years younger. The male graduates from Costa Rica have the same number of dependents as graduates from Guatemala or Nicaragua, but the 252 female graduates in Costa Rica have 2.2 fewer dependents. The largest demographic difference, however, is in marital status: 43.25 percent of the women graduates from Costa Rica are single, compared to 12.72 percent of the men from that school. Only 9.5 percent of the graduates from the other two universities are unmarried.

From these data it is clear that the influence of the women graduates from the University of Costa Rica will be a factor of considerable

importance in later analyses. As shown in Chapter Two, these women are graduates primarily of the School of Education, and 55.56 percent of them were prepared as undergraduates to become primary school teachers. These two characteristics--female sex and undergraduate training in the social science of education--of 22 percent of the specific population in this study are bound to bias later frequency distribution analyses and calculations. It is evident when the graduates' total income in 1963 in considered.

Amount of income, 1963 Usable income and occupational data were reported by 1,085 graduates, or 95.76 percent of the specific population. By university, the percentages were: Costa Rica, 96.82; and Nicaragua, 93.56 percent. The range of graduates' 1963 income is shown in Table 3.3.

From Table 3.3, the 1963 income averages for the graduates of each university are summarized below:

University	Mean Income	Median Income Range	Modal Income Range
Costa Rica	$3418	$2001-2500	$ 1001- 1500
Guatemala	7437	6501-7000	10001-15000
Nicaragua	7010	5501-6000	10001-15000
TOTAL	$5218	$4001-4500	$ 1001- 1500

It is obvious that earnings reported by Costa Rican graduates are far lower than those reported by graduates from the other two national universities. The mean income of the Guatemalans is 117.58 percent higher than that of the Costa Ricans, and Nicaraguan graduates earn 105.09 percent more than Costa Ricans. As suggested earlier, one reason for this disparity could be that all salaries or wages in Costa Rica

Table 3.3
National Universities of Costa Rica, Guatemala and Nicaragua
RANGE OF TOTAL INCOME - 1963

Range of Income 1963	Number of Graduates in Each Range and Mean Income for Each Range, by University							
	Costa Rica		Guatemala		Nicaragua		Total	
	#	Mean	#	Mean	#	Mean	#	Mean
$ 0000 or no response	19		16		13		48	
0001- 0500								
0501- 1000	37 ↥	$ 916.87			5	$ 775.20	42	$ 900.00
1001- 1500	130 ↧	1231.11	3	$ 1300.00	3	1208.00	136 ↥	1232.12
1501- 2000	63	1737.33	8	1725.00	3	1776.00	74 ↧	1737.57
2001- 2500	50*	2277.36	12	2386.00	4	2232.00	66	2294.36
2501- 3000	53	2689.36	7	2904.00	8 ↥	2676.00	68	2709.88
3001- 3500	41	3261.66	2	3372.00	17 ↧	3412.24	60	3308.00
3501- 4000	14	3749.14	27 ↥	3630.22	3	3852.00	44	3683.18
4001- 4500	43	4237.95	16 ↧	4278.00	10	4274.40	69*	4252.52
4501- 5000	16 ↧	4821.00	20	4797.60	3	4688.00	39	4798.77
5001- 5500	32	5204.25	19	5371.58	24	5155.50	75	5231.04
5501- 6000	22	5925.27	38	5952.32	19*	5977.26	79	5950.78
6001- 6500	6	6174.00	5	6276.00	5	6312.00	16	6249.00
6501- 7000	23	6804.52	12*	6646.00	17	6852.71	52 ↧	6783.69
7001- 7500	3	7200.00	24	7210.91	2	7086.00	29	7189.33
7501- 8000	5	7680.00	8	7725.00	6	7706.00	19	7707.16

↧ ↥ Lower and upper quartile divisions

* Median income falls within this range

Table 3.3 (con.)

Range of Income 1963	Number of Graduates in Each Range and Mean Income for Each Range, by University							
	Costa Rica		Guatemala		Nicaragua		Total	
	#	Mean	#	Mean	#	Mean	#	Mean
$ 8001- 8500	2	$ 8316.00	21	$ 8400.00	3	$ 8092.00	26	$ 8358.00
8501- 9000	18	8584.67	12	8891.00	12 ↧	8626.00	42	8684.00
9001- 9500	4	9258.00	1	9240.00	2	9432.00	7	9305.14
9501-10000	2	9720.00	16 ↧	9639.75	6	9724.00	24	9667.50
10001-15000	12	11009.00	51 ↧	12176.47	27	11293.78	90	11756.00
15001-20000	1	17148.00	9	17385.33	5	16975.20	15	17232.80
20001-30000	2	23142.00	6	22970.00	5	22970.40	13	22996.62
	N=		N=		N=		N=	
Mean	579	$ 3417.99	317	$ 7436.90	189	$ 7010.35	1085	$ 5217.94

↧ ↥ Lower and upper quartile divisions

* Median income falls within this range

are proportionately only half what they are in Guatemala or Nicaragua. However, there are three other reasons for the disparity which are evident from analyses of the data in this study:

1. Graduates of the University of Costa Rica, being six to seven years younger than graduates of the National Universities of Guatemala and Nicaragua, have had less time in their profession in which to earn greater income;
2. A larger percent of Costa Rican graduates are women; and
3. Teaching is the main occupation of a greater number and percent of graduates of the University of Costa Rica, and (as discussed below) teaching is a poorly-paid profession.

Sources of Income In addition to their total 1963 income, graduates were asked to report the number of different remunerative positions they held, the name or title of each position, and the amount of income derived from each. The 1,085 graduates who supplied complete income and occupational data reported one, two, or three or more sources of income as follows (in numbers and percentages):

University		One position	Two positions	Three or more positions	Total
Costa Rica	#	521	50	8	579
	%	89.98	8.64	1.38	100.00
Guatemala	#	251	50	16	317
	%	79.18	15.77	5.05	100.00
Nicaragua	#	139	39	11	189
	%	73.54	20.64	5.82	100.00
TOTAL	#	911	139	35	1085
	%	83.96	12.81	3.23	100.00

The proportion of informants who reported only one position is higher among graduates of the University of Costa Rica than it is among those of Guatemala and Nicaragua, by 10.80 and 16.44 percent, respectively. Contrariwise, only 10.02 percent of the Costa Ricans held more than one remunerative position, while 20.82 and 26.46 percent respectively of the graduates from Guatemala and Nicaragua reported two or more incomes.

It has been pointed out that the average Guatemalan and Nicaraguan graduate reported earnings that were more than twice those reported by the average Costa Rican graduate. One can only speculate about the reasons for this disparity. Perhaps the greater mean income earned by the Guatemalans and Nicaraguans is directly related to the number of additional positions held. The greater number of positions held by Guatemalan and Nicaraguan graduates may indicate a comparative scarcity of professionally-trained personnel in their countries. On the other hand, it may reflect a degree of job insecurity felt by those graduates who accept, or actively seek, a second or third position as a form of employment insurance.

A total of 1,294 income-returning positions were reported by the 1,085 graduates. Each position held by each graduate was compared to his undergraduate training, to determine whether he was employed within or outside the professional field in the area for which he had been prepared. The results may be seen in Table 3.4.

Of all the first positions held, 98.71 percent were within the field of the graduates' professional preparation; of the second positions, 91.95 percent. None of the third or fourth positions reported by the graduates fell outside the areas in which those graduates had

Table 3.4
National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES' SOURCES OF INCOME: RELATIONSHIP BETWEEN POSITIONS AND FIELD OF UNDERGRADUATE STUDY

INCOME SOURCES		UNIVERSITY			TOTALS	
		Costa Rica	Guate-mala	Nica-ragua	Sub-Totals	Total
1st position:	In Field	574	314	183	1071	
	Out/Field	5	3	6	14	1085
	Outside %	0.86	0.95	3.17	1.29	83.85
2 nd position:	In	55	63	42	160	
	Out	3	3	8	14	174
	%	5.17	4.55	16.00	8.05	13.44
3rd position:	In	8	16	11	35	
	Out	-	-	-	-	35
	%					2.71
All positions:	In	637	393	236	1266	
	Out	8	6	14	28	1294
	%	1.24	1.50	5.60	2.16	100.00

been trained. Although the percent of positions held outside areas of undergraduate training is not high (2.16%), in Nicaragua 5.60 percent of all positions were held outside the major field of study.

Graduates from five areas of undergraduate preparation--Agriculture, Dentistry, Engineering, the Humanities (Science and Letters) and Pharmacy--reported that none of the several positions they held were outside the professional fields in which they had been trained. These 365 graduates held 435 positions, a ratio of 1.19 positions per graduate.

The 720 graduates from the four other areas--Economics, Education, Law and Medicine/Microbiology--held a total of 859 positions (also a ratio of 1.19), yet 28 of these positions, or 3.26 percent, were not related to their college training:

Area	Graduates	Total positions	Positions out of area	% out of area
Economics	62	78	1	1.28
Education	241	251	7	2.79
Law	239	289	18	6.23
Medicine/ Microbiology	178	241	2	0.83
Sub-Total	720	859	28	3.26
Other areas	365	435	--	--
TOTAL	1085	1266	28	2.16

Members of the law profession have the most horizontal mobility of employment, over six percent of their positions being outside their area of training; and medical doctors have the highest ratio of multiple positions, one and one-third jobs per graduate. Nicaraguans held half of the outside positions, and 12 of them were filled by lawyers. All of the outside positions in the field of Agriculture (8) were held by lawyers. In Guatemala, three Doctors of Pedagogy had their primary positions outside their area.

In an analysis by positions within each area, i.e., how many positions in each area are held by graduates not trained in the area, there appeared two areas in which over eight percent of the positions were held by graduates not professionally prepared in those areas--Agriculture, 8.79 percent, and the Humanities (Science and Letters), 11.54 percent.

Amount of Income by Position The mean amount of income reported by the graduates in total and for each position held is shown in Table 3.5. In that table, the mean income derived from the first, second, and third positions is expressed also as a percentage of total income.

Table 3.5

National Universities of Costa Rica, Guatemala and Nicaragua

GRADUATES: MEAN TOTAL INCOME, 1963: BY NUMBER OF POSITIONS HELD

No. of Positions Held	University and No. of Graduates		MEAN INCOME FROM ALL POSITIONS - 1963						
			1st Position		2nd Position		3rd, 4th, etc. Positions		Total
			Amount	%	Amount	%	Amount	%	Amount
1	C.R.	521	$3231	100.00					$3231
	Gua.	251	7164	100.00					7164
	Nic.	139	6868	100.00					6868
sub-total		911	4868	100.00					4868
2	C.R.	50	3283	66.96	$1620	33.04			4903
	Gua.	50	4914	60.38	3224	39.62			8138
	Nic.	39	4400	62.02	2694	37.98			7094
sub-total		139	4183	62.61	2498	37.39			6681
3 or more	C.R.	8	3654	56.76	1532	23.80	$1252	19.44	6438
	Gua.	16	5029	52.77	2623	27.52	1878	19.71	9530
	Nic.	11	4161	48.87	2616	30.72	1738	20.41	8515
sub-total		35	4442	52.23	2371	27.88	1691	19.89	8504
All Positions	C.R.	579	$3241		$1606	(n=58)	$1252	(n=8)	$3418
	Gua.	317	6701		3078	(n=66)	1878	(n=16)	7437
	Nic.	189	6201		2084	(n=50)	1738	(n=11)	7010
TOTAL		1085	$4768		$2228	(n=174)	$1691	(n=35)	$5218

For graduates with two incomes, roughly two-thirds of total income was derived from first, and one-third from second, positions. Graduates with three incomes earned an average of slightly more than half their total income from their primary position, 27.88 percent from their second, and 19.89 percent from their third.

As previously noted, 83.96 percent of the graduates reported that their total income was derived from a single source. The above table appears to indicate that it is financially advantageous in Central America to hold more than one position. Graduates with two jobs earned more than those with one; graduates with three or more earned still more. The financial advantage of a second or third income-producing employment is shown below:

University and Number of Positions Held	Graduates		Mean Income	Financial Advantage Over	
	#	%		One Position Income	Two Position Income
Costa Rica					
1 position	521	89.98	$3231		
2 positions	50	8.64	4903	51.75%	
3+ positions	8	1.38	6438	99.26	31.31%
Guatemala					
1 position	251	79.18	7164		
2 positions	50	15.77	8138	13.59	
3+ positions	16	5.05	9530	33.03	17.10
Nicaragua					
1 position	139	73.54	6868		
2 positions	39	20.64	7094	3.29	
3+ positions	11	5.82	8515	23.98	20.03
TOTAL					
1 position	911	83.96	$4868		
2 positions	139	12.81	6681	37.24%	
3+ positions	35	3.23	8504	74.69	27.29%

All graduates who held two positions earned over one-third (37.24 percent) more money than those who had just one income-producing position, and those who had three incomes almost three-fourths more (74.69 percent). Graduates with three incomes reported average earnings 27.29 percent greater than did graduates with two incomes. For Costa Rican graduates the differences are even more pronounced: two-position graduates reported 51.75 percent greater income than one-position graduates, and three-position graduates 99.26 percent greater than graduates with but one position.

Eighty-four percent of the graduates reported only one source of earnings. In all cases, the "first" position is the graduate's major income. The gross importance of the first income is indicated in the following summary derived from Table 3.5:

University	Mean Total Income	First Position	
		Mean Income	% of Total
Costa Rica	$3,418	$3,241	94.82
Guatemala	7,437	6,701	90.10
Nicaragua	7,010	6,201	88.46
TOTAL	$5,218	$4,768	91.38

However, for the sixteen percent of the graduates who did report having more than one job, their second and/or third position obviously was of considerable importance. Setting first income = 100%, the second job produced a sixty percent increase in total income for those who reported two jobs. Similarly, for those reporting three positions, setting first income at 100%, the second salary raised their total income by 53.38 percent, and with first and second total at 100 percent, the third income raised total income a further 24.82 percent.

Amount of Income--Period of Graduation and Field of Undergraduate Study In Table 3.6, the mean income is shown for three groups of graduates from each university: the "Old Grads", Middle Graduates, and Recent Graduates. In Table 3.7, the income data are re-ordered according to major areas of the graduates' academic training: the Physical, Medical, and Social Sciences.

It would logically be hypothesized that the "Old Grads" would report having a greater mean total income than Middle or Recent graduates, and that those graduates trained in the Medical Sciences would have greater income than graduates prepared in the Physical or Social Sciences. It would be further hypothesized that all Costa Rican mean incomes would be less than half those of graduates from the other two universities.

Table 3.6
National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES BY PERIOD OF GRADUATION: MEAN 1963 INCOME

University	PERIOD OF GRADUATION							
	Number of Graduates				Mean Income, 1963			
	1900-1953	1954-1958	1959-1963	Total	1900-1953	1954-1958	1959-1963	Total
Costa Rica	285	142	152	579	$3582	$3892	$2667	$3418
Guatemala	138	89	90	317	8673	7256	5721	7437
Nicaragua	111	36	42	189	7811	7039	4871	7010
TOTAL	534	267	284	1085	$5777	$5438	$3961	$5218

Table 3.7

National Universities of Costa Rica, Guatemala, and Nicaragua
GRADUATES BY THREE MAJOR SCIENCE AREAS OF UNDERGRADUATE TRAINING:
MEAN 1963 INCOME

University	PHYSICAL	MEDICAL	SOCIAL					
	SCIENCE AREAS							
	Number of Graduates				Mean Income, 1963			
	P	M	S	Total	Physical	Medical	Social	Total
Costa Rica	114	72	393	579	$4,610	$4,128	$2,942	$3,418
Guatemala	73	127	117	317	8,056	7,544	6,935	7,437
Nicaragua	17	104	68	189	8,177	6,984	6,758	7,010
TOTAL	204	303	578	1085	$6,140	$6,540	$4,199	$5,218

The mean income earned by the younger, Recent graducates (1959-63) was lower in each country than the mean income earned by the Middle and the "Old Grads". The "Old Grads" (1900-53), as anticipated, reported the greatest mean total income, except in Costa Rica. In Costa Rica the Middle Graduates of that university earned more than the "Old Grads". The greater length of time that one practices one's profession seems to correlate with a higher total income, except in Costa Rica.[12]

The average "Old Grad" earned 6.23 percent more than the average Middle Graduate and 45.85 percent more than the average Recent Graduate. Middle Graduates earned an average of 37.04 percent more than those who graduated between 1959 and 1963.

"Old Grads" from Guatemala and Nicaragua did earn more than double the amount reported by the "Old Grads" in Costa Rica, 142.13 and 118.06 percent more respectively. However, the Middle Graduates of those two universities did not report double the income of their counterparts in Costa Rica; merely 86.43 and 80.86 percent more. Among the Recent Graduates, the Guatemalans earned 114.51 percent more than the Costa Ricans, and Nicaraguans 82.64 percent more.

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[12]In Central America, one continually encounters the phrase, "except in Costa Rica". Whatever the topic under discussion, be it of philosophy, economics, the military, music, dancing, education, the weather, food, population or money, agreement almost always seems to be complete but for the exception of Costa Rica. All other Central Americans recognize this, and more or less grudgingly respect the Costa Ricans' differences. Costa Rica is the only Central American nation that has no military government, no standing army, no large indigenous Indiana population; it is not yet a full participant in the Central American common market, does not follow a foreign policy of "me-tooism", does not consider itself incapable of improvement. The University of Costa Rica has a "University City", not geographically dispersed faculties; it does produce graduates and keep track of them; and it maintains and regularly publishes university academic, political, and financial records.

As hypothesized, Medical Science area graduates had the highest mean total income in 1963, reporting 6.51 percent greater income than graduates trained in agriculture or engineering, and 55.75 percent more than graduates prepared in economics, education, law and the humanities. Graduates majoring in the Physical Sciences reported a 46.23 percent higher mean total income than did graduates who studied the Social Sciences.

In the Physical and Medical Science areas, graduates from Guatemala and Nicaragua did not report incomes double those of the Costa Ricans. Altogether, Guatemalan and Nicaraguan Physical Scientists reported just 76.05 percent more income than their associates in Costa Rica, and the Medical Scientists of those two universities reported 75.97 percent more than their cohorts. In the Social Science area, however, the difference between Costa Rican graduates and those of the two other universities is more pronounced. Altogether, Guatemalan and Nicaraguan social scientists reported 132.70 percent greater income than Costa Ricans trained in the Social Sciences; specifically, Guatemala, 135.72 percent more, and Nicaragua, 129.71 percent more.

The mean total income for all Guatemalan graduates is 117.58 percent higher, and for all Nicaraguan graduates 105.09 percent higher, than that of all Costa Rican graduates, as previously noted. Only the "Old Grads" in Guatemala and Nicaragua, but not the Middle or Recent graduates, reported an average of double the income earned by the Costa Ricans. The Physical and Medical Science area graduates of those two universities did not report double the income of their counterparts in Costa Rica. It therefore appears that the overall low mean total 1963

income of Costa Rican graduates may be attributed (a) primarily to the low earnings of the Social Scientists, and (b) particularly to those trained in Education, who comprise 60.05 percent of the Costa Rican Social Scientists.

To test this hypothesis, graduates trained in the area of Education were removed from consideration, and a comparison was made of the incomes reported by all other graduates. Excluding the Education groups, the average graduate of the University of Costa Rica earned 57.06 percent less than the graduate of the National University of Guatemala, and 47.40 percent less than the average graduate in Nicaragua, as seen below:

University	n	Mean Total Income-1963	Percent of Financial Difference in Income: Over Costa Ricans	Over Nicaraguans
Costa Rica (less School of Education graduates)	342	$4,756		
Guatemala (less graduates trained in Education)	313	7,470	57.06	6.56
Nicaragua	189	7,010	47.40	
TOTAL	844	$6,267	31.78	

For graduates whose primary occupational position is in the area of Education, the mean 1963 income was $1,476; this is shown in Table 3.8.

Table 3.8

National Universities of Costa Rica, Guatemala and Nicaragua

GRADUATES: RELATION BETWEEN PROFESSIONAL FIELD OF PRIMARY OCCUPATIONAL POSITION AND THE AMOUNT AND SOURCES OF INCOME IN 1963

UNIVERSITY		PROFESSIONAL FIELD OF PRIMARY OCCUPATIONAL POSITION									
INCOME FACTOR	NO. OF SOURCES	Agri-culture	Den-tistry	Econ-omics	Educa-tion	Engi-neering	Law	Medi-cine: Micro-biology	Phar-macy	Science Letters Human-ities	TOTAL
COSTA RICA	n=	66	13	30	236	48	89	11	49	37	579
Mean	1st	$ 3738	$ 4549	$ 6037	$ 1448	$ 5275	$ 5664	$ 4228	$ 3387	$ 2152	$ 3241
total	2nd	138	886	249	27	209	339	1309	58	57	161
income-	3rd	49				69	15	208			16
1963	Total	$ 3925	$ 5435	$ 6286	$ 1475	$ 5553	$ 6018	$ 5745	$ 3445	$ 2209	$ 3418
Income	1st	95.23	83.69	96.04	98.17	94.99	94.12	73.59	98.32	97.42	94.82
source,	2nd	3.51	16.31	3.96	1.83	3.76	5.63	22.78	1.68	2.58	4.70
in %	3rd	1.26				1.25	0.25	3.63			0.48
GUATEMALA	n=	6	18	32	1	67	76	86	23	8	317
Mean	1st	$ 4916	$ 8715	$ 7728	$ 1800	$ 7480	$ 5831	$ 6980	$ 4964	$ 3762	$ 6701
total	2nd	688	333	1329		692	468	536	827	427	641
income-	3rd		133	120		103	48	138	60		95
1963	Total	$ 5604	$ 9181	$ 9177	$ 1800	$ 8275	$ 6347	$ 7654	$ 5851	$ 4189	$ 7437
Income	1st	87.72	94.92	84.21	100.00	90.39	91.87	91.19	84.84	89.81	90.10
source	2nd	12.28	3.63	14.48		8.36	7.37	7.00	14.13	10.19	8.62
in %	3rd		1.45	1.31		1.25	0.76	1.81	1.03		1.28

Table 3.8 (con.)

UNIVERSITY		PROFESSIONAL FIELD OF PRIMARY OCCUPATIONAL POSITION									
INCOME FACTOR	NO. OF SOURCES	Agri-culture	Den-tistry	Econ-omics	Educa-tion	Engi-neer-ing	Law	Medi-cine: Micro-biology	Phar-macy	Science Letters Human-ities	TOTAL
NICARAGUA	n=		7	1	1	17	66	83	14		189
Mean	1st		$ 6369	$12073	$ 2038	$ 7951	$ 5602	$ 6136	$ 5769		$ 6201
total	2nd			1387		226	689	777	1140		708
income	3rd			136			108	136			101
1963	Total		$ 6369	$13596	$ 2038	$ 8177	$ 6399	$ 7049	$ 6909		$ 7010
Income	1st		100.00	88.80	100.00	97.24	87.53	87.05	83.50		88.46
source,	2nd			10.20		2.76	10.77	11.02	16.50		10.10
in %	3rd			1.00			1.70	1.93			1.44
TOTAL	n=	72	37	62	238	132	231	180	86	45	1085
Mean	1st	$ 3836	$ 6919	$ 6910	$ 1452	$ 6739	$ 5692	$ 6423	$ 4197	$ 2433	$ 4768
total	2nd	184	450	806	27	457	487	694	440	121	397
income-	3rd	44	65	62		77	54	142	16		53
1963	Total	$ 4064	$ 7434	$ 7778	$ 1479	$ 7273	$ 6233	$ 7259	$ 4653	$ 2554	$ 5218
Income	1st	94.39	93.07	88.84	98.17	92.66	91.33	88.48	90.20	95.26	91.38
source,	2nd	4.53	6.05	10.36	1.83	6.28	7.81	9.56	9.46	4.74	7.61
in %	3rd	1.08	0.88	0.80		1.06	0.86	1.96	0.34		1.01

Amount of Income--Professional Area of Primary Position In Table 3.8 nine areas of professional work are listed in alphabetical order; for all graduates whose primary position is in each area, the mean total income is indicated. As noted earlier, graduates of the Medical Sciences reported the highest mean income, followed by Physical and Social Science graduates. An easier comparison by area of income data can be made by condensing the nine professional fields into just three groups that correspond to the three major science areas of undergraduate training; setting the mean total income for all graduates ($5,218) to be equal to 100 percent, the relationship of each area to the others is as follows:

AREA	MEAN TOTAL INCOME--1963		RELATION TO OVER-ALL MEAN INCOME IN PERCENT	
Physical Sciences:				
Engineering	$7,273		139.38	
Agriculture	4,064		77.88	
Mean	$6,140		117.67	
Medical Sciences:				
Dentistry	$7,434		142.47	
Medicine/		$7,289		139.69
Microbiology	7,259		139.11	
Pharmacy	4,653		89.17	
Mean	$6,540		125.34	
Social Sciences:				
Economics	$7,778		149.06	
		$6,643		127.31
Law	6,341		121.52	
Science:Letters/	2,554		48.95	
Humanities		$1,651		31.64
Education	1,476		28.29	
Mean	$4,199		80.47	
ALL AREAS:				
OVERALL MEAN	$5,218		100.00	

It is obvious that within each of the three major areas there are disparities between and among each of the specific disciplines, as reported by the graduates who work in those disciplines. Engineers, for example, reported earnings 78.96 percent higher than Agronomists. In the Medical Sciences, Dentists, Medical Doctors and Microbiologists earned 56.65 percent more money than Pharmacists; and in the Social Sciences, Lawyers and Economists reported income 302.36 percent greater than did graduates working in areas pertaining to Education and the Humanities.

Graduates working in Education had a lower mean total income than any other group, only 28.29 percent of the mean total income for all graduates; graduates working in the area of Economics had the highest relationship, 149.06 percent of the overall mean. A comparison of the nine professional areas, for graduates of each university and for all graduates, is shown in Table 3.9.

Table 3.9

National Universities of Costa Rica, Guatemala and Nicaragua

GRADUATES: RANK ORDER OF 1963 INCOMES BY FIELD OF STUDY

UNIVERSITY AND INCOME FACTOR	PROFESSIONAL FIELD OF PRIMARY OCCUPATIONAL POSITION									
	Agriculture	Dentistry	Economics	Education	Engineering	Law	Medicine: Microbiology	Pharmacy	Science Letters Humanities	MEAN: ALL AREAS
COSTA RICA n=	66	13	30	236	48	89	11	49	37	579
Mean Income	$ 3925	$ 5435	$ 6286	$ 1475	$ 5553	$ 6018	$ 5745	$ 3445	$ 2209	$ 3418
% of Mean: All Areas	114.83	158.95	183.91	43.15	162.46	176.07	168.08	100.79	64.66	100.00
Rank of Area in Country	6	5	1	9	4	2	3	7	8	
GUATEMALA n=	6	18	32	1	67	76	86	23	8	317
Mean Income	$ 5604	$ 9181	$ 9177	$ 1800	$ 8275	$ 6347	$ 7654	$ 5851	$ 4189	$ 7437
% of Mean: All Areas	75.35	123.45	123.40	24.20	111.27	85.34	102.92	78.67	56.33	100.00
Rank of Area in Country	7	1	2	9	3	5	4	6	8	
NICARAGUA n=		7	1	1	17	66	83	14		189
Mean Income		$ 6369	$13596	$ 2028	$ 8177	$ 6399	$ 7049	$ 6909		$ 7010
% of Mean: All Areas		90.86	192.52	28.93	116.65	96.41	100.56	98.56		100.00
Rank of Area in Country		6	1	7	2	5	3	4		
TOTAL n=	72	38	63	238	132	231	180	86	45	1085
Mean Income	$ 4064	$ 7434	$ 8131	$ 1479	$ 7273	$ 6233	$ 7259	$ 4653	$ 2554	$ 5218
% of Mean: All Areas	77.88	142.47	155.87	28.30	139.38	119.45	139.11	89.17	48.95	100.00
Rank of Area	7	2	1	9	3	5	4	6	8	

Amount and Source of 1963 Income: Teaching and Non-Teaching Graduates It was stated earlier that 136 graduates from the three universities had incomes in the income range of $1,001-$1,500. Of the 136, 130 were graduates of the University of Costa Rica, 122 of whom were women trained to teach.

An analysis was made comparing income and occupational data of those graduates who teach and those who do not. The results, as seen in Table 3.10, further indicate that the low income earned by the Costa Rican women who teach is probably the primary reason why the average Costa Rican graduate has a mean 1963 income less than half that of the average Guatemalan or Nicaraguan graduate.

A total of 1,085 graduates presented complete income and occupational data: of these, 318, or 29.31 percent, devote all or part of their time to teaching, and 767, or 70.69 percent, do not teach. Those who teach earned an average of $2,220 in 1963 while the non-teachers earned $6,460. Women comprise 71.38 percent of those who teach.

In Costa Rica half of the graduates teach, and 79.23epercent of them are women. Teaching is the primary occupation of 236, or 83.10 percent, of the 284 graduates who teach in Costa Rica.

In Nicaragua less than eight percent of the graduates teach (15 or 189), and not one of them lists teaching as his primary occupation. In Guatemala just six percent teach (19 of 317), and only one teaches for his primary source of income (see Table 3.8).

Those in Costa Rica who teach reported an average income of $1,741, while the non-teaching graduates reported $5,033, a difference of

Table 3.10

National Universities of Costa Rica, Guatemala and Nicaragua

TEACHING AND NON-TEACHING GRADUATES: NUMBER OF POSITIONS HELD AND INCOME RECEIVED, 1963

FACTOR		Costa Rica (n=579)		Guatemala (n=317)		Nicaragua (n=189)		Total (n=1,085)	
		Teach	Do not Teach	Teach	Do not Teach	Teach	Do not Teach	Teach	Do not Teach
Number		284	295	19	298	15	174	318	767
Percent		49.05	50.95	5.99	94.01	7.94	92.06	29.31	70.69
Male		59	273	18	291	14	173	91	737
Female		225	22	1	7	1	1	227	30
Percent Female		79.23	7.46	5.26	2.35	6.67	0.57	71.38	3.91
Average Annual Income-1963	1st Position	$1,617	$4,801	$4,907	$6,816	$5,257	$6,283	$1,986	$5,920
	2nd Position	105	215	1,444	590	563	721	206	475
	3rd Position	19	17	199	87	-	109	28	65
	TOTAL	$1,741	$5,033	$6,550	$7,493	$5,820	$7,113	$2,220	$6,460
% of total income derived from 1st position		92.88	95.39	74.92	90.97	90.33	88.33	89.46	91.64

$3,292, or an amount nearly double that earned by the teachers. Teaching graduates in Guatemala and Nicaragua also earn less than the non-teachers, but the difference is not so great as in Costa Rica. However, it must be remembered that those who teach in Guatemala and Nicaragua do not have teaching as their main source of income. To get a truer picture of the monies earned from teaching in Guatemala and Nicaragua, it is necessary to look at the incomes received from the second and third positions held by graduates who teach in those countries; i.e., $1,444 and/or $199 in Guatemala, and $563 in Nicaragua (Table 3.10).

In Costa Rica, the true value of teaching as a primary source of income for 236 graduates was reported to be $1,475 (see Table 3.8). Thus the figure of $1,741 mean total income for the 284 graduates in Costa Rica who reported some teaching (as found in Table 3.10), is $266 higher because the primary positions of 48 graduates who teach (284 less 236) lie outside the area of education.

The 236 Costa Rican graduates whose primary occupation was teaching, did so at different levels of instruction: primary level, 64.41 percent; secondary level, 34.32 percent; and in higher education, 1.27 percent. The other 48 Costa Ricans who reported teaching, but as a second or third occupation, taught at the same levels, but a greater percent taught at the higher levels as follows: primary, 6.25 percent; secondary, 68.75 percent; and higher education, 25.00 percent. These data account for both (1) the low level of income reported by those whose primary positions were as teachers, and (2) the slightly higher

income reported by those graduates whose primary positions lay outside the professional area of education. The data also indicate dramatically the extremely low monetary position in Central America of the education profession as compared to other professions.

CHAPTER FOUR

CHARACTERISTICS OF THE GRADUATES: THE GRADUATES AS UNDERGRADUATES

What were the graduates like during their "golden days", while they were college students? Where had they gone to high school? How old were they when they entered college? What academic programs were pursued? What kinds of financial support did they have? Did they work outside of school? What was their average annual under graduate income while in school? How long did it take them to be graduated? What did it cost the graduates in time and money to obtain their degrees?

The answers to these questions are quite relevant to the organization of administration of higher education institutions in Central America. The picture here presented of undergraduate college life in Central American universities provides suggestions for different curriculum planning and more economical operation. The graduates themselves have presented data which should help university authorities solve such problems as which programs need revision? What professional areas need be emphasized more? or less? How can the graduation process be speeded up? What amount of economic aid do undergraduates need? In what ways can the university produce more graduates for less expenditure?

Secondary School Origins Prior to matriculation at the university, the graduates completed a secondary school program. It is a part of academic folklore that the great majority of Latin American university students (1) attend private secondary schools, (2) have predominantly urban, rather than rural, backgrounds, and (3) attend non-coeducational schools.

A question requesting the graduates to report their secondary school origins tested these assumptions; the results are shown in Table 4.1

Table 4.1
National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES: SECONDARY SCHOOL ORIGINS, IN PERCENT

Type of High School Attended	UNIVERSITY			
	Costa Rica	Guate-mala	Nica-ragua	TOTAL
	n=588	n=323	n=195	n=1106
Public	74.8	66.6	65.6	70.8
Private	25.2	33.4	34.4	29.2
Capital area	61.2	77.7	32.3	60.9
Interior area	38.8	22.3	67.7	39.1
Co-educational	42.0	18.9	69.7	40.7
Segregated by sex	58.0	81.1	30.3	59.3

Almost seventy-one percent of the 1,106 graduates who reported had attended a public high school, and only 29.2 percent a private school. This was the case for the graduates of each of the three national universities, although in Costa Rica the percentage of public school graduates were slightly higher--74.8 percent.

Nicaraguan graduates proved to be an exception to the second hypothesis: there, 67.7 percent of the graduates attended a high school not located in the Capital district of the country (the Managua metropolitan area). This might be attributed to the fact that the university itself is not located in Managua, but in León, which is some fifty miles from the capital city. However, the majority of secondary schools in Nicaragua are in the Managus district, and are urban in character.[13]

[13]Orr, Paul G. and Hereford, K.T., Characteristicas de los escuelas secundarias de America Central, (Guatemala, IIME, 1964) p.4.

In Costa Rica and Guatemala, graduates of urban, capital area high schools out-numbered other graduates two to one.

Although the overall figures support the hypothesis that students do not attend coeducational schools (40.7% vs. 59.3%), there were marked differences in this factor between graduates of the three national universities. In Costa Rica the percentage was close to the overall figures (42% vs. 58%). Guatemalan and Nicaraguan graduates, however, reported opposite extremes; in Guatemala, eight of every ten university graduates had attended segregated secondary schools, but in Nicaragua seven of ten graduated from escuelas mixtas, coeducational secondary schools.

Table 4.2
National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES BY FIELD OF UNDERGRADUATE PREPARATION: PERCENT WHO ATTENDED EACH TYPE OF SECONDARY SCHOOL

Field of Undergraduate Training	Percent who attended each type of school						
	N=	Public	Private	Capital	Interior	Co-ed.	Boys or Girls only
Agriculture	70	72.9	27.1	62.9	37.1	41.4	58.6
Engineering	126	57.9	42.1	85.7	14.3	23.0	77.0
Physical Sci.	196	63.3	36.7	77.6	22.4	29.6	70.4
Dentistry	40	52.5	47.5	75.0	25.0	35.0	65.0
Medicine/ Microbiology	186	69.4	30.6	52.7	47.3	44.1	55.9
Pharmacy	87	72.4	27.6	72.4	27.6	25.3	74.7
Medical Science	313	68.1	31.9	61.0	39.0	37.7	62.3
Economics	62	77.4	22.6	88.7	11.3	35.5	64.5
Education	239	75.3	24.7	45.2	54.8	57.3	42.7
Law	249	72.7	27.3	55.4	44.6	39.4	60.6
Science/Letters (Human)	47	78.7	21.3	63.9	36.1	36.2	63.8
Social Sciences	597	74.7	25.3	55.4	44.6	45.9	54.1
TOTAL	1106	70.8	29.2	60.9	39.1	40.7	59.3

In the table above, the graduates are sub-divided into their professional fields of undergraduate preparation. Graduates who majored in Education were the only group in which more than half attended co-educational schools in the interior of the country. Pharmacists, and especially Engineers, displayed the opposite characteristic. Nearly sixty-three percent of the Agriculture graduates came out of urban area high schools. In order downward, a greater percent of Physical Science than Medical or Social Science graduates had attended private high schools: 36.7 percent, and 31.9 and 25.3 percents, respectively. The same progression held for attendance at segregated (boys or girls only) schools: Physical sciences graduates, 70.4 percent, Medical graduates, 62.3, and Social sciences graduates, 54.1 percent. It might be said in general, that Social science area graduates tended to more than other grads come to the university from public, co-educational schools in the interior of a country. The implications of this in later analyses of financial income will be apparent.

Age at University Matriculation Each university graduate in the study reported (1) his age in 1963, (2) the year in which he first enrolled at the university, and (3) the year he graduated from the university. These data were recorded in the punched card record for each graduate. A simple series of subtractions and calculations was made to obtain (a) the graduate's age at matriculation, (b) his age at graduation, and (c) the number of calendar years spent to get his degree. For example:

(a) 1963 present age----------40
-1943 year of matriculation
20 -20
20 age at matriculation

(b) 1963 present age----------40
-1954 year of graduation
9 -9
31 age at graduation

(c) 1954 year of graduation
-1943 year of matriculation
11 calendar years spent to obtain the degree

These computations were made by machine for each graduate, and also recorded in his punched card record.

Table 4.3
National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES: MEAN AGE AT FIRST UNIVERSITY ENROLLMENT

Period of Graduation	U N I V E R S I T Y			
	Costa Rica	Guate-mala	Nica-ragua	Total
	n=598	n=333	n=202	n=1133
1900-1953	18.7	19.7	18.7	18.7
1954-1958	18.6	19.8	18.5	18.9
1959-1963	18.8	19.3	18.7	19.1
Mean	18.7	19.4	18.7	18.9

As seen in Table 4.3, the "average" university graduate in Central America was nearly nineteen years old when he entered college. The "average" graduate of the University of San Carlos in Guatemala did not begin his university studies until the age of 19.4, while the graduates of the other two national universities began their studies when half a year younger.

These differences do not seem to be due to the sex of the graduates. Guatemalan and Nicaraguan graduates are mostly males, 96.70 and 98.02 percent respectively (see Table 3.1). Over forty-two percent of the Costa Rican graduates are female. Yet Guatemalans enter college one-half year older than Nicaraguans, whose age at matriculation is the same as the Costa Ricans.

Furthermore, a study of the high school programs pursued by the graduates, based upon conversations with educators and analyses of past programs, does not reveal an appreciable difference of curricula or years of high school study between the three countries.[14]

Change of Faculty or Program Compared to students in United States colleges and universities, Central American universitarios rarely change their program of studies once they have enrolled. This is due primarily to the fact that it is traditional in Latin universities for matriculating students to choose their major field of study when they first enroll, and to enter the appropriate faculty. Since there is much less variety of program selection, this procedure is not difficult for the students. Many new university students have, in fact, known throughout their high school careers which faculty they would enter and which program they would pursue, (1) because of family tradition, or (2) because of intense personal desire to follow a particular career which will bring "prestige" or social and economic upward mobility.

Two additional factors mitigate against a change of faculty or program by university students. In those universities which have

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[14]Ibid., p.4.

established a "program of general studies" for first and/or second year students, the students have an extra year or two in which to decide their major area of undergraduate training, enabling the students to be more sure of their final choice. Secondly, because of traditional administrative practices, it is difficult for a student to change his program or faculty without losing the credits already earned. Intra- or inter-faculty transfer of credits, although possible, is rare, since each faculty considers itself complete and independent, and "guards" this autonomy.

Nevertheless, some students do change their programs. In this study, 58 of 1,133 university graduates (5.12%) indicated that they had made one or more changes during their undergraduate years. In Guatemala just 1.20 percent changed (4 of 333), and in Nicaragua 2.97 percent (6 of 202). However, in Costa Rica 48 of 598, or 8.03 percent, changed their program or faculty. The data for graduates of the University of Costa Rica are shown in Table 4.4.

It is obvious that most transfers at the University of Costa Rica are <u>into</u> the School of Education, 16.11 percent of whose graduates reported having changed from their original faculty of enrollment. Of the changes in this faculty, 76.92 percent were women who had first enrolled in a different college.

Table 4.4
National University of Costa Rica
GRADUATES: CHANGE OF FACULTY AFTER FIRST ENROLLMENT

Faculty or School	Number	Graduates who changed one or more times					
		Total	% / %	Male		Female	
				#	%	#	%
Agriculture	66						
Dentistry	17						
Economics	31	3	9.67 / 100.00	3	100.00		
Education	242	39	16.11 / 100.00	9	23.08	30	76.92
Engineering	48	1	2.08 / 100.00	1	100.00		
Law	96	4	4.17 / 100.00	4	100.00		
Microbiology	11						
Pharmacy	50	1	2.00 / 100.00	1	100.00		
Science and Letters	37						
TOTAL	598	48	8.03 / 100.00	18	37.50	30	76.92

Non-university Studies Pursued During Undergraduate Career Except at the University of Costa Rica, university study is by and large part-time study. Many university students must work, sometimes at two or three jobs, in order to support themselves and/or their families.[15]

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[15]Recent data, however, suggests that this belief, commonly held in Central American university circles, may be false. In the second student census at the University of San Carlos of Guatemala, conducted in 1963, in 69.40 percent of the students enrolled in the Guatemala City faculties reported themselves to be single, widowed or divorced. Furthermore, 42.06 percent of the students in Guatemala City do not work. Such a large number of students, in this case 2,442, could and should be allowed to study on a full-time basis, thus graduating sooner, to their own and the nation's benefit. /See Universidad de San Carlos de Guatemala, Segundo Censo Estudiantil Universitario Enero de 1963 (Guatemala: Oficina de Registro, 1963); mimeograph, 201 pp., from which the above data were calculated./

Other students enjoy the idea of part-time study, for it gives them more time to pursue social or political interests, and to have the "prestige" of being a universitario longer. Some students no doubt feel that they can further their career, in either their work or university studies, if they take up additional post-secondary school studies. Most such studies reported by the graduates are short-term programs (four to ten weeks in duration), sponsored by government agencies or private foundations, designed to acquaint the trainee with specific administrative, economic, language, etc., techniques. A formal certificate of attendance and proficiency upon completion of the course of studies can then be added to one's curriculum vitae.

In actuality, only 3.27 percent of the graduates in this study reported such studies. However, there seems to be a trend in recent years for more undergraduates to pursue studies outside the university while still enrolled in the university. This tendency is indicated in Table 4.5 in which the data are shown in two ways--by the period of graduation, and by each of the three major science areas of undergraduate training.

Considering all the graduates who reported outside studies, the percentage has increased through the years from 1.96 percent (the "Old Grads") to 3.66 percent (Middle Graduates) to 5.37 percent for the Recent Graduates.

Nearly five percent of Guatemalan graduates pursued other post-secondary school studies while they were working toward their university degree; and for the Recent Guatemalan graduates (1959-1963) the figure was 10.64 percent.

Table 4.5

National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES: OTHER POST-SECONDARY SCHOOL STUDIES MADE CONCURRENT WITH UNIVERSITY UNDERGRADUATE STUDIES

FACTOR	UNIVERSITY			
	Costa Rica	Guatemala	Nicaragua	Total
	n=598	n=333	n=202	n=1133
Number of graduates	18	16	3	37
Percent of graduates	3.01	4.80	1.49	3.27
Percent of all graduates in each period: 1900-1953	1.69	2.70	1.68	1.96
1954-1958	4.83	2.20	2.70	3.66
1959-1963	3.80	10.64	-	5.37
Percent of all graduates in each major science area: Physical	5.26	1.37	-	3.43
Medical	2.56	2.92	1.85	2.48
Social	21.74	8.94	1.30	3.63

In regard to the percent of all graduates in each major science area of undergraduate training who undertook outside studies, graduates of the Social Sciences, especially in Costa Rica and Guatemala, reported the greatest number of studies. In Costa Rica 21.74 percent of the Social Science graduates took extra-curricular studies, and in Guatemala the figure was 8.94 percent.

The extent to which the pursuance of outside studies prolongs the pursuit of a university degree can only be conjectured. It may be noted, however, that a study made of the academic progress of university students in Guatemala in 1963 indicated that the future economists, accountants, business administrators, lawyers, educators, and specialists in the Humanities all had lower course completion averages than the overall university average.[16]

[16]IIME Staff (Burton D. Friedman, et. al), Academic Progress of University Students, University of San Carlos of Guatemala, 1963, (Michigan State University: IIME, 1964). Table A, pp. 2-3.

University Becas Received During Undergraduate Career In Latin American university terminology, the generic term becas is used to include such official university financial aid as the remission of fees, scholarship or fellowship monies, or outright study and research grants. The graduates were asked to report whether they had received any form of beca during their last three years of college study, and if so, the amount for each year. A summary of all data concerning becas is presented in Table 4.6 which is sub-divided into four parts for ease of discussion.

1. In all, 26.65 percent of the graduates reported some form of economic aid from their university in their last years of study. At the University of Costa Rica, 41.64 percent of the graduates received such aid; in Guatemala 6.31 percent; and in Nicaragua 15.84 percent.

2. The mean amount of monies received in the "common" unit of Central American pesos was $59.94 per recipient per year, which represented 5.15 percent of the undergraduate's total mean annual income. Costa Rican and Guatemalan graduates reported the extreme figures; $93.03, or 10.18 percent of the undergraduate income, in Costa Rica, and $8.17, or 0.46 of one percent of undergraduate income, in Guatemala.

Graduates of the University of Costa Rica who received becas reported an annual amount of $93.03, more than double that reported by Nicaraguans, and 14½ times greater than the mean of $6.31 reported by Guatemalan beca recipients. Compared to the percent of Guatemalan and Nicaraguan graduates who received becas, Costa Rican graduates

Table 4.6

National Universities of Costa Rica, Guatemala and Nicaragua

GRADUATES: SUMMARY OF DATA ON BECAS (Any Official University Financial Aid) RECEIVED IN LAST THREE YEARS OF UNDERGRADUATE STUDY

DATA FACTOR OR CALCULATION	%, mean, or #	1133 Graduates: Percentage, average, or number, by University			
		Costa Rica	Guate-mala	Nica-ragua	Total
		n=598	n=333	n=202	n=1133
1. Recipients:					
Number:	#	249	21	31	302
Percent of all graduates	%	41.64	6.31	15.84	26.65
2. Mean annual amount	$\bar{X}$	$93.03	$ 8.17	$45.43	$59.94
Percent amount of beca represents of mean undergraduate income:	%	10.18	0.46	5.09	5.15
3. Distribution:					
a. By period----1900-1953	%	40.16	57.14	12.50	38.41
1954-1958		28.92	14.29	43.75	29.47
1959-1963		30.92	28.57	43.75	32.12
Percent of all graduates in each period who had becas: 1900-1953	%	33.90	8.11	3.36	20.64
1954-1958		49.65	3.30	37.84	32.60
1959-1963		48.73	6.38	30.43	32.55
b. By Science Area: Physical	%	21.69	28.57	3.12	20.20
Medical		10.44	61.91	62.50	19.54
Social		67.87	9.52	34.38	60.26
		100.00	100.00	100.00	100.00

Table 4.6 (con.)

DATA FACTOR OR CALCULATION	%, mean, or #	1133 Graduates: Percentage, average, or number, by University			
		Costa Rica	Guate-mala	Nica-ragua	Total
		n=598	n=333	n=202	n=1133
b. Percent of all graduates in each area who had becas:					
Physical	%	47.37	8.22	5.38	29.90
Medical		33.33	9.49	18.52	18.27
Social		41.63	1.63	14.29	30.03
c. By Faculty (Costa Rica only):	#	249			
Agronomy	%	14.06			
Dentistry		3.21			
Economics		5.22			
Education		46.99			
Engineering		7.63			
Law		10.84			
Microbiology		2.41			
Pharmacy		4.82			
Science/Letters		4.82			
		100.00			
4. Mean amount of beca:					
Teachers	$\bar{X}$	$114.34	$ 7.58	$167.80	$110.48
Non-teachers		72.52	8.21	34.88	38.99
Percent amount of beca represents of mean undergraduate income:					
Teachers	%	16.06	0.44	22.08	14.26
Non-teachers		6.48	0.46	3.86	2.94

graduates reported two and a half times percent more than Nicaraguans (41.64 vs. 15.84%), and six and a half times the percent reported by Guatemalans (41.64 vs. 6.31%).

3. Section three of Table 4.6 contains the distribution of the becas by period of graduation and major science area, and the percentage of all graduates in each period and science area who received them. Altogether, the becas were roughly divided equally between the "Old Grads", Middle Graduates and Recent Graduates--38.41, 29.47, and 32.12 percent respectively. Only in Nicaragua did a much larger percent of Recent or Middle Graduates receive becas than did "Old Grads" (30.43 and 37.89% vs. 3.36%).

Nearly one-third of all graduates in the ten-year period 1954-1963 received financial aid of one sort or another. However, there was a difference of almost forty-five percent between graduates of the National University of Guatemala and those of the University of Costa Rica. In that ten-year period, 49.19 percent of the Costa Rican graduates had received becas, while in Guatemala the figure was 4.84 percent, and in Nicaragua, 34.13 percent.

Graduates of the Social Sciences received over sixty percent of all becas, and the Physical and Medical Science graduates approximately twenty percent each. In Costa Rica, 67.87 percent of all becas went to undergraduates majoring in the Social Sciences; in Guatemala and Nicaragua, 61.91 and 62.50 percent respectively were given to Medical Science majors. In Guatemala, less than ten percent of the becas received were reported by Social Science majors.

Of all the graduates who majored in the Physical Sciences, 29.90 percent received a beca: 18.27 percent of the dentists, medical doctors and pharmacists reported becas; and 30.03 percent of the Social Scientists said they had received a beca. However, these figures are fairly high primarily because the graduates of the University of Costa Rica reported a 41.64 percent reception of becas. The two lowest percentages of all graduates in a given major science area who received becas were reported by the Social Scientists in Guatemala, 1.63 percent, and the Physical Science graduates in Nicaragua, 5.88 percent.

From all the data above, it is evident that the University of Costa Rica has a larger program of financial aid for its students than the two other national universities. Furthermore, a distribution by faculty of the beca recipients in Costa Rica, as shown in Table 4.6, indicates that the program is broadly based. That it is balanced also may be seen in the following data: Physical Science area graduates represent 19.06 percent of the specific Costa Rican population, and they received 21.69 percent of the becas; Medical Science graduates, 13.04 percent of the specific population, reported 10.44 percent of the becas; and Social Science area graduates, 67.90 percent of the population, got 67.87 percent of the becas. A faculty by faculty analysis revealed an equally fair balance of distribution.

4. One further analysis of the beca data was made: graduates who teach were compared to those who do not. Teaching graduates reported a mean annual undergraduate income from becas of $110.48, which represented 14.26 percent of their total average annual undergraduate income; non-teaching graduates reported beca income of $38.99,

or 2.94 percent of average annual undergraduate income. In looking ate each of the universities, Nicaraguan graduates who teach (although not as a primary occupation--see Table 3.8) reported a mean annual beca income of $167.80, whereas Costa Ricans who teach (over eighty percent of them as a primary occupation) reported an average annual income of $114.34 from becas.

From the beca data provided by graduates of the national universities of Costa Rica and Nicaragua, it would seem that undergraduates who later were to devote all or part of their time to teaching were subsidized from 2 to 5 times more than their co-students who were to pursue other occupations. Some form of official university financial aid represented 16.06 percent of the average annual undergraduate income for those Costa Ricans who became teachers, and becas in Nicaragua provided 22.08 percent of annual undergraduate income for the Nicaraguans who later taught.

Undergraduate Programs of Study--Academic Years Required When the graduates first enrolled in their universities, each elected to follow a specific course of studies which would lead to an academic degree or professional titale. These courses of study vary from university to university, and from faculty to faculty within a given university. Generally they require from two or three academic years of study (in the case of the titles Primary School Teacher or Secondary School Teacher) to eight years of academic work (for the title Medical Surgeon or the degree Doctor of Medicine). Though degrees and titles vary from country to country, degrees common to many fields of study

are the Licenciado and the Doctorado. These usually represent completion of four to eight years' work. For this (and other reasons), the Doctorado is not comparable to the United States Ph.D. degree. There are cases, also, where the Doctorado of one university is equivalent to the Licenciado conferred by another university--both degrees requiring the same number of courses, examinations and related requirements. Titles appropriate to the particular area of undergraduate professional training, such as Agronomist, Economist, Engineer or Pharmacist are likewise common awards in Central American universities upon completion of a specific program of studies.

The graduates were requested to indicate the program of studies followed as an undergraduate, and the number of academic years of study the program required. The number and percent of graduates who enrolled in undergraduate programs of each length at each of the three universities, are shown in Table 4.7. The same data are re-ordered in Tables 4.8 and 4.9 to indicate the number and percent of graduates in each length program by the period of graduation and by the three major science areas.

Graduates of the University of Costa Rica had been enrolled as undergraduates in programs of study which required a mean of 4.1 years of academic work; 39.96 percent of the graduates were in two-year programs, and 32.44 percent in six-year programs. Guatemalan graduates took an "average" program of 6.5 academic years of study--28.53 percent of the graduates taking an eight-year medical school program. In

Table 4.7

National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES: UNDERGRADUATE PROGRAMS--ACADEMIC YEARS OF STUDY REQUIRED: NUMBER AND PERCENT OF GRADUATES BY UNIVERSITY

A. In Absolute and Relative Terms

University		Academic years of study in the programs							
		2	3	4	5	6	7	8	Total
Costa Rica	#	221	21	37	125	194			598
	%	39.96	3.51	6.19	20.90	32.44			100.00
Guatemala	#		2	3	7	226		95	333
	%	0.60	0.60	0.90	2.10	67.87		28.53	100.00
Nicaragua	#				31	84		87	202
	%				15.35	41.58		43.07	100.00
TOTAL	#	221	23	40	163	504		182	1,133
	%	19.51	2.03	3.53	14.39	44.48		16.06	100.00

B. In Relative Terms, all Three Universities

University	Academic years of study in the program							
	2	3	4	5	6	7	8	Total
Costa Rica	19.51	1.85	3.27	11.03	17.12			52.78
Guatemala		0.18	0.26	0.62	19.95		8.38	29.39
Nicaragua				2.74	7.41		7.69	17.83
TOTAL	19.51	2.03	3.53	14.39	44.48		16.06	100.00

Table 4.8

National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES: UNDERGRADUATE PROGRAMS--ACADEMIC YEARS OF STUDY REQUIRED: NUMBER AND PERCENT OF GRADUATES BY PERIOD OF GRADUATION

A. In Absolute and Relative Terms

Period		Academic years of study in the program							
		2	3	4	5	6	7	8	Total
1900-1953	#	128	2	14	71	243		104	562
	%	22.78	0.36	2.49	12.63	43.24		18.50	100.00
1954-1958	#	50		9	50	115		49	273
	%	18.32		3.29	18.32	42.12		17.95	100.00
1959-1963	#	43	21	17	42	146		29	298
	%	14.43	7.05	5.71	14.09	48.99		9.73	100.00
TOTAL	#	221	23	40	163	504		182	1,133
	%	19.51	2.03	3.53	14.39	44.48		16.06	100.00

B. In Relative Terms, all Three Periods

Period	Academic years of study in the program							
	2	3	4	5	6	7	8	Total
1900-1953	11.30	0.18	1.23	6.26	21.45		9.18	49.60
1954-1958	4.42		0.80	4.42	10.14		4.32	24.10
1959-1963	3.79	1.85	1.50	3.71	12.89		2.56	26.30
TOTAL	19.51	2.03	3.53	14.39	44.48		16.06	100.00

Table 4.9

National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES: UNDERGRADUATE PROGRAMS--ACADEMIC YEARS OF STUDY REQUIRED: NUMBER AND PERCENT OF GRADUATES BY 3 MAJOR AREAS OF TRAINING

A. In Absolute and Relative Terms

Science Area		Academic years of study in the program							
		2	3	4	5	6	7	8	Total
Physical	#			1	83	120			204
	%			0.49	40.69	58.82			100.00
Medical	#				42	99		182	323
	%				13.00	30.65		56.35	100.00
Social	#	221	23	39	38	285			606
	%	36.47	3.79	6.44	6.27	47.03			100.00
TOTAL	#	221	23	40	163	504		182	1,133
	%	19.51	2.03	3.53	14.39	44.48		16.06	100.00

B. In Relative Terms, all Three Areas

Science Area	Academic years of study in the program							
	2	3	4	5	6	7	8	Total
Physical			0.08	7.33	10.59			18.00
Medical				3.71	8.74		16.06	28.51
Social	19.51	2.03	3.45	3.35	25.15			53.49
TOTAL	19.51	2.03	3.53	14.39	44.48		16.06	100.00

Nicaragua, the only undergraduate programs followed were of five, six or eight years duration, and the "average" program was 6.7 academic years of study.

For all 1,133 graduates in the study, the "average" undergraduate program pursued was 5.3 years in length. Only 2.03 and 3.53 percent of the graduates, respectively, followed a two- or a three-year program. A six-year program of study is the most common at these three universities, 44.48 percent of the graduates having pursued such a course of work.

In analyzing the courses of study taken by the graduates of different periods of time, it appears that a higher percent of "Old Grads" took two- or eight-year programs than did Recent Graduates. Two-year programs were followed by 22.78 percent of the "Old Grads", but by only 14.43 percent of the Recent Graduates: eight-year courses of study were selected by 18.50 percent of the 1900-1953 graduates, while just half that percent of the Recent Graduates, 9.73, were in eight-year programs.

There was an increase in the percent of Recent Graduates who pursued three- to six-year academic programs, when compared to the percent of "Old Grads" who were in such programs.

When the graduates and their undergraduate programs were classified by a division into the Physical, Medical and Social Sciences, the greatest variety of programs was found to be in the Social Sciences--courses of study from two to six years in length. Physical Scientists took three-, four-, or five-year programs and Medical Scientists five-, six-, or eight-year programs.

Most of the Social Science area graduates followed either a two- or a six-year undergraduate program, 36.47 and 47.03 percent respectively. Graduates who majored in Human Medicine (56.35 percent of the Medical Science enrollees) took the eight-year program, most Pharmacists and all Microbiologists (13.00%) took a five-year course; and most Dentists (30.65 percent) were in a six-year program. One Physical Scientist, a "Capitán Topógrafo", followed a four-year course of studies "hace muchos años" (many years ago), but most of the Engineers were in six-year programs and the Agronomists in five-year courses.

Calendar Years Spent to Obtain Degree or Title The mean number of calendar years invested by the graduates in pursuit of their goal--graduation from the university--is shown in Table 4.10.

As noted earlier, a calculation of years invested was made for each graduate; the reported year of graduation minus the year of first matriculation.

In the Table, the average number of calendar years spent before graduation is reported by duration of each academic program for (a) university, (b) period of graduation and university, and (c) the three science areas and university.

The mean number of calendar years spent by all graduates in all programs was 7.5. Costa Rican graduates averaged 5.7 years of study, Guatemalans an even ten years, and Nicaraguans 8.4 years.

Except for the two-year academic programs, which required 2.5 calendar years of work, and the three-year programs, which represent a special case (see note to Table 4.10), it would appear that the

graduates invested from 2.0 to 3.0 additional calendar years to complete the number of academic years of study required by their programs. It took, for example, 7.0 calendar years for graduates to finish a four-year program; to finish the most common program offered in the region, a six-academic-year course of studies, graduates needed 8.7 calendar years.

From Part B of Table 4.10, in which the data are re-ordered by the period of graduation, it is evident that the number of calendar years needed to complete undergraduate programs has increased through the years. Graduates in the period 1900-1953 took 6.9 calendar years to finish their academic work, Middle Graduates (1954-1958) spent 7.3 calendar years, and the Recent Graduates (1959-1963) invested 8.7 years of their time before they graduated.

This trend in academic life in Central America is evident in each of the three national universities considered in this study. Years spent by undergraduates in Costa Rica before they graduated have increased from 4.8 ("Old Grads") to 5.9 (Middle Graduates) to 7.3 calendar years (Recent Graduates). In Guatemala, the "Old Grads" needed 9.8 years, Middle Graduates, 9.1 years; but Recent Graduates invested 11.1 calendar years to complete their degree programs. For Nicaraguan university students, the time necessary to obtain a university degree or title has moved upward from 8.3 calendar years for the "Old Grads" and the Middle Graduates, to 8.8 calendar years for the Recent Graduates.

Table 4.10

National Universities of Costa Rica, Guatemala and Nicaragua

GRADUATES: AVERAGE NUMBER OF CALENDAR YEARS SPENT TO COMPLETE PROGRAMS OF FROM 2 TO 8 ACADEMIC YEARS

A. By University

	Academic years of study in the program							
	2	3	4	5	6	7	8	Total
Costa Rica	2.5	10.2*	6.7	7.2	7.8			5.7
Guatemala		7.0	10.3	10.1	9.7		10.7	10.0
Nicaragua				6.6	8.2		9.3	8.4
TOTAL	2.5	9.9	7.0	7.2	8.7		10.0	7.5

B. By Period and University

		Academic years of study in the program							
		2	3	4	5	6	7	8	Total
1900-	C.R.	2.4	9.0	5.8	6.0	7.0			4.8
1953	Gua.		6.0	7.0		9.1		11.5	9.8
	Nic.				6.5	8.3		9.0	8.3
1954-	C.R.	2.4		6.3	7.7	8.1			5.9
1958	Gua.			9.0	10.5	8.7		9.7	9.1
	Nic.				7.2	7.3		9.5	8.3
1959-	C.R.	3.1	10.3	7.6	8.5	9.2			7.3
1963	Gua.		8.0	15.0	10.0	11.1		10.6	11.1
	Nic.				6.2	8.6		10.1	8.8
1900-1953		2.4	7.5	5.9	6.1	8.1		10.1	6.9
1954-1958		2.4		6.6	7.7	8.3		9.6	7.3
1959-1963		3.1	10.2	8.1	8.4	10.0		10.4	8.7

*This figure represents 21 graduates who did not finish their original degree program (for which they first enrolled 7 to 15 years prior to 1963), but who, after several years of teaching experience, were permitted to re-enroll in a special course of studies leading to the degree of Secondary School Teacher.

Table 4.10 (con.)

C. By Science Area and University

		Academic years of study in the program							
		2	3	4	5	6	7	8	Total
Physi-	C.R.				6.9	7.4			7.1
cal	Gua.			7.0		8.6			8.6
	Nic.				7.2				7.2
Medi-	C.R.				6.4	7.6			7.2
cal	Gua.					8.7		10.7	10.1
	Nic.				5.9	7.0		9.3	8.1
Social	C.R.	2.5	10.2*	6.7	8.4	8.1			5.1
	Gua.		7.0	12.0	10.1	10.9			10.8
	Nic.					8.3			8.3
Physical Sci.				7.0	7.0	8.1			7.6
Medical Sci.					6.3	8.0		10.0	8.9
Social Sci.		2.5	10.0	7.0	8.7	9.3			6.7

*This figure represents 21 graduates who did not finish their original degree program (for which they first enrolled 7 to 15 years prior to 1963), but who, after several years of teaching experience, were permitted to re-enroll in a special course of studies leading to the degree of Secondary School Teacher.

Through the years, the number of calendar years to complete the eight-year academic programs in medicine has moved from 10.1 to 10.4 years. This represents the smallest average and percent of increase in needed time of any of the several academic programs analyzed. Programs of from two to six years of academic work all required more calendar time of Recent Graduates than of "Old Grads". It took Recent Graduates 10.0 years to complete a six-year program; it took the "Old Grads" 8.1 years. The older Agronomists, Pharmacists and Microbiologists spent 6.1 calendar years to finish; recent graduates invested 8.4 calendar years.

Data from Part C of Table 4.10 show that graduates whose undergraduate major was in the social sciences invested an average of 6.7 calendar years to earn their degrees; Physical Science majors averaged 7.6, and Medical Scientists 8.9.

The two- and three-year programs of study were pursued only by undergraduates in the Social Sciences, and eight-year programs only by those in the Medical Sciences. Both Physical and Social Science undergraduate majors followed four-year programs, and both groups of graduates in these areas devoted seven years to their college studies. A comparison of the five- and six-year courses of study shows that graduates of the Social Science programs invested proportionately more calendar years than graduates of similar length programs in the Medical or Physical Sciences. To obtain a degree or title based upon a five-year course of study, the Social Scientists spent 8.7 calendar years, the Physical Scientists 7.0, and the Medical Scientists 6.3 years.

When graduates were classified by nine specific fields of undergraduate preparation, it was found that Economics majors in Guatemala reported the greatest number of calendar years invested for their degrees: 12.4; education majors in Costa Rica, as expected, the fewest: 3.3 years. Figures for the graduates of each area of undergraduate training (which, for all practical purposes, is each university faculty or school), are presented by university in Table 4.11.

Table 4.11
National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES: AVERAGE NUMBER OF CALENDAR YEARS SPENT TO COMPLETE PROGRAMS IN EACH FIELD OF UNDERGRADUATE PREPARATION

Field	CALENDAR YEARS INVESTED			
	Costa Rica	Guate-mala	Nica-ragua	Total
Agriculture	6.9	8.5		6.9
Dentistry	6.2	8.8	7.0	7.6
Economics	8.2	12.4		10.4
Education	3.3	8.0		3.4
Engineering	7.3	8.6	7.2	8.0
Law	8.0	10.1	9.3	9.1
Medicine/Microbiology	6.1	10.7	9.3	9.7
Pharmacy/Chemistry	7.6	8.1	5.9	7.5
Science and Letters/ Humanities	6.7	10.4		7.3
Physical Sciences	7.1	8.6	7.2	7.6
Medical Sciences	7.2	10.1	8.7	8.9
Social Sciences	5.1	10.8	9.3	6.7

Since programs in the Medical Sciences generally require more academic years of study than those in the Physical or Social Sciences, one might expect that graduates of Medical Science programs would probably devote more calendar years for their studies than other graduates. This was true for graduates of the University of Costa

Rica but not for graduates in Guatemala and Nicaragua. In the letter universities, graduates who majored in the Social Sciences reported more calendar years in study than their compatriots who majored in Physical or Medical Sciences.

A comparison of the graduates from each university who majored in the same discipline reveals a wide variance in time needed to complete their programs. Dentists, for example, invested 6.2 calendar years in Costa Rica, seven years in Nicaragua, and 8.8 years in Guatemala. Pharmacists in Guatemala invested half a year more in pursuit of their titles than did Pharmacists in Costa Rica, and 2.2 more years than Pharmacists in Nicaragua.

Extra Calendar Years Invested The comparison above, however, is misleading, because the length of academic program in a given area of study varies from university to university. Dentists in Costa Rica follow a five-year course of study, while the dental program (1964) in Guatemala and Nicaragua is of six academic years. A degree or title in Pharmacy requires six years in Costa Rica and Guatemala, but five academic years of study in Nicaragua.

Thus, a more meaningful question is: How many calendar years beyond the required number of academic years were invested by the graduates to obtain their degrees? The question is not only the time spent to earn a degree, but the "extra" time invested over and above that required in the university-planned program of study.

For example, Dentists in Costa Rica spent 1.2 mean extra calendar years before graduating; in Guatemala, Dentists invested 2.8 extra years, and Nicaraguans one extra calendar year. In the field of Pharmacy, Costa Ricans spent 1.6 extra years and Guatemalans 2.1 beyond the required six academic years of study, and Nicaraguan Pharmacists invested an extra nine-tenths of a year to complete their studies.

An analysis was made of all the graduates who were enrolled in academic programs of five, six and eight years, in order to determine whether they graduated "on time" or took one or more extra calendar years to complete their programs.[17] Seventy-five percent of the graduates in this study were in programs of five, six or eight academic years of study, 44.48 percent of them in the most common length undergraduate program--a six-year academic course of studies. The number of extra calendar years invested by the graduates of these programs to obtain their degrees is shown in Table 4.12 and 4.13.

Of the graduates in this study who had been enrolled in undergraduate programs of from five to eight academic years duration, less than half (47.15%) were graduated "on time" or within one extra calendar year. The percentage of graduates of the national universities of Costa Rica and Nicaragua who spent one or less extra years to

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[17]Those graduates who were enrolled in two-, and four-year academic programs were not included in this analysis because, for one reason or another, they constituted a group apart. For example: (1), of the 284 graduates of two- to four-year programs, none were from Nicaragua and only five from Guatemala; (2), 221 were graduates of a two-year course of studies leading to the title Primary School Teacher, and, from Tables 4.7 and 4.8, are known to have taken 2.5 calendar years to get their titles; and (3), several of the graduates in this group are "special" cases (as explained in the footnote to Table 4.10), having interrupted their studies for a number of years and then returned under a different university program.

Table 4.12

National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES OF 5, 6 and 8 YEAR ACADEMIC PROGRAMS: NUMBER OF EXTRA CALENDAR YEARS SPENT TO OBTAIN DEGREE OR TITLE, BY UNIVERSITY
(In Number and Percent)

	All three universities					Costa Rica				
	No. of extra years invested					No. of extra years invested				
	0-1	2-3	4-5	6+	Total	0-1	2-3	4-5	6+	Total
#	397	252	85	108	842	185	68	27	36	316
%	47.15	29.93	10.09	12.83	100.00	58.54	21.52	8.54	11.40	100.00

	Guatemala					Nicaragua				
	0-1	2-3	4-5	6+	Total	0-1	2-3	4-5	6+	Total
#	81	137	45	61	324	131	47	13	11	202
%	25.00	42.28	13.89	18.83	100.00	64.85	23.27	6.44	5.44	100.00

obtain their degrees was much higher than the percent of Guatemalan graduates in the same category: 58.54 and 64.85 percent, respectively. In Guatemala just 25.00 percent were graduated "on time" or with but one extra year of investment.

Graduates of the University of Nicaragua appear to have spent much less extra time to earn their degrees than graduates of the other universities. Less than 12 percent of the Nicaraguans invested four or more extra calendar years before graduating; in Costa Rica nearly 20 percent spent more than three extra years to graduate, and in Guatemala 32.72 percent of the graduates invested at least four extra calendar years. Of the 61 Guatemalan graduates who spent six or more extra years to graduate, 19 or over thirty percent invested more than twenty extra calendar years of their time before earning their degrees.

In Table 4.13, graduates of 5, 6 and 8 year academic programs are compared. Among graduates of six-year academic programs, less than fifty percent (42.71%) were graduated "on time" or within one extra calendar year of investment. Nearly fifteen percent spent two calendar years to complete one academic year of study in their program. More than half of the graduates of five- and eight-year programs finished before more than one extra calendar year had passed, 54.37 and 53.04 percent, respectively. Contrary to what one might have expected, Medical School graduates (those in the eight-year programs) reported the lowest overall ratio of extra time invested: only 11.60 percent of Medical School graduates needed four or more extra years to finish. Of the six-year academic program graduates, 26.95 percent spent four or

Table 4.13

National Universities of Costa Rica, Guatemala and Nicaragua GRADUATES OF 5, 6 and 8 YEAR ACADEMIC PROGRAMS: NUMBER OF EXTRA CALENDAR YEARS SPENT TO OBTAIN DEGREE OR TITLE, (BY LENGTH OF PROGRAM) (By Number and Percent)

	Graduates of 5 Year Academic Programs				
	No. of Extra Calendar Years Invested				
	0-1	2-3	4-5	6+	Total
#	87	38	17	18	160
%	54.37	23.75	10.63	11.25	100.00

Graduates of 6 Year Academic Programs

	0-1	2-3	4-5	6+	Total
#	214	152	59	76	501
%	42.71	30.34	11.98	14.97	100.00

Graduates of 8 Year Academic Programs

	0-1	2-3	4-5	6+	Total
#	96	62	9	14	181
%	53.04	35.36	4.97	6.63	100.00

more extra years, or 66.67 percent extra time beyond their normal program length. Nearly one-fourth of the graduates of five-year programs needed 80.00 percent extra time--four or more extra calendar years--in order to graduate.

From these analyses it is evident that more than half of the university graduates of 5, 6 and 8 year academic programs in these three Central American universities invested at least two extra calendar years in pursuing degree programs, regardless of the length of program followed. It also appears that graduates of six-year academic programs

invested much more extra time, proportionate to the length of their program, than did graduates of other programs. These analyses complement and verify the data found in Table 4.10.

Relationship of Extra Calendar Years Invested to Other Factors

The graduates of the longer length programs were analyzed to see if the additional calendar years invested might be due to (1) secondary school origin, or (2) whether or not the students had becas as undergraduates. Another analysis was made to observe if the number of extra calendar years spent was an influence upon later pursuance of postgraduate studies.

As shown in Table 4.14, no perceptible differences were reported by school graduates and private school graduates who finished their careers "on time" or within one extra year--47.41 vs. 46.36 percent. However, more than twice the percent of public school graduates than private school graduates than private school graduates spent six or more extra calendar years beyond the required number of academic years (15.52 vs. 6.90 percent). Among private school graduates, a percent equal to those who graduated on time needed two to five extra years of time--46.74 and 46.36 percent, respectively. Products of the public schools, if they did not complete their studies on time, spent either two or three extra years (27.59 percent), or more than five extra years in university study (15.52 percent).

The possession of some form of university-given financial aid, be it remission of fees, scholarship or outright grant, enabled the becarios to finish their careers faster than graduates who did not have becas

Table 4.14

National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES OF 5, 6 and 8 YEAR ACADEMIC PROGRAMS: RELATION BETWEEN NUMBER OF EXTRA CALENDAR YEARS SPENT TO OBTAIN DEGREE OR TITLE AND

A. TYPE OF SECONDARY SCHOOL ATTENDED
B. RECIPIENCY OF UNIVERSITY FINANCIAL AID (BECAS)
C. PURSUANCE OF POST-GRADUATE STUDIES

A. Secondary School Attended		Number of Extra Calendar Years Invested				
		0-1	2-3	4-5	6+	Total
Public	#	275	160	55	90	580
	%	47.41	27.59	9.48	15.52	100.00
Private	#	121	92	30	18	261
	%	46.36	35.25	11.49	6.90	100.00

B. Beca Status		0-1	2-3	4-5	6+	Total
Beca	#	98	47	13	14	172
	%	56.98	27.32	7.56	8.14	100.00
No Beca	#	286	199	72	91	648
	%	44.14	30.71	11.11	14.04	100.00

C. Post-Graduate Studies		0-1	2-3	4-5	6+	Total
Yes	#	168	88	26	25	307
	%	54.72	28.67	8.47	8.14	100.00
No	#	229	164	59	83	535
	%	42.80	30.65	11.03	15.52	100.00

(Table 4.14, part B.). Although the financial aid received by these graduates of 5, 6 and 8 year academic programs represented only 2.94 percent of their average undergraduate income (see Table 4.6), 56.98 percent of the beca students as against 44.14 percent of the non-becarios finished their university studies with less than two extra

years of investment. More than twenty-five percent of the graduates who had no financial aid spent four or more extra years as undergraduates, while but 15.70 percent of the financially-aided students needed as much time to graduate.

As might have been hypothesized, the greater the number of extra calendar years invested by a graduate to earn his degree the lesser the possibility that he would pursue post-graduate studies. Of graduates who sought a second university degree, a greater percent finished more or less "on time", when compared to those who finished on time but did not pursue graduate studies. Of those graduates who delayed graduation for four or more years, significantly fewer pursued a second degree.

Significance of Calendar Years Invested From the above analyses it is evident that, regardless of the formal duration of academic programs, students do not complete their studies within the prescribed time. And there is no evidence that more graduates can be produced by developing programs of shorter duration. Graduates of six-year academic programs (the most common length) spent the greatest extra amount of time, proportionate to their program, than other graduates. Graduates who prepared themselves to teach, mostly in Costa Rica under a two-year academic program, were in recent years taking at least one-third more calendar time than academic time in order to graduate. The trend at all three national universities is an increase in the amount of calendar time needed for graduation, and the trend seems to be accelerating.

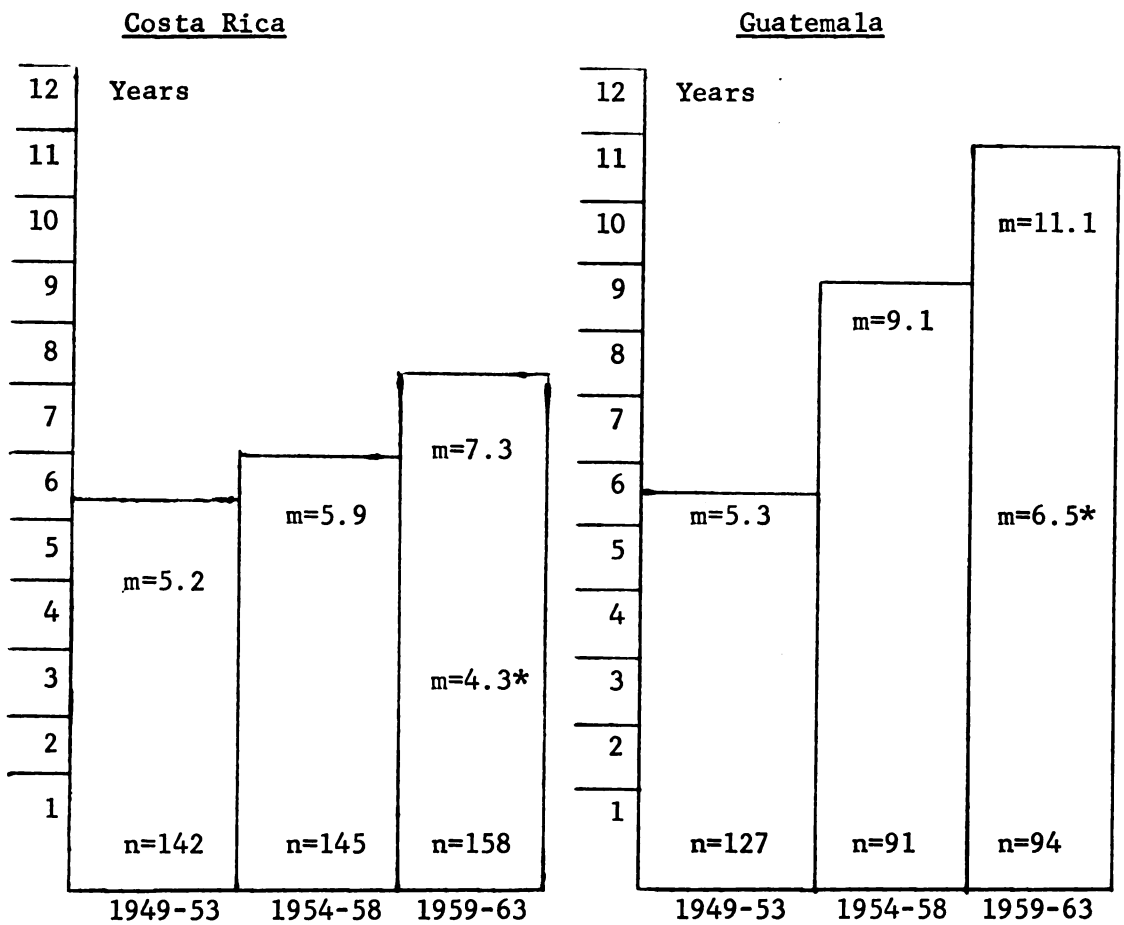
Prospects for Future Graduates To illustrate the acceleration of needed calendar time prior to graduation, the 870 graduates in this study who graduated in the fifteen-year period 1949-1963 were divided into three five-year groups. The mean number of calendar years spent by the graduates of each time period, for each university, was calculated, and is shown in Graph 4.1.

Between 1949 and 1963, the average number of calendar years invested by the average graduate increased 55.36 percent. During this fifteen-year period, the average number of invested calendar years in Costa Rica increased 40.38 percent, and in Guatemala it more than doubled, going up 109.43 percent. In Nicaragua there was no increase over the period 1949-1953: however, the mean number of years spent had dropped to 8.3 in 1954-1958, yet rose again to 8.8 during the period 1959-1963.

These data complement those found in Table 4.10, part B, wherein the "Old Grads" of 1900-1953 needed fewer calendar years to complete their studies than did the Recent Graduates of 1959-1963. This was true at all three national universities studied.

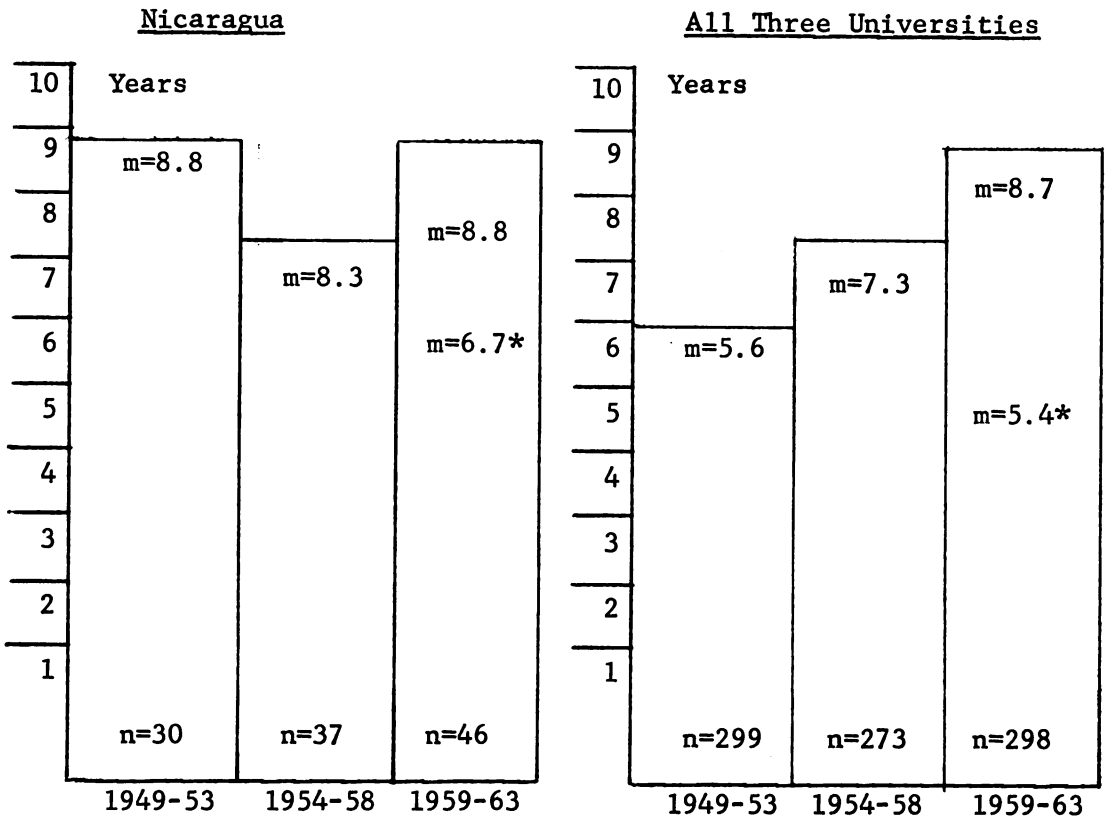
What will be the record made by graduates in the future? How many calendar years will the graduates of 1964-1968 invest? Or the graduates of 1969-73? Data on the present undergraduate populations in the national universities of Central America is now being studied, analyzed and prepared for publication by the staff of IIME--the Institute of Educational Research and Improvement at the University of San Carlos, Guatemala. One recent study published by IIME, dealing with the academic progress of 5,036 re-enrolled students at San Carlos (the

Graph 4.1
National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES, 1949-1953, 1954-1958, 1959-1963: CALENDAR
YEARS SPENT TO GRADUATE



* Number of academic years, average program of studies, 1963.

Graph 4.1 (con.)



* Number of academic years, average program of studies, 1963.

national university), can be used to compare the undergraduate record made by "yesterday's" graduates to that now being made by "tomorrow's" graduates.

The statistically "average" re-enrolled undergraduate at San Carlos was in a program of studies calling for completion of 43.32 courses in 6.14 academic years of work.[18] He had completed 17.14 courses (39.57%), or 2.44 academic years of work. However, he had enrolled 5.30 calendar years prior to 1963: thus, his progress was at the rate of 46 percent of an academic year's requirements during one calendar year. In other words, he was spending 2.17 calendar years of time to complete the course requirements of a single academic year. If this "average" undergraduate were to proceed at the same rate of progress, he would need a total of 13.32 calendar years to finish his course work: writing a thesis, a usual prerequisite for graduation, would probably add another year.

Although not exactly equivalent, the data provided by the graduates in the present study permit a comparison between their average undergraduate records at the three national universities to the undergraduate record of the "average" re-enrolled San Carlos student in 1963. This comparison appears in Table 4.15.

Granted that the university graduates represent the "successful" undergraduate student, nevertheless they were spending nearly a year and a half of calendar time to complete a year of academic work. And

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[18] IIME Staff (Friedman, et. al.), op. cit., Table A, p. 2.

Table 4.15

National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES: UNDERGRADUATE ACADEMIC PROGRESS COMPARED TO THE "AVERAGE" 1963 RE-ENROLLED UNIVERSITY STUDENT IN GUATEMALA

Criteria of Academic Progress	UNDERGRADUATE ACADEMIC PROGRESS				
	The "average" re-enrolled student at the University of San Carlos Guatemala, 1963	The "average" graduate			
		Costa Rica	Guate-mala	Nica-ragua	Total
	n=5,036	n=598	n=333	n=202	n=1,133
Academic years required	6.14	4.1	6.5	6.7	5.3
Academic years completed	2.44	4.1	6.5	6.7	5.3
Calendar years elapsed since first enrollment	5.30	5.7	10.0	8.4	7.5
Rates of Academic Progress: Calendar years to complete one academic year	2.17	1.39	1.54	1.25	1.42
Rates of Academic Progress: Completion[1] average	46.04%	71.93%	65.00%	79.76%	70.67%
Calendar years required for graduation	13.32	5.7	10.0	8.4	7.5
	Projection	Actual			

[1]Completed academic years + elapsed calendar years: i.e., the percent of an academic year's work completed in one calendar year.

if the 5,000 undergraduates at San Carlos can be assumed representative of students at the other national universities, then today's undergraduates may take even longer to become tomorrow's graduates. Besides the modification of certain programs and the provision of additional university student financial aid, university authorities might consider changing such significant factors as teaching methodology, rates of failure and part-time study traditions.

Amount and Source of Undergraduate Income The graduates were asked to report the average monthly income they had during the last three years of their undergraduate work. They were also requested to state the principal source of that income, and whether or not they received from the university any form of financial aid, be it a scholarship, a grant, or the remission of tuition.

The monthly income reported was converted, first, into a common monetary denominator--the Central American peso, a non-existant but widely used theoretical unit of money equal to one U.S. dollar--and secondly, the income was converted by machine operation into an annual sum for each graduate.

The sources elicited, from an open-ended question, fell into eight categories. These were reduced to three principal sources: (1) Self (including Becas), (2) Parents (father, mother, both parents), and (3) Other Family (wife or husband, blood-relatives, and non-consanguine family members).

The mean annual income of the average graduate during the last three years before graduation was $1,163. The principal source of the

student's income was the graduate himself, 65.42 percent, followed by parents, 19.52 percent, and other family members, 15.06 percent.

Table 4.16
National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES: MEAN ANNUAL UNDERGRADUATE INCOME AND PRINCIPAL SOURCE OF THAT INCOME

FACTOR	C.R.	Guate.	Nic.	Total
Mean Annual Undergraduate Income:	$ 913	$1,781	$ 892	$1,163
Principal Source:				
Self	63.00%	79.45%	47.87%	65.42%
Parents	20.40	11.83	30.32	19.52
Other Family	16.60	8.72	21.82	15.06
	100.00%	100.00%	100.00%	100.00%

The most striking difference between graduates of the three national universities may be seen by comparing the data reported by the Guatemalans to that of the other graduates. The Guatemalans' average undergraduate income was nearly double that of Costa Rican and Nicaraguan graduates. Almost eighty percent of the Guatemalan graduates were self-supporting during the last three years of their undergraduate careers, as compared to sixty-three percent of the Costa Ricans and less than fifty percent of the Nicaraguan graduates.

Conversely, parents and other family members were the principal source of undergraduate income for a smaller proportion of the Guatemalans than for graduates of the two other universities--20.55 percent in Guatemala as compared to 37.00 and 52.14 percent, respectively, in Costa Rica and Nicaragua.

A series of analyses were made to determine if any significant relationship exists between Mean Annual Undergraduate Income and Principal Source of that income, and two other factors: Number of Extra Calendar Years Invested, and 1963 Income. In these analyses, the income was classified in three levels--high, medium and low. Chi-square tests were employed to determine differences among income groups. In the tables that follow, the "Observed" as well as the "Expected" responses are recorded in each of the Chi-square cells. "Observed" responses are the actual responses made by the graduates, and "Expected" responses are those that would normally fall within the cell were there no significant difference. In the total columns the number of Observed responses is summed and the percent of the total that the responses represent is given.

There does exist a significant relationship between the graduates' mean annual undergraduate income and the principal source of that income, as shown in Table 4.17.

Of all the graduates of the three universities who reported usable data for <u>both</u> factors in the analysis (n=1,009), mean undergraduate incomes of $3,000 or more were reported by 12.39 percent. Medium incomes, $1,200-2,999, were reported by almost twenty-three percent of the graduates, and Lower incomes, less than $1,200, by 64.62 percent.

For the graduates of the different universities, however, these income figures varied considerably. Three times as great a percent of Guatemalan graduates reported "high" undergraduate incomes as did graduates of the universities of Costa Rica and Nicaragua (25.86% vs. 6.00

Table 4.17

National Universities of Costa Rica, Guatemala and Nicaragua

GRADUATES: RELATION BETWEEN LEVEL OF MEAN ANNUAL UNDERGRADUATE INCOME (During Last Three Years of Study) AND PRINCIPAL SOURCE OF THAT INCOME

Level of Mean Annual Undergraduate Income	ALL THREE NATIONAL UNIVERSITIES Principal Source			Total Number and Percent	Costa Rica Principal Source			TOTALS
	Self	Parents	Other, Family		Self	Parents	Other, Family	
HIGH E= $3,000 or more 0=	81.7	24.5	18.8	125	18.9	6.1	5.0	30
	100	13	12	12.39	21	5	4	6.00
MEDIUM $1,200-$2,999	151.5	45.5	35.0	232	64.9	21.0	17.1	103
	181	21	30	22.99	78	11	14	20.60
LOW less than $1,200	425.8	128.0	98.2	652	231.2	74.9	60.9	367
	378	164	110	64.62	216	86	65	73.40
TOTALS #	659	198	152	1009	315	102	83	500
TOTALS %	65.31	19.62	15.07	100.00	63.00	20.40	16.60	100.00

X^2 4df = 48.58, $p < .01$

X^2 4df = 11.50, $p < .05$

Table 4.17 (con.)

Level of Mean Annual Undergraduate Income		Guatemala			Total Number and Percent	Nicaragua			TOTALS
		Principal Source				Principal Source			
		Self	Parents	Other, Family		Self	Parents	Other, Family	
HIGH $3,000 or more	E=	64.7	10.1	7.2	83	5.7	3.7	2.6	12
	O=	75	4	4	25.86	4	4	4	6.39
MEDIUM $1,200-$2,999		83.8	12.9	9.3	106	11.0	7.0	5.0	23
		89	5	12	33.02	14	5	4	12.23
LOW less than $1,200		104.5	16.0	11.5	132	73.3	46.3	33.4	153
		90	30	12	41.12	72	48	33	81.38
TOTALS	#	254	39	28	321	90	57	41	188
	%	79.12	12.15	8.73	100.00	47.87	30.32	21.81	100.00

X^2 4df = 26.51, $p < .01$ X^2 4df = N.S.

and 6.39%). Altogether, more than half of the Guatemalans were in the Medium or High income range, while less than thirty percent of the Costa Ricans, and less than twenty percent of the Nicaraguans, were in the two upper income ranges.

The significance of the relationship between the level of undergraduate income and its source is due primarily to the fact that fewer graduates than expected, whose parents were the principal source of their income, reported medium or high incomes (34 instead of 70). More parent-supported graduates than expected were in the lower income range (164 vs. 128). A greater number than expected of self-supported graduates (281 instead of 233.2) appeared in the upper income ranges, and fewer than expected reported low incomes (378 rather than 425.8).

In Guatemala, the relationship between parent-supported graduates and their level of income contributed more than three-quarters of the variance to be observed in the Chi-square analysis: fewer parent-supported graduates were in the higher level incomes, and a greater proportion than expected had low level incomes.

In Nicaragua, no significant relationship appeared between the two factors.

Source of Undergraduate Income: Relationship to Extra Calendar Years Invested Graduates of the 5, 6, and 8 year academic programs were analyzed to see if a significant relationship existed between the source of their undergraduate income and the number of extra calendar years they spent to complete their university education. It was presumed that those students who were supported by parents or other family

members would not take as long to graduate as self-supported students. This was true, and to a greater extent than expected.

A much lower percentage than expected of Parent- or Other Family-supported graduates (11 instead of 29) needed six or more extra years to complete their work, and a higher percent of non-self supporting graduates than had been expected were graduated "on time" or within one extra year (138 instead of 110.4). These four groups of graduates, the parent-or family-supported students who either finished "on time", or who took six or more extra calendar years to finish, accounted for over sixty-five percent of the variance of 28.21 which made the relationship between the two factors significant.

Among the self-supported graduates, the two extreme groups--those who terminated more or less as they should have and those who took the longest to finish--represented 27.12 percent of the significant difference shown: more of these graduates needed six or more extra years, and fewer of them were graduated as early as might be expected.

Since the level of undergraduate income is low for those students supported by parents or other family members (see Table 4.17), and more self-supported graduates reported medium or high incomes, it then appears that self-supporting, high-income earning undergraduates take the longest time to finish their university studies.

Table 4.18

National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES OF 5, 6, and 8 YEAR ACADEMIC PROGRAMS: RELATION BETWEEN SOURCE OF UNDERGRADUATE INCOME AND NUMBER OF EXTRA CALENDAR YEARS SPENT TO OBTAIN DEGREE OR TITAL

Source of Undergraduate Income		Graduates of 5, 6 and 8 Year Academic Programs				Total Number and Percent
		Extra Calendar Years Invested				
		0-1	2-3	4-5	6+	
Self	E=	259.6	164.2	58.2	68.0	550
	0=	232	168	64	86	70.15
Parents		77.9	49.2	17.5	20.4	165
		96	47	13	9	21.05
Other, Family		32.5	20.6	7.3	8.6	69
		42	19	6	2	8.80
TOTALS	#	370	234	83	97	784
	%	47.19	29.85	10.59	12.37	100.00

X^2 6df = 28.21, $p < .01$

Level of Undergraduate Income: Relationship to Extra Years Invested

Another analysis was made of the 5, 6 and 8 year program graduates to determine if a significant relationship existed between the level of undergraduate income and the number of extra calendar years invested for the degree or title. From the data above, one would expect that undergraduates with high level incomes would take longer to graduate (since high income results from self-support) and that low level income students would graduate sooner. This was true, and again to a greater extent than expected.

Table 4.19

National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES OF 5, 6 and 8 YEAR ACADEMIC PROGRAMS: RELATION BETWEEN LEVEL OF MEAN ANNUAL UNDERGRADUATE INCOME AND NUMBER OF EXTRA CALENDAR YEARS SPENT TO OBTAIN DEGREE OR TITLE

Level of Mean Annual Undergraduate Income		Graduates of 5, 6 and 8 Year Academic Programs: Number of Extra Calendar Years Invested				Total Number and Percent
		0-1	2-3	4-5	6+	
HIGH $3,000 or more	E=	52.0	33.5	11.6	13.9	111
	0=	29	33	18	31	13.84[1]
MEDIUM $1,200-$2,999		93.3	60.0	20.9	24.8	199
		75	68	32	24	24.81[1]
LOW less than $1,200		230.7	148.5	51.5	61.3	492
		272	141	34	45	61.35[1]
TOTALS	#	376	242	84	100	802
	%	46.88	30.18	10.47	12.47	100.00

X^2 6df = 63.65, p .01

[1]The 802 graduates of these longer length programs reported slightly higher incomes than appear in Table 4.17 where the income percentages for 1,009 graduates include shorter length program graduates.

Specifically, three groups of graduates in this analysis contributed the most to the significance that exists between level of undergraduate income and extra years spent for the degree:

a. more graduates than expected with low level incomes finished up their collegiate careers with no, or only one, extra year of investment;

b. more high level income graduates than expected spent six or more extra years in pursuit of their degrees; and conversely;

c. fewer graduates with high level income finished "on time" or with but one extra invested calendar year.

Nearly half of the high level income graduates took four or more extra calendar years to complete their studies (49 of 111), but only 16.06 percent of low level income graduates invested more than three extra years as undergraduates (79 of 492), as seen in Table 4.19.

Since nearly seventy percent of the graduates were self-supporting during their undergraduate years (Table 4.18), it appears that the personal quest for a high income during one's college days works adversely against timely graduation--the more money earned, the longer to be graduated. The figures above support the data found in Table 4.18, where high-income, self-supporting undergraduates took significantly longer to finish their studies. The data also suggest the need by Central American undergraduates to be helped more financially by their parents, university or government, so that they can devote their full-time to university study and not have to seek concurrent employment.

Source of Undergraduate Income: Relationship to Level of 1963 Income Two other Chi-square analyses were made with data pertaining to the graduates' undergraduate life. It was believed that two factors--the Principal Source of the Graduates' Undergraduate Income and the Number of Extra Calendar Years Invested--would be reflected in the level of the graduates' 1963 Income.

The financial data produced by the analysis shown in Table 4.20 indicate that nearly ninety-five percent of the graduates in Guatemala and Nicaragua were in the high or medium level of 1963 income, while

Table 4.20

National Universities of Costa Rica, Guatemala and Nicaragua

GRADUATES: RELATION BETWEEN LEVEL OF 1963 INCOME AND PRINCIPAL SOURCE OF UNDERGRADUATE INCOME

Level of 1963 Income	ALL THREE NATIONAL UNIVERSITIES — Principal Source			Total Number and Percent	Costa Rica — Principal Source			TOTALS
	Self, becas	Parents	Other, Family		Self, becas	Parents	Other, Family	
HIGH E= $7,000 or more 0=	162.2	56.3	41.5	260	28.8	11.4	8.8	49
	184	38	38	25.00	35	7	7	9.11
MEDIUM $2,000-$6,999	344.5	119.4	88.1	552	171.5	67.6	51.9	291
	370	111	71	53.07	201	50	40	54.09
LOW less than $2,000	142.3	49.3	36.4	228	116.7	46.0	35.3	198
	95	76	57	21.93	81	68	49	36.80
# TOTALS	649	225	166	1040	317	125	96	538
%	62.40	21.64	15.96	100.00	58.92	23.23	17.85	100.00

X^2 4df = 56.71, $p < .01$

X^2 4df = 42.43, $p < .01$

Table 4.20 (con.)

Level of 1963 Income	Guatemala Principal Source			TOTALS	Nicaragua Principal Source			TOTALS
	Self, becas	Parents	Other, Family		Self, becas	Parents	Other, Family	
HIGH E= $7,000 or more 0=	112.7	18.4	12.9	144	30.8	21.3	14.9	67
	118	13	13	46.00	31	18	18	35.45
MEDIUM $2,000-$6,999	119.0	19.4	13.6	152	50.2	34.6	24.2	109
	118	23	11	48.57	51	38	20	57.67
LOW less than $2,000	13.3	2.2	1.5	17	6.0	4.1	2.9	13
	9	4	4	5.43	5	4	4	6.88
# TOTALS	245	40	28	313	87	60	42	189
%	78.27	12.78	8.95	100.00	46.03	31.75	22.22	100.00

X^2 4 df = 9.90, $p < .05$

X^2 4 df = N.S.

in Costa Rica over ninety percent were in the medium or low level. As such, these figures reflect the data presented in Table 3.3, and validate the monetary ranges established for the three levels of 1963 income used in these analyses.

There is a significant relationship between the graduates' 1963 income and the principal source of their undergraduate income ($p < .01$). The three low level income groups accounted for over seventy percent of the variance found. Most noticeably, there were fewer self-supported graduates with low level 1963 incomes than expected, and more low level 1963 income graduates whose principal source of undergraduate income was their parents or other family members. Since these results are quite similar to those found in the analysis of the level and source of the graduates' undergraduate income (Table 4.17), it is probable that they reflect merely an historical continuation over a short period of years.

For the graduates of the University of Costa Rica, the significance of principal source of undergraduate income to their 1963 income was roughly the same as that shown above for all graduates--the three lower level cells contributing almost 63.00 percent of the variance.

Extra Calendar Years Invested: Relationship to Level of 1963 Income In this analysis graduates of 2, 3 and 4 year academic programs were excluded. These graduates of the shorter length programs were shown in earlier analyses of 1963 income to fall primarily into the lower income level, nearly all of them being Costa Rican women

trained in the area of Education. Knowing that a large number of low level 1963 income graduates would thus be omitted from the analysis, and that it would pertain mostly to Guatemalan and Nicaraguan graduates, it was still felt there might be some significance between the number of extra years spent to obtain the degree and the level of the graduates' 1963 income.

Table 4.21
National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES OF 5, 6 and 8 YEAR ACADEMIC PROGRAMS: RELATION BETWEEN NUMBER OF EXTRA CALENDAR YEARS SPENT TO OBTAIN DEGREE OR TITLE AND LEVEL OF 1963 INCOME

GRADUATES OF 5, 6 and 8 YEAR ACADEMIC PROGRAMS				Total Number and Percent
Number of Extra Calendar Years Invested	Level of 1963 Income			
	HIGH-$7,000 or more	MEDIUM-$2,000-$6,999	LOW-less than $2,000	
0-1 E=	119.4	233.3	14.3	367
0-1 O=	113	242	12	46.11
2-3	79.7	155.8	9.5	245
	92	197	6	30.78
4 or more	59.9	116.9	7.2	184
	54	117	13	23.11
TOTALS #	259	506	31	796
TOTALS %	32.54	63.57	3.89	100.00

X^2 4 df = 10.02, $p < .05$

There was some indication found ($p < .05$) that the number of extra years invested by the graduates correlated significantly with the graduates' 1963 income level. Specifically, among those graduates in the lower level of 1963 income, there were 24.00 percent fewer

graduates than expected who took less than four extra years to graduate; and there were 80.00 percent more graduates than expected who needed four or more extra years to be graduated. It has already been seen that the level of the graduates' undergraduate income correlates significantly with the number of extra calendar years spent for their degrees (Table 4.19). If we look at the two groups of graduates as divided--those who took less and those who took more than four extra years--and compare them to both the undergraduate and 1963 income levels, then the monetary value of a university degree, the resultant upward financial mobility, becomes apparent.

During their undergraduate years, over sixty percent of the graduates of 5, 6 and 8 year academic programs were in the lower income level. In 1963, however, only 3.89 percent of the graduates were in the lower income level. Nearly one-third of the graduates had incomes of $7,000 or more in 1963, whereas just 13.84 percent had high undergraduate incomes.

For those graduates who took less than three extra years to complete their college education, the percentages are almost the same: 66.83 percent had low undergraduate incomes, but only 2.94 percent had low incomes in 1963, and the percent of these graduates in the high income levels rose from 10.03 to 33.50 percent.

It was to be expected that for graduates who spent four or more extra calendar years for their degrees the financial rewards of a degree would be less dramatic, since the greater number of extra years spent correlated with high undergraduate income. During the undergraduate years, graduates who took four or more extra years and

Table 4.22

National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES OF 5, 6 and 8 YEAR ACADEMIC PROGRAMS: NUMBER AND PERCENT OF GRADUATES BY NUMBER OF EXTRA CALENDAR YEARS SPENT TO OBTAIN DEGREE (more or less than four) COMPARED TO THEIR

A. LEVEL OF UNDERGRADUATE INCOME (during last three years)
B. LEVEL OF 1963 INCOME

A. UNDERGRADUATE INCOME

Level of Income		EXTRA CALENDAR YEARS INVESTED		
		0-3	4 or more	Totals, # & %
HIGH $3,000 or more	#	62	49	111
	%	10.03	26.63	13.84
MEDIUM $1,200-$2,999		143	56	199
		23.14	30.43	24.81
LOW Less than $1,200		413	79	492
		66.83	42.94	61.35
TOTALS	#	618	184	802
	%	100.00	100.00	100.00

B. 1963 INCOME

HIGH $7,000 or more	#	205	54	259
	%	33.50	29.35	32.54
MEDIUM $2,000-6,999		389	117	506
		63.56	63.59	63.57
LOW Less than $2,000		18	13	31
		2.94	7.06	3.89
TOTALS	#	612	184	796
	%	100.00	100.00	100.00

were in the higher income level represented 44.14 percent of the undergraduates with high incomes (49 of 111 graduates). In 1963, these graduates represented but 20.85 percent of the high level income graduates (54 of 259). Even so, a university degree for the graduates who took more than three extra years to finish meant a distinct rise in income. The percent of these graduates in the low income levels fell from 42.94 to 7.06, and the percent in the middle ranges rose from 30.43 to 63.59.

As will be shown later in the analyses of occupational activities, the percent of income increase between undergraduate and 1963 incomes for all graduates was 348.58--a substantial monetary value for the university degree.

Graduates' Age at Graduation and Year of Graduation The "average" national university graduate in Central America began his higher education when he was 18.9 years old. He spent 7.5 calendar years of his life to obtain his degree or title, and graduated at the age of twenty-six and a half. Comparable data for the graduates of each national university in this study is shown in Table 4.23.

The data here, of course, complement those presented earlier in Table 4.3 and 4.10, which dealt with the graduates' age at matriculation and the number of calendar years they devoted to university work. The age at matriculation data indicate that Recent Graduates entered college at approximately the same age as the "Old Grads"; in fact, in Guatemala, Recent Graduates began university life a half-year younger than the "Old Grads". Yet the average age at graduation in all three countries has been higher for Recent Graduates than for the "Old Grads"

Table 4.23
National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES: MEAN AGE AT GRADUATION AND YEAR OF GRADUATION

Age at Graduation and Year of Graduation	Costa Rica n=598	Guate-mala n=333	Nica-ragua n=202	Total n=1133
Age at Graduation	24.4	29.3	27.1	26.4
"Old Grads" 1900-53	23.5	28.6	27.0	25.6
Middle Graduates 1954-58	24.4	28.7	26.8	26.1
Recent Graduates 1959-63	26.1	30.7	27.5	27.8
Year of Graduation	1953	1952	1949	1952

because of the greater number of calendar years which the more recent graduates have had to invest before getting their degree or title.

Summary of Analyses of Calendar Years Spent to Obtain Degrees

The analyses made of the number of calendar years invested by the graduates to complete a university education in the national universities of Costa Rica, Guatemala and Nicaragua have shown the following:

a) the graduates took nearly 1½ calendar years to complete one academic year of study;

b) less than one-half of the graduates graduated "on time" or within one extra calendar year;

c) the number of calendar years spent has increased, at an accelerating rate, during recent years;

d) Medical students spend proportionately less extra time to graduate than graduates of a six-year academic program, which is the most common length program in Central America;

e) the graduates who took the longest time to graduate were those who were self-supporting and had a high undergraduate income;

f) the more extra years invested by the graduates to earn their degrees means the less possibility that they will pursue post-graduate studies; and

g) some form of beca, no matter how small, seems to enable students to finish their university education somewhat faster.

Recent studies have indicated that time has allocation properties which are not dissimilar to those applied to land.[19] Time, like land, can be consumed or wasted. Yet, there is the general impression that time can also be conserved--or like money, invested.

Educating one's self is an example of an investment of human hours or years. The return on the investment is not more time, but an increase in the range of choice of gainful employment, as well as X number of more financially productive years of professional work. In the case of university graduates, if they have invested six calendar years to complete a six-year course of studies, they have conserved as well as invested their time. If it takes a graduate twelve calendar years to complete a six-year program, he has invested twice as much time as should be necessary; yet his "return" is the same range of gainful employment but fewer years of more gainful employment. This represents a waste of time, as well as the loss of money, effort and productivity, not only to the individual, but to the state and its institutions.

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[19]Richard L. Meier, "Human Time Allocation: A Basis for Social Accounts", in Journal of the American Institute of Planners, Vol. XV, No. V, Spring, 1959: pp. 27-33.

Universities may be said to be more efficient and effective within their society when they fulfill their standard functions with a minimal expenditure of human time and its corresponding financial costs. The surplusses may then be re-allocated by the institution or the individuals. Should the universities of Central America be able to produce their graduates "on time" rather than permitting them to spend many extra calendar years as universitarios, then the time and "extra" operation monies "saved" by the universities could be re-allocated toward the perfection of present activities or expended on a wider variety of functions. Similarly, the time "saved" by the graduates would enable them to practice for a longer time as university degree-holders, benefiting themselves and the nation.

CHAPTER FIVE

CHARACTERISTICS OF THE GRADUATES: POST-GRADUATION ACTIVITIES

As of 1963, the "average" Central American national university graduate included in this study had been out of the university practicing his profession for eleven years. During this time he had increased his annual income some 340 percent over that which he had lived on as an undergraduate. Of all the graduates represented in this study, less than one percent worked solely outside the field in which they were professionally trained, although 13.48 percent of the graduates engaged in some work unrelated to their training after they were graduated. Nearly thirty-five percent of the graduates did post-graduate study, and seventy-five percent of these graduates earned a second and/or third post-graduate title or degree.

Years Since Graduation (to 1963) Since the date for each graduate were recorded on IBM cards, it was easy to obtain the number of years since graduation by subtracting the year of graduation from the year 1963, and by machine calculation get the average number of years since graduation for the graduates of each university and of the three major areas of undergraduate preparation. These figures are shown in Table 5.1.

Nicaraguan graduates typically have been out of school longer than the other graduates because they graduated three years before the Costa Ricans and Guatemalans. It might be supposed that there would be a direct relationship between present income and number of years of professional practice; i.e., the more years out of college, the greater the income. Yet a comparison of the data here shown and that presented in Table 3.9--1963 Income by Professional Area of Work--indicates that

Table 5.1
National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES: YEARS SINCE GRADUATION (to 1963) BY UNIVERSITY AND MAJOR SCIENCE FIELD OF UNDERGRADUATE TRAINING

	Costa Rica N=598	Guate-mala N=333	Nica-ragua N=202	Total N=1133
Years Since Graduation (to 1963):	10.4	11.0	13.7	11.1
By Major Field of Undergraduate Training:				
Physical Sciences	10.9	9.3	8.1	10.1
Medical Sciences	11.4	13.6	14.5	13.4
Social Sciences	10.1	9.4	13.7	10.4

the number of years since graduation seems to have little if any influence on the relative amount of money earned in 1963, within a given country.

Nicaraguan Medical and Social Science graduates had been out of school 14.5 and 13.7 years, respectively, and the physical scientists 8.1 years. But, from Table 3.9, Engineers in Nicaragua ranked No.1 in 1963 income, and Lawyers, social science area graduates, ranked fourth. Guatemalan Medical Science area graduates had been out of college more than four years longer than their fellow graduates of the Physical or Social Sciences, yet Guatemalan Economists and Engineers ranked second and third behind Dentists (who earned only $4 more in 1963 than the Economists), and Medical doctors and Pharmacists ranked fourth and sixth, respectively.

Obviously there are other factors than the number of years since graduation which relate to the graduates' 1963 income: for example, the number of jobs held, as shown in Table 3.5. A study of the types of activities engaged in by the graduates after their graduation was

made to ascertain certain other considerations. The analyses of occupational and activity differences to follow will indicate to some extent which activities were "subdominate" or "influent" in the graduates' lives, but will not explore fully the relationship of the activities to professional or societal stratification.

Classification of Post-Graduation Activities Following the ecological concept of "activity" as the notion implied by the terms "occupation" or "function", some attempt was made to view the graduates' different activities--their numbers and kinds--as aggregates of sub-populations, and to look for aspects of activity interdependence.

The activities undertaken by the graduates once they had earned their degrees or titles were grouped into three major categories:

a) Professional work only (work in the professional area for which the graduate was trained),

b) Work unrelated to training (work in an occupational area for which the graduate was not trained), and

c) Graduate studies only (the pursuance of a second or third university-level degree).

Four subcategories were also made: three which combine any two major groups, and a seventh of those graduates who engaged in all three major types of activity. For example, if a graduate earned a Licenciatura in Economics and reported his first position as a banker and his second as an elementary school teacher, then he had undertaken two activities since graduation--Professional work and Work unrelated to training. Separate questions on the data-gathering instrument elicited information about Graduate studies--where, when and degrees pursued or earned.

The Activities as Undertaken by the Graduates The use of the term "activity" is not to be equated with the term "position" as used in earlier analyses. A graduate may have engaged in one type of activity since graduation, but have held two or more positions, or jobs, for which he received compensation.

More than half the graduates engaged only in one activity after they left the university (56.40 percent); another 40.07 percent combined two types of work; and 3.53 percent did three types of activity (i.e., professional work, unrelated work and graduate study). Over fifty-five percent of the graduates have worked only in their professional field since their graduation.

Table 5.2

National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES: TYPE AND NUMBER OF ACTIVITIES ENGAGED IN SINCE GRADUATION IN PERCENT BY UNIVERSITY

CATEGORY OF ACTIVITY	Costa Rica N=598	Guate-mala N=333	Nica-ragua N=202	Total N=1133
Graduates engaged in 1 activity only:	62.37	50.15	44.55	55.60
Professional work	0.33	0.90	0.50	0.53
Work unrelated to training	0.17	0.30	0.50	0.26
Graduates studies only				
Sub-total: 1 activity	62.87	51.35	45.55	56.39
Graduates engaged in 2 activities:				
Professional work + unrelated work	8.86	5.71	16.34	9.27
Professional work + graduate study	24.25	39.04	35.64	30.63
Unrelated work + graduate study	0.17	0.30	-	0.18
Sub-total: 2 activities	33.28	45.05	51.98	40.08
All 3 types of activity (i.e., profess. work, unrelated work, and graduate study):	3.85	3.60	2.47	3.53
TOTAL	100.00	100.00	100.00	100.00

By summing various percentages found in Table 5.2 it is possible to look at different facets of the graduates' activities.

For example:

1. Percent of graduates who did some graduate study:

   Costa Rica--28.44 percent (0.17 + 29.25 + 0.17 + 3.85)

   Guatemala--43.24 (0.30 + 39.04 + 0.30 + 3.60)

   Nicaragua--38.61 (0.50 + 35.64 + 2.47)

   All graduates--34.59 percent (0.25 + 30.63 + 0.18 + 3.53)

2. Percent of graduates who did some unrelated work:

   Costa Rica--13.21 percent

   Guatemala--10.41

   Nicaragua--19.31

   All graduates--13.51 percent

3. Percent of graduates who did not follow their profession:

   Costa Rica--0.67

   Guatemala--1.50

   Nicaragua--1.00

   All graduates--0.96 percent

From these figures it can be seen that a higher percent of Nicaraguan and Guatemalan graduates pursued graduate studies than did Costa Ricans (Nicaraguans greater by a third than Costa Ricans). And nearly twenty percent of the Nicaraguans followed some work unrelated to their profession, a percent one-half again higher than Costa Rican and Guatemalan graduates. At least ninety-eight percent of all graduates of each university, however, did work at one time in the professional field of their undergraduate training.

Along with the data presented earlier, of the number of positions held by the graduates in or out of their professional field, it appears that occupationally the graduates seem to be horizontally mobile,

especially in Nicaragua. Not only do a greater percent of Nicaraguan graduates work in unrelated areas, and a greater percent have positions outside their field, but the percent of Nicaraguan graduates engaged in two or more activities is also greater than the percent of graduates from the other two universities who are comparable--51.98 vs. 33.28 and 45.05 percents, respectively.

Of all the graduates with two activities, those whose two activities were professional practice and graduate study constituted by far the highest percent. This combination of post-graduate work produced a very high 1963 income average, compared to graduates with other combinations, and the highest overall percent of monetary increase of all graduates during the post-graduation years, as will be seen in the next analyses.

Type and Combination of Activities Compared to 1963 Income Again looking at the graduates as classified by the activities they undertook after graduation, and studying the 1963 incomes as they reported them, some startling information appears.

In general, the highest overall mean 1963 incomes were earned by those who engaged in work unrelated to their under-graduate training. Of the graduates engaged in only one activity, those whose work was unrelated to their profession earned a mean of $7,030 in 1963; those practicing their profession, $4,331; and those who have only pursued graduate studies since they graduates, the least, of course, $1,844.

For the two-activity graduates, unrelated work plus graduate study produced $7,826, compared to the mean of $6,176 earned by professional work plus graduate study. Both of these combinations,

Table 5.3

National Universities of Costa Rica, Guatemala and Nicaragua

GRADUATES: MEAN 1963 INCOME BY TYPE AND NUMBER OF ACTIVITIES ENGAGED IN SINCE GRADUATION

CATEGORY OF ACTIVITY	Costa Rica N=579	Guate-mala N=317	Nica-ragua N=189	Total N=1085
Graduates engaged in 1 activity only:				
Professional work	$3295	$6195	$5169	$4331
Work unrelated to training	5316	6800	11148	7030
Graduate studies only	2232	1800	-	1844
Sub-total: 1 activity	3303	6180	5178	4342
Graduates engaged in 2 activities:				
Professional work + unrelated work	3216	7304	6811	5085
Professional work + graduate study	3377	8158	8237	6176
Unrelated work + graduate study	6852	8800	-	7826
Sub-total: 2 activities	3352	8054	7789	5931
All 3 types of activity (i.e., Professional work, unrelated work and graduate study):	3054	7712	6163	4840
All graduates	$3418	$7437	$7010	$5218

however, meant a greater income than the $5,085 earned by the graduates who did professional work plus unrelated work. To some extent, the data may also suggest the monetary value of graduate study, if it is combined with other types of work.

The results of comparisons between all groups of graduates engaged in one, and those engaged in two, activities, are reflected consistently in the analyses of individual universities--in general, graduates who also worked in areas unrelated to their undergraduate preparation had the highest 1963 incomes.

Percent of the Graduates' Income Increase After Graduation It has already been suggested that the value of working in one's professional field in combination with graduate study is high. When the graduates' 1963 incomes are compared to their mean annual undergraduate income (during the last three years of study), then the percent of Income Increase--the value more or less of the degree or title--becomes apparent. This is shown in Table 5.4.

The graduates who engaged in two activities had the highest percent of income increase, 383.37. The income increase for those graduates with one activity was 290.47 percent; for those who had three activities, 316.16 percent; and for all graduates, 348.58 percent. Of the graduates with two activities, those who combined graduate study with professional training increased their income during the post-graduate years 421.62 percent, an increase over forty-five percent greater than the increase for graduates with but one activity, and nearly twenty percent greater than that of all graduates.

Comparing only those graduates who engaged in two activities, at each university the graduates who did professional work plus graduate

Table 5.4

National Universities of Costa Rica, Guatemala and Nicaragua

GRADUATES: PERCENT THAT 1963 INCOME IS TO MEAN ANNUAL UNDERGRADUATE INCOME (DURING LAST THREE YEARS OF STUDY), BY TYPE AND NUMBER OF ACTIVITIES ENGAGED IN AFTER GRADUATION

CATEGORY OF ACTIVITY	Costa Rica n=579	Guate-mala n=317	Nica-ragua n=189	Total n=1085
Graduates engaged in 1 activity only:				
Professional work	258.15	262.28	598.51	292.30
Work unrelated to training	343.00	209.09	271.60	251.50
Graduate studies only	24.00	200.00	-	34.40
Sub-total: 1 activity	257.47	260.98	578.64	290.47
Graduates engaged in 2 activities:				
Professional work + unrelated work	246.55	208.45	427.58	290.25
Professional work + graduate study	259.64	384.15	962.84	421.62
Unrelated work + graduate study	63.14	62.96	-	63.04
Sub-total: 2 activities	252.10	348.44	731.27	383.37
All types of activity	341.97	285.60	366.89	316.16
All graduates	274.18	317.55	685.82	348.58

study had the highest percent of income increase, especially in Nicaragua, where this group of graduates increased their income over nine-hundred and sixty percent.

The graduates of the University of Costa Rica had the lowest overall percent of income increase of all graduates, which could have been predicted on the basis of earlier financial analyses. Other comparisons of the graduates of the three universities reveal further information about the percent of income increase through the years after graduation:

1. Costa Ricans engaged solely in work unrelated to their training had a higher percent of increase than those who followed professional work--343.00 vs. 258.15 percent: but Nicaraguan figures for the same two groups are reversed, i.e., professional workers only, an average of 598.51 percent increase, and workers solely in unrelated fields, a 271.60 percent increase.
2. Of the graduates who engaged in one or two activities, the percent of the Nicaraguans' increased income was more than double that of the other universities' graduates--578.64 (Nicaragua) vs. 257.47 (Costa Rica) and 260.98 (Guatemala) percent, respectively, for one activity graduates; and 731.27 (Nicaragua) vs. 252.10 (Costa Rica) and 348.44 (Guatemala) percent for two-activity graduates. These figures indicate that the university degree or title comparatively is worth more to the Nicaraguans than to the graduates of the other schools. Even though the average Guatemalan undergraduate income was quite high (compared to the other

universities' undergraduates), and the undergraduate and 1963 incomes of the Costa Ricans were comparatively the lowest of the three universities' graduates, these Nicaraguan percents of income increase are still surprisingly high.

3. It is notable that the average percent of income increase for all graduates, and for all the graduates of Guatemala and Nicaragua, is greater than the income increase shown by the graduates who combined the three types of activities. Costa Rican graduates are again the exception. In that country, graduates who divided their work among the three types of activity increased their income 431.97 percent, while for all Costa Ricans the increase was 274.18 percent. This difference between the graduates of the three universities could have been hypothesized, since data previously shown (Table 3.5, ff.) indicated that a great proportion of Costa Rican graduates (n/m-521/579) held but one position (one activity), and earned a low mean 1963 income of $3,231. The 58 Costa Ricans who held two or three positions (multiple activity) had mean 1963 incomes 51.75 and 99.26 percents greater, respectively, than those graduates with just one position. A lower proportion of Guatemalan and Nicaraguan graduates held one position (n/m=251/317 and 139/189), yet their 1963 incomes averaged high--$7,164 and $6,868, respectively.

Comparison of Income Increase to Area of Undergraduate Training One other analysis was made of the percent of income increase for the graduates after they left school. The graduates were sorted by the field

of their undergraduate preparation; the mean 1963 income and the percent of income increase over undergraduate income were then extracted. The purpose was to observe not only how the graduates of each area ranked in each country by mean 1963 income, but to see the relative "value" of professional degrees or titles as reflected in the percent of income increase they meant to the graduates. These data are shown in Table 5.5.

The number of actual graduates from the sample (n) is shown in relation to the number of all known graduates (m), so that the data of each cell in Table 5.5 may be interpreted as valid or not. Thus, artifact data may be easily discerned: e.g., the Humanities and Education areas in Guatemala, n/m=5/104 and 4/61, respectively.

Economists in Costa Rica, and of all graduates, ranked first in mean 1963 income; but the Economists also had the next to lowest percent of income increase in all three countries. Why? Probably because undergraduate Economists have high undergraduate incomes by working more hours outside of school and taking more extra calendar years to terminate. From Table 4.10 it is evident that Economics majors took 10.4 calendar years to graduate, longer than the graduates of any other area of professionalization.

Dentists and graduates of Medicine and/or Microbiology rank 1st and 2nd among all graduates, in percent of income increase. They rank 1st and/or 2nd in Costa Rica and Guatemala, and 2nd (Medicine) and 4th (Dentistry) in Nicaragua. Why such high percents of increase? Probably because as undergraduates they went to school full-time, did not work outside of school, and for these reasons have reported low

Table 5.5

National Universities of Costa Rica, Guatemala and Nicaragua

GRADUATES: MEAN 1963 INCOME AND PERCENT OF INCOME INCREASE OVER UNDERGRADUATE INCOME BY AREA OF UNDERGRADUATE TRAINING, IN RANK ORDER OF AREA BY COUNTRY

COSTA RICA		GUATEMALA		NICARAGUA		TOTAL	
Mean 1963 Income	% of Income Increase	Mean 1963 Income	% of Income Increase	Mean 1963 Income	% of Income Increase	Mean 1963 Income	% of Income Increase
AREA OF TRAINING		AREA OF TRAINING		AREA OF TRAINING		AREA OF TRAINING	
$6286	193.74%	$9181	655.08%	$8177	790.74%	$7778	179.57%
ECONOMICS (n/m=30/185)		DENTISTRY (n/m=18/84)		ENGINEERING (n/m=17/33)		ECONOMICS (n/m=62/185)	
6018	335.45	9177	160.34	7049	856.44	7434	718.72
LAW (n/m=89/421)		ECONOMICS (n/m=32/107)		MEDICINE (n/m=83/290)		DENTISTRY (n/m=38/280)	
5745	710.30	8275	268.10	7010	685.82	7273	345.65
MICROBIOLOGY (n/m=11/50)		ENGINEERING (n/m=67/231)		M E A N (n/m=122/844)		ENGINEERING (n/m=132/448)	
5553	441.76	7654	656.32	6909	907.14	7259	737.25
ENGINEERING (n/m=48/184)		MEDICINE (n/m=86/572)		PHARMACY-CHEMISTRY (n/m=14/86)		MEDICINE/MICRO. (n/m=180/912)	
5435	887.82	7437	317.55	6758	590.17	6341	354.84
DENTISTRY (n/m=13/170)		M E A N (n/m=317/1796)		LAW (n/m=68/409)		LAW (n/m=233/9287)	

n = Respondees from the sample; m = Total known graduates

Table 5.5 (con.)

COSTA RICA		GUATEMALA		NICARAGUA		TOTAL	
Mean 1963 Income	% of Income Increase	Mean 1963 Income	% of Income Increase	Mean 1963 Income	% of Income Increase	Mean 1963 Income	% of Income Increase
AREA OF TRAINING		AREA OF TRAINING		AREA OF TRAINING		AREA OF TRAINING	
$3925	449.24%	$6347	275.78%	$6369	726.07%	$5218	348.58
AGRICULTURE (n/m=66/234)		LAW (n/m=76/421)		DENTISTRY (n/m=7/26)		MEAN (n/m=1085/6620)	
3445	336.07	5851	315.26			4653	396.05
PHARMACY-CHEMISTRY (n/m=49/298)		PHARMACY-CHEMISTRY (n/m=23/149)				PHARMACY (n/m=86/483)	
3418	274.18	5604	211.33			4064	441.87
MEAN (n/m=579/3980)		AGRICULTURE (n/m=6/24)				AGRICULTURE (n/m=72/258)	
2209	241.58	4089	132.72			2552	201.18
SCIENCE-LETTERS (n/m=37/168)		HUMANITIES (n/m=5/104)				HUMANITIES (n/m=42/272)	
1475	102.89	1920	78.38			1476	102.35
EDUCATION (n/m=236/2427)		EDUCATION (n/m=4/61)				EDUCATION (n/m=240/2488)	

n = Respondees from the sample; m = Total known graduates

average undergraduate incomes. Proportionate to the length of their academic programs, Medical doctors and Dentists invested fewer extra calendar years in their carraras than graduates of the other fields of preparation.

It is interesting that the Dentists in Nicaragua, the group with the lowest mean 1963 income in that country, had a higher mean 1963 income than the Economists in Costa Rica, who ranked first in their country, and a higher mean than five of the nine area groups of graduates in Guatemala.

In 1963, income, Lawyers rank 2nd in Costa Rica, but 5th of all groups for all graduates--just above the Mean. Yet in percent of income increase, Lawyers rank just below the means in Guatemala and Nicaragua, and just above in Costa Rica. The overall status of Lawyers, 5th in both mean 1963 income and percent of increase, may reflect a trend of opinion about the prestige or importance of this profession in Central America.

Engineers in Nicaragua had the highest mean 1963 income, but it was lower than their counterparts in Guatemala by nearly $100. The group that occupied third place in 1963 income in Nicaragua, Pharmacists, had, however, a tremendously high percent of income increase--907.14 percent. Agriculture, reflecting perhaps its loss of influence in Central American economic development, ranked below the mean 1963 income in Guatemala and Nicaragua, and ranked only 6th of nine areas of training in Costa Rica.

Graduates of Sciences and Letters (or Humanities) and of Education are the lowest two groups in Costa Rica and Guatemala, and of

all graduates in all areas, in both mean 1963 income and percent of income increase. The overall low estate of Education graduates indicates the low level of esteem and money paid to those in Central America who teach, and helps to explain the lack of qualified teaching personnel at all levels of instruction throughout the isthmus.[20]

How can one explain that the percent of income increase for all the Nicaraguans was higher than any area group in Guatemala, and higher than seven of nine groups in Costa Rica? It could be because the average Nicaraguan had been out of school three to four years longer than graduates of the other two universities. Or perhaps it is because the average Nicaraguan finished his university studies with a lower mean number and percent of extra calendar years as an undergraduate. Another reason could be that undergraduate Nicaraguans study (and work?) in the provincial city of Leon, but after graduation find employment in the capital city of Managua, where salaries are undoubtedly higher.

Perhaps a better indication of the value of the university degree to the graduates of each university is their mean Annual Income Increase after graduation. We know that the average graduate in Costa Rica had graduated 10.4 years before 1963; the average Guatemalteco 11.1 years, and the Nicaraguan 13.7 years. A simple division of the

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[20]Note particularly in the Bibliography the series of IIME publications dealing with these problems throughout Central America. A plan of action and an estimate of costs has recently been suggested by that Institute to alleviate the needs of secondary public education via the formation of necessary personnel at all levels of instruction, including the university level.

overall mean income increase for the graduates of each university shows that the percent of mean annual income increase was 26.36 for Costa Ricans, 28.61 for Guatemalans, but nearly double those figures for the Nicaraguans, 50.06 percent.

To summarize the data on the percent of the graduates' income increase between graduation and 1963, it appears that the value of a university degree is relatively the highest in Nicaragua, that graduates engaged in two activities had higher percents of increase than those engaged in one (except in Costa Rica), and that graduate study, combined with professional work, meant the highest percent of income increase to the graduates (again, except in Costa Rica). One reason for the Costa Rican exceptions become evident when the relative monetary value of post-graduate study is analyzed.

The Value of Post-Graduate Study to the Graduates A comparison was made of the graduates who did not pursue graduate studies and those who did, to ascertain if the mere pursuance of further study, regardless of whether an additional degree or diploma was earned, meant a comparatively higher 1963 income and/or a higher percent of income increase. This is shown in Table 5.6.

Post-graduate study of any kind meant both a higher mean 1963 income and a higher percent of income increase for the graduates of all three universities who studied. The 1963 income difference of nearly $1,600 represents almost a third greater income for the graduates who studied, compared to those who did not; and their percentage of income increase was more than a third greater.

Table 5.6
National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES: INFLUENCE OF POST-GRADUATE STUDY ON 1963 INCOME

FACTOR	Costa Rica n=598	Guate-mala n=333	Nica-ragua n=202	Total n=1133
No. of graduates who studied	170	144	78	392
No. who did not study	428	189	124	741
Percent of graduates who studied	28.43	43.24	38.61	34.60
Percent who did not study	71.57	56.76	61.39	65.40
Mean 1963 Income: Study	$4347	$8081	$7998	$6011
No Study	3295	6316	5654	4460
Percent Income Increase:				
Study	359.89	367.38	889.85	401.33
No Study	257.38	254.04	524.75	291.57

Less than thirty percent of the Costa Ricans pursued post-graduate studies: in Guatemala and Nicaragua, graduates who did some post-graduate university work represented 43.24 and 38.61 percents, respectively, of those universities' graduates. For each university and in total, the percent of income increase was higher for graduates who studied, and lower for those who did not, than the overall mean increase for all graduates (see Table 5.4).

Like the undergraduate degree or title, additional post-graduate studies appear to be of greater relative value to the Nicaraguans than to graduates of the other two universities who made further study. The difference in the percent of income increase between those who studied and those who didn't was 102.51 percent in Costa Rica, and 113.34 percent in Guatemala. In Nicaragua graduates who did post-graduate study earned 365.10 percent more than those who did not go further academically.

Additional University Degrees or Titles Earned by the Graduates

Multiple university degrees or titles were reported by over twenty-five percent of the graduates. An additional 381 degrees, titles or diplomas were earned, representing more than one-fourth of all the degrees held by all graduates in this study.

The data on the possession of additional degrees reflects that presented above on the pursuance of post-graduate studies. Just as a greater percent of Guatemalan and Nicaraguan than Costa Rican graduates pursued further study, so it was in the garnering of a second and/or third degree. In Costa Rica, 18.39 percent of the graduates earned additional degrees: 34.53 and 33.66 percent, respectively, of the Guatemalans and Nicaraguans did so. However, the average Costa Rican graduate is younger (by 5 or 6 years), and has been out of college for fewer years, than graduates of the other universities. Table 5.7 contains the data on additional degrees held by the graduates.

The number of multiple degrees held by 110 graduates in Costa Rica represents less than twenty percent of all the degrees held by Costa Rican graduates in this study. In Guatemala and Nicaragua, a third of the graduates hold multiple degrees equal in percent to approximately one-third of all the degrees held by graduates of those universities. Of all the degrees or titles held by the graduates in this study, second or third additional degrees account for 25.16 percent.

Costa Rican graduates who hold multiple degrees are three years younger than their counterparts in Guatemala and Nicaragua, which

Table 5.7
National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES: POSSESSION OF ADDITIONAL DEGREES, TITLE OR DIPLOMAS; IN NUMBER AND PERCENT, BY UNIVERSITY

FACTOR		Costa Rica	Guate-mala	Nica-ragua	Total
No. and Percent of graduates with: 1 additional degree	#	84	79	42	205
	%	14.05	23.72	20.79	18.09
3 or more degrees	#	26	36	26	88
	%	4.35	10.81	12.87	7.77
Multiple degrees	#	110	115	68	293
	%	18.39	34.53	33.66	25.86
Total No. of additional degrees:	#	136	151	94	381
Percent additional degrees to all degrees	%	18.51	31.20	33.22	25.16
Average age of graduates with:					
1 additional degree		35.8	38.9	39.0	37.7
3 or more degrees		37.0	39.7	38.9	38.7

accounts in part for the lower percent of additional degrees held in Costa Rica. Of the Nicaraguan graduates with additional degrees, those who hold two or more are slightly younger than those who hold but one. They are also as young or younger than Guatemalan graduates who have two or three additional degrees. The acquisition of a third degree or title by these graduates, at an earlier age than other graduates were getting two, probably accounts for the very high percent of income increase over undergraduate income (889.85) shown by Nicaraguan graduates who pursued further studies.

Level of Additional Degrees of Titles Over 50 various degrees, titles, diplomas or certificates are offered at the university level by the three universities being studied. And over 100 combinations

of degree and specialization are possible.[21] Graduates could have earned an additional degree either at the same "level" as their original undergraduate degree, or at a higher level. They could also have gone abroad to Europe or the United States and received a certificate from France, or a Master's degree from Michigan State University. Many Medical doctors and Dentists visited clinics abroad for specialization, and the diplomas or certificates attesting to the completion of such post-graduate work are framed for office walls. Primary School Teachers returned to college for a Bachelor's degree, and Economists continued studying after graduation, probably toward a Licenciatura in Law.

The amount of preparation or course work required to obtain a Licenciatura, for example, varies among the faculties of any one institution, as well as between universities. And who is to say that a Profesorado or Doctorado at one school is not of the same difficulty as those at another college. For this reason it was impossible to ascertain whether the additional degrees represented an upward progression academically or not. Thus, the 381 additional degrees (of 135 nomenclatures) were classified only in six general levels of difficulty, as shown in Table 5.8.

Of all the additional degrees or titles held by the graduates in this study, 56.43 percent are of a type probably of the least difficulty to obtain--Diplomas or Certificates of attendance or of short-term study such as summer school institutes or workshops. Almost

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[21]See appended list of titles and degrees offered by the National Universities of Central America.

Table 5.8
National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES WHO HOLD TWO OR MORE UNIVERSITY-LEVEL DEGREES: LEVEL OF THE DEGREES AND PERCENT OF DEGREES IN EACH LEVEL

Level of Degrees Held	Costa Rica n=110	Guate-mala n=115	Nica-ragua n=68	Total n=293
Level of all additional degrees (2nd, 3rd, etc.):				
Diplomas or Certificate, etc.	49.26	51.66	74.47	56.43
Medical - Dental Specialist	2.21	9.93	8.51	6.82
Bachelor or Prof. 2nd School	15.44	0.66	2.13	6.30
Licenciatura	8.82	1.99	3.19	4.72
Master	17.65	27.82	9.58	19.69
Ph.D. or M.D.	5.88	6.62	1.06	4.99
Other unknown	0.74	1.32	1.06	1.05
	100.00 (n=136)	100.00 (n=151)	100.00 (n=94)	100.00 (n=381)
Level of 2nd University degree:				
Diploma or Certificate, etc.	46.36	46.96	67.65	51.54
Medical - Dental Specialist	1.82	9.56	10.29	6.83
Bachelor or Prof. 2nd School	16.36	0.87	1.47	6.83
Licenciatura	10.00	2.61	4.41	5.80
Master	20.00	30.43	13.24	22.52
Ph.D. or M.D.	4.55	7.83	1.47	5.12
Other unknown	0.91	1.74	1.47	1.36
	100.00 (n=110)	100.00 (n=115)	100.00 (n=68)	100.00 (n=293)
Level of 3rd University degree:				
Diploma or Certificate, etc.	61.53	66.67	92.30	72.73
Medical - Dental Specialist	3.86	11.11	3.85	6.82
Bachelor or Prof. 2nd School	11.54	-	3.85	4.54
Licenciatura	3.86	-	-	1.14
Master	7.67	19.44	-	10.23
Ph.D. or M.D.	11.54	2.78	-	4.54
Other unknown	-	-	-	-
	100.00 (n=26)	100.00 (n=36)	100.00 (n=26)	100.00 (n=88)

twenty percent of the additional degrees were at the Master's Level and five percent at the Doctoral Level.

In Nicaragua, nearly seventy-five percent of all additional degrees are Diplomas or Certificates, which illustrates the scarcity of high-

level post-graduate degrees among graduates there. It also suggests another reason why the basic undergraduate degree, and any further study, in Nicaragua leads to a high percent of income increase: the supply evidently cannot meet the demand.

In Costa Rica and Guatemala approximately half the additional degrees were at the lower level of difficulty; yet Costa Ricans also reported 15.44 percent additional degrees at the Bachelor's level, and over seventeen percent at the Master's, while 27.82 percent of the Guatemalans' post-graduate degrees were at the level of a Master's.

A study of the second university degree earned by the graduates of each university shows some interesting variations. Nicaraguans seem to obtain Diplomas or Certificates in nearly fifty percent more cases than the Costa Ricans or Guatemalans (67.65 percent vs. 46.96 and 46.36 percent, respectively). Some thirteen percent of the Nicaraguans earn Master's level degrees, and ten percent get Medical-Dental Specialist titles.

Guatemalans tend to obtain Master's level degrees more than other graduates (30.43 percent), and almost eight percent get a doctoral level degree. In Costa Rica, a high percent of second degrees are of university undergraduate level--B.A.'s, B.E.'s, or Profesorados, 16.36 percent, and Licenciatura, 10 percent. However, a higher percent of Costa Ricans than Nicaraguans get a Master's or a Doctorate, 24.55 percent compared to 14.71 percent for the Nicaraguans.

The third degree or title earned by the graduates in over two-thirds of the cases is a Diploma or Certificate (especially in

Nicaragua); but in Guatemala 19.44 percent of the third degrees were at the Master's level, and in Costa Rica 11.54 percent were Doctorates.

A large number of the Costa Rican graduates in this study earned as their first degree a Primary or Secondary School Profesorado. It is evident from the data on additional degrees earned that these graduates seem to progress upward as they obtain a second or third university degree. It is true that less than five percent of the Costa Ricans have a third university degree (as compared to over ten percent for the graduates in Guatemala and Nicaragua), yet the average Costa Rican graduate is six years younger and has been out of school three less years, hence may still pursue a third degree. The University of Costa Rica has a much broader scholarship program than the other two universities, and perhaps it will enable the Costa Rican graduates to show similar or further progression in post-graduate studies when comparatively they reach the same age or have been out of the university as long.

Additional Degrees Earned by Major Science Areas Half of the additional degrees were in the Medical Sciences, thirty percent in the Social Sciences, and twenty percent in the Physical, as follows:

Science Area	Costa Rica n=136	Guate-mala n=151	Nica-ragua n=94	Total n=381
Physical	32.35%	15.89%	11.70%	20.74%
Medical	12.51	64.25	78.72	49.34
Social	55.14	19.86	9.58	29.92
	100.00%	100.00%	100.00%	100.00%

More than three-fourths of the additional degrees in Nicaragua were in the Medical Sciences, but only 12.51 percent of the Costa Rican degrees. This is due, no doubt, to the absence (at this writing) of any graduates from the recently established Medical School in Costa Rica, and the fact that less than 200 Dentists and Microbiologists are known to be graduates of the University, as compared to more than 600 M.D.'s and Dentists in Guatemala and over 300 in Nicaragua.

Conversely, of course, a greater percent of Costa Rican additional degrees are in the Social Sciences (more than half), and the Physical Science area, 32.35 percent.

When the graduates' additional degrees, as separated into the science areas, are studied in another way, it is possible to see what proportion of the degrees in each area are located by country, as follows:

Science Area	Costa Rica	Guate-mala	Nica-ragua	Total
Physical-No. of degrees	44	24	11	79
percent	55.70	30.38	13.92	100.00
MMedical-No. of degrees	17	97	74	188
percent	9.04	51.60	39.36	100.00
Social-No. of degrees	75	39	9	114
percent	69.79	26.32	7.89	100.00

Less than ten percent of all the additional Medical area degrees are held by Costa Rican graduates; over half are held in Guatemala, and the other forty percent by Nicaraguans. Of the Physical Science

additional degrees, more than fifty percent were earned by graduates of the University of Costa Rica: Costa Ricans also hold 75 of the 114 Social Science second and third degrees, a high of nearly seventy percent. All in all, Guatemalan graduates seem to have the most balanced of the additional degrees of any of the three universities.

Geographic Areas Where Additional Degrees Were Earned Most of the graduates stayed in the American continents to obtain their additional degrees: 39.90 percent remained in Central America or went to South America, and 44.09 percent came to the United States. Additional degrees earned by Guatemalan and Nicaraguan graduates followed roughly the same pattern, although a slightly higher percent of Guatemalans than Nicaraguans came to the United States, 55.63 percent vs. 47.87 percent. The Costa Rican graduates got 57.35 percent of their additional degrees in Central or South America, and less than ten percent from the United States.

Table 5.9 contains these data, as well as the percent of all additional degrees held by the graduates.

More than fifty percent of all additional degrees earned by the graduates in Europe are in Guatemala, as are just half of those received in the United States. Costa Ricans hold 65.88 percent of the degrees or titles awarded as second or third degrees in Central America. About a third of the additional degrees brought back from South America are held by graduates in each of the three countries.

It is possible also to take a double view of the additional degrees earned by the graduates: i.e., the geographical area in which

Table 5.9
National Universities of Costa Rica, Guatemala and Nicaragua
ADDITIONAL DEGREES HELD BY GRADUATES: PERCENT EARNED BY GEOGRAPHIC AREAS, FOR EACH UNIVERSITY AND ALL THREE UNIVERSITIES

Geographic Area	Costa Rica	Guate-mala	Nica-ragua	Total
Europe	5.15	15.89	10.64	10.76
Central America	41.17	9.27	15.96	22.31
South America	16.18	17.22	20.21	17.59
United States	28.68	55.63	47.87	44.09
Other	8.82	1.99	5.32	5.25
All Areas Combined	100.00	100.00	100.00	100.00
Europe	17.07	58.54	24.39	100.00
Central America	65.88	16.47	17.65	100.00
South America	32.83	38.81	28.36	100.00
United States	23.21	50.00	26.79	100.00
Other	60.00	15.00	25.00	100.00

the degrees of each of the three major science areas of preparation were earned. In this view, the percent of additional Physical Science area degrees, for example, can be seen in relation to the geographic area where earned, and to other sub-groups.

Nearly half of the additional Physical Science degrees, and more than half of the Medical Science degrees, were bestowed by institutions in the United States. For the additional Social Science area degrees, the graduates went to Sough America or stayed in Central America: 49.18 percent of the Social Science degrees came from those geographic areas.

Medical Science degrees earned in the United States at the post-graduate level accounted for 25.72 percent of all additional degrees reported. The only other sub-category in which more than ten percent

Table 5.10
National Universities of Costa Rica, Guatemala and Nicaragua
ADDITIONAL DEGREES HELD BY GRADUATES: PERCENT EARNED IN EACH MAJOR SCIENCE AREA, BY GEOGRAPHIC AREA

Science Areas		Percent	Percent	Geographic Areas
Physical (n=79)		1.31	6.33	Europe
		4.20	20.25	Central America
		4.46	21.52	South America
		9.98	48.10	United States
		0.79	3.80	Other
	Sub-Total	20.74	100.00	Total
Medical (n=188)		6.04	12.23	Europe
		6.56	13.30	Central America
		9.45	19.15	South America
		25.72	52.13	United States
		1.57	3.19	Other
	Sub-Total	49.34	100.00	Total
Social (n=114)		3.41	11.40	Europe
		11.55	36.80	Central America
		3.67	12.28	South America
		8.40	28.08	United States
		2.89	9.65	Other
	Sub-Total	29.92	100.00	Total
	TOTAL	100.00		

of the degrees were earned was that of Social Science degrees gotten in Central America. Social scientists seem to have spread over the earth more than other area graduates, because the "other" geographic area category contained graduates who had brought back degrees from Japan, North Africa, India and Russia. Nearly ten percent additional degrees in the Social Sciences came from geographic areas other than the four most commonly found in this study.

Summary of the Graduates' Post-graduate Activities In this chapter evidence was presented that supports the following summary observations:

1. The "average" Central American national university graduate had been out of the university 11.1 years in 1963.
2. Less than one percent of the graduates did no work in the field in which they had been professionally trained.
3. More than one-half of the graduates participated in just one type of activity after graduation although they may have held more than one renumerative position in that activity.
4. Graduates who followed two types of activities had higher mean 1963 incomes than those graduates who worked in just one.
5. Thirteen point thirty-three percent of the graduates worked outside their area of specialization at one time or another.
6. Graduates whose work after graduation was in their professional field of training had the highest percent of income increase; i.e., difference between their mean undergraduate income and their mean 1963 income.
7. Of all the graduates, Economists had the highest mean 1963 income ($7778), and Education graduates the lowest ($1476).
8. Law school graduates ranked fifth of the nine areas of training both mean 1963 income and percent of income increase over their undergraduate income.
9. 34.60 percent of the graduates took some post-graduate studies.
10. 25.86 percent have a second and/or third university-level degree, title or certificate.

11. Post-graduate studies of any kind usually meant a percent of income increase one-third greater than that of graduates who did no post-graduate study.
12. Diplomas and Certificates (rather than the higher-level post-graduate degrees) form 56.43 percent of the extra titles or degrees held by the graduates.
13. Approximately twenty-five percent of the additional degrees are at the Master's or Doctorate level.
14. Medical Science degrees represent 49.34 percent of all the additional degrees held; half of these degrees are in Guatemala.
15. Costa Ricans hold 55.70 percent of the additional Physical Science degrees and 69.79 percent of the extra Social Science degrees.
16. Nearly forty-five percent of the additional degrees earned were obtained by study in the United States.

CHAPTER SIX

OPINIONS OF THE GRADUATES

The graduates were requested to indicate what they thought of their undergraduate university training, and to give their opinions of the most pressing university problems, the improvements in the university deemed necessary, and the university services considered most useful to them.

The graduates' answers and suggestions will form the basis for the observation and analysis of aspects of university organization, and will lead to a discussion of the general overall efficacy of the universities.

Central American national universities operate in societies characterized by sharp divisions of social class or status and by a politics more or less organized on those divisions. In such societies university administrators are not likely to be responsive through normal channels to voters of all classes or parties unless the administration has deliberately been made broadly representative of all groups. However, suggestions and opinions from the university's own graduates, whose values and judgments the university itself helped form, should be given serious consideration by responsible university officers. The elected or appointed university officers are, after all, accountable to their "clientel"--the students and the graduates--who ultimately become powerful as the nation's economic, educational and political leaders.

The graduates' opinions are presented in consensus form, as the shared value judgments of the most highly-educated, discernable sub-population in each of the three countries. It is hoped that the ideas expressed by the graduates may help bring about change in institutional operation, either through (1) the informal actions of individuals, or (2) the stimulation of formal action by such organizations as Faculties, colegios, or alumni associations.

The Efficiency of Undergraduate Preparation In a "forced-choice" question on the data-gathering instrument, the graduates were asked to indicate their opinion of the undergraduate training they had received at the university. A range of five choices was given to the graduates, in Spanish: muy eficiente, eficiente, termino medio o pasable, deficiente, and muy deficiente.

The term "eficiente" in Spanish should not be equated exactly to the English word "efficient." To the Central American graduates, "eficiente" would refer mainly to the number of courses in his program, the subject matter or content, and the teaching methods employed. It would be an appropriate affirmative answer to the question as, Did they teach me all I need to know, to the best of their ability? To a U.S. graduate, "efficient", used in connection with his undergraduate education, would refer not only to the idea of the best possible course content and methods of presentation, but also to whether his program was offered under a system of scheduling favorable for the conservation of his investment in time and money. Furthermore, back in the mind of U.S. graduates is the knowledge that they are "products" entering the business, industrial or academic marketplace.

In the following discussion of the graduates' opinions concerning their undergraduate training, the term "efficient" (eficiente) will refer to the university's presentation of program content to inform and "form" an undergraduate prior to granting him a degree or title. Later, the author will use the word "efficient" in a different, more conventionally North American way. Specifically, a university program will be deemed efficient if it produces graduates in the numbers needed for national development and within a reasonable period of time. Neither of these connotations of the word "efficient" are highly valued by Central American graduates.

In one way the phrase "termino medio o pasable" was an unfortunate choice, for it threw the percentages of response upward toward the positive. The phrase "ni eficiente no deficiente" was considered to be more neutral, but Central Americans retained as consultants thought that because the phrase was not "good Spanish" it would be offensive to the graduates, and lose its neutrality in the process of being so considered. It was decided to use "termino medio o pasable" and translate it as "Acceptable or Passable."

More than sixty percent of all the graduates considered their undergraduate preparation to be efficient, or very efficient: 28.50 percent deemed it acceptable or passable, and less than ten percent found it to be deficient. Nicaraguan graduates seemed to be the most critical of their training, and Costa Ricans the least. In Nicaragua, more than fifteen percent of the graduates judged the education they obtained at the university as deficient, and another forty percent as merely acceptable or passable. Costa Ricans, on the other hand,

Table 6.1

National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES: OPINION OF THE EFFICIENCY OF THEIR UNDERGRADUATE PREPARATION, IN NUMBER AND PERCENT BY UNIVERSITY

Degree of Efficiency		University			
		Costa Rica	Guate-mala	Nica-ragua	Total
Very Efficient	#	98	17	20	135
	%	16.47	5.10	9.90	11.95
Efficient	#	357	155	70	582
	%	60.00	46.55	34.65	51.50
Acceptable or Passable	#	113	129	80	322
	%	18.99	38.74	39.60	28.50
Deficient	#	25	30	25	80
	%	4.20	9.01	12.38	7.08
Very Deficient	#	2	2	7	11
	%	0.34	0.60	3.47	0.97
TOTAL	#	595	333	202	1130
	%	100.00	100.00	100.00	100.00

responded somewhat in reverse: less than five percent thought their education deficient, and more than three-fourths considered it efficient.

The Costa Rican and Nicaraguan opinions of their college preparation are interesting, since it is known that Costa Ricans had a low mean percent of income increase (274.18) compared to the Nicaraguans' high percent (685.82), and a mean 1963 income less than half that of the Nicaraguans ($3418 vs $7010).

Almost as great a percent of the Guatemalan graduates as those of Nicaragua considered their university training to be just passable or acceptable in nature (38.74 percent and 39.60 percent, respectively).

If it is assumed that the phrase "termino medio o pasable"--Acceptable or Passable--contains positive connotations rather than neutral, then the high percent of "efficient" and "very efficient" responses should be considered in that context. If the graduates understood the term to imply the neutrality of "neither efficient nor deficient", then nearly thirty percent of them could not decide if their university had prepared them well or not.

Opinion of Efficiency: "Old Grads" and More Recent Graduates

The graduates who were graduated before 1954 were compared to those who were graduated in the ten-year period 1954-1963 to see if there was a difference of opinion between the two groups about their undergraduate education.

The two groups responded in almost identical manner. The "Old Grads" were a little more critical than the more recent graduates of the way their universities had prepared them, 10.02 percent compared to 6.13 percent indicating deficient undergraduate training. Graduates who had been out of college a shorter time were a little less clear than the "Old Grads", 30.65 percent of the recent graduates indicating an Acceptable or Passable education, compared to 26.30 percent of the older graduates who reported the same. These comparisons are shown in Table 6.2.

Table 6.2
National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES: OPINION OF THE EFFICIENCY OF THEIR UNDERGRADUATE PREPARATION--"OLD GRADS" COMPARED TO MORE RECENT GRADUATES

Degree of Efficiency		Graduates: "Old Grads"	1954-1963	Total
Very Efficient	#	70	65	135
	%	12.52	11.38	11.95
Efficient	#	286	296	582
	%	51.16	51.84	51.50
Acceptable or Passable	#	147	175	322
	%	26.30	30.65	28.50
Deficient	#	47	33	80
	%	8.41	5.78	7.08
Very Deficient	#	9	2	11
	%	1.61	0.35	0.97
TOTAL	#	559	571	1130
	%	100.00	100.00	100.00

Opinion of Efficiency Compared to Other Factors From the data already shown of the graduates' opinions about the efficiency of their undergraduate training, it was hypothesized that no significant correlation would appear with such other factors as secondary school origins or major science area of preparation. The analyses were made, and no significant differences among the graduate could be demonstrated.

It was decided, however, to compare the graduates' efficiency opinions to their secondary school origin, major area of training, and mean 1963 income level, so that other hypotheses could be tested. These were: (1) that private high school graduates would be more critical of the national university education than public school

graduates; (2) that Medical and Physical Science area graduates would be more critical than Social Science area graduates; (3) that graduates with low mean 1963 income would respond more critically than medium or high level income graduates and (4) that Social Scientists trained in 5 and 6 year academic programs would tend to rate the efficiency of their university education lower than those Social Scientists who graduated from 2, 3 and 4 year programs. Tables 6.3 and 6.4 contain the figures used to examine these hypotheses: the data are shown in numbers and percent.

More private high school graduates were critical of their university preparation then Public school graduates; Medical Scientists (but not the Physical Scientists) were more critical than Social Scientists; and Social Science graduates of the longer 5 and 6 year programs were more than twice as critical of the undergraduate education than graduates of the shorter 2, 3 and 4 year programs.

Table 6.3

National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES' OPINION OF THE EFFICIENCY OF THEIR UNDERGRADUATE PREPARATION, IN PERCENTS, BY
A. SECONDARY SCHOOL ORIGINS
B. THREE MAJOR SCIENCE AREAS OF TRAINING
C. LEVEL OF MEAN 1963 INCOME

A. SECONDARY SCHOOL ORIGINS

Opinion		Public	Private	Total
Efficient	#	521	194	715
	%	65.70	58.26	63.50
Acceptable Passable	#	210	111	321
	%	26.48	33.33	28.51
Deficient	#	62	28	90
	%	7.82	8.41	7.99
TOTAL	#	793	333	1126
	%	100.00	100.00	100.00

Table 6.3 (con.)

B. THREE MAJOR SCIENCE AREAS OF PREPARATION

		Physical	Medical	Social	Total
Efficient	#	132	163	420	715
	%	64.71	51.42	69.31	63.44
Acceptable Passable	#	63	112	147	322
	%	30.88	35.33	24.26	28.57
Deficient	#	9	42	39	90
	%	4.41	13.25	6.43	7.99
TOTAL	#	204	317	606	1127
	%	100.00	100.00	100.00	100.00

C. LEVEL OF MEAN 1963 INCOME

		High	Medium	Low	Total
Efficient	#	135	349	202	686
	%	51.72	61.66	80.16	63.58
Acceptable Passable	#	95	173	40	308
	%	36.40	30.57	15.87	28.54
Deficient	#	31	44	10	85
	%	11.88	7.77	3.97	7.88
TOTAL	#	261	566	252	1079
	%	100.00	100.00	100.00	100.00

Table 6.4

National Universities of Costa Rica, Guatemala and Nicaragua
SOCIAL SCIENCE AREA GRADUATES: OPINION OF THE EFFICIENCY OF UNDERGRADUATE PREPARATION: 5 AND 6 YEAR ACADEMIC PROGRAM GRADUATES COMPARED THOSE OF 2, 3 AND 4 YEAR PROGRAMS

Opinion		5 and 6 Year Academic Program	2, 3 and 4 Year Academic Program
Efficient	#	184	236
	%	57.86	86.62
Acceptable or Passable	#	102	42
	%	32.08	11.27
Deficient	#	32	6
	%	10.06	2.11
TOTALS	#	318	284
	%	100.00	100.00

The other assumption--that a greater percent of low level 1963 income graduates than higher level income graduates would down-grade their university training--was disproven, and to a surprising degree. Over eighty percent of the low level income graduates (n=202) decided their college education had been efficient, and less than three percent deficient.[22]

It is probable that the great majority of the graduates represented in the 2, 3 and 4 year Social Science area programs are the same graduates who gave the low level income responses, since the

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[22]It is interesting to speculate if these graduates are among the 236 Costa Rican graduates whose primary occupation is teaching. See Tables 3.8 and 3.9.

percentage and numerical figures are roughly equal. It is also known that of the 284 graduates who took the shorter-length programs, 279 were from the University of Costa Rica, and 236 of them reported a mean 1963 income of $1,475.

Opinion of Efficiency Compared to Extra Calendar Years Invested by the Graduates for their Degrees The majority of the graduates did not graduate "on time", but needed extra calendar years to complete their university studies. Theoretically, then, the "proper" hypothesis would be that graduates who spent the most extra time on their carreras would be significantly more critical of their preparation than those who spent the least time. On the other hand, in the light of the responses already shown, the logical hypothesis was that no significant correlation would appear between extra time spent in undergraduate preparation and the graduates' opinion of its efficiency.

The theoretically "correct" hypothesis proved false, and the logically "correct" hypothesis true: in the Chi-square analysis no significant correlation appeared.

The percent figures given in Table 6.5, however, do show that graduates who spent either 2-3 or 4-5 extra calendar years in pursuit of their degrees were less critical than those who graduated "on time", or those who took the longest.

Table 6.5

National Universities of Costa Rica, Guatemala and Nicaragua
GRADUATES OF 5, 6 AND 8 YEAR ACADEMIC PROGRAMS: OPINION OF THE EFFICIENCY OF THEIR UNIVERSITY PREPARATION COMPARED TO THE NUMBER OF EXTRA CALENDAR YEARS SPENT FOR THE DEGREE OR TITLE

Opinion of University Preparation		Extra Calendar Years Spent To Obtain Degree or Title				
		0-1	2-3	4-5	6 or more	Total
Efficient or very Efficient	#	234	140	47	57	708
	%	59.30	55.56	55.29	52.27	57.04
Acceptable or Passable	#	117	91	31	38	277
	%	29.70	36.11	36.47	35.51	33.05
Deficient or very Deficient	#	43	21	7	12	83
	%	10.94	8.33	8.24	11.22	9.91
TOTALS	#	394	252	85	107	883
	%	100.00	100.00	100.00	100.00	100.00

Efficient	%	48.95	29.29	9.83	11.93	100.00
Acceptable, Passable	%	42.24	32.85	11.19	13.72	100.00
Deficient	%	51.81	25.30	8.43	14.46	100.00

Summary: Efficiency of Undergraduate Preparation In general, the graduates were not critical of their undergraduate training. In every category shown--Public, Private, Physical, Medical, High, Low, et. cetera--more than fifty percent of the graduates considered their higher education efficient. Nevertheless, the figures do raise some questions for further thought:

Why are Nicaraguan graduates more critical than graduates of the Universities of Costa Rica and Guatemala?

Do the longer undergraduate programs in the Medical Sciences lead to greater dissatisfaction?

Why weren't the graduates who needed 6 or more extra years to complete their work more disatisfied?

What makes low level income graduates so much less critical than others?

What would the graduates' responses have been had different criteria of judgment re their undergraduate training been employed: e.g., "effective", "useful", or "sufficient" rather than "efficient"?

Does the graduates' satisfaction with their preparation indicate, in truth, an efficient education, or could it be a reflection of either university "indoctrination", or the "protection" of their efforts or institution?

Qualitative Coding of "Open-Ended" Questions Each graduate was asked to write out what, in his opinion, were (1) the three most serious problems presently confronting his university, (2) the improvements that the university ought to make, and (3) the university services that he would favor if the school were in a position to offer them.

Enough space was given on the questionnaire for three, open-end essay-type answers to each of the three solicited opinions. The graduates tended to indicate three problems, and two improvements and services, so that altogether nearly 6,000 opinions were recorded. The responses were written on cards in the random order that they were received, and kept in that order. From the 2,632 problem-responses,

for example, a sample of 530 problems (every 5th card--20 percent) was extracted. These cards formed the basis of the reading, analyzing and classification procedure adopted by the committee established for this process.

The nine individual members of the committee of first classification had experiences in many facets of higher education.[23] Collectively, they formed a cross-cultural, cross-national group of university administrators, professors and students, and represented six countries and nationalities from seven universities of North, Central and South America, and the Caribbean.

Each committee member read every problem in the sample, and made his list of 8 to 12 core problem areas. The lists were then compared and discussed, terminology and final wording agreed upon, and the ultimate list of the most serious university problems suggested by the graduates were drawn up. The same procedure was followed with the Improvements and Services suggested.

The randomly selected samples were then replaced, and all the Problems, Improvements and Services mentioned by the graduates were classified. The classified responses were coded for IBM card perforation, and then subjected to machine calculations and analyses.

The "Most Serious Problem" of the University Altogether 980 graduates of the Universities of Costa Rica, Guatemala and Nicaragua

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[23]Members of the committee are listed in Appendix C.

gave their opinions of the most serious problems facing their university today. Some graduates wrote at length, some in note form: some mentioned several problems, some only one. It was assumed in the coding procedure that the graduate considered the first problem he wrote about to be of primary importance, the second of secondary importance, and so on.

When a consensus was made of all the opinions expressed by the graduates, five problems were each mentioned by more than ten percent of the graduates, and one of the problems by over twenty percent. These are, in rank order:

1. Lack of a well-prepared, full-time teaching staff;
2. Lack of meaningful relation between the University programs and national needs;
3. Lack of sufficient economic resources;
4. Administrative deficiencies (in organization, planning, goal-setting, use of human, economic and/or physical resources); and
5. Lack of adequate physical plant, equipment and teaching materials.

The complete figures, in number and percent, are presented in Table 6.6.

Lack of well-trained, full-time teaching personnel was mentioned as a major university problem in 20.06 percent of the opinions expressed by the graduates: in order, this problem ranked second among the primary responses, first among the second responses, and third of the additional suggestions.

Table 6.6

National Universities of Costa Rica, Guatemala and Nicaragua
"MOST SERIOUS PROBLEM" OF THE UNIVERSITY: CONSENSUS OF OPINION BASED UPON MULTIPLE RESPONSES OF THE GRADUATES, IN RANK ORDER

"Most Serious Problem" of the University	Consensus Total and Percent	Number of Opinions in order of response		
		1st	2nd	3rd
1. Lack of well-prepared, full-time teaching staff	528 20.06	210	214	104
2. Lack of effective relation between the university programs and the national needs	434 16.49	119	173	142
3. Lack of sufficient economic resources	369 14.02	222	76	71
4. Administrative deficiencies (in organization, planning, goal-setting, use of human, economic and/or physical resources)	346 13.15	105	119	122
5. Lack of adequate physical plant, equipment and teaching materials	270 10.26	53	119	98
6. Deficiencies in secondary school preparation and/or the university admissions system	205 7.78	97	57	51
7. General lack of university order, discipline and seriousness of purposed	196 7.45	84	60	52
8. Intervention of politics in the university	146 5.55	58	39	49
9. Economic problems of the student body	71 2.70	18	24	29
Other	67 2.54	14	21	32
TOTALS	2632 100.00	980	902	750

Of the nine basic problems identified by the graduates, the two of least importance (by percent of graduate's opinion) are those about which the most "noise" is usally made in the Press or during university crises: political intervention in the university and the economic struggles of the students.

When only the first opinions of the graduates are considered, the two most serious problems of the universities emerge. In addition to the need for well-prepared, full-time staff members, the need for sufficient economic resources to operate the university becomes obvious. This is shown in Table 6.7, a ranking of the most serious problems based upon the graduates' primary opinions. The number of responses for each university's graduates is also given in percent.

Each of the two major problems was mentioned by more than twenty percent of the graduates. Two other problems were noted by over ten percent of the graduates--the lack of an effective correlation between present academic programs and national needs, and deficiencies in administrative organization. However, lack of adequate physical plant, ranked number five in a consensus of all opinions, received but 5.41 percent of the primary opinions, and ranked eighth.

The graduates of each university, of course, mentioned problems which they deemed of most importance to their university and country. There are interesting differences of opinion between and among the graduates of the three universities. Nicaraguans were more concerned than the others about the lack of university order (second in importance) and political intervention (fourth). To Costa Rican graduates these problems seemed unimportant: they were considered of seventh and ninth

Table 6.7
National Universities of Costa Rica, Guatemala and Nicaragua
"MOST SERIOUS PROBLEM" OF THE UNIVERSITY, IN THE OPINION OF THE GRADUATES: BY UNIVERSITY, WITH PERCENTAGES

"Most Serious Problem" of the University	Number and Percent of Responses	Responses and Percent by University		
		Costa Rica	Guate-mala	Nica-ragua
1. Lack of sufficient economic resources	222 22.65	77 15.94	94 29.28	51 28.98
2. Lack of a well-prepared, full-time teaching staff	210 21.43	134 27.74	47 14.64	29 16.48
3. Lack of effective relation between the university programs and the national needs	119 12.14	77 15.94	32 9.97	10 5.68
4. Administrative deficiencies (in organization, planning, goal-setting, use of human, economic and/or physical resources)	105 10.71	55 11.39	43 13.40	7 3.98
5. Deficiencies in secondary school preparation and/or the university admissions system	97 9.90	69 14.29	27 8.41	1 0.56
6. General lack of university order, discipline and seriousness of purpose	84 8.57	19 3.93	34 10.59	31 17.62
7. Intervention of politics in the university	58 5.92	7 1.45	27 8.41	24 13.64
8. Lack of adequate physical plant, equipment and teaching materials	53 5.41	28 5.80	8 2.49	17 9.66
9. Economic problems of the student body	18 1.84	9 1.86	4 1.25	5 2.84
Other	14 1.43	8 1.66	5 1.56	1 0.56
TOTALS	980 100.00	483 100.00	321 100.00	176 100.00

importance in Costa Rica. Both the Guatemalan and Nicaraguan graduates were of the opinion that the university lacked economic resources: 29.28 percent of the Guatemalan, and 28.98 percent of the Nicaraguan, graduates "ranked" this as their university's most pressing problem.

Two of the problems appear to be of more importance in Costa Rica than in Guatemala and Nicaragua. The lack of relationship between the University's programs and national needs, and deficiencies in secondary school preparation or the university's admissions system were seen by graduates in Costa Rica as of second and fourth importance, respectively. Among the Guatemalans, these two problems appeared as fifth and sixth: in Nicaragua as sixth and ninth.

Most Serious Problem of the University as Expressed by Various Groupings of the Graduates It was believed that something new could be learned, or some old ideas verified or changed, by seeing what different sub-groups of graduates might consider to be the serious problems of the university. It would seem natural that whether a graduate went to a public or private high school, or was an "Old Grad" or a more recent graduate, might materially influence his ideas of the most pressing university problems. Likewise, his mean 1963 income and the source of his undergraduate income would be important.

From Table 6.8, in which are shown the percentage figures of these comparisons, the following differences appear:

1. a higher percent of private high school graduates than public were critical of administrative organization and efficiency;

Table 6.8

National Universities of Costa Rica, Guatemala and Nicaragua

"MOST SERIOUS PROBLEM" OF THE UNIVERSITY, AS EXPRESSED IN VARIOUS GROUPINGS OF THE GRADUATES

"Most Serious Problem" of the University	Secondary School Attended		Source of Undergraduate income		Period of Graduation			Mean 1963 Income	
	Pub.	Pvt.	Self	Parents & Family	1900-1953	1954-1958	1959-1963	$5,218 or less	$5,219 or more
1. Lack of sufficient economic resources	22.75	22.22	21.47	24.37	18.94	24.17	27.27	22.11	23.47
2. Lack of a well prepared, full-time teaching staff	22.90	18.28	21.64	21.29	19.38	20.83	25.18	22.79	19.64
3. Lack of effective relation between the university programs and national needs	12.99	10.04	12.44	11.49	11.68	15.83	9.79	12.42	11.73
4. Administrative deficiencies, etc.	9.75	12.90	9.03	12.61	9.91	11.67	11.19	10.88	10.46
5. Deficiencies in secondary school preparation	10.64	8.60	10.39	8.96	13.00	7.50	6.99	11.91	6.89
6. General lack of university order, discipline & seriousness of purpose	8.12	9.68	9.88	6.72	11.45	6.67	5.59	5.61	13.01
7. Intervention of politics in the university	5.17	7.17	5.62	6.72	7.27	5.42	4.20	4.76	7.65
8. Lack of adequate physical plant, etc.	4.73	7.17	6.64	3.64	4.63	4.58	7.34	6.12	4.34
9. Economic problems of the student body	1.62	2.51	1.53	2.52	1.10	3.33	1.75	1.87	1.53
Other	1.33	1.43	1.36	1.68	2.64	-	0.70	1.53	1.28
TOTALS %	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
TOTALS #	677	279	587	357	454	240	286	588	392
	956		944		980			980	

2. a greater percent of public school graduates then private school graduates saw deficiencies in their secondary school preparation;
3. a slightly higher percent of private school graduates deplored the lack of university order, political intervention and the inadequacy of the university's physical plant;
4. graduates who themselves were the principal source of the undergraduate income tended to be more critical of secondary school deficiencies, and less critical of university administrative deficiencies, than those graduates whose main support come from their parents or family;
5. the "Old Grads" worried less about the university's finances than the younger graduates, and also put less emphasis on student economic problems;
6. twice the percent of the "Old Grads" than graduates of the ten-year period, 1954-1963, saw deficiencies in modern secondary education, and the lack of university discipline and seriousness, as important university problems;
7. more than double the percent of graduates whose 1963 income was above the Mean, than those whose income was below saw faults in university order and discipline as a very important problem; and
8. a greater number and percent of low 1963 income graduates, compared to their opposites, felt secondary school deficiencies to be a major university problem.

Some of the university problems mentioned by the graduates are fairly narrow in scope; others are more general, and contain "problems within problems". The resolution of some problems could almost automatically resolve others: i.e., reduce politics in the university, and order, academic discipline and seriousness of purpose should improve. Other problems, however, cannot be resolved quickly, even though the universities should suddenly acquire sufficient economic resources.

A lot of money for one's alma mater is nice to think about, and it is easy subconsciously to rationalize the existence of university problems as due to the lack of financial resources. Yet the acquisition of money also creates problems, both in the getting of it and the planned, organized use of it. If the governments of Costa Rica, Guatemala and Nicaragua would give their national universities ten times as much money next year as this year, the universities would still need three to four or more years to develop a well-trained, full-time teaching staff. True, greater economic resources would give an institution a feeling of "freedom", of confidence--room to move about--so that personnel would feel secure that planned procedures of reform could transpire. But sufficient financial resources per se will not make problems disappear overnight.

Neither money, legislation or re-organization can solve some of the problems. Only if individuals adopt responsible attitudes can they be resolved. What if each student, professor, administrator, graduate and government official decided to ignore politics, and develop greater self-discipline and seriousness of academic responsibility? Other, more pressing problems could then be solved through better communication and cooperation.

The "Most Important Improvement" the University Could Make

Quite naturally, the graduates' opinions about university improvements reflect their ideas of what the problems of the university are. If one believes that the lack of economic resources is a major problem, then an important improvement at the university would be the establishment of a better mechanism to obtain additional funds, via goverment and/or foundations and private enterprise. If there are deficiencies in administrative organization, then a revision and reformation of the university's administrative structure are called for.

The majority of the "most important improvements" suggested by the graduates are reflections of their opinions of the university's problems. Other indicated improvements that the university could make seem to include combinations of problems: e.g., Minimize politics and establish order, discipline and seriousness of purpose. Some suggested improvements are specific in nature--promote scientific research, develop a good library system--but would relate to, and be affected by, other improvements--create a staff of full-time teaching personnel, evaluate and revise the academic programs.

Eight hundred and seventy-two graduates gave their opinions of the most important improvement that their university could make. Two improvements stood out, in the consensus of opinions, as much more important than the others:

1. Evaluate and revise the academic programs, adapting the curricula to national needs, and
2. Create a full-time, well-trained teaching staff.

Each of those recommendations was made by more than twenty percent of the graduates. Two other suggestions were mentioned by at least ten percent of the graduates:

3. Revise and re-organize the administrative structure; and
4. Increase the physical plant (buildings, grounds, roads) and equipment.

Just as there were different problems seen by the graduates of the different universities, so with the improvements they verbalized. Among Costa Rican graduates, two improvements were seen as quite necessary, and a third appeared at a second level of importance:

1. Evaluate and revise the academic programs, adapting the curricula to national needs (27.51 percent);
2. Create a full-time, well-trained teaching staff (28.95 percent); and
3. Revise and re-organize the administrative structure (12.92 percent).

In Guatemala, the graduates felt strongly that the adaptation of the curricula to the nation's needs by an evaluation of academic programs was the most necessary improvement the university could make (39.93 percent). A group of three second-level improvements appeared in Guatemala, each being mentioned by more than ten percent of the graduates:

1. Revise and re-organize the administrative structure;
2. Resolve the economic problems of the university, the faculty, and the student body; and
3. Create a full-time, well-trained teaching staff.

Table 6.9

National Universities of Costa Rica, Guatemala and Nicaragua
"MOST IMPORTANT IMPROVEMENT" THAT THE UNIVERSITY COULD MAKE,
IN THE OPINION OF THE GRADUATES: BY UNIVERSITY, WITH PERCENTAGES

"Most Important Improvement" that the University could make	Number and Percent of Responses	Responses and Percent by University		
		Costa Rica	Guate-mala	Nica-ragua
1. Evaluate and revise the academic programs, adapting the curricula to national needs	221 25.34	115 27.51	90 30.93	16 9.82
2. Create a full-time well-trained teaching staff	204 23.39	121 28.95	39 13.40	44 26.99
3. Revise and re-organize the administrative structure	119 13.65	54 12.92	49 16.84	16 9.82
4. Increase the physical plant (buildings, grounds, roads) and equipment	90 10.32	22 5.26	19 6.53	49 30.06
5. Resolve the economic problems of the university, the faculty, and the student body	83 9.52	24 5.74	42 14.43	17 10.43
6. Promote better articulation between the university and secondary education	51 5.85	33 7.89	16 5.50	2 1.23
7. Minimize politics and establish order, discipline and seriousness of purpose	42 4.82	15 3.59	18 6.19	9 5.52
8. Establish better communication between and among university personnel, students, and graduates	24 2.75	9 2.15	10 3.44	5 3.06
9. Develop a good library system (with distribution of materials and services)	12 1.38	6 1.44	4 1.37	2 1.23
10. Promote scientific research	7 0.80	6 1.44	- -	1 0.61
Other	19 2.18	13 3.11	4 1.37	2 1.23
TOTALS	872 100.00	418 100.00	291 100.00	163 100.00

Nicaraguan graduates, like the Costa Ricans, saw two major improvements the university could make: like the Guatemalans, they considered three university changes as secondary.

1. Increase the physical plant and equipment (30.06 percent);
2. Create a full-time, well-trained teaching staff (26.99 percent);
3. Resolve the economic problems of the university (10.43 percent);

4-5 Revaluate and revise the academic programs, and re-organize the administrative structure (9.82 percent each).

A comparison between the university problems mentioned by the graduates and the improvements they deemed necessary indicates that the suggested improvements are not merely obverse sides of the coin. Both Guatemalans and Nicaraguans considered the lack of economic resources by far the most serious problem facing their national university. Yet the Guatemaltecos suggested that the revision of academic programs and the re-organization of the administration were more important improvements than solving the economic problems of the university, and Nicaraguan graduates gave precedence to the creation of a full-time staff and the increment of the physical plant and equipment.

In Costa Rica the graduates' suggestions for improvements in the university were primarily reflections of the problems they saw, although they also gave much less importance to the resolvement of the university's economic problems.

It is evident that the graduates believe some of the most serious problems of their university can be attacked with present resources. They have implied that important changes can, and ought to be, initiated without awaiting an increase in financial resources. Changes can begin in administrative methods or organization to better utilize existing personnel and facilities. And the revaluation of present university programs, curriculum revision, and development of staff can be made a continuous process of present on-going operations.

The "Service of the University" Most Requested by the Graduates

Overwhelmingly, the graduates indicated that the university service they most approved was the opportunity to take post-graduate courses of professional specialization in their field of preparation. More than seventy-five percent of the graduates listed this service as of primary importance.

The graduates of the University of San Carlos, Guatemala, responded only a little less enthusiastically than the other graduates; 66.79 percent of the Guatemalans favoring this service, as shown in Table 6.10.

Eight other services were discussed by the graduates, but none received more than ten percent of the "vote". One university service--more formal post-graduate courses leading to advanced degrees--was requested by 9.06 percent of the Guatemalan graduates. And three other services were mentioned by over six percent of the graduates of one or another university:

Table 6.10
National Universities of Costa Rica, Guatemala and Nicaragua
"SERVICE OF THE UNIVERSITY" MOST REQUESTED BY THE GRADUATES: BY UNIVERSITY, WITH PERCENTAGES

"Service of the University" Most Requested	Number and Percent of Responses	Responses and Percent by University		
		Costa Rica	Guate-mala	Nica-ragua
1. Courses of professional specialization (in each area of training)	701 74.26	393 77.82	177 66.79	131 75.29
2. Library services, including materials and distribution	46 4.87	19 3.76	15 5.66	12 6.90
3. More and greater variety of summer school offerings	38 4.03	34 6.73	- -	4 2.30
4. More formal post-graduate programs leading to advanced degrees	38 4.03	14 2.77	24 9.06	- -
5. Professional and technical consultation with university staff members	37 3.92	18 3.56	9 3.40	10 5.75
6. Conferences, seminars, etc. on diverse themes of general interest (not specialized)	30 3.18	8 1.58	17 6.41	5 2.87
7. Financial aid (becas) for advanced study	14 1.48	2 0.40	11 4.15	1 0.57
8. The opportunity and guidance necessary to conduct scientific research	13 1.38	5 0.99	7 2.64	1 0.57
9. The use of university facilities for meetings, research, colloquia, etc.	7 0.74	2 0.40	3 1.13	2 1.15
Other	20 2.11	10 1.99	2 0.76	8 4.60
TOTALS	944 100.00	505 100.00	265 100.00	174 100.00

1. Library services, including materials and distribution (Nicaragua, 6.90 percent);
2. More and greater variety of summer school offerings (Costa Rica, 6.73 percent); and
3. Conferences, seminars on diverse themes of general interest (Guatemala, 6.41 percent).

Even though the response was so great for the opportunity to take special courses of professionalization, the graduates did indicate a wide variety of university services that they considered valuable. Some of these services will become more available to the graduates when certain university problems of undergraduate training are solved: e.g., professional and technical consultation with university staff members will be more feasible after the university has developed a well-trained, full-time professional staff. The use of university facilities, or library privileges, will be more possible after the university's physical plant--buildings, laboratories, auditoria--is increased.

Most of the services suggested by the graduates should become part of a university's Continuing Education program, wherein short-term conferences and workshops, formal and informal instruction, advisory consultation, and cultural, professional and intellectual stimulation are offered by the university, not only to the graduates, but to the public at large. Business and industrial organizations, if they are to benefit the economy of these emergent nations, must have access to these kinds of service. Literary, political and social organizations, also, must become the consumers of the university's Continuing education services, to further needed cultural change within the nation.

Summary of the Graduates' Opinions The graduates of the national universities of Costa Rica, Guatemala and Nicaragua hold the following opinions (in consensual form):

1. that their undergraduate preparation was--by and large--efficient;
2. that the major university problems are
   a. Lack of sufficient economic resources,
   b. Lack of a well-prepared, full-time teaching staff,
   c. Lack of a sensible relationship between the university programs and the national needs, and
   d. Deficiencies in university administration.
3. that the most important improvements the universities can make are:
   a. The revaluation and revision of academic programs to adapt the curricula to the national needs, and
   b. The creation of a full-time teaching staff; and
4. that the university services most needed are post-graduate courses of specialization in all areas of professional preparation.

A university cannot be thought of apart from the culture it serves, nor can it serve a culture from which it is apart. The university graduates have indicated some ways in which the universities' own objectives are not being fulfilled, or are not related to the needs of the nations. They have also given their points of view about other university problems, and have suggested possible improvements.

Central American university leadership, of course, should take the initiative in proposing solutions for problems, and even in the definition of problems. Yet university policymakers should also be responsive to the competence of their own graduates, and the candor with which the graduates have offered their suggestions and opinions. University reform, changes of purposes or procedures, even ideas, do not always flow inevitably and continuously from within university organization. There are times when the opinions of a respected, responsible body of citizens can be useful as a stimulant for institutional self-reflection and re-evaluation.

CHAPTER SEVEN

RESUMÉ AND CONCLUSIONS

University graduates are the jewels of a nation. Being rare, they are precious, especially in emergent, developing countries. But graduates are also valuable to a nation in other ways. They are symbolic of a nation's aspirations to create an educated populace, the "wealth" of human resources needed to develop the country; and their knowledge and professional skills are useful and necessary in the planning, implementation and accomplishment of such national goals.

A national university is the nation's jeweler. As the institution so employed, its work is to sort the raw gems, and to plan and execute the process of cutting, grinding, buffing and polishing. The resultant graduates then not only reflect their own particular facets, but aspects of the organizational planning and workmanship of the university as well.

The Graduates That Have Been Produced National university graduates in Central America are predominately men. They entered college from a public high school (70.80 percent) when nearly nineteen years of age, and were graduated seven-and-a-half years later.

More than half of the graduates majored in the social sciences, and 44.48 percent of the graduates followed six-year academic programs. Of all known graduates of the Central American national universities for which data is available (Table 2.1), the most popular professional fields of study were the traditional "big three"--Law, Medicine and Engineering--, and a new middle-class profession, Pharmacy. Dentistry

is also becoming a more favored field of study. However, far too few Agronomists,[24] Economists and Teachers have emerged from the national universities since 1950.

The graduates in this study averaged 37.5 years of age in 1963. They had been out of the university for eleven years. During these years, 99 percent had worked at one time or another in the professional field for which they were trained. Many of the graduates engaged in more than one type of activity after graduation (43.60 percent), and thirteen and a half percent did some work unrelated to their fields of preparation. A high proportion of the graduates presently hold multiple income-returning positions (16.04 percent), especially in Guatemala and Nicaragua (20.82 and 26.46 percent, respectively).

One-third of the graduates pursued post-graduate study of some kind, and more than a quarter of all the graduates have a second and/or third university-level degree. Half of the additional degrees are in the Medical sciences; nearly forty-five percent were earned in the United States.

The Value of a University Education to the Graduates The graduates themselves considered their undergraduate training to be efficient. Sixty-three percent of the graduates held this opinion, and another

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[24]In 1959 there was one Agronomist per 1,800 inhabitants in Costa Rica, but in El Salvador, Guatemala and Honduras the ratio was one for 150,000 or more inhabitants. See Organización de los Estados Unidos para la Alimentación y la Agricultura, Un estudio de la educación agrícola universitaria en América Latina (OAA, Roma, 1959).

twenty-eight percent thought their college training had at least been acceptable or passable.

If the value of a university education can be seen in monetary terms, then the first university degree may have been worth a great deal to the graduates. Their mean 1963 income was $5,218, an increase of 348.58 percent over the average of their incomes as undergraduates. This meant an average annual income increase--in a fairly stable economy--of thirty-one percent in the post-graduate years.[25] Many graduates during these years held multiple positions, or participated in several activities. Such occupational mobility, in great part attributable to the university degree, meant a considerable increase in income. Graduates with two or three jobs had 1963 incomes worth one-third to three-fourths more than those with but one position: graduates who participated in multiple activities had over ninety percent greater income increase after graduation than those who limited their activity to one.

There were some graduates, however, who worked in fields outside their professional area (13.51 percent). In Nicaragua, more than twenty percent of the graduates did unrelated work. Even though the number of such graduates is few, it is interesting to note that the highest 1963 incomes were reported by these graduates.

Society's Relative Evaluation of the Graduates A society honors those citizens it respects in various ways; through political election,

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[25]This is not to say that the individuals involved might not have enjoyed higher incomes without the benefit of a university education. Nor is it inconceivable that similar individuals might have achieved the same income levels without a university education.

the bestowal of literary or artistic awards, acceptance of one's inherited social or economic position, and by establishing, unofficially, relative levels of economic status. Prestige and esteem are abstract in nature, and difficult to evaluate. Earned income as a criteria can be used as one measure to judge how a society values its university graduates.

It is understood, of course, that the average university graduate has income far in excess of the national per capita income; graduates are definitely in the upper quartile of income-earning citizens. For persons at this level of income-return, it is easiest to compare them to each other to see the relative value society places upon their services.

From the data on 1,133 graduates found in this study, it is evident that Central American Economists are highly valued, monetarily. Educators--teachers and professors--are lowly valued, monetarily. Teachers in this study reported a mean 1963 income of $1,476: the Economists' mean 1963 income was $7,778, greater by 427.02 percent than the teachers.

As groups, Dentists, Engineers and Medical doctors all reported means of more than $7,000: Pharmacists, Agronomists and those trained in the Humanities all reported means of less than $5,000.

The Law profession seems to have lost some of its prestige, at least monetarily, since Lawyers as a group ranked in the middle of nine professional fields of work in regard to mean 1963 income.

Relatively, the extreme difference between what teachers earn and what graduates in other professions earn reflects woefully the most glaring national problem in all Central American countries--the great shortage of qualified, trained public school teachers.

It is evident from data amassed for this study that only one university faculty in all of Central America is producing anywhere near the number of teachers needed in its nation.[26] The College of Education at the University of Costa Rica, from 1950 to 1963, produced 1,643 graduates--a ratio of 34.40 percent, graduates to matriculants. During this period of time, the faculties of Humanities in Guatemala and El Salvador had graduated 14 and 165 graduates, respectively--ratios of graduates to matriculants of 0.70 and 3.20 percents. And not all of these graduates were prepared as teachers; the majority were prepared as philosophers, historians, linguists and journalists.

Yet even in Costa Rica the relative status, monetarily, of the teaching profession is the lowest of all. Teachers in Costa Rica do not even earn half of the mean 1963 income reported by all Costa Rican graduates in this study. This: in a country which--relative to its Central and South American neighbors--has few economic and no military problems, and in which its Faculty of Education produced 56.67 percent of all its university graduates from 1950 to 1963.

The Efficacy of the University as a National Institution: Production

One of the costs to a university is the process of matriculating students. Presumably, this and other university costs are later offset by the production of trained graduates whose work during their lifetimes recompenses the goverment and university expenditures. Therefore,

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[26]See Emma Gamboa and Félix Hernández Andrino, Formación de profesores de educación media (Guatemala, IIME, 1963 and Paul G. Orr and Karl T. Hereford, Necesidades de personal de educación media (Guatemala IIME, 1963.

a legitimate means of analyzing university efficacy is to compare the ratio of graduates to matriculants.

As stated earlier, the Faculty of Education at the University of Costa Rica is the most productive of all university faculties, in the ratio of the number of graduates to matriculated students. Only three other faculties in the institutions studied had a ratio of more than ten percent, and they were also in Costa Rica--Dentistry, 11.90 percent; Microbiology, 18.90 percent; and Pharmacy, 10.40 percent. The overall figure of graduates to matriculants at the University of Costa Rica was 7.10 percent.

However, if the graduates and matriculants for the College of Education at the university are removed from consideration, the remaining faculties produced just 3.50 percent of their total enrollments, 1950-63, as graduates.

The National Universities of El Salvador and Guatemala had even lower percentages of graduates for this period of time--3.00 and 3.10 percent, respectively. For the National Autonomous University of Nicaragua, from which data from five faculties was available for the same period of time, the ratio was 6.60 percent, graduates to matriculants. This figure, though, does not include the School of Journalism, or the Faculties of Humanities and Economics. If one can assume that those faculties were comparable in production to their counterpart faculties in Costa Rica, El Salvador and Guatemala (Humanities 1.3, 0.4 and 1.1: Economics 0.8, 0.7 and 3.2), then the Nicaraguan ratio of graduates to total enrollments was also about three percent.

Not only is total university production low, but there is imbalance of production. As already noted, in some professional fields there has been a surfeit of graduates, and in others a scarcity. The recent CSUCA-sponsored Human Resources studies dealing with the educational systems in Costa Rica and Guatemala seem to be oases in the almost completely deserted absence of attempts to consider the possibilities and limits of occupational opportunities in these developing countries. Only from such studies can come the proper organization and training programs to create the right number of candidates in each professional area.

Possible Reasons for Non-Production University students fail to complete their studies for a variety of reasons. They may have family or economic problems, they may move or get married, they may make a mature decision that they cannot do university work, or they may become drop-outs through frustration.

It is evident from this study that a very small percent of students ever change their academic program or faculty once they have begun their college career. It is difficult to change one's program, or move from one faculty to another, not only because of the administrative "red-tape" involved, but, more importantly, the probability that all the credits so far earned will be lost, and one must begin all over again in a new carrera. Hopefully, the recent installation of general studies programs at these universities will minimize this student problem.

Economically, the undergraduates could be helped to graduate sooner if the universities would expand their scholarship programs. Only the University of Costa Rica seems to have a broad, fairly generous, balanced system of student economic aid. In Nicaragua beca monies awarded to the graduates in this study averaged $45.43 annually, and represented but 5.09 percent of their undergraduate income. Just 31 of 202 Nicaraguan graduates got this aid. In Guatemala, only 21 of 333 graduates had becas, worth a mean of $8.17 a year, 0.46 percent of the undergraduate income. The data showed, nonetheless, that graduates who had becas finished their studies more rapidly than students who were not given financial aid.[27]

Lack of Program Variety The majority of academic programs offered by the faculties in Central American universities are of five, six or eight years duration. There are some two, three and four year programs, but they are available primarily in the Humanities or Education. It may be that prospective university students in these countries do not have a wide enough variety of programs to choose from. Many matriculated universitarios probably discover they are square pegs trying to force themselves into round holes. They then leave the university, possibly because of the narrowness of program choice available to them.

Naturally, the universities must continue to turn out fully qualified graduates in the basic professional fields. Agronomists, economists,

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[27]It must not be assumed that the mere possession by undergraduates of a beca (especially one of such small amount as those reported by the graduates) guarantees earlier graduation. The recipients of these becas may have been superior students to begin with, or have been in programs especially geared for rapid graduation: viz., the primary school teacher-trainees in Costa Rica, Table 4.5, parts 3-c and 4.

doctors, engineers, teachers especially, are needed: yet the universities must also produce other technically qualified personnel at a secondary level. Hospitals do not function only with doctors; nurses and laboratory technicians are essential. Surveyors and draftsmen are needed to construct roads and buildings as well as engineers.

University administrative officers cannot refuse to design and offer programs specifically for students who are not able, or who do not want, to consume the "full-course meal". The process of half-educating a large number of prospective drop-outs or egresados in order to produce one graduate is costly in time, money and effort to both the individuals involved and the university. To invert the analogy above, why not produce one excellent coffee-cake and several loaves of good bread for the nation, rather than one sweet-spicy coffee-cake and a great many left-over, unsweetened, half-done (or perhaps even burned) coffee-cakes?

Unrealistic Present Academic Programs The problem of university underproduction, however, goes deeper than the lack of academic program variety. Shorter-length 2, 3 and 4 year programs are offered at all the universities in Central America, not just at the University of Costa Rica. The length of the academic program does not seem to be a significant factor. Most teacher preparation programs are of such length at present, yet in the ten-year period that ended in 1962, "the institutions that form teachers for the Central American isthmus produced an annual average of 54 teachers".[28]

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[28]IIME Staff, Formación de Personal para la Enseñanza Media: Plan de Acción (Guatemala, IIME, 1964), p. 23.

The solution is probably in shortening some carreras, or eliminating repetition of material, through realistic curriculum revision. For the facts are, as found in this study, that no group of graduates finished their program "on time"; i.e., within the official number of academic years of study planned and required by university authorities. Economists, for example, mainly in 5 and 6 year programs, used 10.4 calendar years to obtain their degrees; Recent graduates (1959-63) needed 8.4 calendar years to finish five-year programs; and graduates of six-year academic programs took 45 percent extra calendar time to complete their higher education. In Guatemala and Nicaragua, graduates of the Social and Physical sciences not only needed more extra calendar years to finish than Medical science graduates (proportionate to the length of their programs), but they also took more total calendar years, period, than the Medical science graduates.

Furthermore, there is a trend at all three universities toward an even greater investment of calendar time by aspiring undergraduates. The "Old Grads", those who were graduated before 1954, spent 6.9 calendar years to earn their degrees; the Middle graduates, 1954-58, needed 7.3 calendar years; and the Recent graduates used 8.7. These are alarming figures, and must be seen with apprehension by the men responsible in Central America for the economic and educational development of the area.

The "Cost" to the University of Producing a Graduate University monies are spent on a variety of things and services. Buildings, landscaped grounds, and equipment must be provided for the students and

faculty; and a teaching staff, for which the major part of university money is allocated, is an absolute necessity. The initial registration and matriculation process, either by faculty or an all-university Registrar's office, represents another cost to the university. As students progress through their years of study, they must re-register repeatedly, for the number of years of their academic programs. The aptitude tests, examinations, becas, grades, official notices and classification services given by the university all cost a lot of money. A vast amount of record-keeping and paper work is necessary in the operation of a university.

The university may be considered efficiently economical with its monies to the extent that it minimizes the costs of these procedures without a loss of service or program effectiveness. If the university administrative and academic organization is so designed that excessive monies must be spent on "extra" registrations, teachers, examinations and classroom reservations beyond those originally planned to meet the needs of the academic programs, then the university is not economical in its production system.

The average graduate in this study invested 1.42 calendar years to complete 1 academic year of programmed study. Nearly half of the graduates were in six-year academic programs. Thus, these students went through the registration process nine times rather than the six called for by their academic programs. This meant, of course, three additional years of costly paper work and teachers salaries for the university, in order to graduate students whom the university had planned to graduate three years previously.

By and large, undergraduates at the Central American universities must register for the full "cycle" (ciclo) of courses required in each academic year of study in the professional program pursued. This means, for example, that a third-year student registers for all six courses in his planned program, even though he still may not yet have passed several courses from his first or second year, or even though he knows, since he must work for a living, that he will not attend or attempt to pass more than three of the courses for which he registers. The graduates in this study may have enrolled for what constituted full-time programs of study, yet they performed as though enrolled on a part-time basis. Therefore, a number of pertinent questions may be raised concerning the "cost" to the university of producing graduates:

> Academically and morally, is it proper to permit students to enroll in courses that they probably will not complete?
>
> Should students be allowed to register only for the number of courses in a semester or year that they plan to finish?
>
> Economically, can a university afford to offer courses for"Phantom" students (who enroll but neither attend nor complete their work)?
>
> Can a university afford to reserve classroom seats and space for such phantom students, for an "extra" number of calendar years?
>
> Economically and intellectually, would it be helpful to eliminate the multiple examination procedure to avoid the expense in time, money and effort that it represents, and possibly raise academic standards?

If a university can solve such economic problems of its own, then the cost of a university degree to the graduate can also be diminished appreciably.

The "Cost" of a University Education to the Graduate Several economists have written extensively on the value and costs of education.[29] Theodore W. Schultz wrote of the "opportunity cost" of education as including "the possible earned income foregone by those enrolled" in schools, colleges and universities.[30] This "opportunity cost" of a university education includes not only the costs of tuition, books, equipment, clothing, housing and food necessary for X number of years of study, but also the time--in number of years--which the student could have put into renumerative employment had he not gone to the university, and the money he could have earned during those years. This money is the "income foregone" by the student while supposedly studying full-time, and is part of his personal investment in his education. It is also part of the state's investment in his education, since the state is "foregoing" a possible productive citizen from whom it could expect, for X number of years (while the student is in school), a service, or goods, and/or tax revenue.

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[29]Charles Benson, Seymore Harris, John Vaizey, Jon Innes and others. See the Bibliography for references.

[30]Theodore W. Schultz, "Investment in Human Capital", in American Economic Review, Vol. 51, No. 1, March 1961, pp. 64-73.

The national university graduates in this study spent an average of a year-and-a-half to complete one academic year of work. This meant, for example, that for graduates of six-year academic programs, half of the "opportunity cost" they had originally planned to invest was "lost", since they had to invest three "extra" calendar years of their lives to get their degrees. It also meant that they (and the state) "lost" three more years of "income foregone". Furthermore, these three extra, lost years should have been the first three years of the graduate's professional career, in which he would have begun to earn more money for himself and to provide greater service to the state.

The state, via monies allocated to its national university, already "gambles" that university students will be even more useful, productive and renumerative after they are graduated. Why not gamble more--see to it that university students are provided with more becas or guaranteed loans--so that students may be graduated in a shorter period of time to be professionally productive for a longer period.

In the United States and Puerto Rico, the financing of a university education has been done for a number of years by private bank- and/or goverment-underwritten loans. These loans provide a form of public share in the individual student's future earning prospects: the lender (university or government agency) advances to the student the funds needed to finance his full-time study, on the condition that after graduation the alumnus repays the loan either by

1. direct payment, plus moderate interest;
2. full-time work on the enabling govermental agency for X number of years, or
3. X number of years teaching full-time in the public schools.

Such a system would reduce the cost of a university education to both the undergraduate and the university. Moreover, the private ends of the student (a professional degree) are reconciled with his public responsibilities (service to the state or repayment of the loan). The private ends of the university (creation of an efficient, effective operation of full-time programs for a full-time student body to provide a full-time teaching staff with a variety of teaching and research opportunities) are at the same time reconciled with the university's public responsibilities (the economical production of a variety of graduates needed by the nation for its development, and the attainment of true educational leadership of the country).

Relationship of the University to the Public School System

Contrary to the educational folklore of Latin America, over seventy percent of the graduates in this study came out of the public schools. This is a very encouraging figure for Central America, for it indicates the emergence of a class of people developing nations need--a rising middle class. Children of the social or economic upper class will always be able to get their education, either at home or abroad, and in private schools if necessary. But children of the middle class must depend upon the public schools.

It is a responsibility of a national university to participate in a broad program of public education as a social and economic equalizing force. The reasons are many: educational differences between different groups are reduced; there is a greater social, geographic and occupational mobility; and the industrialization which comes through wide-spread education brings a greater equality of incomes (which tend toward the median income). All these results of mass education help create a larger, broader middle class, promoting greater political and economic stability.

From the evidence presented in this study, only one national university is really producing public school teachers--the University of Costa Rica. Most of these teachers, however, came out of the university to teach in the primary schools. Some of them, of course, later took a second degree, as secondary school teacher, or a third degree, a Bachelor's of a Licenciatura. Yet none of the three universities under consideration has produced anywhere near the number of secondary school teaching and administrative personnel needed for its country's children.[31]

It is known, also, that high school graduates do not enter the university until age 19 (19½ in Guatemala). How can the university cooperate with the Department of Public Instruction to change this, so that university studies can begin at an earlier age? The graduates

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[31]Orr and Hereford, Necessidades de personal en la educación media, pp. 9-13.

in this study said that the lack of effective relationship between university programs and the national needs was a most serious university problem, and they suggested the adaptation of the curricula to those needs. What can the university do specifically to articulate better with the nation's public schools? The graduates needed a half-year extra to finish a year's academic work. Is part of this university problem attributable to public school education? If so, in what ways can the university work with the public schools to upgrade academic achievement?

The Use of Graduate Data in University Reform Central American educators realize that changes in university production and economy cannot be accomplished without administrative and academic re-organization. Administrative officials and professors are aware of their universities' major problems, and they have not sat idly just dreaming of possible improvements. They also know the educational services that their nations require. CSUCA was established nearly twenty years ago: since then the General Studies idea has been adopted, central registration bureaus set up, foundation monies obtained and international, cooperative research institutes created. Yet all these improvements have been on a regional basis.

It is now time for each university to study itself, to discover in what ways, and how, it can make itself more economically productive. Such thoughts were behind the remarks made by Dr. Carlos Tunnermann Bernheim when he was inaugurated Rector of the National University of Nicaragua, in November of 1964. He entitled his speech "To Give the

Nation the University it Deserves", and mentioned therein the desire to establish a university planning board, improve the faculty, augment the physical plant, prepare more secondary school personnel, and amplify the university's extension programs.[32]

One of the primary steps of university reform is the investigation of educational conditions. One of the sources of information is the institution's graduates. It is hoped that the findings and conclusions of this study will be of use to Central American national university personnel, and that it will be accepted in the spirit of international scholarly communion. Much of the data collaborates what is already known, and other data points specifically to problem areas. Administrators and professors can see from some findings which faculties or programs are weak, or strong; where change is needed, or not needed. The data also provide insight into what kinds or types of data they might wish, or ought, to collect from their undergraduates, and later from the graduates. Furthermore, it is evident that university officials can get more information and cooperation from their graduates than they had perhaps imagined.

Implications for Cross-Cultural Research Elsewhere The results of this study may not be repeated upon replication, because of inadequacies of sample. Graduates of national universities of other countries may evidence different characteristics and opinions than those

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[32]Carlos Tunnermann Bernheim, Dar a la república la universidad que merece (León, Universidad Nacional de Nicaragua, 1964) 19 pp.

elicited in this survey. Nonetheless, there would seem to be potentially valuable lessons to be learned, particularly from the methodology employed, from this original study of university graduates in Central America.

The problems in the construction of the questionnaire were mainly those of terminology, although the inclusion of certain types of questions with which Central American seemed to have had no experience elicited bias responses. And, of course, questions dealing with money and personal income are always suspect.

Ideally, the researcher should have control of all steps in the procedure. In the case of obtaining data for this study, no first hand control was possible over mailing lists of the colegios, nor was a follow-up mailing feasible. It was also impossible to obtain interviews with the secretary of each of the professional associations in each country. Such interviews would have been invaluable for establishing cooperation, getting aid in instrumentation, and the interpretation of results. It is hoped that the data and conclusions of the study will now be scrutinized objectively by Central American authorities.

The principal implications of this study for research elsehwere has to do with the initial and continuing involvement of knowledgeable members of the host country in the design, development, implementation and interpretation of such studies. The importance of this principle cannot be stressed sufficiently: especially (as in this study) where basic data neither exist nor can be created reliably. The responsible involvement of local participants in the research itself would seem to be the minimum essential in such cross-cultural, cross-national research.

It follows, therefore, that the individual, or team of researchers, must necessarily have greater time and funds available to complete validly and more timely the simplest of research operations. The alternative is not satisfactory: to generate as here a mass of data most difficult, if not impossible, to interpret.

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APPENDICES

Appendix A

IME INSTITUTO DE INVESTIGACIONES Y MEJORAMIENTO EDUCATIVO
UNIVERSIDAD DE SAN CARLOS DE GUATEMALA CIUDAD UNIVERSITARIA, GUATEMALA, C.A.

ENCUESTA DE GRADUADOS DE LA UNIVERSIDAD

LA UNIVERSIDAD REALIZA CONJUNTAMENTE CON EL IIME UN ESTUDIO INTEGRAL DE SUS RECURSOS; PARA PODER LLEVARLO A CABO NECESITA DE SU VALIOSA COOPERACIÓN.

UN ASPECTO MUY SIGNIFICATIVO DEL ESTUDIO LO CONSTITUYE ESTA ENCUESTA SOBRE EL RECURSO HUMANO QUE REPRESENTA PARA EL PAÍS LOS GRADUADOS DE ESTA UNIVERSIDAD; EN TAL CALIDAD USTED PUEDE CONTRIBUIR DE UNA MANERA MUY EFECTIVA CON DICHO ESTUDIO DEL ALMA MATER, LLENANDO ESTE CUESTIONARIO CUYA INFORMACIÓN TIENE CARÁCTER DE ESTRICTAMENTE CONFIDENCIAL; SU COLABORACIÓN SERÁ MUY ESTIMADA.

A. DATOS PERSONALES

1. INDIQUE SU EDAD:

A. 25 AÑOS O MENOS	( )	D. 36 - 40	( )	G. 51 - 55	( )
B. 26 - 30	( )	E. 41 - 45	( )	H. 56 - 60	( )
C. 31 - 35	( )	F. 46 - 50	( )	I. 61 O MÁS	( )

2. INDIQUE SU SEXO:
A. M( ) B. F ( )

3. INDIQUE SU ESTADO CIVIL:
A. C( ) B. S( ) C.D( ) D. V( )

4. INDIQUE EL NÚMERO DE PERSONAS QUE DEPENDEN TOTALMENTE DE USTED. (INCLUYÉNDOSE USTED MISMO) _____

B. DATOS EDUCATIVOS

5. INDIQUE EL AÑO EN QUE SE INSCRIBIÓ POR PRIMERA VEZ EN LA UNIVERSIDAD _____

6. INDIQUE EN QUÉ FACULTAD SE INSCRIBIÓ _____

7. NOMBRE Y LUGAR DEL ESTABLECIMIENTO DE SECUNDARIA EN EL CUAL SE GRADUÓ:

_____

8. INDIQUE SI DICHO ESTABLECIMIENTO DE SECUNDARIA ES: PÚBLICO ( ) PRIVADO ( )

9. INDIQUE EL PROMEDIO APROXIMADO DE INGRESO TOTAL MENSUAL QUE USTED PERCIBIÓ DURANTE LOS ÚLTIMOS TRES AÑOS DE ESTUDIO EN LA UNIVERSIDAD. (SEÑÁLELO CON UNA X EN LA CASILLA ENCIMA DE UNO DE ESTOS 7 RANGOS.)

"X" ☐	☐	☐	☐	☐	☐	☐	☐
PAIS	MENOS DE	DE A	DE A	DE A	DE A	DE A	MAS DE
COSTA RICA	₡ 700	700 - 1399	1400 - 2099	2100 - 2799	2800 - 3499	3500 - 4199	4199
EL SALVADOR	¢ 250	250 - 499	500 - 749	750 - 999	1000 - 1249	1250 - 1499	1499
GUATEMALA	Q. 100	100 - 199	200 - 299	300 - 399	400 - 499	500 - 599	599
HONDURAS	L. 200	200 - 399	400 - 599	600 - 799	800 - 999	1000 - 1199	1199
NICARAGUA	C$ 700	700 - 1399	1400 - 2099	2100 - 2799	2800 - 3499	3500 - 4199	4199

10. ¿CUÁL FUÉ SU PRINCIPAL FUENTE DE INGRESO ECONÓMICO MIENTRAS ESTUDIABA EN LA UNIVERSIDAD?

_____

11. INDIQUE SI RECIBIÓ BECA, SUBVENCIÓN O EXONERACIÓN DE DERECHOS EN LA UNIVERSIDAD DURANTE ESE TIEMPO: A. SÍ ( ) B. NO ( )

SI LA RESPUESTA ES QUE SÍ, INDIQUE SU VALOR MENSUAL O ANUAL:

_____ POR MES _____ POR AÑO

C. DATOS PROFESIONALES

12. AÑO EN QUE SE GRADUÓ EN ESTA UNIVERSIDAD: _____

13. EN QUÉ FACULTAD SE GRADUÓ: _____

14. SI ES GRADUADO DE UNIVERSIDAD EXTRANJERA Y SE HA INCORPORADO A ESTA UNIVERSIDAD, INDIQUE CUÁL FUE EL PROCEDIMIENTO (INCORPORACIÓN POR EXÁMEN, POR TRATADO, ETC.) Y ADEMÁS, FECHA EN QUE INICIÓ TRÁMITES DE INCORPORACIÓN Y FECHA DE CUÁNDO OBTUVO ÉSTA.

_____

15. DESPUÉS DE GRADUARSE, CUÁL FUE SU ACTIVIDAD:

( ) ESTUDIOS POSTGRADUADOS ( ) ACTIVIDAD PROFESIONAL ( ) ACTIVIDAD NO RELACIONADA CON LA PROFESIÓN.
( ) DEPENDIENTE
( ) INDEPENDIENTE

16. SI INICIÓ LUEGO ESTUDIOS POSTGRADUADOS, INDIQUE: DURANTE QUÉ AÑOS LOS REALIZÓ; EN CUALES UNIVERSIDADES; EN QUÉ ESPECIALIDAD DE ESTUDIO, Y LOS GRADOS O TÍTULOS UNIVERSITARIOS OBTENIDOS:

UNIVERSIDAD	ESPECIALIDAD	GRADO O TÍTULO	AÑO

17. INDIQUE SU OCUPACIÓN ACTUAL:

OCUPACIÓN	TIPO DE TRABAJO	INGRESO MENSUAL

D. APRECIACIONES PERSONALES

18. LIMITÁNDOSE A SUS ESTUDIOS EN ESTA UNIVERSIDAD, INDIQUE QUÉ ASPECTOS DE DICHOS ESTUDIOS —O QUÉ CURSOS ESPECÍFICOS— HAN SIDO MÁS VALIOSOS PARA EL EJERCICIO DE SU PROFESIÓN:

A. _____

B. _____

C. _____

19. DE IGUAL MANERA, INDIQUE LOS CURSOS QUE LE PARECEN MENOS VALIOSOS:

A. _____

B. _____

C. _____

20. SI REALIZÓ EN SU UNIVERSIDAD O EN OTRA, ESTUDIOS QUE NO FORMABAN PARTE DEL PLAN DE SU CARRERA (INCLUYENDO CURSOS POST-GRADUADOS) INDIQUE QUÉ ASPECTOS O CURSOS LE HAN SIDO MÁS VALIOSOS EN SU PROFESIÓN:

A. _____

B. _____

C. _____

21. COMO GRADUADO DE LA UNIVERSIDAD, SEÑALE LOS TRES PROBLEMAS QUE A SU JUICIO SEAN LOS MÁS GRAVES DE TODOS LOS QUE LA UNIVERSIDAD CONFRONTA HOY:

A. _____

_____

B. _____

_____

C. _____

_____

22. INDIQUE CUÁLES SON LAS MEJORAS (SI ES QUE ESTIMA QUE HACE FALTA ALGUNA) QUE LA UNIVERSIDAD DEBERÍA EMPRENDER:

A. _____

B. _____

C. _____

23. EN GENERAL, INDIQUE CUÁN EFICIENTE JUZGA USTED QUE FUÉ SU FORMACIÓN UNIVERSITARIA:

( )	( )	( )	( )	( )
MUY EFICIENTE	EFICIENTE	TÉRMINO MEDIO O PASABLE	DEFICIENTE	MUY DEFICIENTE

4

24. CON MIRAS A SU SUPERACIÓN PROFESIONAL, INDIQUE LOS CURSOS, SEMINARIOS, SERVICIOS DE CONSULTA, ETC., QUE USTED PODRÍA APROVECHAR SI LA UNIVERSIDAD ESTUVIERA EN CONDICIONES DE OFRECÉRSELOS:

A. _____

_____

B. _____

_____

C. _____

_____

LE ROGAMOS, UNA VEZ LLENADO ESTE CUESTIONARIO, SE SIRVA ENVIARLO LO MÁS PRONTO QUE LE SEA POSIBLE, UTILIZANDO EL SOBRE ADJUNTO QUE ESTÁ DIRIGIDO AL IIME, RECTORÍA DE LA UNIVERSIDAD DE SAN CARLOS DE GUATEMALA.

AGRADECEMOS SU COLABORACIÓN MUY VALIOSA.

(EN CASO DE REQUERIR MÁS ESPACIO PARA SUS RESPUESTAS PUEDE USAR HOJA ADICIONAL)

IMPRESO EN GUATEMALA
Edit. Escolar
TIPOGRAFÍA

APPENDIX B

National Universities of Central America
DEGREES, TITLES, DIPLOMAS AND CERTIFICATES OFFERED

1. UNIVERSIDAD DE COSTA RICA

Escuela de Agronomía

Título: Ingeniero Agrónomo

Academia de Bellas Artes

Títulos: Profesor de Bellas Artes
Licenciado en Bellas Artes

Escuela de Ciencias Económicas

Título: Licenciado en Ciencias Económicas y Sociales

Especialidades:
a) Estadística
b) Seguros
c) Economía
d) Administración de Negocios
e) Administración Pública

Conservatorio de Música

Certificado: Conclusión de Estudios

Título: Conclusión de estudios superiores en:

a) Canto
b) Flauta
c) Piano
d) Violín
e) Violíncelo

Escuela de Derecho

Título: Licenciado en Derecho y Notario

Escuela de Educación

Títulos: Profesor de la. enseñanza
Profesor de 2a. enseñanza
Bachiller en Ciencias de la Educación

Escuela de Farmacia

Título: Licenciado en Farmacia

Escuela de Ingeniería

Título: Ingeniero Civil

Escuela de Microbiología

Título: Licenciado en Microbiología y Química Clínica

Escuela de Odontología

Título: Doctor en Cirugía Dontal

Escuela de Servicio Social

Títulos: Trabajador Social
Licenciado en Ciencias Económicas
(Servicio Social)

Escuela de Medicina

Título: Médico Cirujano

Escuela de Ciencias y Letras

Títulos: Profesor
Bachiller
Licenciado

Especialidades:
a) Biología
b) Filosofía
c) Historia
d) Geografía
e) Físico Matemáticas
f) Filología
g) Química
h) Lenguas Modernas: Inglés
Francés

2. UNIVERSIDAD DE EL SALVADOR

Facultad de Ciencias Económicas

Títulos: Licenciado en Ciencias Económicas
Doctor en Ciencias Económicas
Licenciado en Administración de Empresas
Doctor en Administración de Empresas

Facultad de Ciencias Químicas

Títulos: Doctor en Ciencias Químicas y Farmacia
Doctor en Química Biológica
Doctor en Química Industrial
Geólogo
Doctor en Geología

Facultad de Humanidades

Títulos: Profesor
Maestro

Grados: Licenciado
Doctor

Especialidades:
a) Filosofía
b) Ciencias de la Educación
c) Ciencias Sociales
d) Letras
e) Psicología
f) Periodismo

Facultad de Ingeniería

Títulos: Doctor en Ingeniería Civil
Doctor en Arquitectura
Doctor en Ingeniería Agronómica
Doctor en Ingeniería Electromecánica

Facultad de Jurisprudencia y Ciencias Sociales

Título: Doctor en Jurisprudencia y Ciencias Sociales

Facultad de Ciencias Médicas

Títulos: Doctor en Medicina
Tecnólogo Médico

Facultad de Odontología

Título: Doctor en Cirugía Dental

Escuela Normal Superior del Profesorado

Títulos: Especialidades:

Profesor de Educación Secundaria	a) Biología y Química b) Castellano y Literatura c) Ciencias de la Educación: 1. Parvulos (Educación) 2. Normal (Enseñanza 3. Ciencias Sociales 4. Inglés 5. Matemáticas y Fisica
Profesor de Educación	a) Administración y Técnicas de la Enseñanza b) Ciencias Contables c) Filosofía y Ciencias Educativas
Profesora Especializada on Educación de Párvulos	_____
Profesor Especializada en la Enseñanza de niños débiles montales educables	_____

3. UNIVERSIDAD DE SAN CARLOS DE GUATEMALA

Facultad de Agronomía

Título: Ingeniero Agrónomo

Facultad de Arquitectura

Título: Arquitecto

Facultad de Ciencias Económicas

Títulos: Economista
Contador Público

Grado: Licenciado en Administración de Negocios

Facultad de Ciencias Jurídicas y Sociales

Título: Abrogado y Notario

Facultad de Ciencias Médicas

Título: Medico y Cirujano

Facultad de Ciencias Químicas y Farmacia

Títulos: Ingeniero Químico
Químico Biólogo
Químico Farmaceútico

Facultad de Humanidades

Diplomas: Bibliotecario Auxiliar
Capacitación on Estudios Humanísticos

Títulos: Especialidades

Periodista _____

Bibliotecario General _____

Magistor Artibus (ESC. de Verano) _____

Profesor de 2a. Enseñanza
a) Filosofía
b) Letras
c) Historia y Estudios Sociales
d) Pedagogía y Ciencias de la Educación
e) Psicología
f) Ciencias Biológicas
g) Ciencias Económico Contables
h) Matemáticas
i) Ciencias Químicas

Grados	Especialidades
Licenciado Doctor	a) Filosofía b) Letras c) Historia d) Pedagogía y Ciencias de la Educación e) Psicología
Licenciado	Bibliotecología

Facultad de Ingeniería

Título: Ingeniero Civil

Facultad de Odontología

Título: Cirujano Dentista

Facultad de Medicina Veterinaria y Zooteonia

Título: Médico Veterinario y Zooteonista

4. UNIVERSIDAD NACIONAL AUTONOMA DE HONDURAS

Centro Universitario de Estudios Generales

Título:	Especialidad
Licenciado	a) Biología b) Física c) Matemáticas d) Química

Facultad de Ciencias Económicas (Tegucigalpa, San Pedro Sula)

Título: Licenciado en Ciencias Económicas

Facultad de Ciencias Jurídicas y Sociales

Título: Licenciado en Ciencias Jurídicas y Sociales

Grado: Doctor en Ciencias Jurídicas y Sociales

Facultad de Ciencias Médicas

Títulos: Doctor en Cirugia y Medicina
Enfermera
Obstetra
Técnico Laboratorista

Facultad de Ciencias Químicas y Farmacia

Título: Licenciado en Química y Farmacia

Grado: Doctor en Química y Farmacia

Facultad de Ingenieria

Título: Ingeniero Civil

Facultad de Odontología

Título: Cirujano Dentista

Escuela Superior de Profesorado (Francisco Morazán)

Título	Especialidades
Profesor de Educación	a) Ciencias de la Educación b) Ciencias Naturales c) Ciencias Sociales d) Letras e) Matemáticas y Física

5. UNIVERSIDAD NACIONAL AUTONOMA DE NICARAGUA

Facultad de Ciencias Economicas

Títulos: Licenciado en Administración de Negocios
Licenciado en Economía

Escuela de Ciencias de la Educación

Diplomas: Director de Escuela Primaria
Inspector de la Escuela Primaria

Título: Profesor de Educación Media

Grados: Licenciado en Ciencias de la Educación
Doctor en Ciencias de la Educación

Especialidades:
a) Ciencias Sociales
b) Létras
c) Matemáticas y Física
d) Química y Biología
e) Ciencias Pedagógicas

Facultad de Ciencias Jurídicas y Sociales

Título: Doctor en Derecho

Facultad de Ciencias Químicas y Farmacia

Título: Doctor en Farmacia y Química

Facultad de Ciencias Físicas y Matemáticas

Título: Ingeniero Civil

Facultad de Ciencias Médicas

Título: Doctor en Medicina y Cirugia

Facultad de Odontología

Título: Doctor en Odontología

Escuela de Periodismo

Título: Periodista

APPENDIX C

SURVEY OF UNIVERSITY GRADUATES, NATIONAL UNIVERSITIES OF CENTRAL AMERICA PANEL OF 1ST CLASSIFICATION - PROBLEMS, IMPROVEMENTS, SERVICES

1. Burton D. Friedman (Ph.D.): Assistant Professor, Michigan State University, and Administrative Officer, IIME; Ex-Director of Finance, University of Puerto Rico.
2. Lic. Pablo Lacayo: Chief Investigator, Area of Secondary Education, IIME; Citizen of Nicaragua.
3. Paul Orr (Ph.D.) Research Associate, Michigan State University; Coordinator of Research, Secondary Education, IIME.
4. Lic. Luis Oyarzún (M.A. Bradley University): Editor and Translator, IIME; Citizen of Chile.
5. Artemio Rivera (M.A. University of Puerto Rico): Assistant Professor, University of Puerto Rico; Research Associate, IIME.
6. Lic. Luis Torres: Registrar, University of Costa Rica and Chief Investigator, Area of Higher Education Studies, IIME; Citizen of Costa Rica.
7. Jaime Catalán and
8. Francisco Mayorga: Students, University of San Carlos, Guatemala; Data Processing Coders, IIME.
9. Kirkwood Yarman (M.A. University of Michigan): Assistant Professor, University of Puerto Rico; Research Associate, IIME.