

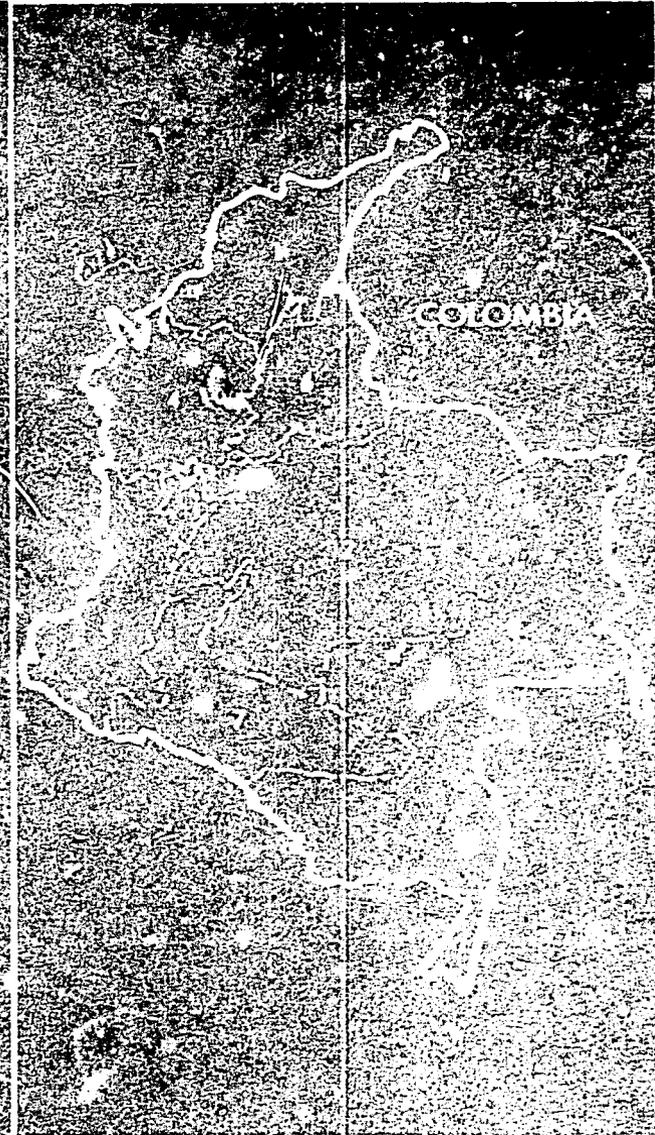
DOCUMENTO DE TRABAJO
Working Document Series

Sección de Asesoría y
Estrategia Sectorial
AN/LA/DR/SASS
División de Asesoría
Económica
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(Asesoría Internacional)

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**ANÁLISIS DEL SECTOR
AGROPECUARIO
COLOMBIANO**

**COLOMBIA AGRICULTURE
SECTOR ANALYSIS**



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ANALYTICAL WORKING DOCUMENT # 6

PARTIAL IMPLICATIONS OF THE LINEAR
PROGRAMMING ANALYSIS FOR
DECISION-MAKING IN THE AGRICULTURAL
SECTOR

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INTRODUCTION

This document has as its object the presentation of a few examples of possible uses of the agriculture sector analysis in agricultural policy making.

Selecting examples and treating each in some depth has the disadvantage of leading the readers to misestimate the breadth of planning utility of the analytical results. The alternative, a broad sketch of planning uses, leaves the planner without any particular feeling of how exactly to use the results. Therefore we have chosen to simply list some possible uses and then select two to explore in some detail.

SECTION I - LIST OF POSSIBLE USES

There are two basic products of the analysis which are of importance to planners:

a) A consistent and conveniently formatted

set of sector wide data files.

b) The results of the analytical techniques.

Both of these products should be of considerable use to sector planning functions of almost every variety.

The set of sector wide data files are very extensive and are useful for commodity by commodity cost of production, demand technology, productivity and input requirement analysis just to mention a few. These files are extensive enough to permit most types of economic analysis.

The list of possible planning uses of the analytical results which follows is only suggestive and not exhaustive.

1. Elaboration of alternative agricultural development strategies and the quantification of the costs and benefits of each.

- a) Optimum crop and livestock mixes required by alternative objectives.
- b) Optimum use of resources such as credit, labor and land under alternative objectives.
- c) To evaluate the impacts on the alternative policies of the sector, such as prices, credit, etc.

2. Evaluate the progress and results of on-going plans or programs

- a) Production programs
- b) Research programs
- c) Technical Assistance programs
- d) Infrastructure programs

3. Elaboration of agricultural short and medium term plans and programs

- a) Production programs
- b) Research programs
- c) ~~Technical~~ Technical assistance programs
- d) Infrastructure programs

4. Impacts of agricultural and no-agricultural industries on the objectives or strategies of the sector

- a) The elaboration and evaluation of overall agricultural development strategies.
- b) Evaluation of agricultural production projects.

Each of these allow the reader to become acquainted with one of the major analytical tools of the analysis, but not with all of its possible uses. The elaboration of overall development strategies is based principally in the linear programming analysis and is expanded in this document. If a deeper treatment of the basic data and methodology utilized as well as summary of results is desired the reader is referred to Analytical Working Document # 1, Preliminary Results of Linear Programming Analysis , March 1972, 24pp. , and Analytical Working Document # 4, Linear Programming Analysis of

Agricultural Activities, April 1972, 127 pp.

The analysis and evaluation of projects is based principally in the Input/Output analysis and is expanded in General Working Document # 6. That document contains a description via three case studies of Banano, Cacao and rollo de Engorde.

SECTION II - THE ELABORATION AND EVALUATION OF OVERALL DEVELOPMENT STRATEGIES

Since this document is primarily aimed at acquainting the planner with some of the results of the analysis which are relevant to general evaluation of development strategies, we have attempted to be selective and brief, rather than to present the exhaustive treatment which will be carried out in the months to come. The discussion which follows will centralize around a set of basic questions.

a) What do we mean by an agricultural

development strategy?

b) What are the alternative strategies we can analyze?

c) How can we evaluate the desirability of each strategy?

d) How can we implement the strategy chosen?

e) Aside from the readjustment of production mixes, technologies of production, location of production, allocations of credit of other resources, what other institutional or structural changes can we evaluate?

QUESTION A - WHAT DO WE MEAN BY AN AGRICULTURAL DEVELOPMENT STRATEGY?

Because of the structure of the linear programming technique an agricultural development strategy for linear programming purposes means a particularly defined mix of four basic elements:

1. A level of production for each activity included as a sector in the analysis.

2. A selection of the technology to be used in each of the productive activities.

3. Location for production

4. An allocation pattern between productive activities (and an accounting of total utilization) for Colombia's limited technology resources.

LEVELS OF PRODUCTION

Fifty eight different crops and livestock products are treated as the basic primary sector production activities*. Level of production in each of these activities is defined as the number of metric tons produced during the calendar year, and is by definition, the level of that production activity. In linear programming terminology

* marketing, processing, industrial Service Sectors are also included making approximately 300 total activities in the overall analysis.

we refer to these as "Activity Levels".

SELECTION OF TECHNOLOGY

The second basic component of an agricultural development strategy is the technology to be used in each of the productive activities. This is simply a question of how each product should be produced.

Different technologies of production which are currently in use in Colombia are described in detail by quantifying the inputs and outputs of each significantly different technology level. The rice production activity, for example, is divided into three different technologies

a) dry land rice

b) small farm irrigated rice

c) large farm commercialized irrigated rice.

"Development Strategy" as intended in this paper would include not only the level of rice production but the levels of each different tech-

nology for rice production. In the case that a technology not currently existing in Colombia is to be included as a possible alternative for planning purposes then a fourth rice activity should be included with its quantified inputs and outputs and level of production.

GEOGRAPHIC LOCATION OF PRODUCTION

An agricultural development strategy specifies the location of production activity for each product and technology level.

ALLOCATION PATTERN FOR LIMITED RESOURCES

Since the resources which Colombia has to allocate in an agricultural development strategy are limited, a strategy quantifies the allocation of each limited resources between the productive activities and technologies earlier explained.

The inclusion of these limited resources prevents the elaboration of unfeasible

strategies.

The resources which are so allocated in the agricultural strategies analyzed are:

- a) Limited skilled and unskilled labor
- b) Limited land and climate resources
- c) Limited domestic and external markets
- d) Limited availability of Fixed Capital goods.
- e) Limited domestic credit
- f) Limited Foreign Exchange
- g) Limited Technology

Agricultural development strategies should be "feasible" from the point of view of our limited resources but need not be "probable", in the sense of "likely to happen". The utility of having a strategy for development is to have a directional guide for changing the outcomes and not of predicting the probability of outcomes. A strategy for development should point the way

in which we should allocate our scarce resources and not be a simple (or even complex) projection of how we think the current unchanged system will allocate these resources. This is the principal difference between this analysis, which is directed at planning, and other analyses that are designed for predicting.

QUESTION B - WHAT ARE THE ALTERNATIVE STRATEGIES WHICH CAN BE ANALYZED AND HOW DO WE EVALUATE THE DESIRABILITY OF EACH.

Given the definition of an agricultural development strategy we can see that with more than:

- 300 - basic activities
- 1 - 4 technologies for each activity
- 200 - possible locations
- 1000 - limited resources to be allocated,

the number of strategies (alternative mixes) is almost infinite.

A grouping and evaluating feasible strategies is the heart of the linear programming technique. The basic grouping and selection process requires that objectives be defined for the Sector. The objectives used here are taken directly from the National Plan and include.

- a) Increase employment
- b) Increase Income
- c) Redistribute Income
- d) Increase production
- e) Increase productivity
- f) Conserve and/or generate Foreign Exchange.

A seventh Test Objective was included, increase private profits not, because it is a Colombian objective, but because it allows us to compare the strategies to meet the Plan objectives with strategies which attempt to meet

private profit objectives.

Having these objectives we can accomplish two important steps:

a) we can group strategies into a manageable number

b) we have a measuring stick for evaluating the desirability of each strategy.

STRATEGY GROUPINGS

The model permits to reduce the number of strategies from the near infinite quantity implied by the large number of resources and activities to a manageable group. Each of these final strategies corresponds to the strategy which maximizes each of our seven objectives.

For the purpose of this paper we will further reduce that number of alternative strategies to three for ease and brevity of

presentation. We have selected three which we hope will acquaint the planner with the analytical technique. The numbers however, are not hypothetical. They are based in the best and most complete statistics available for 1968. New results based on significantly more reliable figures for 1970 are in process in the Ministry of Agriculture Sector Analysis group. These conclusions should be read in the light of the origin of the basic data, which though the best available, is certainly not as precise as we would have liked. Only results showing significant differences between alternative strategies should be utilized, at this stage, in policy formulation. Very close cases should await the more accurate results of the 1970 analysis.

The strategies we will analyze are titled:

1. The Employment Strategy

2. The Value Added Strategy (Production Strategy)

3. The Private Profits Strategy.

These names are simply titles given to specific mixes of:

- Activity levels
- Technologies
- Limited resource allocations

which were selected because they yielded the most possible-feasible employment, or production (value added) or private profits. *

MEASURING STICK

With the objectives so defined we can evaluate the desirability of each of the strategies by quantifying how much of our objectives each strategy produces.

*These mixes are described in detail in AWD 4.

QUESTION C - WHAT ARE THE COSTS AND BENEFITS OF EACH STRATEGY.

Since we agreed that the only way to measure a strategy is to quantify its impact on objectives, the Impacts of the three strategies on three of the seven objectives (employment, value added (Production) and private profits) are presented in Table 1.

For the purposes of this Section, the numbers relating to "Sistema de Crédito Flexible" are relevant. The numbers under the title of "Sistema de Crédito Tradicional" relate to discussion under Question C.

In Table 1 it can be observed for example that if we followed the Employment Strategy we would obtain \$20,941,000,000 pesos* of value added in 1975 and 2,462,000 man years of employment.

* Pesos of 1968

TABLE 1

MEDIDA DEL IMPACTO DE ESTRATEGIAS ALTERNAS DE PRODUCCION
AGROPECUARIA SOBRE LOS OBJETIVOS DEL SECTOR

Estrategias Alternas		EMPLEO		VALOR AGREGADO		UTILIDAD PRIVADA	
		1972	1975	1972	1975	1972	1975
EMPLEO	Estrategia para Maximizar Empleo						
	Sistema de Crédito Flexible	2,254	2,462	18,853	20,941	14,209	14,901
	Sistema de Crédito Tradicional	2,162	2,366	19,187	20,639	13,082	13,771
VALOR AGREGADO	Estrategia para Maximizar Valor Agregado						
	Sistema de Crédito Flexible	2,079	2,350	20,252	22,037	13,686	15,025
	Sistema de Crédito Tradicional	1,991	2,187	19,937	21,510	14,199	15,002
UTILIDAD PRIVADA	Estrategia para Maximizar Utilidad Privada						
	Sistema de Crédito Flexible	1,870	1,895	19,022	19,128	15,559	16,213
	Sistema de Crédito Tradicional	1,766	1,816	18,095	18,459	15,221	16,118
		Miles de Años Hombre		Millones de \$ de 1968		Millones de \$ de 1968	

Fuente: Documento Analítico de Trabajo # 4
Linear Programming Analysis of Agricultural Activities
Richard E. Suttor
Washington, D. C. April, 1972, 111 pp.

Table 1 is the basic working table for quantifying the impacts and interrelationships between the strategies. For convenience of presentation we have elaborated a series of summary tables and graphs to help draw out the policy implications of the analytical results.

In Figure 1 we see the basic data plotted for each strategy.

In the first segment we see the man years of employment generated for each of the strategies listed at the bottom of the graph. As expected, the employment generated is highest under the employment strategy, but without looking at the actual results we could not have predicted either the ordinal, or more important, the cardinal position of employment generation under the "value added" and "private

profits" strategies.

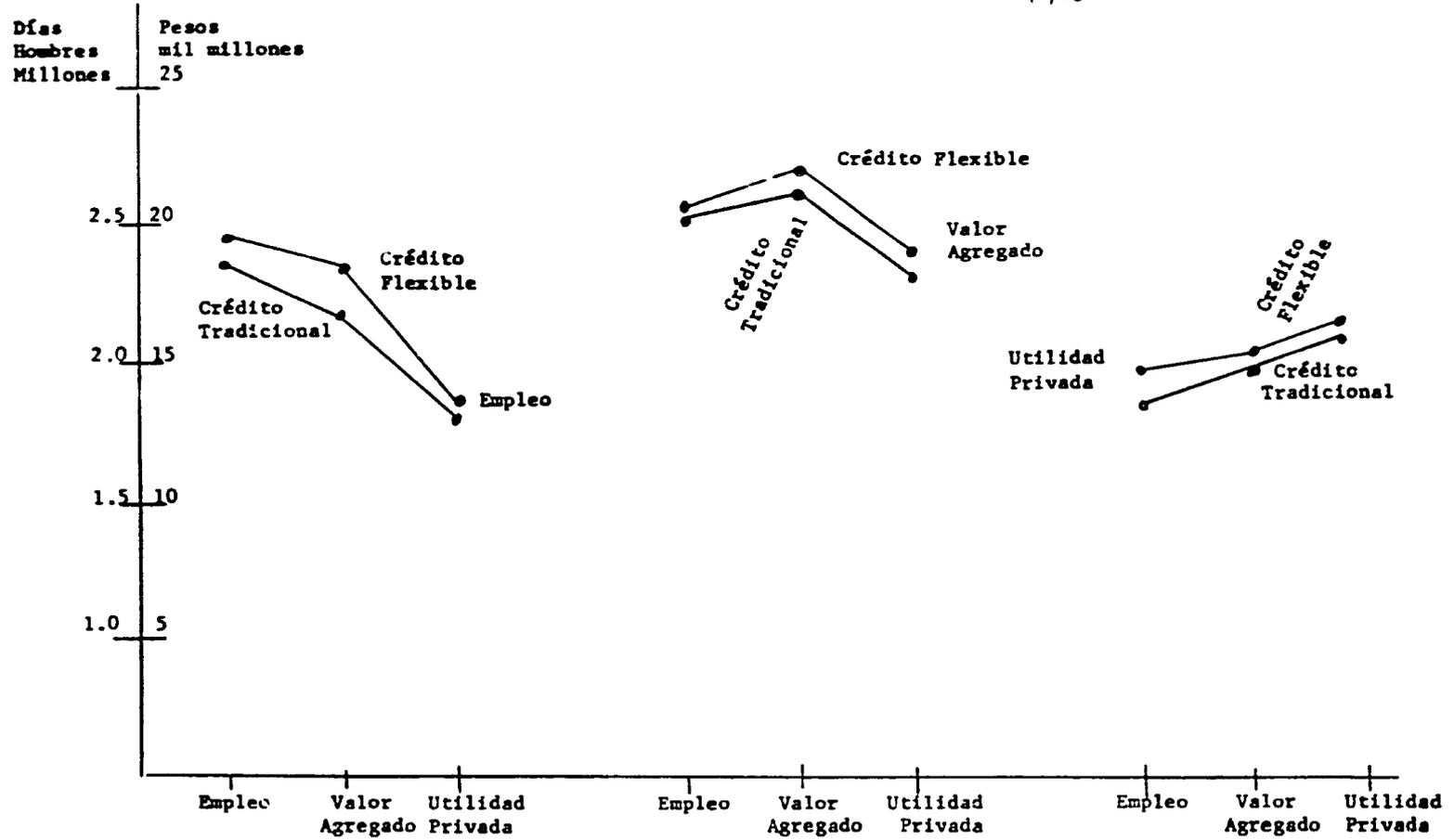
Looking again only at the "Crédito Flexible" lines we observe that employment falls slightly in the value added strategy and then drastically in the private profits strategy. In the second segment we see the Impact on value added of the three strategies. Value added rises significantly from the employment strategy to the value added strategy and then drops drastically in the private profits strategy. Private profits rise only slightly from the employment to the value added strategy and then ^{RISC} ~~drop~~ significantly to the private profits strategy.

Since these numbers are absolutes it is useful to view a percentage change summary. In Table 2 percentage change for each strategy in each of the objectives was calculated for the interval from 1968 to 1975. For example when the employment strategy is used we are able to obtain

FIGURE #1

IMPACTOS SOBRE EMPLEO, VALOR AGREGADO Y UTILIDAD PRIVADA
DE ESTRATEGIAS ALTERNAS DE DESARROLLO AGROPECUARIO-1975

1968-1975



ESTRATEGIAS

TABLE 2

PORCENTAJE DE AUMENTO EN EMPLEO, VALOR AGREGADO Y UTILIDAD PRIVADA
ENTRE 1968 Y 1975

<u>Estrategias Alternas</u>		<u>EMPLEO</u>	<u>VALOR AGREGADO</u>	<u>UTILIDAD PRIVADA</u>
EMPLEO	<u>Estrategia para Maximizar Empleo</u>			
	Sistema de Crédito Flexible	30.8	29.6	23.0
	Sistema de Crédito Tradicional	25.7	27.7 ^x	13.7
VALOR AGREGADO	<u>Estrategia para Maximizar Valor Agregado</u>			
	Sistema de Crédito Flexible	28.5	29.6	27.0
	Sistema de Crédito Tradicional	19.6	26.6 ^y	26.8
UTILIDAD PRIVADA	<u>Estrategia para Maximizar Utilidad Privada</u>			
	Sistema de Crédito Flexible	20.1	19.8	28.2
	Sistema de Crédito Tradicional	15.0	15.6	27.4
		%	%	%

Fuente: Documento Analítico de Trabajo # 4
 Linear Programming Analysis of Agricultural Activities
 Richard E. Suttor
 Washington, D. C. , April 1972, 111 pp.

x see page 22

a 30.8% increase in employment and a 23% increase in private profits in that period.

It is interesting to note some of the direct policy implications of these percentage changes. Since each of these numbers represents possible strategies (that is strategies which do not require better technology than exists in Colombia, more market demand than exists, more labor skills than exist, more credit or capital or land etc.), the percentages themselves tell us much about oft debated but seldom quantified planning issues.

a) Is rural outmigration the inevitable result of the changing Colombian structure of more demand for manufactured and processed goods?

It appears from Table 2 that given the structure of demand (market constraints) the

agriculture sector could (not will) efficiently absorb 25.7% to 30.8% more workers in 1975 than in 1968. Since we do not have compound annual employment growth rates only a rough comparison can be made, yet it would appear that a strategy exists (limited by our resources) which would provide work for all of the additions to the rural labor force between 1968-1975 assuming a natural addition rate to the Labor Force of anything less than 4.0% per year. This does not imply that we would eliminate unemployment, for in addition to new entries there already exists a large un-employed pool to be absorbed. It does not suggest either that rural/urban migration would stop, the motives of that migration may be other than the lack of productive employment opportunities in the "campo". What it does say is that the "employment" problem in the "campo" is not an inevitable problem for Colombia

which results from the underlying economic structure of changing demand *

The previous paragraph should suggest to the mind of the planner other policy implications which might flow from the Table.

In Figure 2 the percentages of Table 2 are plotted for ease of general interrelation. In the first segment we see employment + value added impacts plotted together because of the similarity of the way they move . "Utilidad Privada" is separated because of its completely different pattern.**

* As a result of necessary labor saving technological change.

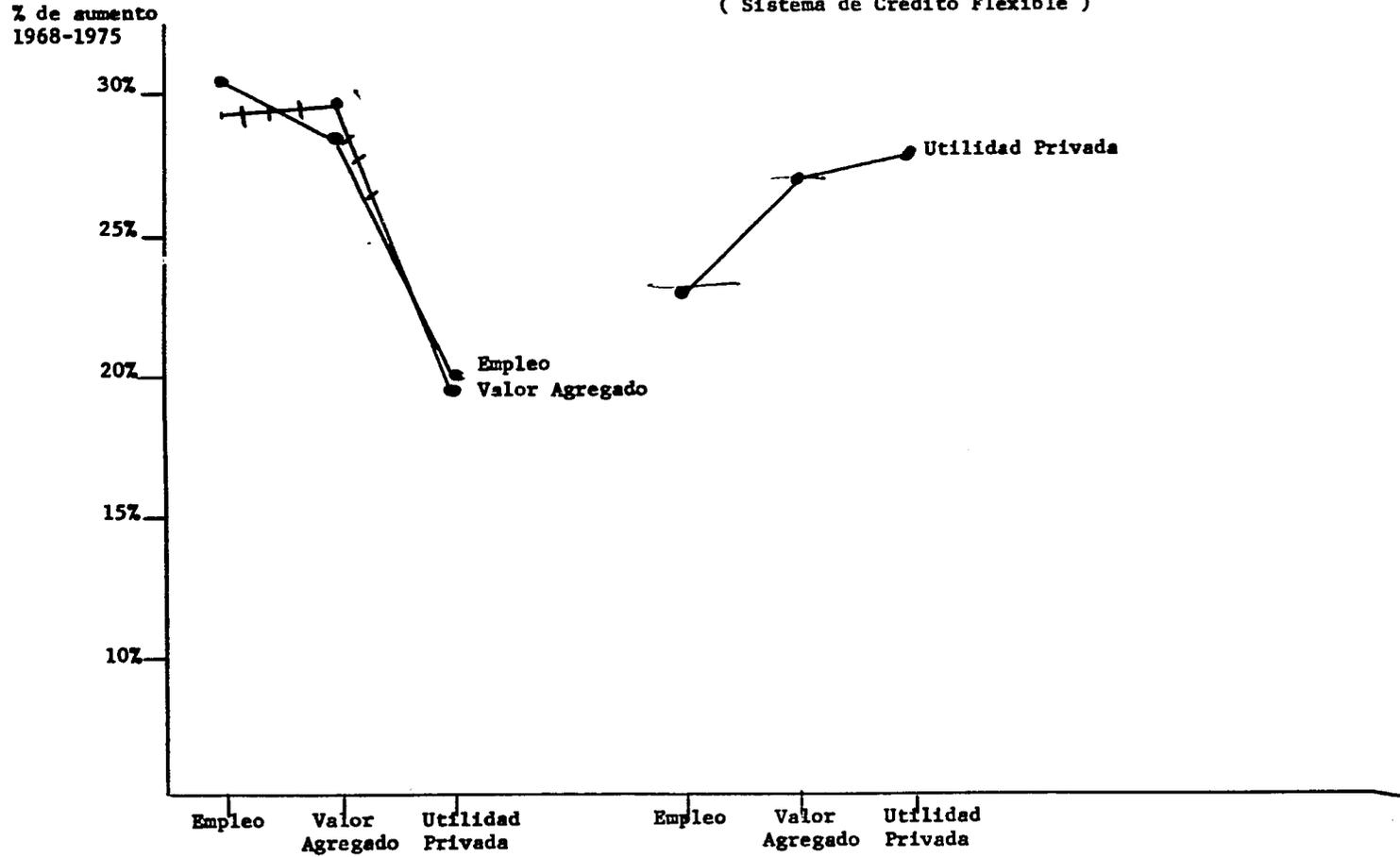
** The strategy headings are repeated at the bottom of the graph.

Here we observe a great deal of complementarity between the employment and value added strategies with reference to employment and value added impacts. That is we observe that under either strategy we get high employment and high value added impacts. However, by looking at the second segment of the graph we can see that the employment and value added strategies are not complementary in their impacts on private profits, where the employment strategy yield a very low (23%) and the value added strategy a high (27%) impact on private profits. It can be observed from the graph that trying to balance all three goals by looking principally at the plan objectives (employment + production-value added) but also not overly damaging private profits, the strategy which appears best is the value added strategy. The employment strategy while very favorable to value added is disastrous for private profits,

FIGURE #2

% AUMENTO 1968-1975 CON ESTRATEGIAS ALTERNAS DE PRODUCCION

(Sistema de Crédito Flexible)



while the value added strategy is reasonably complementary to employment and private profits.

The preceding comments on the selection of a strategy were made in general without quantifying any of the impacts or trade/off between the strategies. We now attempt to quantify the implications of the strategy we have chosen. We will observe how much we have gained by not choosing one of the others, and observe how much those gains have cost us. In a sense this is an attempt to quantify the costs and the benefits of each strategy. But here we are not thinking of the resource costs required but costs defined as "the quantity of our objectives which we have to sacrifice in the case we follow the chosen strategy". The benefits are, "the quantity of objectives we gained by following the

chosen strategy". From these quantified gains and losses (or costs and benefits) we can then calculate exchange rates between the objectives. That is we can say how many pesos of value added we must sacrifice to obtain one man year of employment.

Rather than presenting a table summarizing these "objectives exchange rates" it will be more useful to move step by step in their computation so that the planner can readily see the planning importance of the final numbers.

Let us first attempt to see what the gains are from selecting the value added strategy over the private profit strategy.

These gains are of two types:

- a) Employment gains
- b) Value added gains

The employment gain is equal to the difference between the man years in 1975 of employment

under the value added strategy the man years
under the private profits strategy.

	Empleo Man years
Valor Agregado	+ 2,350,000
Private Profits	- 1,895,000
Employment gain	455,000

If we had selected the private profits strategy we would have lost 455,000 man years of labor in 1975. To a government dedicated to serious effort at confronting a desperate employment problem this finding should be of urgent planning utility.

Passing now to calculate the value added gain of our strategy over the private profits strategy we can calculate it in the same way.

	000,000 \$ value added
Value added strategy	22,037
Private profits Strategy	19,128
Value added gain	2,909

All that is left in this two way comparison is to calculate the losses or costs of our selection. The only sacrifice we had to make vis-a-vis the private profits strategy is a loss of private profits.

	000,000 Private Profits 1975
Value added Strategy	+ 15,025
Private Profits Strategy	- 16,213
Private Profits Loss	- 1,188

We are now in a situation to calculate the exchange rates between what we have lost (Private Profits) and each of the gains (empleo, y valor agregado).

The private profits cost of gaining one man year of employment (that is, the number of pesos of private profits which we must sacrifice in order to gain one man year of employment) is \$2,610.

This is the exchange rate between private profits and employment when we compare these two strategies.

The exchange rate between private profits added value added is likewise calculated by dividing the private profits loss by the value added gain. The exchange rate (the number of pesos of private profits which we must sacrifice to gain one peso of value added) is \$0.408.

These quantified exchange rates give the planner a very good idea of the magnitude of these sacrifices, and while they do not directly make the decision as to which strategy to chose, they allow the planner to make a much more reasoned and intelligent choice.

In order to complete the comparison we have to compare our choice of the value added strategy with the employment strategy, and then compare the two which were not selected (empleo and private profits) with each other.

These comparisons and the relevant exchange rates are presented in Table 6.

QUESTION D - HOW DO WE IMPLEMENT THE STRATEGY CHOSEN

Having evaluated and selected a strategy we have to return by the same route we came to see exactly what configuration of

- a) crop and livestock production levels

TABLE 3

					<u>EXCHANGE RATES</u>		
		+ If gain	- If loss		Empleo to	Value Added	Private Profits
		años hombre	000000\$	000,000\$	loss	to loss	to loss
		Employment	Value Added	Private Profit			
Comparison 1	Value added strategy selected	+ 455000	+ 2909	- 1188	2610	0.408	-----
	Private Profits strategy not selected				Man years gained per \$ lost	\$ gain per Peso lost	
Comparison 2	Value added strategy selected	- 112000	+ 1096	+ 124	-----	\$0,0001 Man years per Peso gained	\$0,0009 lost
	Employment strategy not selected						
Comparison 3	Employment strategy if selected	+ 567000	+ 1813	- 1312	2314	0.72	-----
	Private Profits strategy if not selected				Man years gained per Peso lost	Peso gained per peso lost.	

b) location of production

c) allocation of scarce resources - credit, land - etc. are required by the value added strategy which we chose in order to design the programs and projects required for plan implementation. The detail ^{ad} ~~is used~~ *computer generated description of* in ~~activating~~ the strategies now comes to our aid, for we are not left to ambiguous or general definitions of what the strategy entails but, quantified, crop by crop, region by region, resource by resource, requirements to meet the strategy. Though project implementation is of course yet to be done, the basic question of project design (what project, where, with what technology, requiring what resources) are already answered. Much programming and planning and decision making is left but the important underlying detail

of plan and program direction is there in the hundreds of tables generated ~~in order to~~ ^{a description of} specify at the beginning of the process what the value added strategy, ~~is~~.

QUESTION E - BESIDES THE READJUSTMENT OF ACTIVITY LEVELS, TECHNOLOGIES OF PRODUCTION, AND ALLOCATION OF CREDIT & OTHER RESOURCES; WHAT OTHER INSTITUTIONAL OR STRUCTURAL CHANGES CAN WE EVALUATE WITH THE ANALYSIS ?

At this point we return to the difficult choice of trying to list possible institutional or structural changes which can be analyzed or of selecting one to treat in enough detail to give the planner an idea of how such analysis can be done. We will attempt to evaluate the impact of one institutional system, the current credit distribution system.

CREDIT DISTRIBUTION SYSTEM

Institutional credit in Colombian distributed through a number of institutional chan-

nels. Each of these channels has its own pattern of distribution among the activities included in its credit portfolio. The Banco Ganadero has not, for instance, financed yuca production. In order to evaluate the impact of this institutional rigidity on possible development strategies for the agricultural sector we have assumed that a projected rate of growth in available institutional Credit would be distributed in two ways:

a) Distributed in a completely flexible manner such that any credit institution's resources could be utilized by any agriculture crop or livestock product (Crédito Flexible).

b) Distributed in a partially limited way, such that each institution's resource could be shifted flexibly between

any of the crops or livestock activities it had traditionally financed.

Its credit could not flow to entirely new uses. This would limit Banco Ganadero, for example to livestock activities. (Crédito Tradicional)

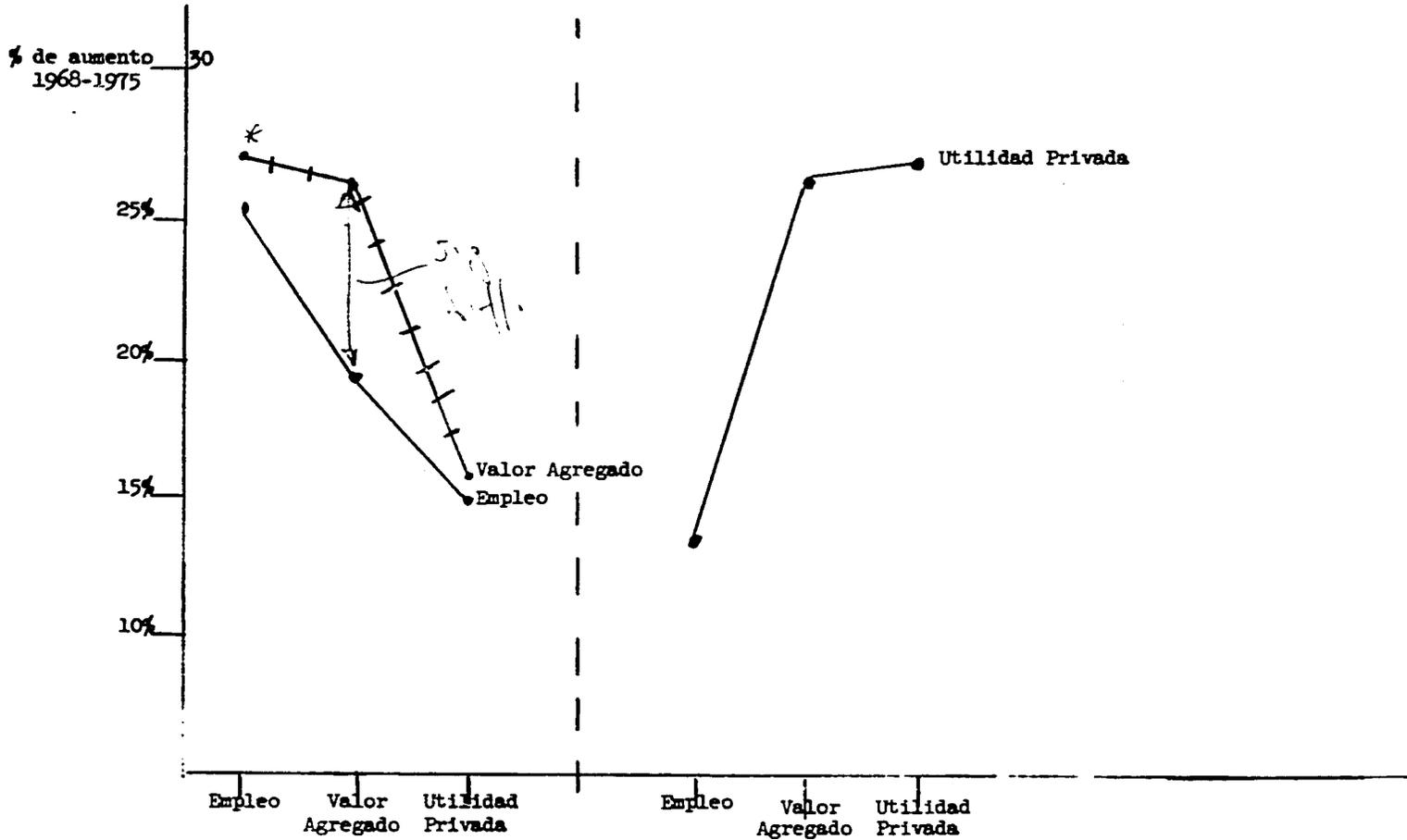
We then used these two alternative formulations of the credit constraint to see if it made any significant difference in the impacts on objectives of any of the development strategies.

The basic results can be observed in Tables 1 and 2 and are graphed in Figure 1. From that figure it can be seen that there is always a negative cost associated with the traditional system. It varies considerably depending on what objective and what strategy is being considered. Figure 2 and Figure 3 present an interesting comparison of the strategies and objectives with these two credit

Fig 3

% AUMENTO 1968-1975 CON ESTRATEGIAS ALTERNAS DE PRODUCCION

(Sistema de Crédito Tradicional)



* % Trend not equal to Absolute Trend

assumptions. In Figure 4 it can be seen that the happy complementarity between the value added and employment strategies, which we found to exist under conditions of credit flexibility, disappears when the traditional credit restraint is applied.

You will note that in the case of the flexible system, employment and value added impacts are very close, and very high, for both the employment and value added strategies. We could therefore avoid sacrificing much private profits by using the value added strategy which in turn sacrificed almost no employment. With the traditional system, however all that is changed. You will note that the value added strategy is very destructive to our employment objective as is illustrated by the massive difference in the distance AB and A_1B_1 . We are

faced then with heavy sacrifices in either value added or in employment unless the credit distribution structure can be altered.

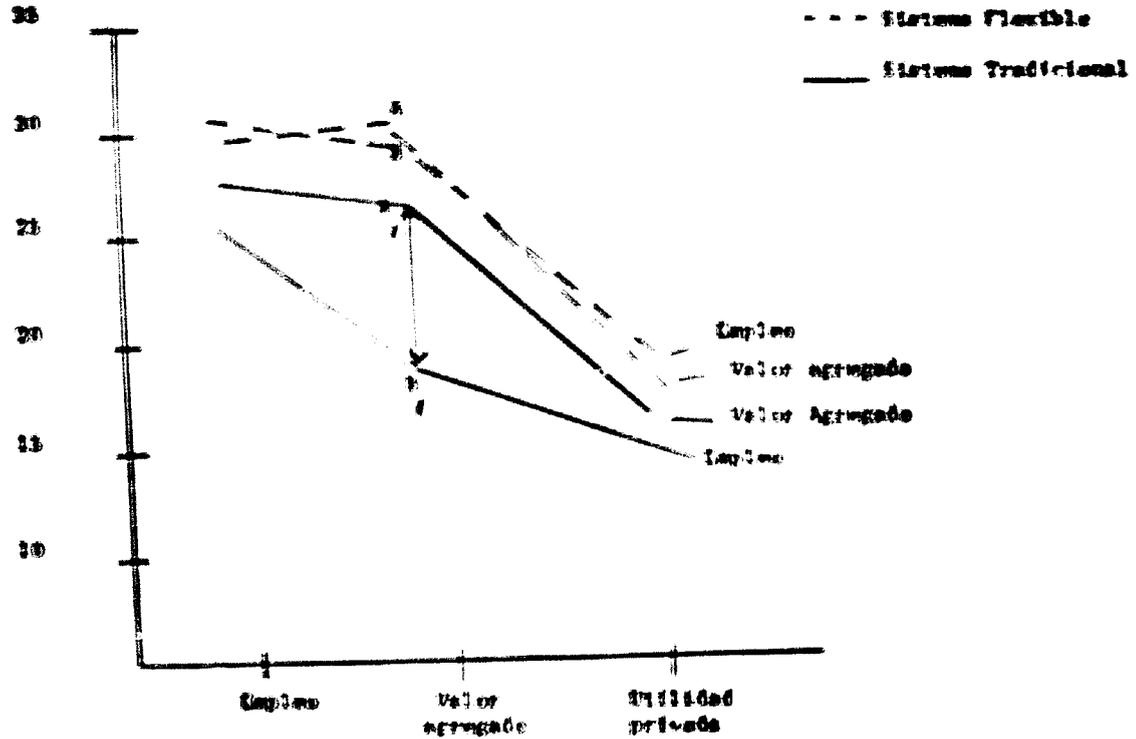
Since any such reordering of institutional structures is painful it would be very useful to quantify the costs of leaving it as it is, or the gains we can obtain from change. Change will be difficult and unless the gains are significant it would probably not be worth the pain.

We can follow the same procedure to evaluate this change as we used to evaluate the strategies. The only difference being that we have no obvious choice of strategies. We will therefore simply quantify the gains due to the changing the rigidity of the credit distribution system assuming we were to follow each of the three strategies.

Table 3 Page 19 quantifies these gains.

Figure 24

ELIX AUMENTO 1960-1971



There is unfortunately no pattern to help the planner choose. If a value added strategy were still followed, without credit flexibility, 163,000 man years of employment and about \$117 million of value added would be lost. It is interesting to note that under either the valor agregado or private profits strategies, private parties would gain almost nothing from a change in the credit flexibility. Stated in a different way, it appears that the rigid credit system yields about as much private profits as a more flexible one would. This in part perhaps explains why the Credit System is the way it is (that is, to maximize private returns). A society however, with employment and value added interests cannot ignore the heavy costs of such a system.

Conclusion

We have sketched a few examples of how the techniques used in the agriculture sector analysis can be applied to elaborating and selecting agricultural development strategies and in evaluating specific institutional or structural changes.

From this date forward documents extending this type of analysis to other planning applications will be distributed by the Sector Analysis Group of the Ministry of Agriculture.

A bibliography of the working documents completed to date is included in annex A.

DOCUMENTOS DE TRABAJO Y PAPELES DE DISCUSION

GRUPO DE ANALISIS SECTORIAL DEL MINISTERIO DE AGRICULTURA ASESORADO

FOR LA

DIVISION DE ANALISIS SECTORIAL DE LA OFICINA DE ASUNTOS LATINOAMERICANOS DE LA AGENCIA PARA EL DESARROLLO INTERNACIONAL. (AID)

Octubre 17, 1972

BIBLIOGRAFIA DE DOCUMENTOS DE TRABAJO Y PAPELES DE DISCUSION

Las series de documentos de trabajo incluyen 4 tipos de documentos:

- (a) Documentos Generales de Trabajo que contienen la primera colección de antecedentes e ideas en una área determinada. (Cubierta borgoña)
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- (d) Documentos Analíticos de Trabajo que contienen el resultado del Análisis. (Cubierta anaranjada)

WORKING DOCUMENTS & DISCUSSION PAPERS

THE SECTOR ANALYSIS AND STRATEGY STAFF

DEVELOPMENT RESOURCES DIVISION

LATIN AMERICAN BUREAU

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BIBLIOGRAPHY OF WORKING DOCUMENTS AND DISCUSSION PAPERS

The Working Document and Discussion Paper Series includes two basic types of Documents:

1. Those documents related only to the Colombian Agricultural Sector Analysis (Working Documents)
2. Documents with more general relevance to Latin American development problems (Discussion Papers with dark brown covers.)

The Working Documents on the Colombian Agricultural Sector Analysis are further divided into four sub-types:

- (a) General Working Documents which represent the first collection of data and ideas in a given subject area (Burgundy Covers)
- (b) Statistical Working Documents which contain corrected final versions of statistics used in the analysis and generated by the analysis (Green Covers)
- (c) Methodological Working Documents which contain the description and comments on methodologies used in the analysis (Yellow Covers)
- (d) Analytical Working Documents which contain the results of the analysis. (Orange Covers)

METHODOLOGICAL WORKING DOCUMENTS (Yellow Covers)

Methodological Working Document # 1

Bienes de Capital Fijo en La Matriz Insumo/Producto-Treatment of Capital Goods in the Input/Output Matrix
Samuel R. Daines
Washington, D.C. January, 1972, 65 pp.

Methodological Working Document # 1 A

Bienes de Capital fijo en La Matriz Insumo/Producto Treatment of Capital Goods in the Input/Output Matrix
Samuel R. Daines
José Manuel Ricardo (Forthcoming)

Methodological Working Document # 2

Datos Microeconómicos sobre Agricultura: Descripción y Evaluación de Datos INCORA al Nivel Microeconómico
Microeconomic Agricultural Data: Description and Evaluation of INCORA Data at the Firm Level
Thomas P. Walker
Washington, D. C. February 1972. 35 pp.

Methodological Working Document # 3

Estructura Sectorial De Insumo/Producto para el Análisis del Sector Agropecuario Colombiano
Sectorial Structure of the Input/Output Component of Colombian Agricultural Sector Analysis
Samuel R. Daines and George Poynor
Washington, D.C. March, 1972, 34 pp.

Methodological Working Document # 3A

Sectorial Structure of the Input/Output Component of Colombian Agricultural Sector Analysis
Samuel Daines - George V. Poynor and Richard E. Suttor
Washington, D.C (Forthcoming)

Methodological Working Document # 4

*Ajuste de la Matriz de Establecimiento a Productos Principales a una Matriz de productos Principales a Productos Principales [UMAT] * WMAT = PP [WMAT]*
*Adjustments of the Establishments a Principal Products Matrix to a Principal Products a Principal Products Matrix [UMAT] * WMAT = PP [WMAT]*
George V. Roynor - Cathy Gleason
Washington, D.C. March, 1972, 70 pp.

Methodological Working Document # 5

Matriz de Ajuste Precios al Comprador/Precios al Productor: Servicios de Mercadeo en la Matriz Insumo/Producto (I/P)
Purchaser Price/Producer Price Adjustment Matrix: Marketing Services in the Input/Output Matrix
Samuel R. Daines - Cathy Gleason and José Ricardo
Washington, D.C. March, 1972, 52 pp.

Methodological Working Document # 6

Anotaciones sobre la Inclusión (Cierra) del Sector de Unidades Familiares (Hogares) en La Matriz Insumo/Producto
Notes on Closing the Input/Output Matrix to the Households Sectors
Samuel R. Daines
Washington, D.C. March, 1972, 21 pp.

Methodological Working Document # 7

Análisis de Empleo: Uso de Modelo Insumo/Producto y de Programación Lineal
Input/Output and Linear Programming Techniques for the Employment Analysis in Colombia
Donald V. Coes
Washington, D.C. March, 1972, 12 pp.

Methodological Working Document # 8

Notes of the Mathematics of Input/Output Analysis
Part I: The Static Model
Apuntes en Relación a los Matemáticas del Análisis de Insumo/Producto
George V. Poynor
Washington, D. C. April 1972, 10 pp.

Methodological Working Document # 9

Linear Programming Model Incorporating Input/Output Equations
Modelo de la Programación Lineal Incorporando Ecuaciones del Análisis de Insumo/Producto
Richard E. Suttor
Washington, D. C. April 1972, 60pp.

Methodological Working Document # 10

Ajustes en Los Datos de la Matriz Original de Transacciones del Modelo Insumo Producto
Reconciliation of Data in the Initial Input/Output Transactions Matrix
Samuel R. Daines
José Manuel Ricardo (Forthcoming)
Washington, D. C.

Methodological Working Document # 11
*Potential Demand for the Exports of a Single Country:
The Inadequacy of Methodology*
R. K. van Haeften, USDA
Washington, D. C. August 1972 13 pp.

Methodological Working Document # 11 A
*La Demanda Potencial por Las Exportaciones de un Determinado
País y La Insuficiencia de la Metodología*
R. K. van Haeften, USDA,
Washington, D. C. August 1972 13pp.

Methodological Working Document # 12 A
*Efectos sobre Las Divisas: Metodología para Estimar Los Efectos
sobre Las Importaciones de La Producción de Determinados Productos
Colombianos para Consumo Interno y Exportación*
Don Coes, LA/DP
Washington, D. C. August 1972, 31 pp.

Methodological Working Document # 12 B
*Foreign Exchange Impacts:
A Methodology for Estimating Import Impacts of Production of Selected
Colombian Products, for Internal Consumption and Export*
Don Coes, LA/DP
Washington D. C. August 1972, 31 pp.

Methodological Working Document # 12 C
*Comparisons of Methodologies for Estimating Import Dependence
(Impacts) on the Production of Selected Colombian Products*
Jose Manuel Ricardo
Washington, D. C. October 1972 25pp.

Methodological Working Document # 14 A
*Metodología para la Estimación de la Elasticidad de Sustitución
entre La Capital y el Trabajo en La Ausencia de Rendimientos
Constantes de Escala*
James T. Riordan
Washington, D. C. October 1972 20pp.

Methodological Working Document # 14 B
*A Methodology for Estimating the Capital/Labor Elasticity
of Substitution in the Absence of Constant Returns to Scale*
James T. Riordan
Washington, D. C. September 1972 pp.

Methodological Working Document # 16
*Notas Sobre una Metodología Generalizada para Obtener una Serie
Mínima de Limitaciones de Tierra no Redundantes para Fines de
Programación Lineal*
*Notes on a Generalized Methodology for Deriving a Minimal non-
Redundant Land Constraint Set for Linear Programming*
James T. Riordan
Washington, D. C. October 1972 16 pp.

STATISTICAL WORKING DOCUMENTS SERIES
(Green Covers)

Statistical Working Document # 1

Primary Agricultural Production: Area, Value, Quantities
Producción, Área, Valor del Sector Agropecuario Primario
José Manuel Ricardo
Washington, D. C. January 1972, 12pp.

Statistical Working Document # 2

Input/Output Matrices Condensed for Analysis of Primary Agricultural Sectors - 116 Principal Product Sectors at Producer Prices
Matrices de Insumo/Producto Condensadas para Análisis del Sector Agropecuario
Samuel R. Daines - Cathy Gleason
José Manuel Ricardo - George V. Poynor, with data and assistance from the Ministry of Agriculture, INCORA and DANE - con datos y asistencia del Ministerio de Agricultura, INCORA y DANE.
Washington, D. C. March 1972, 106 pp.

Statistical Working Document # 3

Input/Output Matrices Condensed for Highly Aggregated Analysis - 53 Principal Product Sectors at Producer Prices
Matrices de Insumo/Producto Condensadas para Análisis a un Alto Nivel de Agregación - 53 Sectores de Productos Principales a Precios al Productor
Samuel R. Daines - Cathy Gleason
George V. Poynor - José Manuel Ricardo, with data and assistance from the Ministry of Agriculture, INCORA and DANE - con datos y asistencia del Ministerio de Agricultura, INCORA y DANE.
Washington D. C. March 1972, 76 pp.

Statistical Working Document # 4

Input/Output Matrices Condensed for Employment and Income Distribution Analysis - 76 Sectors
Matrices de Insumo/Producto Condensadas para Análisis sobre Empleo y Distribución de Ingresos - 76 Sectores
Samuel R. Daines - Cathy Gleason
George V. Poynor - José Manuel Ricardo, with data and assistance from the Ministry of Agriculture, INCORA and DANE - con datos y asistencia del Ministerio de Agricultura, INCORA y DANE.
Washington, D. C. March 1972, 120 pp.

Statistical Working Document # 5

Input/Output Matrices for Disaggregate Analysis, 201 Sectors: Employment Model
Matrices de Insumo/Producto para Análisis Desagregado de 201 Sectores: Modelo de Empleo
Samuel R. Daines - Cathy Gleason
George V. Poynor - José Manuel Ricardo, with data and assistance from the Ministry of Agriculture, INCORA and DANE - con datos y asistencia del Ministerio de Agricultura, INCORA y DANE.
Washington, D. C. March 1972, 120 pp.

Statistical Working Document # 6

Input/Output Matrices for Disaggregate Analysis, 201 Sectors: Income Model
Matrices de Insumo/Producto para Análisis Desagregado de 201 Sectores: Modelo de Ingreso
Samuel R. Daines - Cathy Gleason
George V. Poynor - José Manuel Ricardo, with data and assistance from the Ministry of Agriculture, INCORA and DANE - con datos y asistencia del Ministerio de Agricultura, INCORA y DANE.
Washington, D. C. March 1972, 116 pp.

Statistical Working Document # 7

Input/Output Matrices for Disaggregate Analysis, 201 Sectors: "Leontief" Model
Matrices de Insumo/Producto para Análisis Desagregado de 201 Sectores: Modelo de "Leontief"
Samuel R. Daines - Cathy Gleason
George V. Poynor - José Manuel Ricardo, with data and assistance from the Ministry of Agriculture, INCORA and DANE - con datos y asistencia del Ministerio de Agricultura, INCORA y DANE.

Statistical Working Document # 8

Transactions and Input Coefficients Matrix for Agricultural Processing and Marketing Analysis - 115 Sectors, 1968
Matriz de Transacciones y Coeficientes Técnicos para Análisis de las Sectores de Mercado e Industrias de Elaboración de Productos Agropecuarios, 115 Sectores, 1968
Samuel R. Daines - Cathy Gleason
George V. Poynor - José Manuel Ricardo, with data and assistance from the Ministry of Agriculture, INCORA and DANE - con datos y asistencia del Ministerio de Agricultura, INCORA y DANE.

Statistical Working Document # 9

Basic Transactions Matrix for 201 Principal Product Sectors at Producer Prices, 1968
Matriz de Transacciones Básicas para Análisis de las 201 Sectores de Productos Principales a Precios al Productor, 1968
Samuel R. Daines - Cathy Gleason
George V. Poynor - José Manuel Ricardo, with data and assistance from the Minister of Agriculture, INCORA and DANE - con datos y asistencia del Ministerio de Agricultura, INCORA y DANE.

Statistical Working Document # 10

Input Coefficients Matrix for 201 Principal Product Sectors at Producer Prices, 1968
Matriz de Coeficientes Técnicos para Análisis de las 201 Sectores de Productos Principales a Precios al Productor, 1968
Samuel R. Daines - Cathy Gleason
George V. Poynor - José Manuel Ricardo, with data and assistance from the Ministry of Agriculture, INCORA and DANE - con datos y asistencia del Ministerio de Agricultura, INCORA y DANE.
Washington, D. C. March 1972 130pp.

Statistical Working Document # 11
*Importaciones Utilizadas por Establecimiento Industriales
en 1968*
Imports Used by Industrial Establishments in 1968
DAIE Censo Industrial y Muestra de 1968
Samuel R. Daines
José Manuel Ricardo
Washington, D. C. April 1972 88pp.

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GENERAL WORKING DOCUMENT SERIES (BURGUNDY COVERS)

✓ General Working Document # 1
Agricultural Production Cost Data - Averages by Wage Rate Regions & Seven Geographical Regions for 1970
Datos sobre el Costo de la Producción Agrícola Promedios del Valor de Los Jornales por Regiones y Siete Regiones Geograficas para 1970
Samuel R. Daines and George V. Poynor
Washington, D. C. May, 1971, 68 pp.

General Working Document # 1A
Análisis de sector de la Agricultura en Colombia - Datos del Costo de la Producción Agrícola Promedios por Regiones de Las Tasas de Los Jornales y Siete Regiones Geograficas para 1970
Samuel R. Daines and George V. Poynor
Washington, D.C. May, 1971, 105 pp.

General Working Document # 1 B
Estructura de Costos: Varios Cultivos y Ganaderia
Cost Structure: Several Crops and Livestock Enterprises
Samuel R. Daines - Jose Manuel Ricardo
Washington, D. C. August 1972, 45pp.

✓ General Working Document # 2
Preliminary Analysis of Costs of Employment Generation in Agriculture
Análisis Preliminar de los Costos para Crear Empleos en la Agricultura
Samuel R. Daines
Washington, D.C. May, 1971, 101 pp.

General Working Document # 2A
Análisis Preliminar de los Costos para Crear Empleos en la Agricultura
Samuel R. Daines
Washington, D.C. May, 1971, 20 pp.

✓ General Working Document # 3
The Structure of Agricultural Processing Industries in Colombia - Preliminary Production Data and Structural Analysis
La Estructura de las Industrias de Elaboración de Productos Agropecuarios en Colombia - Datos Preliminares de la Producción y del Análisis de la Estructura de estas Industrias
Samuel R. Daines
Washington, D.C. June, 1971, 55 pp.

General Working Document # 3A
The Structure of Agricultural Processing Industries in Colombia - Preliminary Production Data
La Estructura de las Industrias de Elaboración Agropecuarios en Colombia - Datos Preliminares
Brandon Robinson and Samuel R. Daines
Washington, D. C. December, 1971, 64 pp.

✓ We have exhausted our supply of those Documents which we have checked

General Working Document # 3 B
Dificiles de Especializacion y Cobertura de Industrias de Elaboracion Agropecuarias
Specialization and Coverage Ratios of Agricultural Processing Industries
Samuel R. Daines
Jose Manuel Ricardo
Washington, D. C. August 1972, 12 pp.

✓ General Working Document # 4
The Structure of Agricultural Inputs Industries in Colombia - Preliminary Production Data and Structural & Employment Analysis
La Estructura de las Industrias Productoras de Insumos en Colombia - Datos Preliminares de la Producción y del Análisis sobre la Estructura y el Empleo en estas Industrias
Samuel R. Daines
Washington, D.C. June, 1971, 46 pp.

General Working Document # 5 A
Analysis of INCORA Supervised Credit
Don Bostwick, Agricultural Economist, USDA
Washington, D. C. August 1: 2, 108 pp.

General Working Document # 5 B
Analisis de los Datos de la Muestra de Credito Supervisado de INCORA
Don Bostwick, Agricultural Economist, USDA
Washington, D. C. August 1972, 122 pp.

General Working Document # 7
Estimaciones del Valor de la Mano de Obra per Clases: Tecnica, No Calificada y Administrativo e Implicita
Estimates of the Value of Labor by Types: Unskilled, Skilled-Technical and Administrative and Implicit.
Samuel R. Daines
Jose Manuel Ricardo
Washington D. C. (Forthcoming)

General Working Document # 8
Sectores de Servicios: Estimaciones y Datos Estadísticos
Service Sectors: Estimates and Statistical Data
Samuel R. Daines
José Manuel Ricardo
Washington, D. C. May, 1972, 28 pp.

General Working Document # 9
Seasonality of Labor Demand: Inter-Regional and Inter-Crop Data and Comparisons
Características Estacionales de La Demanda de Trabajo: Comparación entre Diferentes Regiones u Cultivos
George V. Poyner
Washington, D.C. June, 1971, 48 pp.

General Working Document # 9 A
Seasonality of Labor Demand: Inter-Regional & Inter-Crop Data and Comparisons

Samuel R. Daines - Cathy Gleason
George V. Poyner - José Manuel Ricardo
Richard E. Suttor
Washington, D. C. May 1972, 119 pp.

General Working Document # 10
Estimaciones y Cuadros Estadísticos del Sector de Unidades Familiares (Hogares)
Estimates and Statistical Tables of the Household Sector
Samuel R. Daines
José Manuel Ricardo
Washington, D. C. (Forthcoming)

General Working Document # 11
Data and Preliminary Analysis of Fruit Production (INCORA Data). Datos y análisis Preliminares de La Producción Pecuria (Datos de INCORA)
Dwight Steen and Samuel R. Daines
Washington, D.C. June, 1971, 30 pp.

General Working Document # 12
Data and Preliminary Analysis of Livestock Production (INCORA Data) Datos y Análisis Preliminares de La Producción Pecuaria (Datos de INCORA)
Dwight Steen and Samuel R. Daines
Washington, D.C. July, 1971, 13 pp.

General Working Document # 13
Sector de La Construcción: Estimaciones y Datos Estadísticos
Construction Sector: Estimates and Statistical Data
Samuel R. Daines
José Manuel Ricardo (Forthcoming)

General Working Document # 14
Sectores del Comercio Exterior: Estimaciones y Datos Estadísticas
External Trade Sectors: Estimates and Statistical Data
Samuel R. Daines
José Manuel Ricardo
Washington, D. C. August 1972, 43 pp.

General Working Document # 16
Sector Público. Estimaciones y Datos Estadísticos
Government Sector: Estimates and Statistical Data
George V. Poyner
Samuel R. Daines
José Manuel Ricardo (Forthcoming)

✓ General Working Document # 17
Farm Firm Level Analysis (Preliminary Analysis Based on Data Provided by Dr. Bostwick USDA)
Análisis Microeconómico de Fincas (Análisis Preliminar basado en Datos Suministrados por el Dr. Bostwick USDA)
Dwight Steen and Samuel R. Daines
Washington, D.C. July, 1971, 25, pp.

✓ General Working Document # 17A
Data from Farm Firm Level Analysis Provided by INCORA-Datos Facilitados por INCORA para un Análisis Microeconómico de Fincas en Colombia
Samuel R. Daines
Washington, D.C. September, 1971, 175 pp.

General Working Document # 17B - Spanish Edition
Some Economic Characteristics of Colombian Farms Receiving INCORA Loans
Algunas de las Características Económicas de Fincas en Colombia que están Recibiendo Prestamos de INCORA
Dana Dalrymple and Edith Allen USDA
Washington, D.C. October, 1971, 26 pp.

General Working Document # 17B
Some Economic Characteristics of Colombian Farms Receiving INCORA Loans
Dana Dalrymple and Edith Allen USDA
Washington, D.C. January, 1972, 26 pp.

General Working Document # 17 C
Small Farm Economics
Preliminary Results of a 474 Farm Subsample of
INCORA Borrowers
Dana Dalrymple, USDA - Samuel R. Daines
Cathy Gleason - Beverly Lowenstein
Washington, D. C. August 1972, 28 pp.

✓ General Working Document # 17D
Utilización del Prestamos de INCORA y La Producción de Fincas
Utilization of INCORA Loans and Farm Production
Samuel R. Daines Dana Dalrymple - USDA
Beverly Lowenstein
Washington, D. C. December 1971, 64 pp.

General Working Document # 17E - Spanish Edition
Características Economicas de Fincas que estan Recibiendo Prestamos
de INCORA - Suplemento de Los Documentos de Trabajo #17B and 1A
Dana Dalrymple and Edith Allen - USDA
Washington, D.C. December, 1971, 33 pp.

General Working Document # 17E
Economic Characteristics of Farms Receiving INCORA Loans - Supplement
to Working Documents #17B and 1A
Dana Dalrymple and Edith Allen - USDA
Washington, D.C. December, 1971, 33 pp.

General Working Document # 17F
Economic Characteristics of Small Farms Receiving INCORA Credit in
Colombia: Data Gathering Procedures and Format.
Características Economicas de Fincas que estan Recibiendo Prestamos
de INCORA: Descripción de Los Datos Recolectados.
Dwight Steen and Thomas Walker
Washington, D.C. January, 1972, 20 pp.

General Working Document # 17 G
Small Farm Economics
2901 Farm Sample
Preliminary Results: Land Use, Profitability, Farm Consumption,
Capital Structure
Samuel R. Daines - Cathy Gleason
Dana Dalrymple, USDA - Beverly Lowenstein
Washington, D. C. August 1972, 19 pp.

General Working Document # 17 I
Small Farms Credit
2901 Farm Sample Income and Credit Ratios by Income Level
Dana Dalrymple, USDA
Cathy Gleason
Beverly Lowenstein
Washington, D. C. August 1972, 9 pp.

General Working Document # 17 J
Small Farm Economics
Statistical Results of Crop Specific Analysis
2901 Farm Sample
Dana Dalrymple, USDA
Samuel R. Daines
Cathy Gleason
Beverly Lowenstein
Washington, D. C. August 1972, 66 pp.

General Working Document # 17 L
Small Farm Analysis Preliminary Results: Land Use and Land Tenure
James R. Horst, USDA
Thomas Walker
Washington, D. C. (Forthcoming)

General Working Document # 17 M
Small Farm Analysis Preliminary Results: Farm Family Structure
James R. Horst, USDA
Thomas Walker
Washington, D. C. (Forthcoming)

General Working Document # 17 O
Small Farm Analysis: Consumption Patterns
James T. Riordan
Washington, D. C. (Forthcoming)

General Working Document # 17 P
Small Farm Analysis Preliminary Results: Investment in Durable Goods
James R. Horst, USDA
Thomas Walker
Washington, D. C. (Forthcoming)

General Working Document # 17 Q
Small Farm Analysis Preliminary Results: Income Distribution
 James R. Horst, USDA
 Thomas Walker
 Washington, D. C. (Forthcoming)

General Working Document # 17 R
Small Farm Analysis Preliminary Results: Production by Commodity
 James R. Horst, USDA
 Thomas Walker
 Washington, D. C. (Forthcoming)

General Working Document # 17 S
*Small Farm Analysis Preliminary Results:
 Variable Cost of Production by Commodity*
 James R. Horst, USDA
 Thomas Walker
 Washington, D. C. (Forthcoming)

General Working Document # 17 T
*Small Farm Analysis Preliminary Results:
 Credit: Amount Used and Intensity*
 James R. Horst, USDA
 Thomas Walker
 Washington, D. C. (Forthcoming)

General Working Document # 17 U
*Small Farm Analysis Preliminary Results:
 Employment: Availability and Utilization*
 James R. Horst, USDA
 Thomas Walker
 Washington, D. C. (Forthcoming)

General Working Document # 17 V
*Small Farm Analysis Preliminary Results:
 Capital/Output and Labor/Output Ratio*
 James R. Horst, USDA
 Thomas Walker
 Washington, D. C. (Forthcoming)

General Working Documents # 18A, 18B, 18C
*Basic Tools for Analysis of Backward Linkage of Agricultural Processing
 Industries and Forward Linkage of Primary Agricultural Production, (LANE DATA)
 Datos Básicos para el Análisis de "Enlaces Hacia Atrás" de Industrias de
 Elaboración Agropecuarias y "Enlaces Hacia Adelante" de la Producción
 Primaria (LANE de DANE)*
 Samuel R. Daines
 Washington, D.C. June, 1971, 18A: 64 pp., 18B 65 pp., 18C 65 pp.

General Working Document # 19 A
*Transactions Matrix for Colombia 1968 - 245 Principal Product Sectors
 at Producer Prices*
*Matriz de Transacciones para Colombia 1968 - 245 Sectores de Productos
 Principales a Precios al Productor.*
 Samuel R. Daines José Manuel Ricardo
 Dwight Steen, with data and assistance from the Ministry of Agriculture,
 INCORA and DANE - con datos y asistencia del Ministerio de Agricultura,
 INCORA y DANE.

General Working Document # 19 B
Input Coefficients Matrix for Colombia 1968 - 245 Sectors
Matriz de Coeficientes Técnicos para Colombia 1968 - 245 Sectores
 Samuel R. Daines - José Manuel Ricardo - Dwight Steen, with data and
 assistance from the Ministry of Agriculture, INCORA and DANE - con datos
 y asistencia del Ministerio de Agricultura, INCORA y DANE.

General Working Document # 19 C
*Basic Transactions Matrix and Input Coefficients Matrix Condensed for
 Analysis of Primary Agricultural Sectors (72 Agricultural Sectors - 142
 Total Sectors)*
 Samuel R. Daines - José Manuel Ricardo
 Cathy Gleason - George V. Poynor
 Washington, D. C. March 1972, 144 pp.

General Working Document # 19 D
*Inverse Matrices Condensed for Analysis of Primary Agricultural Sectors
 with Farm Size Subdivisions (72 Agricultural Sectors - 142 Total Sectors)*
 Samuel R. Daines - Cathy Gleason
 Georg V. Poynor - José Manuel Ricardo
 Washington, D. C. March 1972, 144 pp.

General Working Document # 19 E
Lists of Inputs Used by the Manufacturing Sector in Colombia
Lista de Insumos Utilizados por el Sector Manufacturero de Colombia
 Samuel R. Daines - José Manuel Ricardo
 Washington, D. C. November 1971, 62 pp.

General Working Document # 20
Backward Linkage of Agricultural Processing Industries 1968
Enlace Hacia Atras de Las Industrias de Elaboración Agropecuario 1968
Samuel R. Daines - José Manuel Ricardo
Washington, D. C. August, 1971 148 pp.

General Working Document # 22
Forward Linkage-Output Composition of Agricultural Processing Industries 1968
Enlace Hacia Adelante de Las Industrias de Elaboración Agropecuario 1968
Samuel R. Daines - José Manuel Ricardo
Washington, D. C. August 1971, 54 pp.

✓ General Working Document # 26
Agricultural Production Cost Data: Study by Study Listing of INCORA Data Pile AGDATAS Grouped by Geographical Regions (7) and Wage Rate (4)
Datos del Costo de La Producción Agrícola, Lista de Varios Estudios y Datos de INCORA Agrupados por Regiones Geográficas (7) y Tasa de Jornales por Regiones (4)
Samuel R. Daines
Washington, D.C. June, 1971, 98 pp.

General Working Document # 30
Establishments/Principal Products Adjustment Matrix for Agricultural Processing Industries
Establecimientos/Matriz de Ajuste de Productos Principales de Industrias de Elaboración de Productos Agropecuarios
Samuel R. Daines - José Ricardo - George V. Poyner
Washington, D.C. September, 1971, 74 pp.

General Working Document # 31
Explorations of Possible Calculations of Capital-Labor Substitution Elasticities by Crop and Region (INCORA DATA)
Estudios Preliminares de La Posible Determinación de Las Elasticidades de Substitución de La Razon Capital-Trabajo por Cultivo y Region
Samuel R. Daines - George V. Poyner - Dwight Steen
Washington, D. C. July, 1971, 73 pp.

✓ General Working Document # 32
Production, Area, Income, Elasticity, Prices, and Yield Data (Various Commodities, Years and Sources)
Datos sobre Producción, Area, Ingreso, Elasticidad, Precios y Rendimientos (Varios Cultivos Años y Fuentes)
Samuel R. Daines and Dwight Steen
Washington, D.C. June, 1971, 102 pp.

General Working Document # 33
Forward Linkage and Output Composition of Non Agricultural-Base Industries 1968
Enlace Hacia Adelante de Las Industrias no Agropecuarias 1968
Samuel R. Daines and José Ricardo
Washington, D.C. August, 1971, 77 pp.

General Working Document # 34
Data for Analysis of Backward Linkage of Non Agricultural Industries 1968
VOLS 1 & 2 Datos para Análisis de Enlace Hacia Atras de Las Industrias no Agropecuarias 1968
Samuel R. Daines and José Manuel Ricardo
Washington, D. C. August 1971, Vol.1 175 pp. Vol 2 175 pp.

General Working Document # 35 A
Markets for Fresh Fruits and Vegetables - U. S. and Europe
R. K. van Haeften, USDA
Washington, D. C. October 1972, 204 pp.

General Working Document # 35 B
 Mercados para Frutas y Legumbres - U. S. y Europa
R. K. van Haeften, USDA
Washington, D. C. October 1972, 204 pp.

General Working Document # 35 C
Tariffs, Quality Specifications and Sanitary Regulations for Fresh Fruits and Vegetables
R. K. van Haeften, USDA
Washington, D. C. October 1972

General Working Document # 35 D
Markets for Processed Fruits and Vegetables - U. S. and Europe
R. K. van Haeften, USDA
Washington, D. C. (Forthcoming)

General Working Document # 35 E
Markets for Forestry Products - U. S. and Europe
R. K. van Haeften, USDA
Washington, D. C. (Forthcoming)

General Working Document # 35 F
Markets for Sugar
E. K. van Baeften, USDA
Washington, D. C. (Forthcoming)

General Working Document # 35 G
Latin American Markets
E. K. van Baeften, USDA
Washington, D. C. (Forthcoming)

General Working Document # 43
Marketing Margins Matrix: Purchaser Price - Producer Price Adjustment Matrix
Matriz de Los Margenes de Mercado: Matriz de Ajuste de Precios Comprador a Precios Productor
Samuel R. Daines
Washington, D.C. February, 1972, 143 pp.

General Working Document # 43A
Marketing Margins Matrix: Purchaser Price - Producer Price Adjustment Matrix de Los Margenes de Mercado: Matriz de Ajuste de Precios de Comprador a Precios de Productor
Samuel R. Daines - Cathy Gleason
Washington, D.C. March, 1971, 143 pp

Discussion Paper # 1
Generacion de Empleo-Problemas y Perspectivas
Employment Generation in Latin America
Morris D. Whitaker, Consultant
Washington, D.C. August, 1971, 45 pp.

Discussion Paper # 2
International Comparisons of Production Costs and Technology for
Agricultural Processing
Samuel R. Daines - Elizabeth Busse
Washington, D.C. December, 1971, 48 pp.

Discussion Paper # 3
Experimentation in Instructional Processes to Lower Education
Unit Output Cost
Brandon Robinson
Washington, D. C. September 1972 pp.

Discussion Paper # 4
National Decisions and Foreign Assistance
Brandon Robinson
Washington, D. C. September 1972, 23 pp.

Discussion Paper # 5
External Demand Prospects for Selected Labor Intensive Agricultural
Products of Latin America
Samuel R. Daines
Washington, D.C. December, 1972, 162 pp.