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MANAGEMENT DECISIONMAKING EXERCISE

INDUSTRIAL COLLEGE OF THE ARMED FORCES

Washington, D. C.

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1971

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13. ABSTRACT

This document describes the 1971 - 1972 version of the Management Decisionmaking Exercise (MDE) used at the Industrial College of the Armed Forces (ICAF). The Participants' and Background documentation explains the play of the game from a participant's viewpoint. The Administrative documentation provides complete instruction for the faculty and computer operations personnel involved in conducting the MDE.

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FOREWORD

This manual provides complete instructions for the faculty and computer operations personnel involved in conducting the Management Decisionmaking Exercise. A separate manual is available for issue to participants which explains the play of the game from a participant's viewpoint. Game monitors should also be thoroughly familiar with the Participants' Manual prior to conducting the Exercise.

The Management Decisionmaking Exercise has undergone considerable change since its first use at the Industrial College in 1963. However, the general design of play and the underlying economic and business principles have remained relatively static. The ICAF version is one of the more simple models of the many that have been designed to illustrate business and economic activity. This simplicity is by choice since our objectives in using the model vary somewhat from those usually found in graduate schools of business or industrial corporations using simulations as training devices. Bear in mind that the Management Decisionmaking Exercise supports the core program in Course 430, Management of Industrial Resources, as well as the foundation courses in Economics and Management. The simplicity of design allows the participant to more clearly control the relatively few variables with which he is confronted and to access their interaction unencumbered by the myriad of possible variables which make up the actual business and economic situation. However, do not be misled by the ease of play, this is a very sophisticated simulation of economic principles. The relationship of variables and the formulas used are explained in the ICAF manual entitled Management Decisionmaking Exercise Description of Model.

The present model is written in the BASIC language for play in a time-shared mode. This version was first introduced at the Industrial College in 1968. A "what-if" capability which allows the participants to interrogate the model with hypothetical questions designed to assist in the decisionmaking process was added at that time.

Subsequent changes improved the format of output reports, supplied monitor personnel with machine-generated data with which to prepare comprehensive critiques of their individual teams, improved the pricing algorithm, introduced an inventory storage charge, and provided a charging scheme for each firm using more than three "what-if" interrogations

during a decision period. More information for the players was also provided in the form of future plant capacity notation, and calculated firm performance measures.

Questions and suggestions for improvement should be forwarded to SIMCOM.

ALAN S. WILHITE
Captain, USN
Director, Simulation & Computers

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1.0 INTRODUCTION

This manual is intended to facilitate the administration of the ICAF Management Decisionmaking Exercise and should be used in conjunction with the Participants' Manual and Background Information written expressly for this exercise. Those persons who will be acting as administrators during the exercise should have participated in the exercise at least once and should be thoroughly familiar with all materials concerning the exercise.

Administering the exercise will require planning, organization, and careful monitoring. The results gained will be directly proportional to the time and effort expended to make the exercise successful. It should be emphasized that this simulation represents an educational technique and that it should be treated seriously. The exercise should be fun; but its value lies not in entertaining students but in providing a stimulating learning environment.

This business exercise can have the same teaching values that have made laboratory exercises valuable to the physical sciences. It should be interesting to the students and can teach by showing the results of good or bad decisions very quickly. It allows mistakes to be made without the actual cost which would result from such mistakes in an actual business. It allows for experimenting that cannot be tolerated in actual business situations. If properly conducted, it can generate a great deal of personal involvement making the participants feel they are working at a serious business and making important decisions. This involvement can help to make the exercise an effective learning vehicle, augmenting the auditorium presentations, I/D's and case study in which the students are both participants and observers.

The information needed to participate is easy to learn because it is based on simple relationships known to most people and is consistent with the materials presented in Course 430. Students will know that sales generally increase with marketing effort and with decreasing prices. They will know that production costs generally decrease with increasing quantity and more efficient production. Realism is obtained by the use of information, terminology, and condensed forms of reports usually found in business organizations.

The ICAF Management Decisionmaking Exercise consists of three parts: (1) an orientational briefing, (2) five student decision periods, and (3) a post-game analysis and evaluation of decisions. This manual will concentrate on information related to the conduct of the student decision sessions and the post-game analysis and evaluation of decisions. Detailed information regarding the orientational briefing and a description and analysis of the model will be provided in other manuals.

As an administrator or faculty monitor, a thorough understanding of your responsibilities during and between decision periods will be vital to the success of the exercise. Moreover, the observations and the information compiled during the decision sessions will be of critical importance in analyzing and reviewing the sessions with the students during the post-game debriefing.

2.0 GENERAL ORGANIZATION OF THE EXERCISE

Each Industry Committee will constitute a distinct industry. Within each industry, there will be three companies made up of five students. The companies within each industry will be numbered 1, 2, or 3. The industry, itself, will be denoted by a two-digit number corresponding to the number of the industry committee involved; e.g., Industry Committee 2 will be in Industry 02; Committee 4, Industry 04; and Committee 12, Industry 12.

3.0 ADMINISTRATIVE ROLES

There are basically three administrative roles: (1) the exercise director, (2) the faculty monitors, and (3) the administrative console operators. A single individual may be acting in more than one of these roles during the exercise; but for the sake of exposition, they will be treated here as distinct roles.

3.1 The Exercise Director

The exercise director is charged with the overall supervision of the exercise. He will deliver the orientational briefing and will lead the post-game description and analysis of the model. Prior to the beginning of the exercise, he must see that all faculty monitors and administrative console operators have been thoroughly briefed on their responsibilities and that they are in possession of all requisite materials. During the exercise, the director will advise and assist individual monitors and console operators as needed, and will make sure that all have adequate supplies of required materials; and will take any additional actions necessary for the smooth conduct of the exercise.

3.2 Faculty Monitors

The faculty adviser of each industry committee will act as monitor of that committee's industry (see Appendix II). He will be responsible for assigning students to the three company teams within the industry and for designating one member of each team as company president. He will see that all essential materials and information are distributed to the students in his committee prior to the beginning of the first decision period and all subsequent periods. He will probably want to use the students he has designated as company presidents for this distribution.

At the end of each period, he will collect all company decision forms, check them carefully, and turn them over to the SIMCOM Project Officer. Once the reports have been generated by the computer and returned to him, he should make them immediately available to the student teams. In distributing the reports to the teams, he must take care to see that the confidential nature of each company's reports is observed.

During the exercise, the faculty adviser will observe the performance of the three companies in his assigned industry, provide substantive clarifications and procedural assistance as it is needed, and maintain records on the actions and performance of the three companies. (See Section 7.1 for details). Using the observations and records made during the course of the exercise, he will lead his committee in a post-game analysis of the decisions made during the exercise.

3.3 Administrative Console Operators

Each administrative console operator will be charged with obtaining all computer generated reports for two industries (see Appendix II). At the end of each decision period, he will receive a complete set of company decision forms for each of his industries from the SIMCOM Project Officer. He will enter the data contained on the forms into the computer using a remote teletype console following the procedures described in Section 9.0. He will obtain company reports and industry summaries for all firms in each industry. He will also get Confidential Administrator's Reports for each industry. After all of these reports have been printed, the SIMCOM Project Officer will give them to the appropriate faculty monitors, who in turn will distribute the company reports and industry summaries to the student teams and retain the Confidential Administrator's Report. SIMCOM will arrange to have the contents of the current files punched out on paper tape for use in the event that the primary computer system goes down or the file is in someway destroyed.

4.0 ZERO PERIOD MATERIALS

Prior to the start of the first decision period, each firm in each industry will be given a folder of zero period materials containing the following information:

a. Minus 2, Minus 1, and Zero Period Company Reports and Industry Summaries
b. A Participants' Checklist for Making Computer Projections
c. A list of Team Members
d. A supply of Computer Data Worksheets
e. A supply of Decision Forms.
f. Telephone numbers, User Codes, and Passkey for using the computer system.

Of course, all participants will receive a copy of the PARTICIPANTS' MANUAL and BACKGROUND INFORMATION prior to the start of the game. This should be distributed several days before the orientational briefing in order to give the participants ample time to study it.

5.0 ORIENTATION FOR THE EXERCISE

The orientation for the exercise will consist of three parts. Firstly, an orientational briefing will be given to all of the participants. This briefing will amplify, clarify and re-emphasize some of the more important points covered in the PARTICIPANTS' MANUAL and BACKGROUND MATERIALS. (See the MANAGEMENT DECISIONMAKING EXERCISE BRIEFING MANUAL). Normally, this briefing will be given by the Exercise Director. Second, and immediately following the orientation briefing, there will be a question and answer session. Third, following the question and answer session with the exercise director, the participants will break down into Industry groupings and meet with their Industry Monitor. At this session, the faculty monitor will distribute the Zero Period Materials and the information required for making computer projections (i.e., telephone numbers, user number, password, and passkey). He will explain the procedures that will be used for collecting decision forms and distributing computer generated reports. He will attempt to answer any remaining questions that the participants may have and will make sure that the procedures for making computer projections are understood. If all of these tasks have been completed before the time allotted for the session has expired, the faculty monitor may allow the participants to break down into their firm groupings and begin to organize themselves.

6.0 DURING THE DECISION PERIODS

During the decision periods, the company teams will meet in their assigned team rooms (see Appendix II) and deliberate the decisions they must make. The faculty monitor will want periodically to sit in on these sessions but should make himself generally available to provide clarifications of any game matters which the participants find confusing.

Promptly at the end of each decision period, the faculty monitor should require that each firm submit its completed decision form (an example of which is shown on the next page). Since decision forms from all three firms in an industry must be in before the decisions can be entered into the computer, the faculty monitor should insist that the end-of-period deadline be observed by all teams.

7.0 BETWEEN PERIODS

Immediately after the decision forms are turned in, the faculty monitor should check them quickly but carefully. He should make sure that all entries are legible and are right-justified in the spaces provided on the decision form. Most importantly, he should check to

ICAF MANAGEMENT DECISIONMAKING EXERCISE

FIRM _____ INDUSTRY _____

DECISION FORM

DECISIONS FOR PERIOD _____

AREA DECISIONS Unit Price (In Dollars)	Area A	Area B	Area C	Area D
Marketing (In THOUSAND Dollars)	Area A	Area B	Area C	Area D
PLANT DECISIONS (In THOUSAND Dollars)	Production	Research	Plant Improvement	

CASH (In THOUSAND Dollars)

NOTE: TOTAL EXPENDITURES (Marketing expenditures in areas A, B, C, and D; plus Production, Research and Plant Improvement expenditures) must not exceed CASH less $1,000. Should total expenditures exceed these limits, the faculty monitor will adjust by reducing the amount allocated to production.

TOTAL EXPENDITURES (In THOUSAND Dollars)

_____ DATE

_____ SIGNATURE

make sure that total expenditures (the sum of marketing, production, research and plant improvement allocations) do not exceed cash less $1000. If the expenditures represented on a form do exceed cash less $1000, the faculty monitor should adjust the production entry downward until this criterion is met.

After checking over the decision forms of the three companies in his industry, the faculty monitor will give the forms to the SIMCOM Project Officer. Using a teletype terminal and following the procedures described in Section 9.0, the administrative console operator will enter the decisions and obtain in triplicate the company report and industry summary for each firm in the industry. The console operator should then fill the prepared envelops for each firm and the faculty monitor in accordance with the directions contained in their instructional packets.

As soon as the faculty monitor receives the computer generated reports, he should make them available to the company teams. He should, however, take care to see that the confidential nature of the individual company reports is respected.

7.1 Confidential Administrators' Report

The faculty monitor of each industry will use the Confidential Administrators' Report to develop the charts and graphs which he will use in leading the post-game analysis and evaluation of decisions. The Confidential Administrators' Report is designed to provide the faculty monitor of each industry with fairly detailed information at the end of each period on the decisions and activities of each firm within his industry. In this report, he will have essentially all of the information on a firm that the firm will get on its confidential company report plus some additional information that will aid him both in advising the participants during the exercise and in leading the post-game critique. The information on this report is for the use of the faculty monitors only. It should not be made available to or shown to students.

The Administrators' Report is divided into four major sections. The first section (an example of which is shown on the next page) gives a sales breakdown by firm and marketing area. The second and third sections (examples of which are shown on page 9) relate respectively to production and finance. The fourth section reports several performance measures which will be particularly useful during the post-game analyses and critique. As in the company reports, all values in the Administrators' Report are given in units of one thousand to the nearest thousand, except for prices, unit costs of production and unit delivery costs, and per cent of plant capacity being used. Because computations are carried out to a high degree of accuracy and then rounded back for simpler reporting, there will be slight discrepancies in some of the results.

By section, the items contained in the report are as follows:

SALES by FIRM by AREA

This section contains the following items first for Area A, then B, then C, then D, and finally for all areas combined.

MARKETING is the amount spent by each firm for marketing in the area.

ORDERS are the number of orders (units requested) received by a firm from the area. Note that the orders represent the demand for a firm's product in a given marketing area.

SALES are the total number of units actually sold by each firm in the designated marketing area. Sales represent the number of ORDERS that a firm can and does fill.

UNIT PRICE gives the price to be charged in the area by each firm.

DELIVERED (DEL) COST is the unit cost of production plus the unit cost of transportation for the units sold in the area. The delivered cost will be based on the average of the unit cost of production for items sold from inventory and the unit cost of production for items sold from current production, plus the transportation cost. Units in inventory will be sold first.

COST OF GOODS (GDS) SOLD (SL) is the production costs of the units sold during the period. It may include both units sold from old inventory and from current production.

REVENUE is the total amount of money received by each firm from SALES in the area. It is equal to SALES times the UNIT PRICE.

SAMPLE

ICAF MANAGEMENT DECISIONMAKING EXERCISE

CONFIDENTIAL ADMINISTRATORS' REPORT

INDUSTRY 99 PERIOD 0

BUSINESS INDEX = .98

SALES

	FIRM	1	2	3
AREA A	- MARKETING	300.	50.	50.
	- ORDERS	111.	21.	21.
	- SALES	111.	21.	21.
	- UNIT PRICE	44.00	42.00	42.00
	- DEL COST	33.20	35.20	35.20
	- REVENUE	4870.	892.	892.
	- NET RETURN	896.	94.	94.
AREA B	- MARKETING	50.	300.	50.
	- ORDERS	21.	111.	21.
	- SALES	21.	111.	21.
	- UNIT PRICE	42.00	44.00	42.00
	- DEL COST	35.20	33.20	35.20
	- REVENUE	892.	4870.	892.
	- NET RETURN	94.	896.	94.
AREA C	- MARKETING	50.	50.	300.
	- ORDERS	21.	21.	111.
	- SALES	21.	21.	111.
	- UNIT PRICE	42.00	42.00	44.00
	- DEL COST	35.20	35.20	33.20
	- REVENUE	892.	892.	4870.
	- NET RETURN	94.	94.	896.
AREA D	- MARKETING	300.	300.	300.
	- ORDERS	112.	112.	112.
	- SALES	112.	112.	112.
	- UNIT PRICE	42.00	42.00	42.00
	- DEL COST	34.20	34.20	34.20
	- REVENUE	4684.	4684.	4684.
	- NET RETURN	570.	570.	570.
TOTAL	- MARKETING	700.	700.	700.
	- ORDERS	265.	265.	265.
	- SALES	265.	265.	265.
	- COST GDS SL	8786.	8786.	8786.
	- TRANS COST	196.	196.	196.
	- REVENUE	11338.	11338.	11338.
	- NET RETURN	1655.	1655.	1655.

PRODUCTION

CURRENT	- UNITS	250.	250.	250.
	- UNIT COST	33.14	33.14	33.14
	- TOT COSTS	8273.	8273.	8273.
	- PCT CAP	96.	96.	96.
CAPACITY	- UNITS	260.	260.	260.
	- UNIT COST	32.93	32.93	32.93
	- TOT COSTS	8562.	8562.	8562.
INVENTORY	- UNITS	18.	18.	18.
	- UNIT COST	33.14	33.14	33.14
	- TOT VALUE	613.	613.	613.

FINANCE

PLANT DEPREC	104.	104.	104.
PLANT INVESTMENT	229.	229.	229.
PLANT VALUE	5325.	5325.	5325.
RESEARCH	300.	300.	300.
REVENUE	11338.	11338.	11338.
EXPENSE	10110.	10110.	10110.
GROSS PROFIT	1228.	1228.	1228.
TAXES	614.	614.	614.
NET PROFIT	614.	614.	614.
RECEIPTS	11338.	11338.	11338.
DISBURSEMENTS	10336.	10336.	10336.
CASH FLOW	1002.	1002.	1002.
NET CASH	10505.	10505.	10505.
TOTAL ASSETS	16443.	16443.	16443.

PERFORMANCE MEASURES

PRODUCTION PENALTY	0.21	0.21	0.21
CAPITAL TURNOVER	0.72	0.72	0.72
% PROFIT ON SALES	5.42	5.42	5.42
RETURN ON MARKTING	16.20	16.20	16.20
COSTS OF SALES	38.20	38.20	38.20
RETURN ON CAPITAL	3.88	3.88	3.88

NET RETURN is the difference between amount invested in an area (in terms of production costs of goods sold, transportation, marketing) and the amount of money received by a firm from sales in that area. It is computed by multiplying the difference between UNIT PRICE and unit DELIVERED COST by SALES and then subtracting MARKETING expenditures in the area.

PRODUCTION by Firm

This section of the Administrators' Report gives CURRENT production, what production would be at CAPACITY, and the current INVENTORY.

UNITS indicate the number of quantity of units actually produced (CURRENT), the number of units that could have been produced at plant capacity (CAPACITY), and the number of units in INVENTORY at the end of the period.

UNIT COST shows the unit cost of production of units actually produced (CURRENT), what the unit cost would have been at CAPACITY, and the unit value of units in INVENTORY at the end of the period.

TOTAL (TOT) COSTS indicate the CURRENT production costs in thousands of dollars and what those costs would have been at CAPACITY.

PERCENT of CAPACITY (PCT CAP) indicates what portion CURRENT production is of capacity. It is simply the CURRENT UNITS divided by the UNITS at CAPACITY multiplied by 100.

INVENTORY VALUE is the total value in thousands of dollars of the units remaining in INVENTORY. It is simply the number of UNITS (INVENTORY) times the COST (INVENTORY).

FINANCE by Firm

PLANT (DEPREC) DEPRECIATION indicates the amount each firm's plant depreciated in value to the nearest thousand dollars during the period.

PLANT INVESTMENT gives the amount each firm invested in plant improvement during the period.

PLANT VALUE is the value of each firm's plant at the end of the period and the value at which each plant will be operating at the start of the next period. It is determined by subtracting the amount of depreciation from the old plant value and adding the amount invested in plant improvement during the period.

RESEARCH is the amount invested by each firm in research during the period.

REVENUE is the total amount of money taken in by each firm from sales during the period.

EXPENSE gives the amount it cost each company for the period's operations. It is determined by summing the costs of goods sold during the period, transportation costs, marketing expenditures, research and depreciation.

GROSS PROFIT is the difference between REVENUE and EXPENSE.

TAXES are equal to a fixed percentage of the GROSS PROFIT. There are no taxes on a loss. There is no carry-over of a loss for tax purposes.

NET PROFIT is the difference between REVENUE and EXPENSE less taxes.

RECEIPTS give the total amount of cash taken in from the sale of units during the period. It is equal to the REVENUE.

DISBURSEMENTS indicate the total cash outlay for each firm during the period. This total includes expenditures for production, transportation, marketing, research, plant improvement, taxes, inventory storage charges and charges for extra Market Surveys (WHAT-IF'S).

CASH FLOW is the difference between RECEIPTS and DISBURSEMENTS.

NET CASH is the amount of cash each firm has available at the end of the period. It is the old cash balance plus (or minus) the CASH FLOW.

TOTAL ASSETS is the total value of all assets of a firm, (i.e., CASH PLANT VALUE, and INVENTORY).

PERFORMANCE MEASURES by Firm

This section contains several fairly common measures of management performance.

PRODUCTION PENALTY is equal to the unit cost of production at capacity minus the current unit cost of production. It is expressed in dollars and cents and represents the "penalty" incurred for producing under capacity.

CAPITAL TURNOVI is equal to the revenue or sales income for a period divided by the firm's total assets at the start of that period. This measure shows management's diligence and effectiveness in working the total capital of the business to generate sales volume.

% PROFIT ON SALES, sometimes called margin percentage of profit on sales, is equal to 100 times the ratio of net profit for a period to sales revenue for that period. This measurement shows the spread between revenue and expenses of the period, and without a margin of profit a company has nothing.

RETURN ON MARKETING is the ratio of total revenue from sales to total marketing expenditures. It is a measurement of the average amount of cash taken in per dollar of marketing expenditure.

COSTS OF SALES is equal to a firm's total expense for a period divided by the number of units sold during the period. Thus, it is the average per unit cost of conducting business during the period.

RETURN ON CAPITAL, sometimes called return on investment, is computed by multiplying 100 times the ratio of the net profit for a period to the total assets at the start of that period. Equivalently, it is the percentage profit on sales times the turnover of capital. Return on capital, the profit earned on the capital employed, is widely accepted by management as a tool for measuring performance.

7.2 Developing and Maintaining Charts and Graphs

In order to conduct an effective post-game analysis and evaluation of the decisions made during the game, it will be essential for each faculty monitor to keep up with and analyze the data being generated each period. He will want to develop and maintain a number of charts and graphs during the exercise. All of the necessary data will be contained on his Confidential Administrators' Report. He will use this data to make graphs of the variety shown in Appendix III. After the final decision period, he should use these graphs to make vu-graphs for display during the critique period. After the post-game critique of decisions, the faculty monitor should turn all of his records over to the Exercise Director.

8.0 POST-GAME ANALYSIS AND EVALUATION OF DECISIONS

Upon completion of the exercise, the faculty monitor of each industry will conduct an analysis and evaluation of the exercise with the students in that industry. Part of this critique period should be used by the participants, with each firm taking about 15-20 minutes to cover the following points:

1. Type of organization used by each firm and reason for that particular type.

2. Effectiveness of the organization setup in arriving at decisions.

3. If the exercise were to be played over, what type of organization would be used? Why?

4. What were the goals of each firm?

5. How did the results measure up against the goals?

6. What were the policies and plans of each firm? Reason for deviations, if any, from them? Analysis of effectiveness of policies and plans.

7. If the exercise were to be played over, what other goals and policies would you have set and followed?

8. What systematic method was used in analyzing the data to assist in arriving at your decisions?

9. Summary of firms' decisions with explanations for particularly good and bad decisions.

10. Lessons learned about organization, planning, group behavior, conflict between profit motive and competitive motive, and conflict between reason and emotion in arriving at your decisions.

In his part of the analysis and evaluation, the faculty monitor will share his observations and highlight them using the vu-graphs he has prepared from data generated during the course of the exercise. The faculty monitor will also be responsible for answering any questions concerning the model. He should be prepared to discuss the concepts and assumptions contained within the model, the way in which assumptions are implemented, and strengths and weaknesses of the model in light of contemporary management theory and practice. To aid him in this task, SIMCOM will provide to each monitor a knowledgeable Project Officer and a manual containing a Description of the Model.

9.0 ADMINISTRATIVE USE OF THE TELETYPE CONSOLES

The Administrative Console Operator assigned to each industry will be responsible for obtaining all computer-generated reports for that industry. Once he is given the official decision forms for the three firms in his assigned industry, he will enter these decisions either directly from the decision forms or from a computer data worksheet (shown on the following page) if he wants to consolidate the input data on a single sheet. If he decides to transfer the decisions to a computer data worksheet, he should exercise great care to insure that his transcription is accurate.

ICAF MANAGEMENT DECISIONMAKING EXERCISE

COMPUTER DATA WORKSHEET

CALL XXX-XXXX to establish contact with the appropriate computer system.

USER NUMBER, PASSWORD -- XXXXXX,ICAF

RUN *INDUST

ENTER INDUSTRY NO., FIRM NO., AND PASSKEY: XX,X,XXX.XX? ___,___,___.___ (Note period)

FOR FIRM 1, ENTER 4 PRICES, 4 MARKETING AMOUNTS, PRODUCTION, RESEARCH, AND PLANT IMPROVEMENT

	Price Area A	Price Area B	Price Area C	Price Area D	Market Area A	Market Area B	Market Area C	Market Area D	Production	Research	Plant Improvement
?	,	,	,	,	,	,	,	,	,	,	,
	$	$	$	$	1000 $	1000 $	1000 $	1000 $	1000 $	1000 $	1000 $

FOR FIRM 2, ENTER 4 PRICES, 4 MARKETING AMOUNTS, PRODUCTION, RESEARCH, AND PLANT IMPROVEMENT

	Price Area A	Price Area B	Price Area C	Price Area D	Market Area A	Market Area B	Market Area C	Market Area D	Production	Research	Plant Improvement
?	,	,	,	,	,	,	,	,	,	,	,

FOR FIRM 3, ENTER 4 PRICES, 4 MARKETING AMOUNTS, PRODUCTION, RESEARCH, AND PLANT IMPROVEMENT

	Price Area A	Price Area B	Price Area C	Price Area D	Market Area A	Market Area B	Market Area C	Market Area D	Production	Research	Plant Improvement
?	,	,	,	,	,	,	,	,	,	,	,

ARE ALL INPUTS CORRECT (YES OR NO)?? __

OFF

To obtain the computer-generated reports, the console operator will follow the following procedures:

1. Check Duplex setting. HALF DUPLEX is required.

2. Dial ###-#### to establish contact with the appropriate Computer system.

3. When your user number and password are requested, enter XXXXXX,ICAF.

4. After you have returned the carriage and the system has responded with the word READY, enter the command RUN *INDUST.

5. The program will immediately ask you to enter your industry number, your firm number, and a passkey. Each administrator will have a distinct passkey for each industry to which he has been assigned. You may use any number greater than 3 and less than 10 as a firm number.

6. The program will then ask you to enter decisions for Firm 1. After these decisions are entered, it will ask for the decisions for Firm 2. Once these have been entered, it will ask for the decisions for Firm 3.

7. After the requested information is entered and the carriage returned, the program will ask: COMPANY REPORTS (YES OR NO)? You should respond by typing the word YES. This will cause the Company Reports and Industry Summaries to be printed for all companies.

8. When all Company Reports and Industry Summaries have been printed, the program will query: ADMINISTRATORS' REPORT (YES OR NO)? In response, enter the word YES and return the carriage. This will cause the Confidential Administrators' Report to be printed.

9. After the Administrators' Report has been printed, the program will set up the files for the next decision period.

10. Immediately thereafter the system will indicate that the program has completed execution by typing the word TIME followed by the amount of CPU time in minutes and seconds required for execution.

11. Repeat steps 4 through 11 for the second industry and terminate your transmission with the command OFF.

APPENDIX I

SCHEDULE FOR THE ICAF

MANAGEMENT DECISIONMAKING EXERCISE/ICAF/1970

DATE	TIME	ACTIVITY	PLACE
8 Nov	0830	Orientation	Auditorium
12 Nov	0830	Decision Period No. 1	Team Rooms
15 Nov	0830	Decision Period No. 2	Team Rooms
16 Nov	0830	Decision Period No. 3	Team Rooms
17 Nov	1030	Decision Period No. 4	Team Rooms
18 Nov	0830	Decision Period No. 5	Team Rooms
22 Nov	0830	Analysis and Evaluation of Decisions (IndCom 1-6)	Seminar Rooms
22 Nov	1030	Analysis and Evaluation of Decisions (IndCom 7-12)	Seminar Rooms

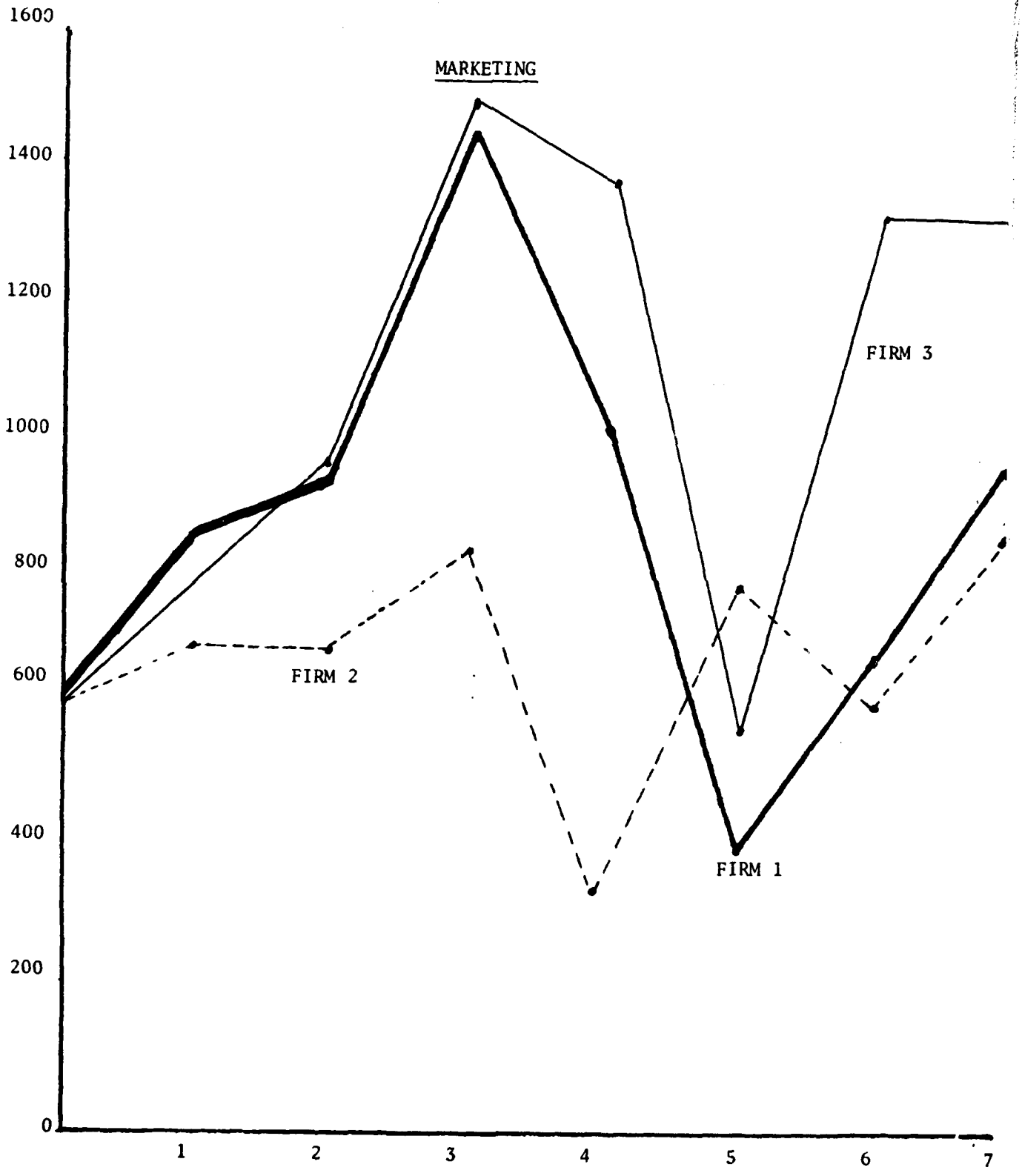
APPENDIX II

INDUSTRY AND FIRM LOCATIONS

Industry Committee	Industry No.	Remote Terminal	Firm Locations 1	2	3
1	1	C361	412	422	417
2	2	418	402	404	406
3	3	314	408	410	420
4	4	318	424	426	428
5	5	308	A431	A433	A435
6	6	A439	A438	A440	A442
7	7	400	A437	A447	A449
8	8	B453	B451	B454	B456
9	9	C476	B457	B458	B460
10	10	414	C464	C466	C467
11	11	D477	C468	C472	C474
12	12	430	C462	C461	C470

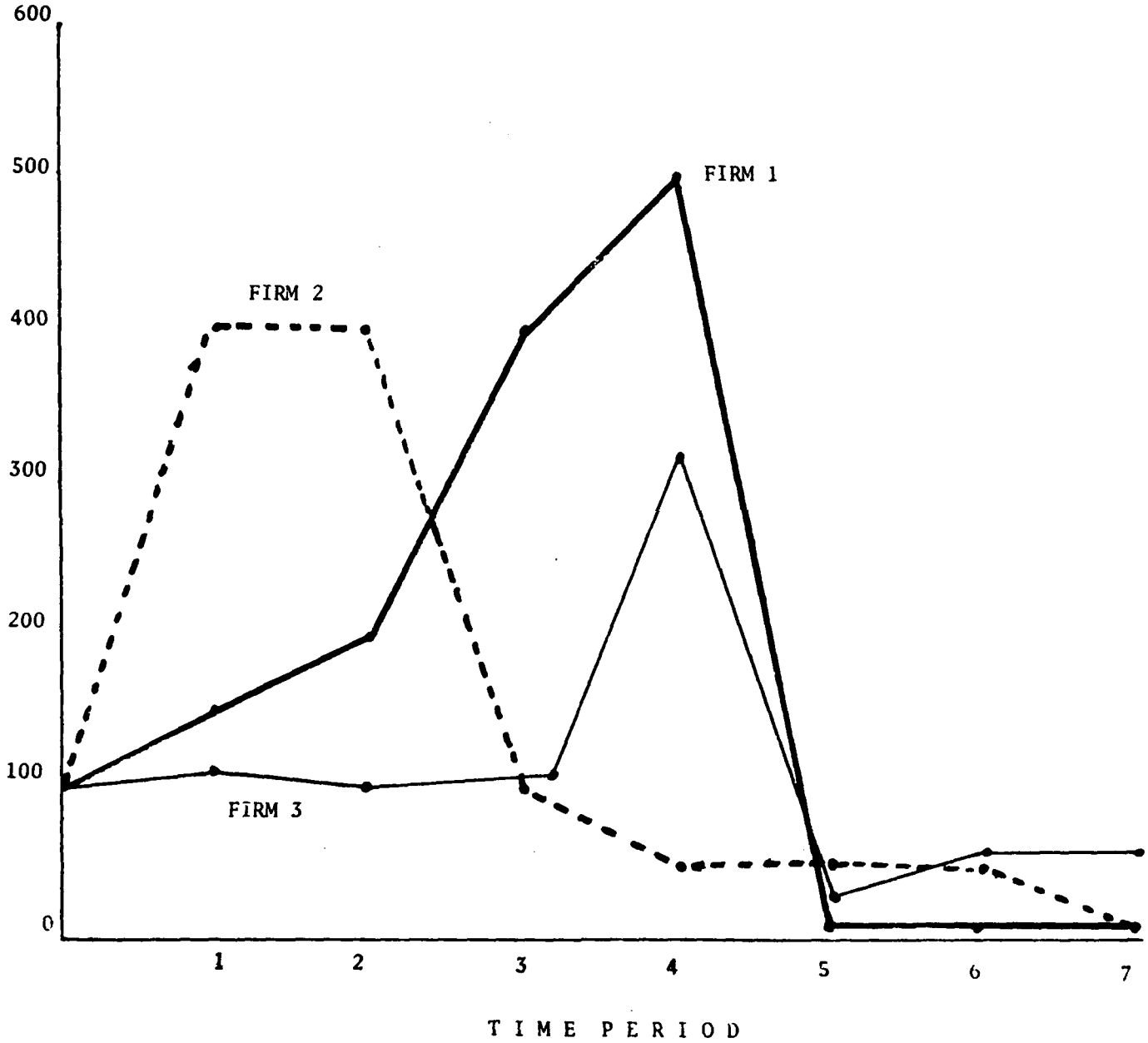
APPENDIX III

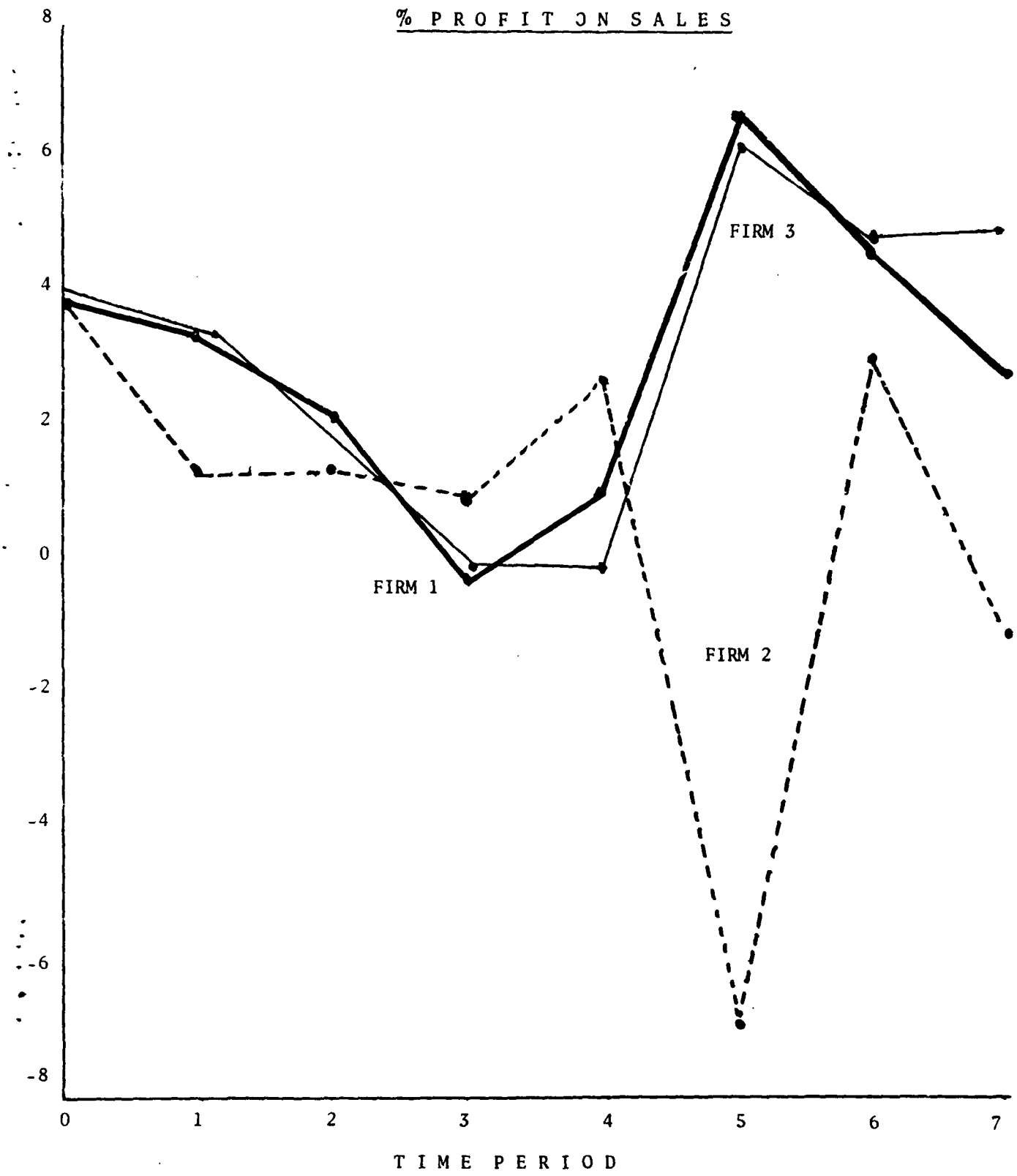
Sample Charts and Graphs

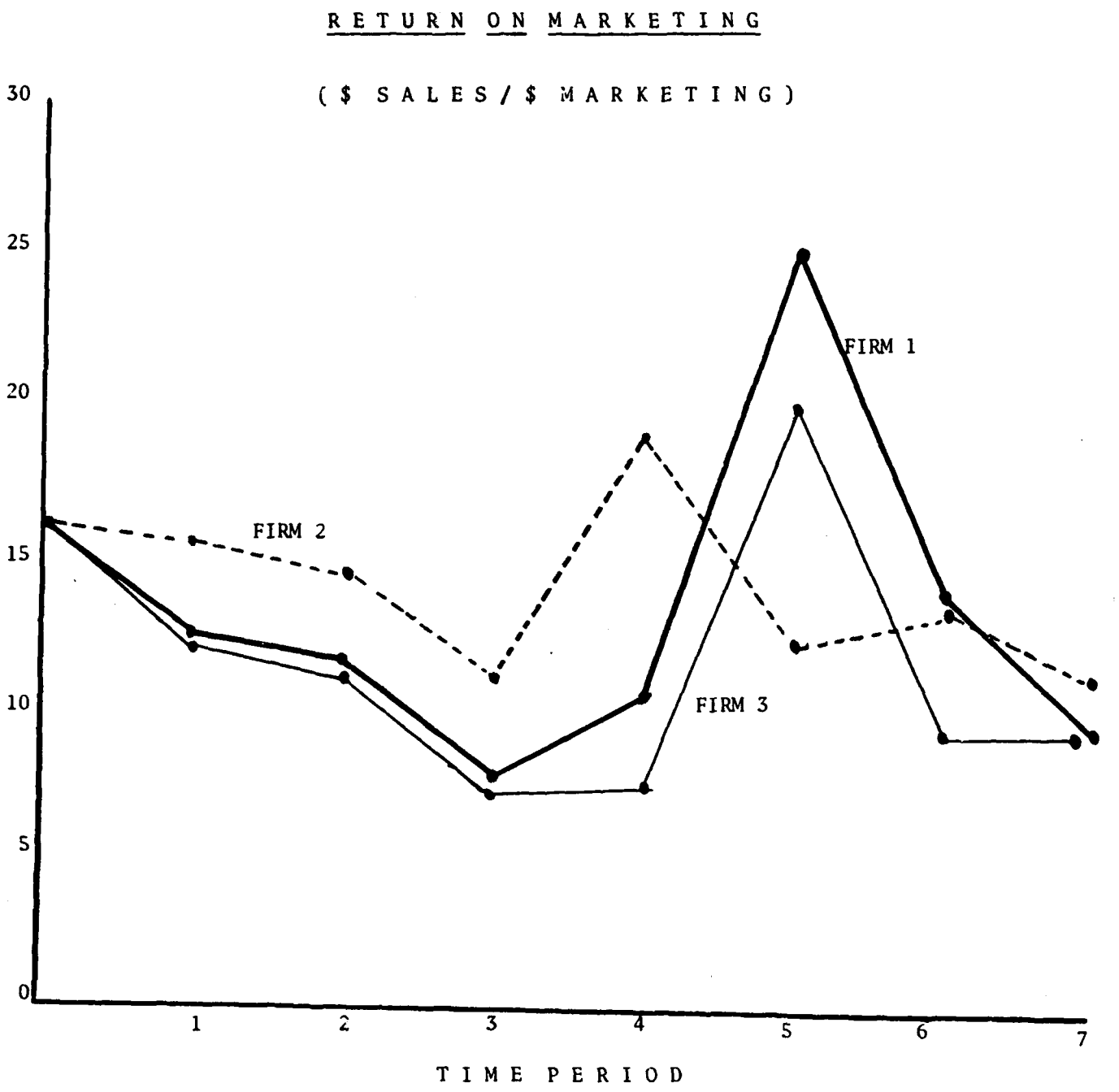

MARKETING
1600
1400
1200
1000
800
600
400
200
0
FIRM 3
FIRM 2
FIRM 1
1
2
3
4
5
6
7

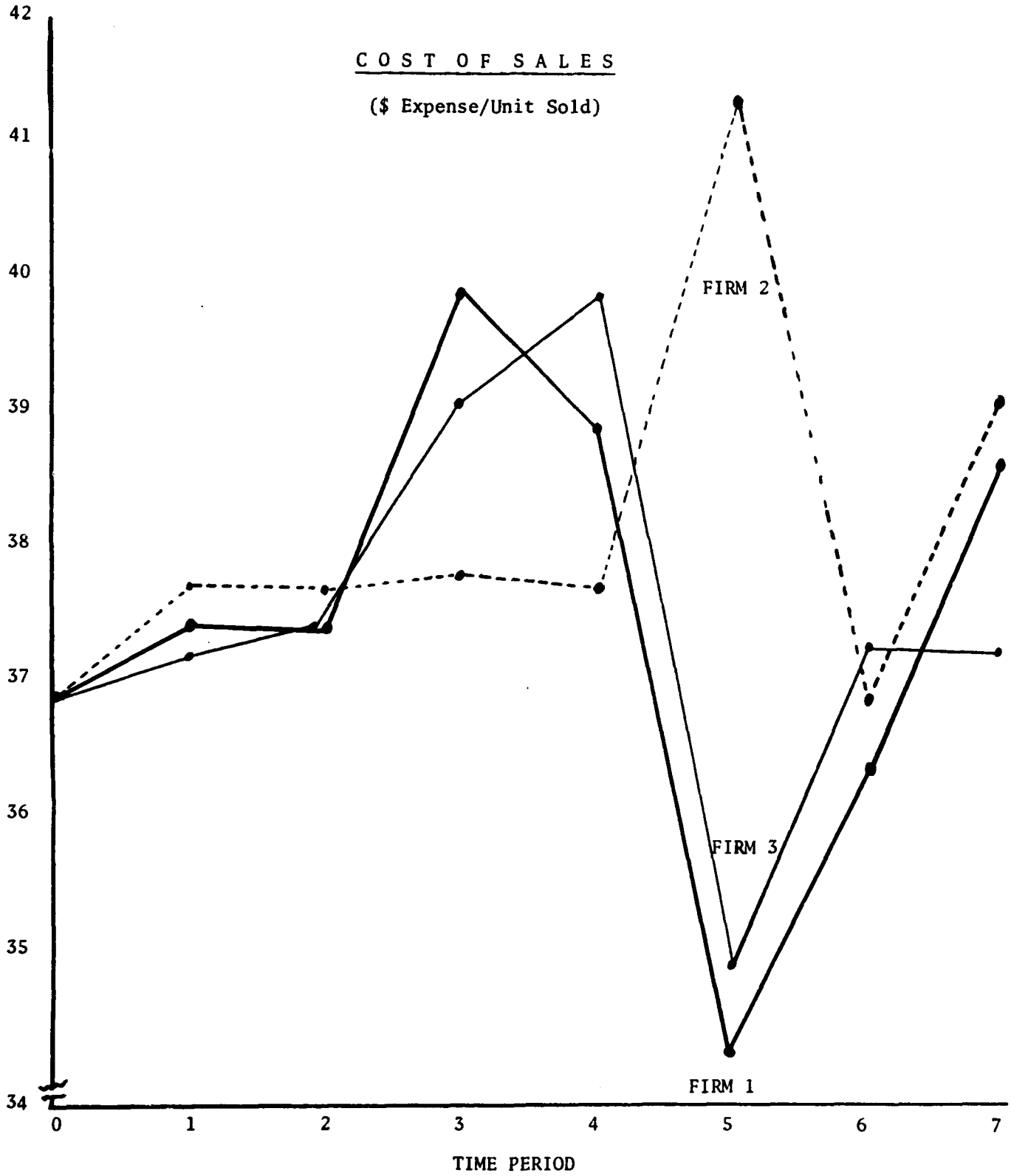
TIME PERIOD

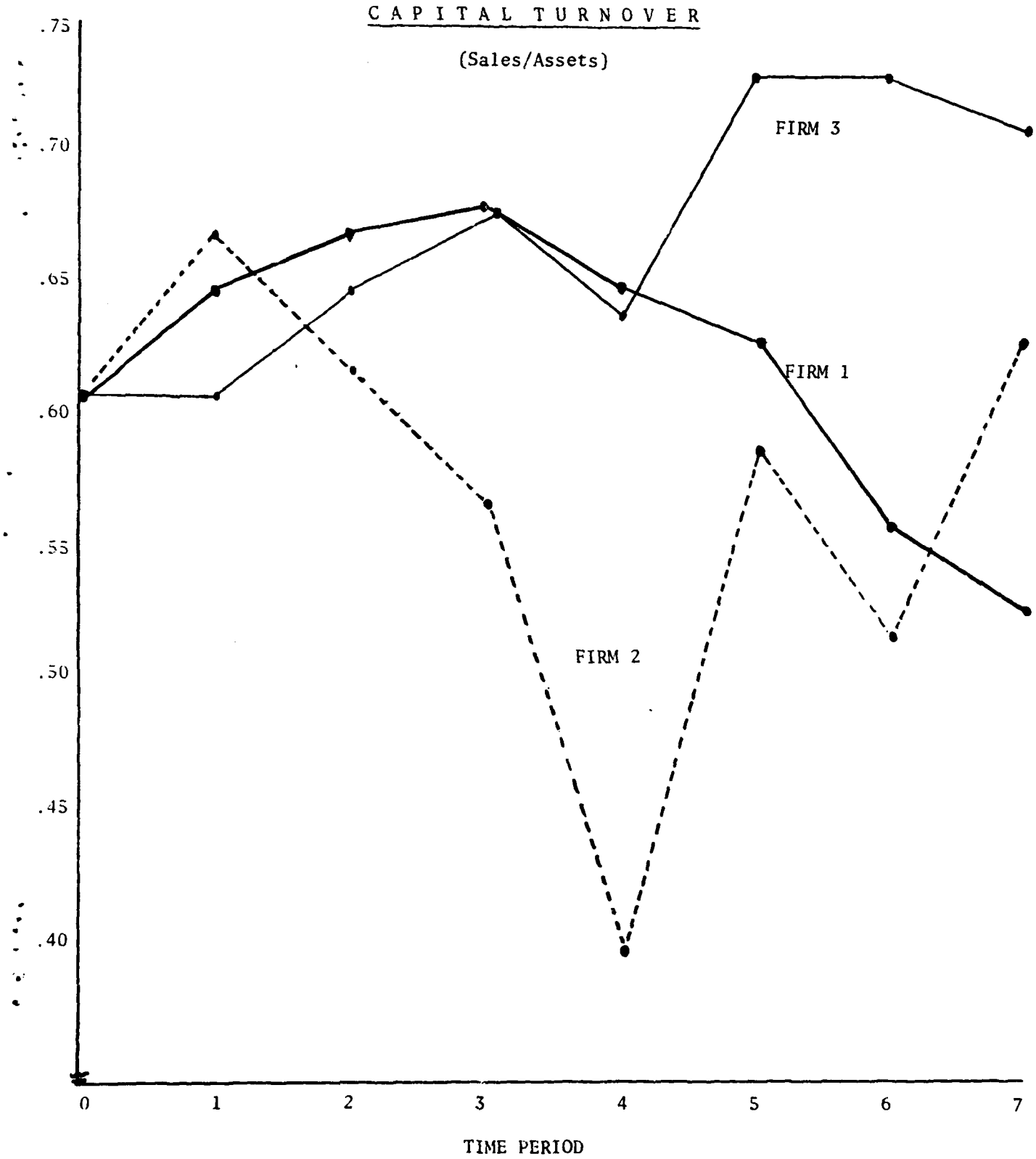
RESEARCH

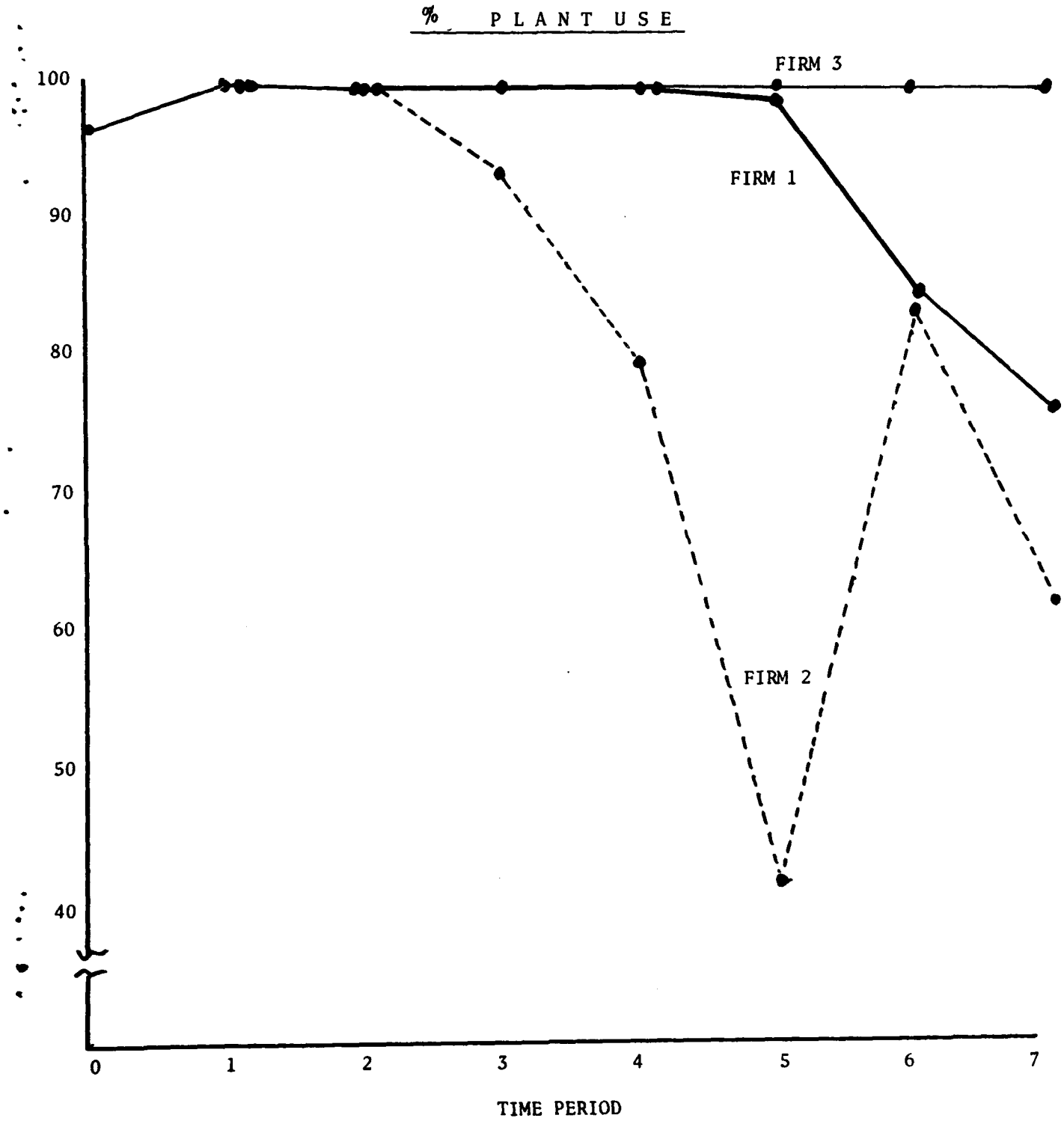

600
500
400
300
200
100
0
FIRM 1
FIRM 2
FIRM 3
1
2
3
4
5
6
7
TIME PERIOD


% PROFIT ON SALES
8
6
4
2
0
-2
-4
-6
-8
FIRM 3
FIRM 1
FIRM 2
0
1
2
3
4
5
6
7
TIME PERIOD

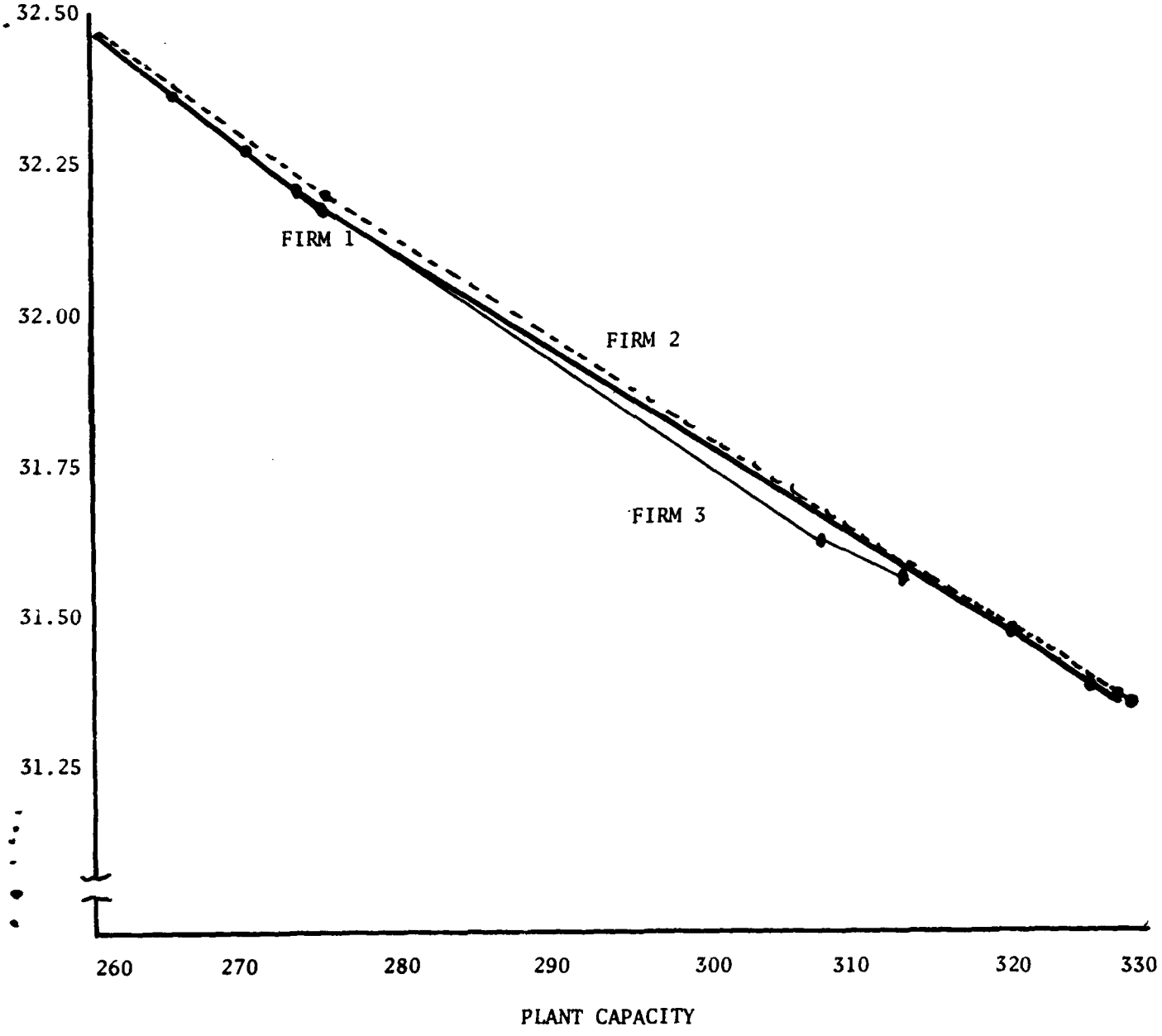

RETURN ON MARKETING
($ SALES / $ MARKETING)
30
25
20
15
10
5
0
FIRM 1
FIRM 2
FIRM 3
1
2
3
4
5
6
7
TIME PERIOD


COST OF SALES
($ Expense/Unit Sold)
42
41
40
39
38
37
36
35
34
FIRM 2
FIRM 3
FIRM 1
0
1
2
3
4
5
6
7
TIME PERIOD


CAPITAL TURNOVER
(Sales/Assets)
.75
.70
.65
.60
.55
.50
.45
.40
FIRM 3
FIRM 1
FIRM 2
0
1
2
3
4
5
6
7
TIME PERIOD

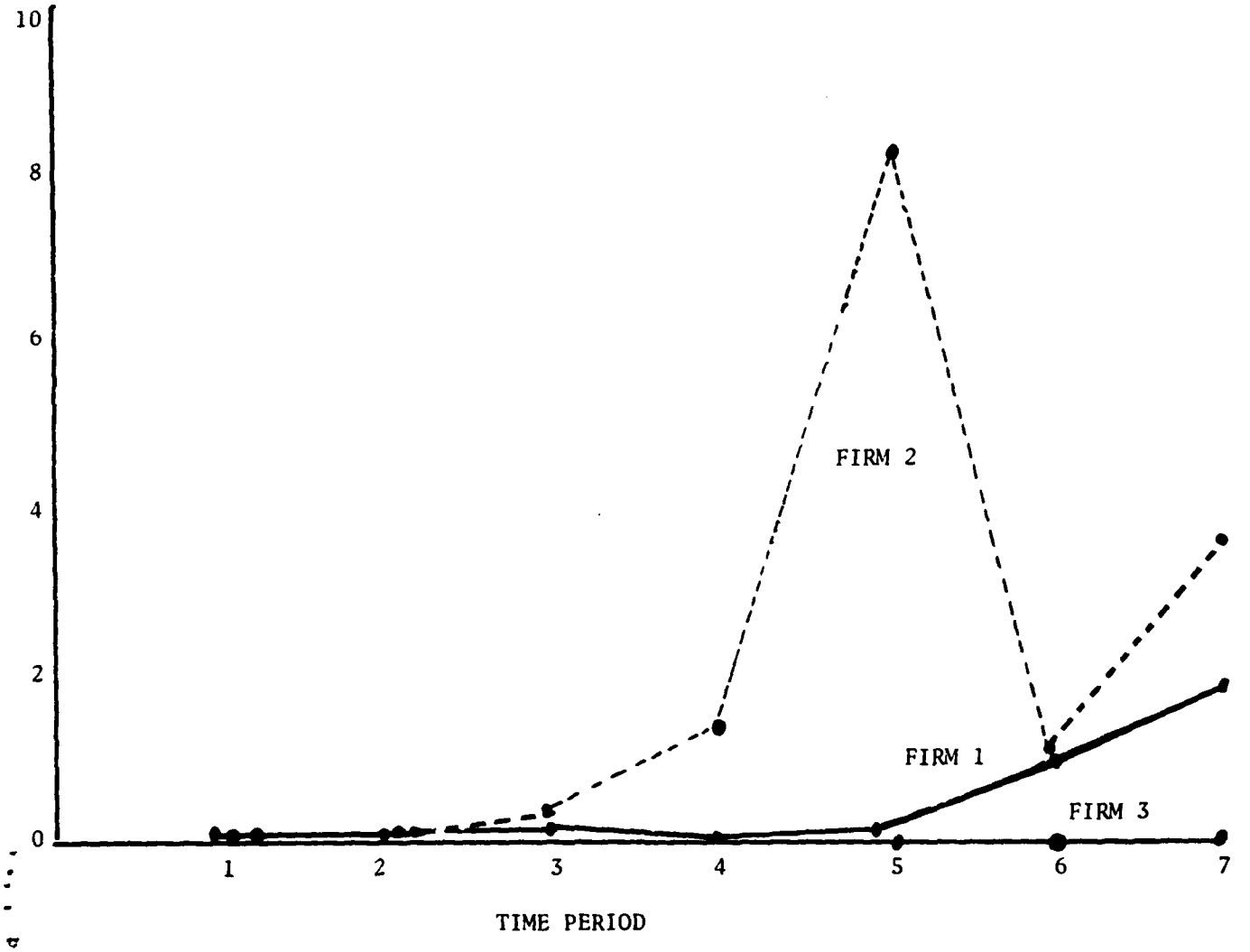

% PLANT USE
FIRM 3
FIRM 1
FIRM 2
100
90
80
70
60
50
40
0
1
2
3
4
5
6
7
TIME PERIOD

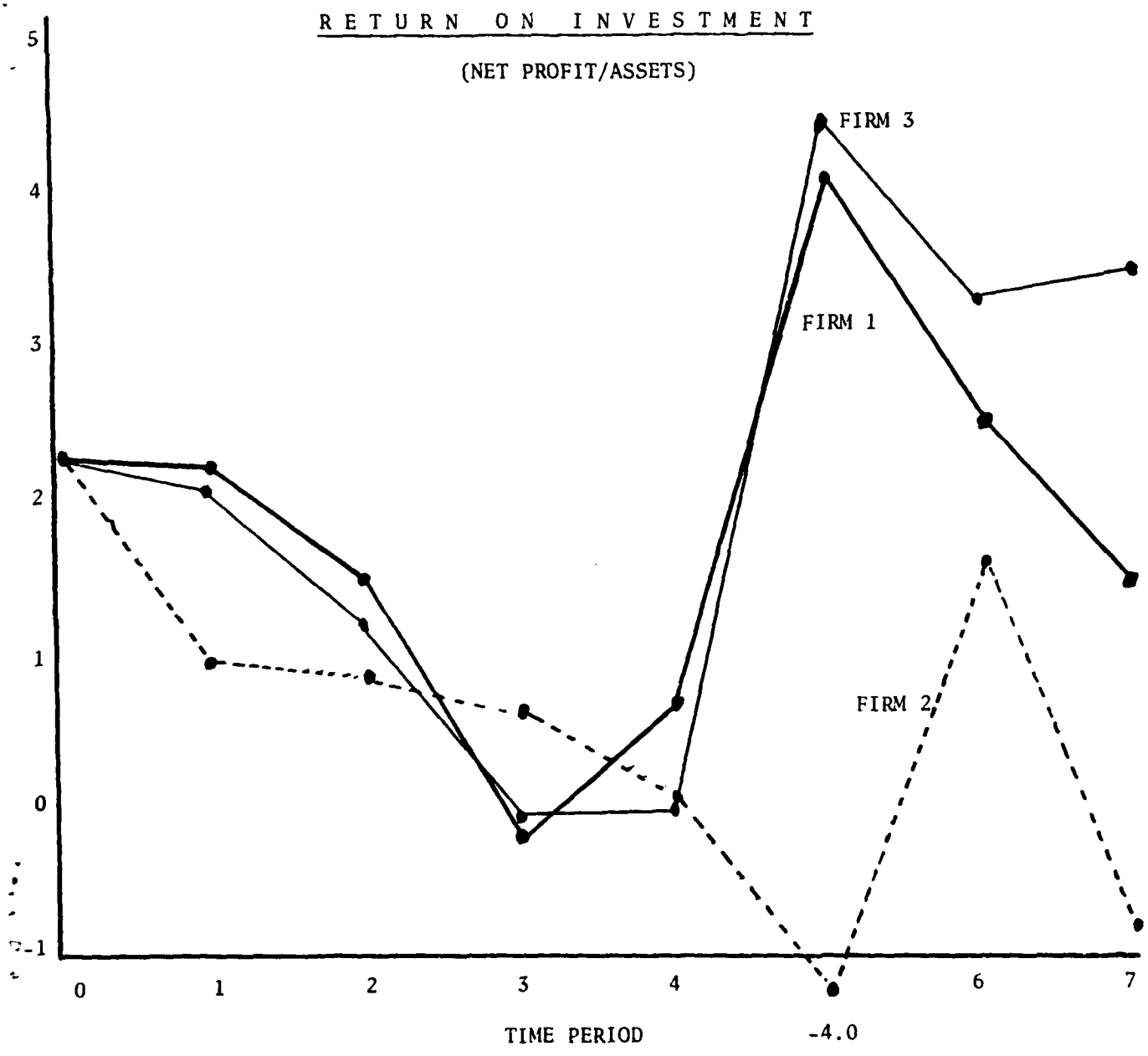
PLANT CAPACITY VS UNIT COST

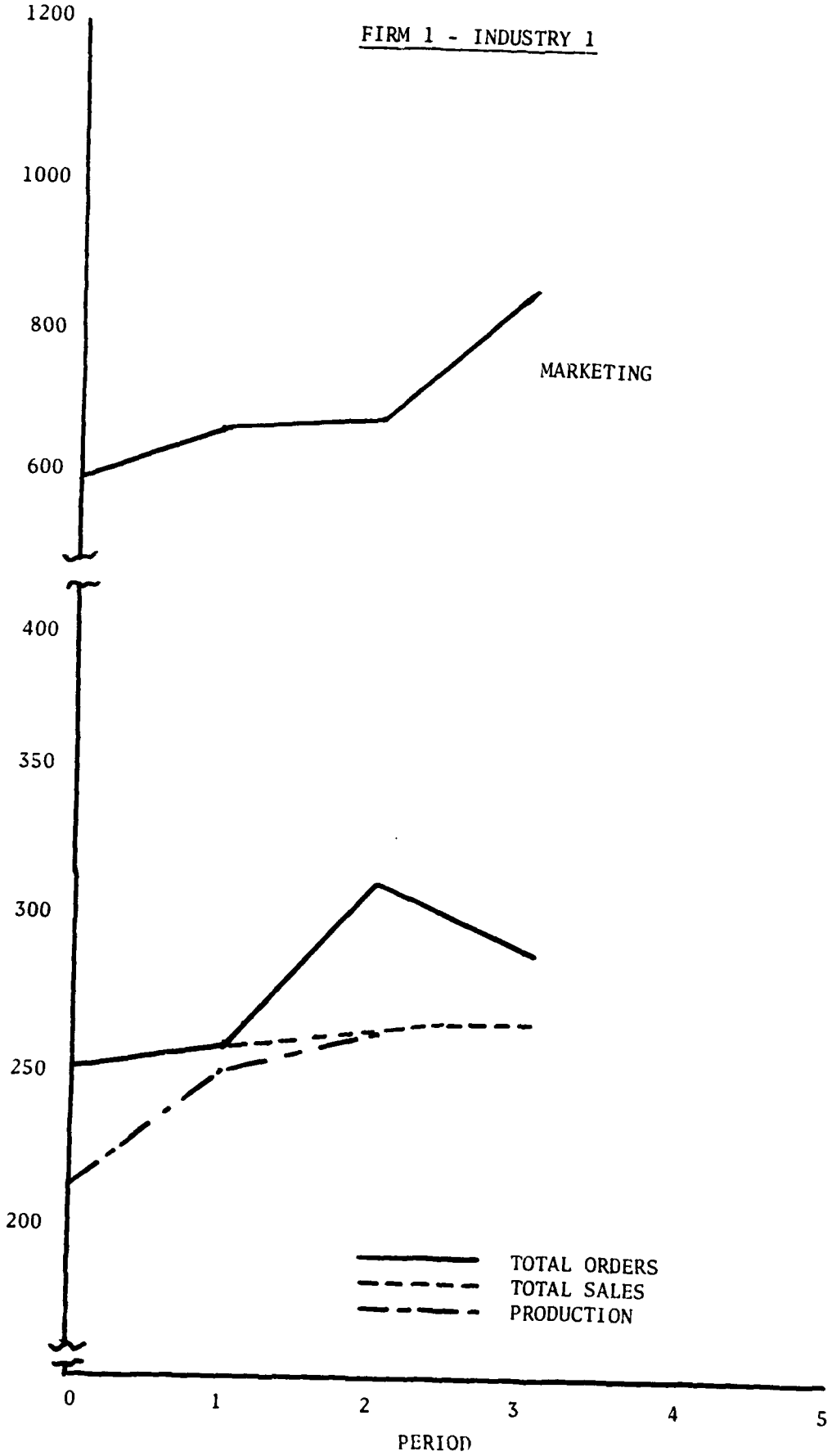


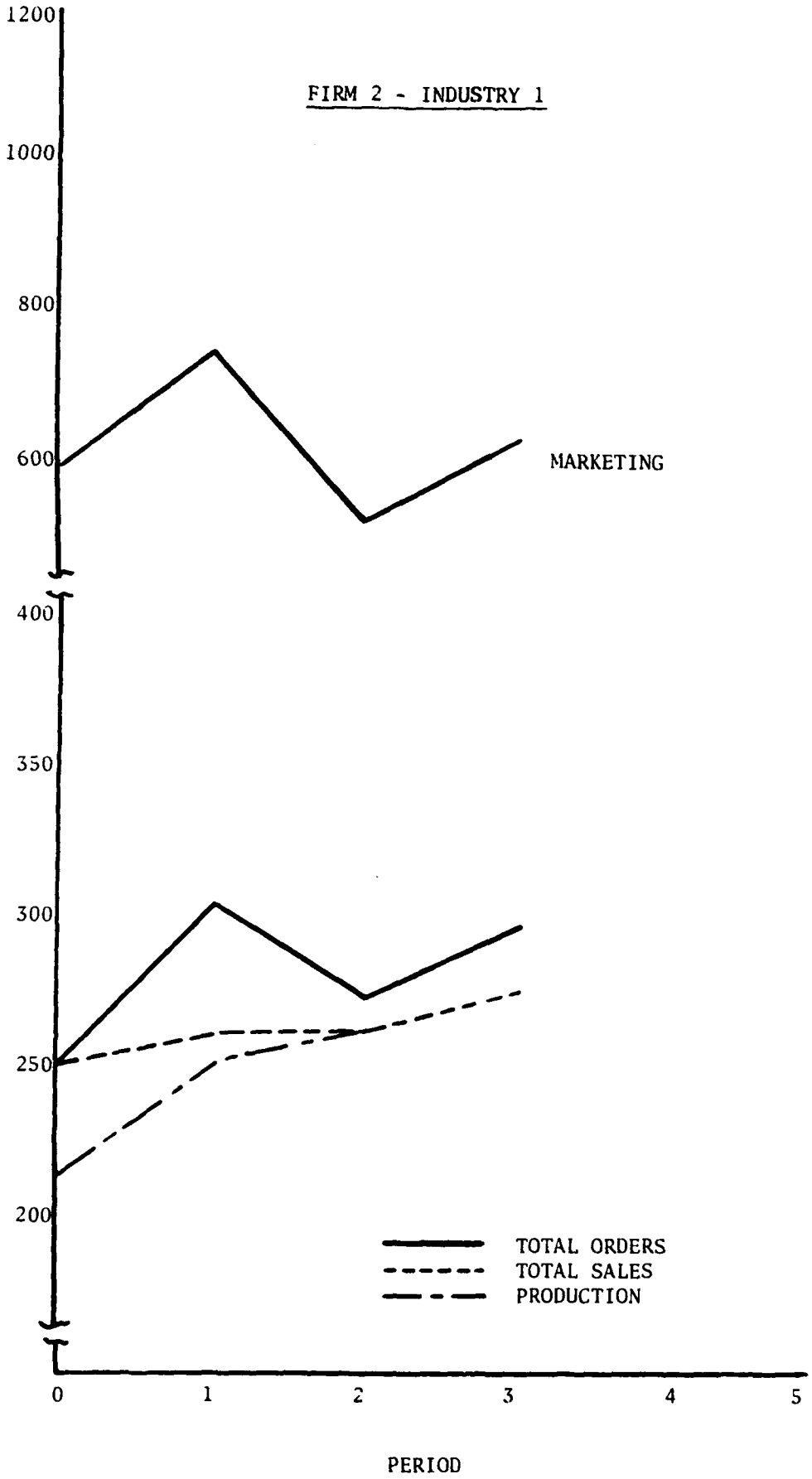
PRODUCTION PENALTY

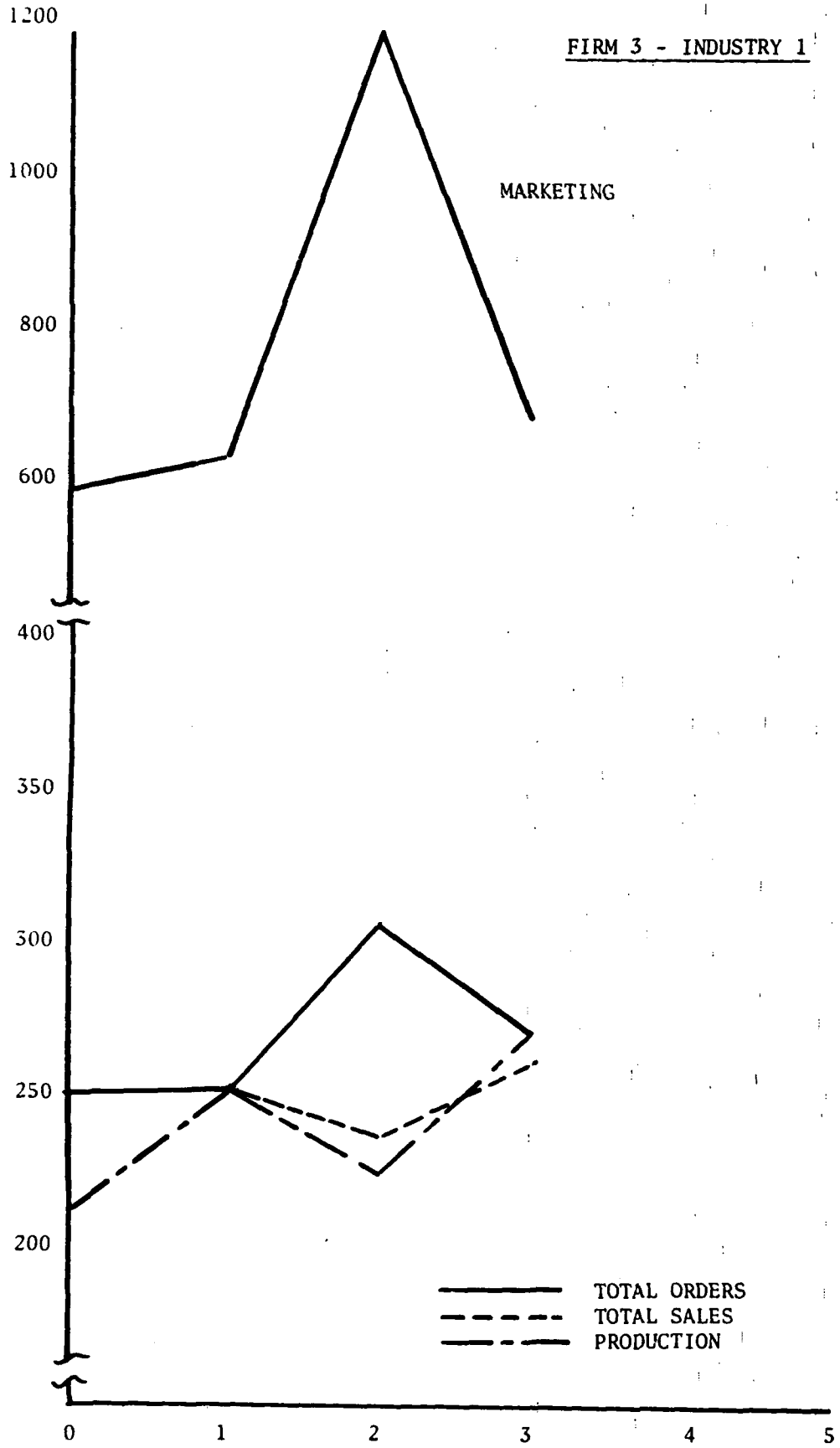
($/UNIT)




RETURN ON INVESTMENT
(NET PROFIT/ASSETS)
FIRM 3
FIRM 1
FIRM 2
5
4
3
2
1
0
-1
0
1
2
3
4
6
7
TIME PERIOD
-4.0


FIRM 1 - INDUSTRY 1
1200
1000
800
600
400
350
300
250
200
MARKETING
TOTAL ORDERS
TOTAL SALES
PRODUCTION
0
1
2
3
4
5
PERIOD


FIRM 2 - INDUSTRY 1
1200
1000
800
600
400
350
300
250
200
MARKETING
TOTAL ORDERS
TOTAL SALES
PRODUCTION
0
1
2
3
4
5
PERIOD


FIRM 3 - INDUSTRY 1
MARKETING
1200
1000
800
600
400
350
300
250
200
TOTAL ORDERS
TOTAL SALES
PRODUCTION
0
1
2
3
4
5
PERIOD