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ABSTRACT

Significant aspects of the economic relationships between the Harrisburg (Pennsylvania) Area Community College and the local community were studied, and quantitative information regarding such relationships is presented. The impact on business was measured in terms of increased cash flows in the local economy. Both an inclusive and a conservative estimate were made for each type of expenditures in the local area by college-related individuals. The total estimated impact in terms of increased cash flows was $4,039,431 inclusive and $2,229,868 conservative. A local multiplier of 1.45 was applied to these figures to arrive at full estimate impact figures of $5,857,175 inclusive and $3,233,309 conservative. After the negative impact of taxes was accounted for, the operation of the college contributed 2 to 4.5 million dollars annually to the cash flow of the local economy. The impact of the college on local government was shown by the estimated $220,350 inclusive and $93,936 conservative taxes paid by college-related persons. The taxes used to support the college is a negative economic impact, but the net impact including increased expenditures was definitely positive. The study also revealed that the revenue picture was relatively positive, in that less than 30% of the operating budget comes from local taxes, and almost 50% comes from non-local sources. Appendixes to the report provide: The Multiplier; College Revenues; Omissions from ACE Format; Population Figures of Sponsoring School Districts; Economic Impact Studies and Computer Simulation; Summary of Funds and Major Capital Expenditures through July 1, 1972; and Instrument. References, 16 tables, and 7 figures are included. (DB)

THE IMPACT OF THE COLLEGE ON THE LOCAL ECONOMY

Research Report No. 11

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First of all, the American Council on Education was the agency through which the manual Estimating the Impact of a College or University on the Local Economy by John Caffrey and Herbert H. Isaacs was developed. The authors of the manual should be recognized as having prepared a major and useful contribution to the literature of higher education.

The information which made this report possible came from a number of sources, each of which contributed to the completeness of the report.

Individuals from the Pennsylvania Departments of Education and Revenue and the Harrisburg Area Chamber of Commerce, as well as several local officials, were willing to give their opinions on how to gather and interpret data.

The Business Office of the College was of considerable help with several expenditure items. The staff of the Data Processing center offered valuable assistance in managing the data.

Faculty members contributed their opinions of the data, too. Truman Eddy, in particular, did an exceptional job of reviewing the final draft. The secretarial skills of Mrs. Virginia Walter were invaluable as usual.

The faculty, staff, and students who trusted us with information about their personal finances were the key to the existence of this study. To them, we offer very real appreciation. We believe their trust was warranted, as there was no instance of misuse of an individual's data.

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CHAPTER I

INTRODUCTION

Purpose

The purpose of this study is to inform the community about the effect of Harrisburg Area Community College on the local economy. In a sense it is a form of accountability. Institutions of higher education have generally not been held accountable to a local community on economic criteria. Traditionally, the criteria for accountability have been rather idealistic goals and prestige. These criteria have generally eluded objective evaluation (Brown, 1970). As the cost of higher education increases, other criteria have become increasingly important. The utility of education in the world of work and the economic impact of higher education on a community and a state are two criteria of newfound importance. The economic impact of the institution can be (1) the effect of the product--i.e., educated individuals--or (2) the actual effect of the income and expenditures of the institution on the local economy.

This study looks at one type of educational institution, a community college. This type of educational institution is most sensitive to income-expenditure economic criteria because it may be supported in part by the local community rather than being supported privately or entirely through a psychologically-distant state budget.

The people who live in the area in which a college is located often think of the institution in terms of students and their social interaction with the community. Merchants and bankers may be sensitive to students as a source of revenue. However, the effect of the total economic relationship is not often fully comprehended. There is a movement or flow of money, both into the institution and out to the community. The flow of money at a locally-supported college consists of more than local taxes and student tuition. State and Federal monies may be an important source of income. And, much of the income of a college may be spent in the local community.

This study attempts to clarify significant aspects of the economic relationships between the College and the local community and to present quantitative information regarding such relationships. The major portion of the study deals with the impact of the College-related expenditures on the local economy. Smaller sections of the study deal with the College's source of revenue, taxes, and saving--all of which are not immediate impact items but which contribute to a more complete picture of the impact of the College on the local economy.

As the reader becomes involved in the economic data, it should be remembered that the primary objective of a community college is to meet the educational needs of the community which it serves. The college was

not founded as a way of directly bolstering the local economy, although it might make an area a more attractive place in which to live and work. The study describes the economic impact of the College on the community while it fulfills its objective.

Background for the Study

In the fall of 1971, the American Council on Education (ACE) published the document, Estimating the Impact of a College or University on the Local Economy, authored by John Caffrey and Herbert H. Isaacs. The authors of this study appreciate the groundwork done by Caffrey and Isaacs. The document was referred to so often, it was simply cited as ACE.

This ACE document is advertised as a "How To Do It Manual." However, from the experience gained in conducting this study, the authors suggest that it be used more as a guide than a procedural manual. An honest estimate of the economic impact requires considerable analysis of the specific parameters affecting a particular institution.

In this study, the authors departed from ACE assumptions and estimates on several occasions to make the approach more relevant to existing local economic conditions. Departures are not a form of criticism, but a further development of the methodology for doing impact studies. A major departure was the use of a different "multiplier." This departure is described in Appendix A. It was also felt that a brief discussion of revenues was necessary to make the study more complete (see Appendix B). Other departures and omissions from the ACE manual are listed in Appendix C.

Study Area

A study area which would meet the purposes of the study and yet be feasible in terms of acquisition of routine data had to be delineated (Richardson, 1969, Ch. 9). A major factor in determining the area was the inclusion of those persons who support the College financially, i.e., who would be most sensitive to economic accountability. The area delineated by this factor is comprised of the 22 sponsoring school districts. The districts cover an area which includes 100 percent of the population of both Dauphin and Perry Counties, 84 percent of the population of Cumberland County, and small portions of York, Schuylkill, and Juniata Counties (see Appendix D). Information on various economic characteristics is not available by school district. The Tri-County area (Cumberland, Dauphin, and Perry Counties) is, however, a standard metropolitan statistical area of the U. S. Census and a labor market area of the U. S. Department of Labor.

The decision to make these counties the local area upon which the impact of the College would be measured was based on the following facts: (1) the Tri-County area was a major reporting unit for various types of

information, (2) College populations, especially faculty, would probably know their residence by county rather than by sponsoring district, and (3) the Tri-County area takes in 95 percent of the population of all sponsoring districts. Throughout the study, the adjective "local" refers to the Tri-County area (see Figure 1).

It should be noted that school districts at the west end of Cumberland County do not support the tuition of their students at the Community College. This non-sponsoring area comprises 16 percent of the population of Cumberland County and 6 percent of the population of the entire Tri-County area. The population figures themselves were not entered into any calculation. Therefore, this discrepancy should not distort any estimates. In fact, there are very few students at the College from the non-sponsoring districts of Cumberland County.

Several hundred students from non-sponsoring districts outside the Tri-County area, especially Lancaster and Lebanon Counties, enroll at H.A.C.C. These students were classified as non-local, and their impact was calculated in a manner distinct from local students. They must each pay the school district's portion of the tuition, as well as the student's portion. The important fact is that their money all comes from outside the local economy and does not require a local tax supplement. It should be noted that this positive impact on the local economy may be curtailed in the future if adjacent counties choose to establish their own community college.

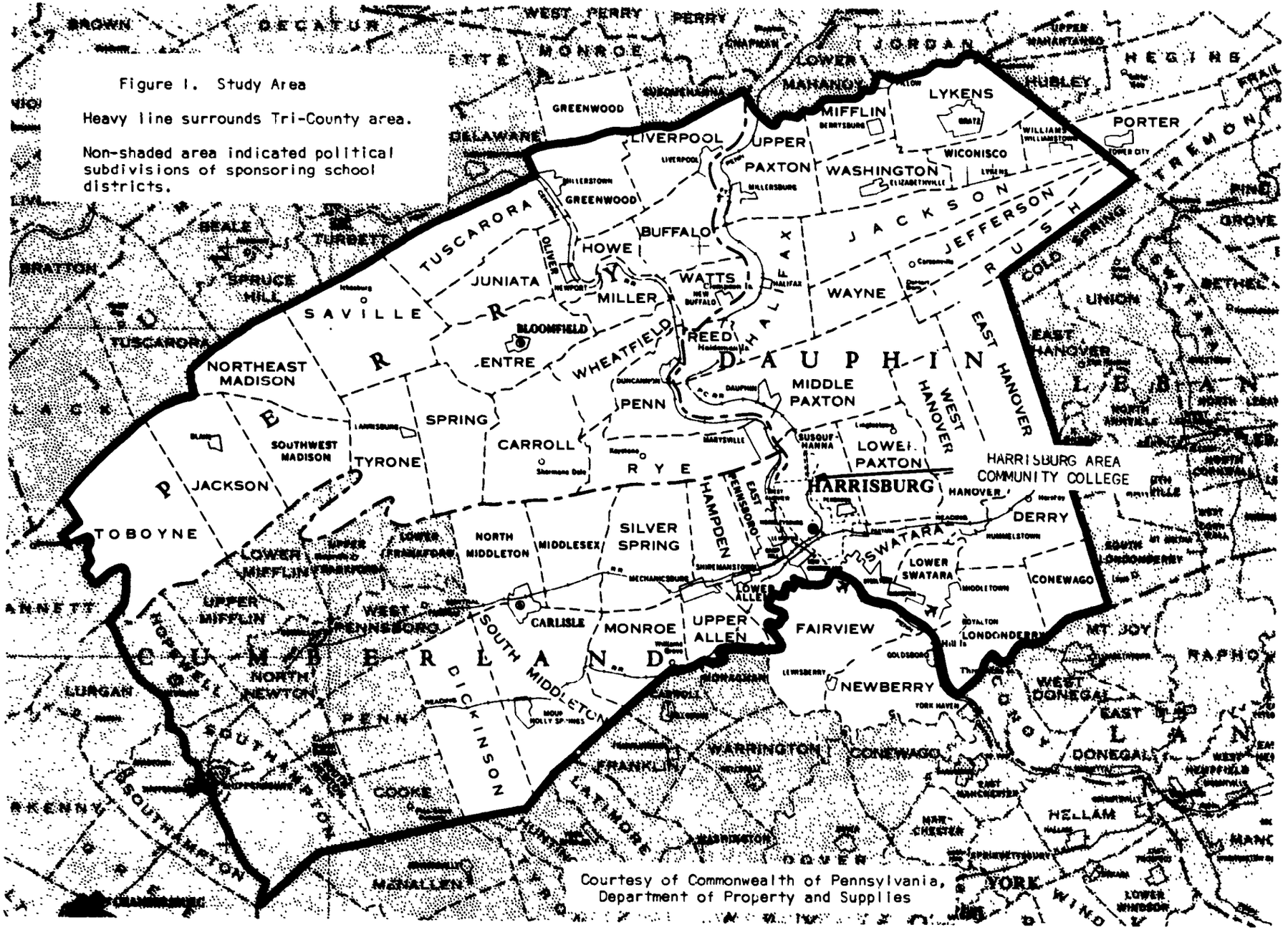
Figure 1. Study Area
Heavy line surrounds Tri-County area.
Non-shaded area indicated political subdivisions of sponsoring school districts.
BROWN
DECATUR
WEST PERRY
PERRY
MONROE
JORDAN
LOWER MAHANOY
HEGINS
HUBLEY
LYKENS
MIFFLIN
PORTER
TREMONT
DELAWARE
GREENWOOD
LIVERPOOL
UPPER PAXTON
WASHINGTON
WICONISCO
TUSCARORA
BUFFALO
HOWE
JUNIATA
MILLER
WATTS
WAYNE
JACKSON
JEFFERSON
RUSH
COLD SPRING
UNION
GROVE
BETHEL
BRATTON
BEALE
TURBETT
SPRUCE HILL
SAVILLE
TUSCARORA
BLOOMFIELD
ENTRE
WHEATFIELD
REED
DAUPHIN
EAST HANOVER
NORTHEAST MADISON
SPRING
PENN
MIDDLE PAXTON
WEST HANOVER
SOUTHWEST MADISON
TYRONE
CARROLL
RYE
LOWER PAXTON
HARRISBURG AREA COMMUNITY COLLEGE
HARRISBURG
HANOVER
DERRY
JACKSON
TOBOYNE
NORTH MIDDLETON
MIDDLESEX
SILVER SPRING
HAMPDEN
EAST PENNSBORO
SWATARA
LOWER SWATARA
CONEWAGO
LOWER MIFFLIN
UPPER MIFFLIN
WEST PENNSBORO
CARLISLE
MONROE
UPPER ALLEN
FAIRVIEW
LONDONDERRY
MT. JOY
NORTH NEWTON
SOUTH MIDDLETON
NEWBERRY
WEST DONEGAL
EAST DONEGAL
PENN
DICKINSON
FRANKLIN
WARRINGTON
CONEWAGO
COOKE
SOUTHAMPTON
HELLAM
MANALLEN
YORK
Courtesy of Commonwealth of Pennsylvania, Department of Property and Supplies

CHAPTER II

THE MODEL

This chapter sets forth the underlying framework for the analysis of the data. Three models are discussed and are represented schematically.

Expenditure-Flows Environment

Figure 2 portrays in a summarized schematic form the income-expenditure relationship between the College, income recipients, and the surrounding business community. The direction of the arrows indicates the direction of either an income payment flow (I) or a purchase expenditure flow (P). The term "income payment" refers primarily to wages and salaries paid by employers to employees. The term "purchase expenditure" refers to purchases by consumers and purchase of intermediate products by business. The schematic is partitioned into local (Tri-County) and non-local sectors because the College affects financially both local and non-local individuals and businesses. An explicit objective of this study is to estimate, where feasible, the magnitude of all local cash flows which are related to the College. "Feasibility" in this study is used in the following sense: Where an item's likely magnitude is so small that even an accumulation of similar small magnitudes would have little or no affect upon the reader's decisions or judgments regarding the results, the item may be safely omitted. This is especially applicable to items of small magnitude that involve high costs of estimation. The reader is referred to Appendix C for a discussion of omissions. The only non-local flow estimated in this study is the level of local expenditures by non-local faculty, staff, and students. A factor of major importance, but for which little, if any, published data exists, is the extent to which local businesses purchase inventories of raw material and intermediate products from non-local sources.

The essential point which is not explicitly portrayed in Figure 2 is that an increased level of purchases from both local and non-local businesses results in increased income to both local and non-local residents in the form of wages, interest, rent, and profit. A further observation is that additional income flows generate additional purchases, which in turn create additional income. A circular process results within the period of a year causing a "multiplied," or increased total income for the participants as a group. The study concentrates on the effects of this process on the local economy. To the extent that local residents spend their income outside of the Tri-County area (and to the extent that such outside expenditures do not result in return cash flows), the "income-multiplying" process is diminished locally. The assumption that local business sales to non-local individuals or non-local businesses do not depend in any significant way upon purely local business conditions underlies the model.

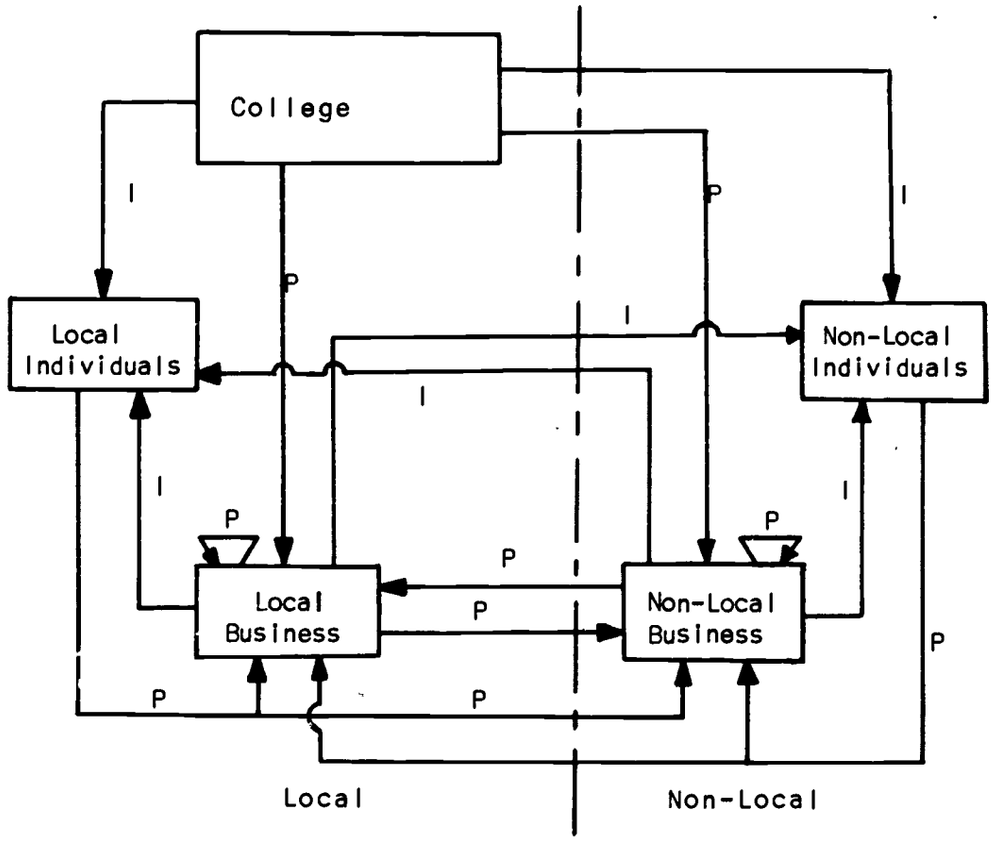

Figure 2: Expenditure-Flows Environment

I = Income Payment; P = Purchase Expenditure
→ - Indicates direction of cash flow

Local Taxation and Sponsored Tuition

The essential relationship between the College and local governments is shown in Figure 3. Local individuals, some of whom receive their income from the College, pay taxes to local governments. Those local jurisdictions, which tax through public school districts that sponsor the College, provide one-third of the cost per student to the College for those students who reside within "sponsoring districts." In addition, children of College-related persons who attend local public schools add a cost burden to the school operations. At the same time, they pay taxes

to the school districts, which are eligible for State and Federal aid due to the enrollment of children of College-related persons.

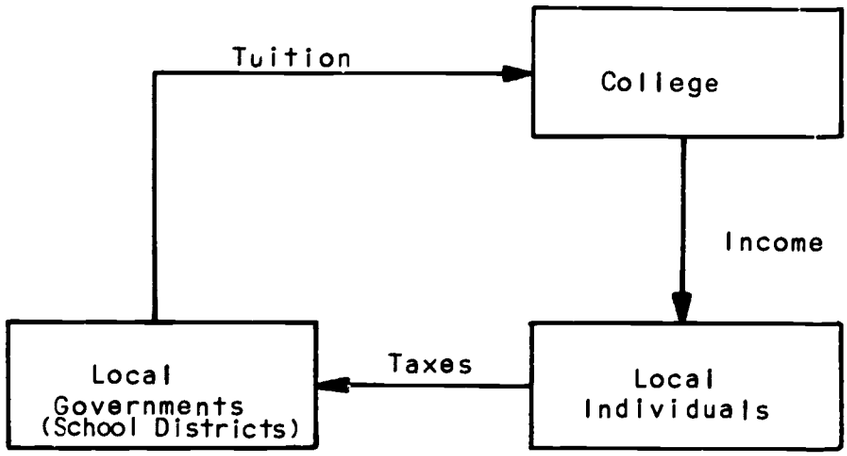

Figure 3: Local Taxation and Sponsored Tuition

Generalized Fiscal Relationships

Figure 4 is an extended model of cash flow relationships used in the ACE manual (p. 7) to display the specific revenue sources and expenditure patterns of colleges in general. This study does not attempt to trace specific dollar inflows to specific dollar outflows on any basis, such as local vs. non-local or part-time vs. full-time. In many cases, such "dollar-tracing" would be based on very arbitrary assumptions, and the meaning of any results obtained would not be clear. Appendix B of this study contains information regarding College revenues from both local and non-local sources. The primary concerns of the study are (1) the extent to which College-related increased taxes in sponsoring districts lower total community (Tri-County) income, and (2) the extent to which College disbursements for wages, salaries, and other operating expenses have an impact on the aggregate income of the Tri-County area.

An extended cash-flow model

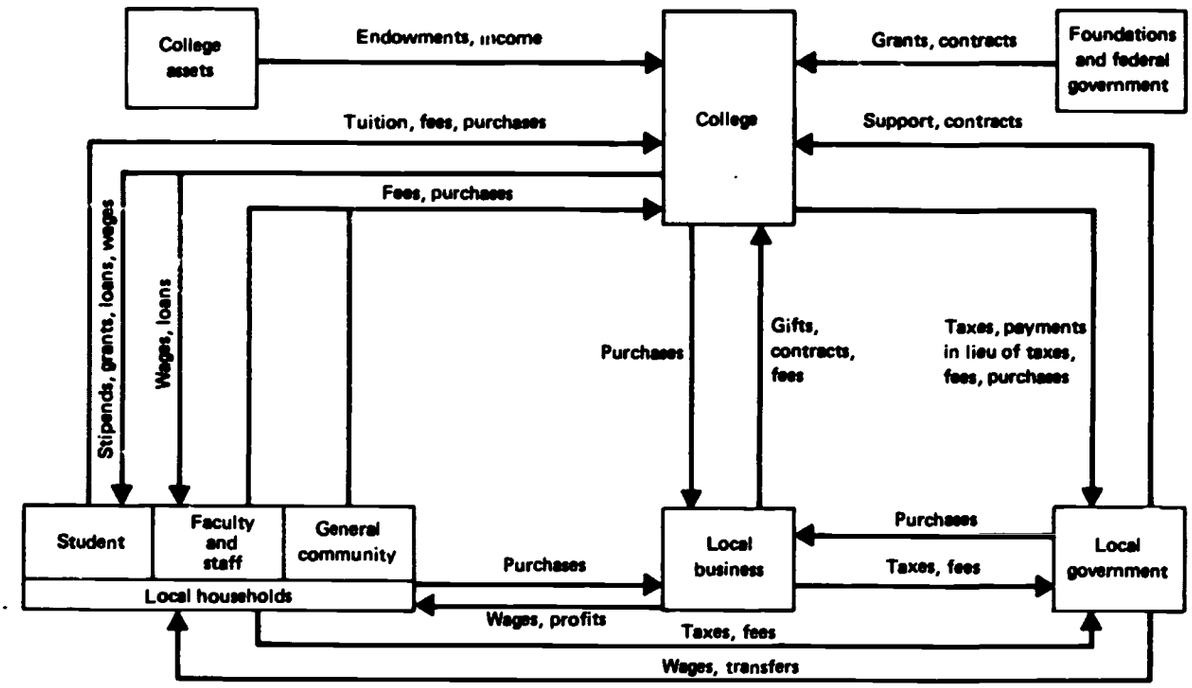

Figure 4: Generalized Fiscal Relationships

(Diagram is from manual, Estimating the Impact of a College or University on the Local Economy, by John Caffrey and Herbert H. Isaacs. Copyrighted by the American Council on Education, 1971)

General Considerations

The model used for this study is not appropriate for either planning or forecasting purposes. The model omits explicit consideration of business cycle impacts on the local area and is not, as indicated earlier, developed in the context of multi-region interdependence. The necessary trade-offs between theoretical exactness and operational content result in a methodological position much closer to the latter than would be the case if this study were a planning-forecasting document. The interested reader is referred to Richardson (1969) for an exceptionally lucid treatment of regional economic theory. The model used in this study is appropriate for the description of the impact of a college on its local economy.

A standard analytical convenience relied upon by most economists is the distinction between "short-run" and "long-run," terms which are often left purposely inexact in their definition. Although stated in terms of current expenditures and revenues, the model concept used in this study is meant to be regarded more in the spirit of long-run "assessment" rather than short-run analysis. Many of the parameters estimated may exhibit considerable short-run instability because of business cycle conditions and inter-regional adjustment processes (Richardson, 1969, pp. 247-286). The reader may reasonably assume that the type of impact reported by this study applies to a "typical year," defined as one in which the extent of the College's operations during the "preceding" year was very similar to that of the "current" year.

The details of the relationships estimated in this study, the rationales for the various estimating procedures, and discussions of the economic processes involved are largely contained in Chapter 4, Analysis of Results, and Appendix A, The Multiplier.

CHAPTER III

METHOD

Instrument

A copy of the survey instrument is contained in Appendix G. The ACE manual provides a framework for a simple instrument. The authors had to modify this framework to fit the variables at a community college, variables such as the absence of special living groups and recognition of geographic factors which are related to local financial support.

The instrument underwent several successive modifications due to a sensitivity to the invasion of the privacy of students, staff, and faculty members. Although precise income figures for faculty and staff were available from College records, it was necessary to tie that information to personal expenditures in order to see if expenditures were reasonable in light of income.

Information on personal savings was to be gathered by the survey, but trial runs of the instrument met with considerable resistance. The authors chose to use Federal Reserve Board estimates on savings data for specific income-age groups rather than reduce the response rate or reliability of the data by including a request for information on savings and checking accounts.

Several modifications were made in the instrument as it was tested on members of the non-professional staff who would have had the least familiarity with survey instruments. This procedure is highly recommended.

For those considering doing a similar study, two modifications should be considered. First, the age categories should be broken down to "under 36," "36 to 54," and "over 54." The reasons for this will become evident later in the section on savings. Second, considerable encouragement should be given for a response to the question on the likelihood of individuals being in the local area if the institution did not exist. Those who left this blank were handled as non-respondents, because they could not be clearly categorized in the analysis.

Reliability of the Data

Special psychometric methods for testing reliability were not used. Self-reported data by students (e.g., age, address, etc.) have been demonstrated to be rather reliable. The expenditure and tax information are probably the most questionable data. The instrument was administered during March and April, when individuals were in the process of filing tax returns. It was hoped that this timing improved the reliability of the data. The data were not used for decisions about individuals. An

aggregate was used, and when data are used in this manner, moderate reliabilities (as low as .40) are quite acceptable (Thorndike & Hagen, 1961, p. 190).

The aggregate taxes reported by one subgroup, faculty, are the most questionable data. The lack of accuracy stems from the fact that, during the 1971-72 year, 30 new faculty may not have yet gone through the process of paying local school, property, or occupational assessment taxes and would not have been able to report one or more of these items. This lack of reporting or under-reporting would cause an under-estimation of the taxes paid to the local community and, therefore, under-estimates the net positive impact on the local economy. It would also result in an over-estimate of the net negative effect on the cost of public schools in the Tri-County area attributable to College-related individuals.

An external check was done on a crucial question, #11, which asked if an individual would be in the Tri-County area if the College were not. One-hundred and twenty local faculty respondents answered the question. Of the 120 answers, 83 faculty, or 69 percent, responded that they would not be in the area if H.A.C.C. were not present. As a check, the following information on all faculty was listed: current residence, residence when hired, previous position, graduate school, and hometown. On the basis of this information, a judgment was made as to the probability of an individual residing in the Tri-County area if the College were not. It was judged that 107 out of 170 faculty, or 63 percent, probably would not be residing in the area. The closeness of the two values supports the reasonableness of the information from the instrument. It may well also be that some individuals from the Tri-County area would seek employment at a college elsewhere if H.A.C.C. did not exist.

Sampling Procedures

Sampling procedures were affected by concern for both anomymity and an adequate response rate. It would have been preferable to take a stratified random sample of students with specific characteristics. However, contacting individual students in classes would have been too disruptive. The adequacy of the response rate to a mailed questionnaire of this type was in doubt, especially since the individual might have questions about some items.

It was decided that a random sample of all of the sections during the Spring 1972 semester was the best of the alternatives. Each section was assigned a number. From a table of random numbers, 21 sections were selected. The sections selected had a total enrollment of 505 and included courses taught in all divisions of the College, both day and evening and on and off-campus. There did not appear to be any systematic bias in the nature of the sections selected. The rosters from which enrollments were taken were processed after the third week of classes--meaning many of the

fluctuations of individuals and totals had been removed. The sample was taken during the last third of the semester. It may be assumed that some attrition had taken place. Whether or not the attrition biased the sample is open to debate. The sample obtained may provide a better estimate of the expenditures of H.A.C.C. students because these are the students who attended most of the semester, and some dropouts had received tuition rebates.

It was judged that a sample of 500 or more would provide at least 300 respondents after consideration of attrition, absenteeism, and refusals to respond. There were, in fact, 353 responses out of the sample 505, or a 70 percent response rate. The non-respondents were due primarily to absenteeism, attrition, and some overlap in the enrollments of sections. In only one instance did a student refuse to complete a survey instrument. A few responses were eliminated due to totally inadequate information.

The 266 responses by full-time students was almost 11 percent of the actual population figure of 2442. The 87 responses by part-time students equaled almost 6 percent of the population figure of 1498. One possible reason for the difference between the percentage of full and part-time students surveyed may be different rates of attrition and absenteeism. It is also quite possible that this is a chance variation in the nature of the sections selected and the students in them.

The nature of the study did not require any inferential statistics. The number of responses compared to the number of students in the population yields a sampling error of less than five percent on major items which were dichotomous questions, i.e., yes or no. This statement cannot be made of the subsets which were used in the same calculations. A larger sample of subgroups could increase the reliability of estimates on the subgroups. However, it is doubtful that an increase in sample size would alter the estimate of the overall impact to any great extent.

Sampling procedures were not used with faculty and staff. The entire population of faculty and full-time staff were surveyed. The lack of response by some faculty may be attributed, at least in part, to a sensitivity to privacy. Post-hoc comments suggest that many non-respondents were women who did not choose to report the combined incomes of themselves and of their respective spouses.

Administration of the Survey

In an attempt to improve the accuracy of data and reduce sensitivity, every effort was made to maintain not just confidentiality but the complete anonymity of the respondent. This meant there could be no direct follow-up, so it was necessary to get a good first-round response. Most faculty received their surveys in division meetings where they could ask questions about the form. Others were given instruments personally by members of

the study team. Faculty members were discouraged from taking the surveys home and were asked to make the best possible estimates at the time of administration. With the exception of two off-campus sections, students received their instruments from a member of the study team who was available to answer questions and collect responses individually. The majority of staff personnel received surveys in staff meetings for secretaries and custodial personnel.

One additional technique was to provide the respondent with an envelope in which to place his survey. The only identifying information was the address of the Research Office to insure direct return. Many respondents appeared to appreciate this added touch of confidentiality.

CHAPTER IV

ANALYSIS OF RESULTS

This chapter is composed of two sections. Section A deals with the Economic Impact on Local Business, and Section B deals with Economic Impact on Local Government. An overview of the findings is presented in order to give the reader a look at the total picture before viewing individual analyses.

Tables I, II, and III summarize the dollar amounts arrived at in this chapter. No summary can adequately explain the process and product of the study. The reader is urged to study the entire chapter after obtaining an overview.

The dollar amounts shown in Table I represent the study estimate of the impact of the College in each of the expenditure categories, on a per-year basis, as taken from fiscal data for the College year 1970-71 and estimated from survey data for faculty and students (1971-72). The fact that survey and fiscal data are not from the exact same time periods emphasizes that this study does not attempt to arrive at an "exact" figure as an estimate of the impact at a given point in time. The economic impact is a continuous process. A description of the process is presented.

The impact concept used in the ACE study is properly termed an "inclusive impact" concept in the sense that it includes both those who would and would not be in the local area if the College were not in operation. The authors decided that a "conservative impact" statement, one which took into account only those individuals who would not be in the local area if the College were not in operation, was necessary to demonstrate a lower limit of the impact.

The number of factors affecting a study of this type make an exact categorization of any variable difficult. The final write-up of the data includes faculty, staff, and full and part-time students. It is questionable if the expenditures of part-time students should be included in an impact statement. The part-time students are College-related, but are their expenditures College-related if the College is not their major activity? Two facts supported their retention. First, some part-time students indicated that they would not be in the area if the College did not exist. Continuing one's education is very important to some individuals, even if they cannot pursue it full-time. Second, the inclusive-versus-conservative concepts which are employed present a range in which the impact may be perceived. The reader's opinion of the criteria for the inclusive and conservative categories can lead him to accept a figure within the range. The inclusion of part-time students can influence the reader's acceptance of the upper limit of the range.

The inclusion of part-time students contributed to the size of inclusive impact but not so much so that it distorted the range. One subgroup, however, had not been considered by ACE or the authors until the final write-up of this report: students who own their own homes; at a community college with no on-campus residence, this group can be large. While the housing expenditures of homeowners are not legitimate impact data, their non-housing expenditures are. The non-housing expenditures of this group can be included. Full-time students who were homeowners expended an estimated annual $116,550 for things other than housing. Part-time students who owned their own homes had an annual non-housing expenditure of $1,982,981. If this amount were added to the inclusive impact, it would seriously distort the upper limit of the impact.

The authors have chosen to describe the part-time students but have excluded them from either total estimate with the exception of those whose residence in the Tri-County area was contingent on the College. Estimates on expenditures by these highly College-related part-time students were included in both the inclusive and conservative impact statements.

It should be noted that if the residence of a large number of part-time students is not College-related, many of those students would not be pursuing higher education. Of course, this is true of large numbers of full-time students, too. Regardless of any economic criteria, many local residents would probably not be pursuing higher education if the Community College did not exist. This thought is interjected to remind the reader that the immediate and primary objective of the community college is not to bring money into the local economy. The objective is to meet the educational needs of the local community.

The estimates in Table I represent the impact of the College on the Tri-County area's economy. In Appendix A and in Section A of this chapter, the multiplier concept is discussed, and the values used in Table I are derived. The income-expenditure multiplier used in this study has a value of 1.45, which is lower than the ACE-recommended value of 1.9. The "multiplied" or full estimated impact may be regarded as an upper limit of the "actual" impact of the College on local business. The actual value lies between the "conservative" impact and the "inclusive" impact. The distinction between these two impact concepts is discussed in Section A of this chapter.

A tax impact multiplier (1.35) was used in this study because the withdrawal of money from consumers to pay taxes has a greater effect than just the immediate tax money. Both the income-expenditure multiplier and the tax impact multiplier are developed in Appendix A. The $951,300 was the sum paid by sponsoring school districts to help meet the costs of their students at the College. These monies which were received through school taxes were an impact on local government. They were also an impact on local business in that monies were removed from the cash flow which could have gone directly to local businesses. The authors chose to enter this item under business. The net income-expenditure impact of $4,572,920 (inclusive) can be viewed as a net impact on both local business and local government.

TABLE I
ECONOMIC IMPACTS ON LOCAL BUSINESS*

Expenditure Items	Estimated Impact Inclusive	Conservative
1. Local expenditures by the College	$455,109	$455,109
2. Expenditures by local faculty and staff for local rental housing	147,112	110,750
3. Local non-housing expenditures by local faculty and staff	912,120	481,703
4. Local expenditures by non-local faculty and staff	5,900	5,900
5. Local expenditures, exclusive of room and board, by students living with parents or in student living groups	1,010,951	359,192
6. Expenditures by students for local rental housing	473,950	301,525
7. Local non-housing expenditures by students who rent local housing	807,140	404,540
8. Local non-housing expenditures by students who own their homes	173,120	57,120
9. Local expenditures by non-local students	309,240	309,240
Local business volume unrealized because of the College-operated enterprises (see page 45)	(255,211)	(255,211)
Total estimated "initial" impact	4,039,431	2,229,868
Income-expenditures multiplier	1.45	1.45
Full estimated impacts	5,857,175	3,233,309
Tax impact on personal disposable income of residents in sponsoring districts (see Table III)	(951,300)	(951,300)
Tax-impact multiplier	1.35	1.35
Multiplied tax impact	(1,284,255)	(1,284,255)
Net Estimated Annual Income-Expenditure Impact	$4,572,920	$1,949,054

*Note. These estimates are annual figures for 1970-71 excluding capital expenditures for construction and equipment.)

Table II displays two impact items which are not of income-flow type and, hence, are shown separately.

TABLE II
ESTIMATED VALUES FOR NON-FLOW ITEMS*

Item	Estimated Value
1. Value of local business inventory committed to College-related business (minimum estimate based on conservative impact)	$249,479
2. Expansion of local banks' credit base resulting from College-related deposits	$436,474

* These items represent physical and monetary assets rather than income-expenditure flows. These items are not additive to the expenditures in Table I.

Model assumptions and data reliability which posed special problems for estimating the items shown in Table II are discussed in Section A of this chapter.

A significant omission, though not without reason, was impact of the College's expansion of major facilities since 1964, i.e., capital budget. The impact of capital expenditures was not incorporated in estimates of local aggregate income, local business inventories, or local bank deposits. Further discussion of this point takes place in the section on Capital Expenditures.

Section B of this chapter is concerned with impact of the College on the economic condition of local governments in the Tri-County area. The dollar amounts shown in Table III apply to the Tri-County area as an aggregate unit of analysis and not to any particular local government within the Tri-County area.

Table III shows the study estimates of the most important impacts on local governments. The study did not attempt to estimate revenue from miscellaneous sources, such as faculty payments for local licenses and permits. The details supporting Table III are discussed in Section B of this chapter.

TABLE III
ECONOMIC IMPACT OF LOCAL GOVERNMENTS
1970-71

Impact Item	Annual Ammounts Inclusive	Conservative
1. Local taxes paid by persons associated with the College to local governments (under-estimate; see p.48)	$220,350	$ 93,936
2. Impact on public school operating costs and public school State and Federal aid		
a. Increase in State and Federal aid to public schools	302,587	116,529
b. Increase in public school operating costs	569,180	219,199
3. Tax-supported tuition paid by sponsoring districts	951,300	951,300

Note. Taxes paid to local governments by non-local students were not included. See p.5i.

A. Economic Impact on Local Business

General

There are four major areas in which the College affects the local business volume:

1. College-related local expenditures
2. Value of local business property committed to College-related business
3. Expansion of local banks' credit base resulting from College-related deposits
4. Local business volume unrealized because of the existence of College-operated enterprises

The first area--College-related local expenditures--is the one most extensively estimated in this study, and it is the area of greatest importance in terms of dollar-measured activity. In the second area--local business property--the estimates are confined to the increase in local business inventories attributable to the presence of the College. Estimates of the third area--local credit base expansion--are limited both in terms of reliability and the economic significance of the results for the local area. The fourth area--College operated enterprises--has only one item, the College bookstore. Each of these areas is discussed more fully in subsequent sections.

Analysis of Data

Two computer programs were used in the data analysis. The first program provided output in terms of the categories displayed in Table I. It also provided the basis for a comparison of preliminary results in terms of local residence defined as Tri-County area vs. local residence defined as sponsoring school district.

Since the conservative estimates of the College's economic impact depended on the "yes-no" variable of Question 11, and because residence type was necessary for estimates of local tax payments, the second computer program represented a more detailed analysis than the first. The response rate was reduced in passing from the summary analysis of the first program to the detailed analysis of the second. This occurred because of the more stringent test conditions for each respondent in the second program. If a respondent failed to answer Question 11, the entire data record pertaining to that respondent was passed over by the program, thereby becoming effectively a "non-response" for the entire set of variables in the detailed analysis. The estimates for College-related local expenditures are based

entirely on the more detailed analysis. A manual analysis was done on a print-out of the data grouped in major categories. Working with the data manually does provide more insight into its nature. The procedure is recommended.

Types of Estimates

One possible approach, and that used in the ACE manual, develops estimates of the various categories in Table I for all persons associated with the College. This study also incorporates a "conservative estimate," based on the number of faculty, staff, and students who indicated that, in the absence of the College, they would not be living in the Tri-County area.

A simple procedure for developing conservative estimates is to use the estimated total expenditure for the category, multiplied by a ratio of respondents who answered "no" to Question 11, to the total number of respondents ("j" denotes the specific group of respondents, and "i" denotes the type of expenditure). The conservative initial impact would be estimated with the following model:

$$\text{Conservative impact} = \frac{\text{Number of "no" respondents}_j}{\text{Total number of respondents}_j} \times \text{Est. annual expenditures}_i$$

There are two objections to this procedure. First, it assumes that expenditure patterns reflected in the amounts reported by those answering "no" are closely similar to the overall expenditure patterns reflected in the total estimate. Second, in situations where "j" includes two distinguishable groups, i.e., part-time and full-time students, it is implicitly assumed that the relative proportions of each group in the total "no's" are the same as the proportions found in the more inclusive sample.

A preferred, more detailed procedure for developing conservative estimates is to estimate annual expenditures for each major group or subgroup involved. This means the estimates are remade using only those individuals who indicated the College was a major factor in their residence. This detailed procedure was used wherever possible in order to avoid the assumptions previously mentioned.

Multiplied Impact

Initial vs. multiplied impact. The expenditures by a resident in the Tri-County area becomes additional income to the recipient. If the recipient is a local business establishment, part of the recipient's income becomes wages paid to employees, rent, interest on borrowed funds, and either dividends or proprietor's income to owners. Additional consumer spending in the area means additional consumer income to someone--workers, landlords, lenders,

owners, or to all four groups in varying proportions. Part of this additional consumer income is then re-spent--some of it locally, some non-locally. A more complete presentation of the multiplier concept is presented in Appendix A. The essence of the concept is that additional local expenditures result in a multiplied impact in terms of the local business volume.

College-Related Local Expenditures

College-related local expenditures are the major component of the impact of the College on local business. The general approach used in estimating the various types of expenditures included the following:

1. Local rental expenditure for housing
2. Local non-housing expenditure
3. Local expenditures by non-local persons associated with the College

Each expenditure type was estimated for each of the following major groups:

1. Faculty
2. Staff
3. Full-time students
4. Part-time students

The sample number of persons and the population number of persons for each major group was as follows:

Group	Total number of usable responses	Number in population
Faculty	129	170
Staff	37	77
Full-time students	266	2,442
Part-time students	87	1,498

A subgroup consists of those members of a major group who meet additional qualifications, such as "full-time students who rent local housing." Each subgroup relevant to this study, together with the sample number of respondents, is shown in Table IV. As stated earlier (p. 3) "local" refers to an individual who resides within the Tri-County area.

A local versus non-local breakdown was more appropriate with certain types of data than a sponsoring versus non-sponsoring breakdown.

TABLE IV
NUMBER OF RESPONDENTS BY SUBGROUP

Subgroup	Nbr. of respondents who answered Question 11	Nbr. in sample who answered Question 11 "no"
1. Local faculty	120	83
2. Local faculty who rent	45	37
3. Local staff	32	6
4. Local staff who rent	6	0
5. Full-time local students living with parents or in student living groups	162	58
6. Part-time local students living with parents or in student living groups	16	1
7. Full-time local students who rent	36	18
8. Part-time local students who rent	16	3
9. Full-time local students who are homeowners	4	0
10. Part-time local students who are homeowners	37	1
11. Non-local faculty and staff	9	
12. Non-local full-time students	55	
13. Non-local part-time students	16	

The calculation procedure that applies to most of the items to be estimated under the heading "College-Related Local Expenditures" is developed as follows using a verbal formula presentation.

1. Estimated number of persons in major group population who belong to subgroup

   = $\frac{\text{Number respondents in subgroup}}{\text{Sample number in major group}}$ X number in major group population

2. Sample Annualized Expenditures

   = Reported total monthly value X 12

3. Sample Annual Expenditures Per Respondent

   = $\frac{\text{Sample annualized expenditures}}{\text{Number of respondents in subgroup}}$

4. Estimated Annual Expenditure

   = Sample annual expenditure per respondent

   X Estimated number of persons (from Step 1 above)

The methodology followed in this study did not include estimates of standard deviations and standard errors of the mean values derived from the survey. The general reader is unlikely to be interested in this particular point; for those who are, Appendix E of the study develops the methodological argument in greater detail.

1. Local Expenditures by the College. The College requires various supplies and equipment to maintain its operation. Supplies include items such as paper products for individuals and for data processing, and cleaning products. Equipment includes such items as typewriters and maintenance vehicles. During the 1970-71 fiscal year the College had $1,573,513 in expenditures for supplies and equipment. The invoices on these items were reviewed. A total of $455,109 of purchases went to vendors in the Tri-County area. This figure is 29 percent of the total expenditures on supplies and equipment.

Almost 71 percent ($1,118,404) of the supplies and equipment was purchased through non-local vendors. Purchases of supplies and equipment are placed on bid by the College, as is required by law of any public institution. Non-local vendors often underbid local vendors. Then, too, some items may only be available non-locally, especially certain types of equipment.

It should be noted that non-local purchases of supplies and equipment are a very small portion of the entire operational budget. The $455,109 in local expenditures was an impact on local business and was entered as an item in the overall impact (both inclusive and conservative).

2. Expenditures by Faculty and Staff for Local Rental Housing.

a. Inclusive Impact. All faculty and staff in this subgroup. There were 45 local faculty, out of 120 local faculty respondents, who reported expenditures on rental housing of $7,955/month. Of the 32 local staff respondents, 6 reported expenditures of $709/month. Through College records, 161 faculty and 75 staff were identified as living within the Tri-County area. Based on the sample proportions, the total number of local faculty and staff who rent was estimated:

---

1) Estimated Number of Local Faculty and Staff in Population Who Rent

Faculty: $\frac{45}{120} \times 161 = 60$ persons

Staff: $\frac{6}{32} \times 75 = 14$ persons.

The next two steps involve annualizing and averaging the reported amounts.

2) Sample Annual Expenditures

Faculty: 12 X $7,955/month = $95,460/year

Staff: 12 X $ 709/month = $ 8,508/year

3) Sample Annual Expenditures Per Respondent

Faculty: $\frac{\$95,460/year}{45 \text{ faculty}} = \$2,121/year/person$

Staff: $\frac{\$ 8,508/year}{6 \text{ staff}} = \$1,418/year/person$

Finally, the total annual expenditures in this category was estimated.

4) Total Estimated Annual Expenditures

Faculty:	$2,121/year/person	X 60 faculty	=	$127,260/year
Staff:	$1,418/year/person	X 14 staff	=	$ 19,852/year
Total				$147,112/year

The estimate of annual expenditures on local rental housing by faculty and staff of the College was $147,112 per year. A more conservative estimate was also derived.

b. Conservative Impact. The inclusive amounts for all faculty and staff provided an upper limit for the impact of this expenditure item. To determine the "conservative impact" value, the rental expenditures of those persons who indicated that the presence of the College was a minor consideration in their choice of the Tri-County area as a place of residence must be deducted from the total. There remained 37 of the 45 responding local faculty renters who indicated that, in the absence of the College, they would not have chosen the Tri-County area as a place of residence. The 37 respondents reported combined monthly rental expenses of $6,830. Because all of the 6 staff respondents indicated that the College had little bearing on their choice of the Tri-County area as a place of residence, the conservative impact value for their rental expenditures was zero.

---

1) Estimated Number of Local Faculty in Population Who Rent and Who Would Answer "No" to Question 11

$$\text{Faculty: } \frac{37}{120} \times 161 = 50 \text{ persons}$$

2) Sample Annual Expenditures

$$\text{Faculty: } 12 \times \$6,830/\text{month} = \$81,960/\text{year}$$

3) Sample Annual Expenditures Per Respondent

$$\text{Faculty: } \frac{\$81,960/\text{year}}{37 \text{ faculty}} = \$2,215/\text{year/person}$$

4) Total Estimated Annual Expenditures (Conservative)

$$\text{Faculty: } \$2,215/\text{year/person} \times 50 \text{ faculty} = \$110,750/\text{year}$$

The conservative estimate of the impact of the College in terms of faculty and staff expenditures for local rental housing was $110,750 per year.

The housing expenditures of homeowners were excluded from any impact estimate because most of the amount so reported represents a "capital" rather than a "current" transaction. Expenditures in the form of mortgages reflect primarily an accumulation of previous savings and lending transactions involving such savings, rather than current income.

No data was collected which would have produced an estimate of the impact on the local credit market of the demand of new faculty for home loans. The assumptions involved in scaling up explicit information on mortgages would have made it difficult to do so, even if the data were obtainable.

3. Local Non-Housing Expenditures by Local Faculty and Staff.

a. Inclusive Impact. The $912,120 per year shown in the following display was derived from the data reported by 120 faculty and 32 staff respondents which was scaled upward to the actual number of local faculty (161) and local staff (75). The two relevant expenditure categories for this section were "food" and "other" (which included expenses other than food and housing). The reported monthly amounts were:

	Food	Other	Total
Faculty:	$15,470	$24,729	$40,199/month
Staff:	$ 3,767	$ 5,651	$ 9,418/month

The study estimates are developed in the following display:

---

1) Actual Number of Local Faculty and Staff:

Local faculty = 161 Local staff = 75

2) Sample Annual Expenditures

Faculty: $40,199/month X 12 = $482,388/year

Staff: $ 9,418/month X 12 = $113,016/year

3) Sample Annual Expenditures Per Respondent

Faculty: $\frac{\$482,388/year}{120\ faculty}$ = $4,020/year/person

Staff: $\frac{\$113,016/year}{32\ staff}$ = $3,532/year/person

4) Total Estimated Annual Expenditures

Faculty:	$4,020/year/person	X	161 faculty	= $647,220/year
Staff:	$3,532/year/person	X	75 staff	= $264,900/year
Total				$912,120/year

The value of $912,120/year represents the estimate of the annual local non-housing expenditures by those College faculty and staff who resided locally.

b. Conservative Impact. The total estimate of $912,120/year was reduced to $481,703/year. Of the 120 faculty respondents, 83 replied negatively to Question 11 and reported non-housing expenditures of $26,787/month. The corresponding values for staff respondents were 6 negative replies to Question 11 for reported expenditures of $1,850/month. These expenditures were broken down as follows:

	Food	Other	Total
Faculty:	$19,439	$7,348	$26,787/month
Staff:	$ 520	$1,330	$ 1,850/month

Based on the sample, the following estimates of the total number of faculty and staff who were relevant for the analysis of this section were made.

---

1) Estimated Number of Local Faculty and Staff in Population Who Answered "No" to Question 11

Faculty: $\frac{83}{120} \times 161 = 111$ persons

Staff: $\frac{6}{32} \times 75 = 14$ persons

2) Sample Annual Expenditures

Faculty: $26,787/month X 12 = $321,444/year

Staff: $ 1,850/month X 12 = $ 22,200/year

3) Sample Annual Expenditures Per Respondent

Faculty: $\frac{\$321,444/year}{83 \text{ faculty}} = \$3,873/year/person$

Staff: $\frac{\$ 22,200/year}{6 \text{ staff}} = \$3,700/year/person$

4) Total Estimated Annual Expenditures (Conservative)

Faculty:	$3,873/year/person	X 111 faculty	=	$429,903/year
Staff:	$3,700/year/person	X 14 staff	=	$ 51,800/year
Total				$481,703/year

The conservative estimate of the impact of the College in terms of faculty and staff expenditures for items other than housing was $481,703 per year.

4. Local Expenditures by Non-Local Faculty and Staff. College records indicated there were 9 non-local faculty and 2 non-local staff. All 9 non-local faculty responded and reported a total amount of $5,900 per year spent within the Tri-County area. The two non-local staff chose not to respond to the survey. Both, it may be noted, were from sponsoring districts. Local expenditures of non-local staff cannot be estimated without sample data. The sum, however, would probably not exceed $1,300.

It should be noted that, as throughout the rest of the study, the authors chose to err toward an under-estimate of the impact, in this case by not making an estimate on non-local staff.

The $5,900 is both the inclusive impact estimate and the conservative impact estimate, on the premise that expenditures within the Tri-County area by members of this subgroup would be zero of the College did not exist. Services which are available in Harrisburg are also available in other population centers such as Lancaster, Lebanon, and York. Five of the nine non-local faculty reported that they would not be in the Harrisburg area if the College were not in existence.

5. Local Expenditures, Exclusive of Room and Board, by Local Students Living with Parents or in Student Living Groups.

a. Inclusive Impact. The expenditures category from the survey instrument that was relevant for this section was "other." There were 162 full-time students who reported monthly "other" expenditures of $9,071, and 16 part-time students who reported a corresponding value of $1,190. The total number of students who were in the "Local, with Parents or in Groups" classification was estimated. An average expenditure per respondent was arrived at as an estimate for the population. Then, these figures were put together to yield a total annual impact.

---

1) Estimated Number of Local Students Living with Parents or in Groups

Full-time: $\frac{162}{266}$ X 2,442 = 1,487 students

Part-time: $\frac{16}{87}$ X 1,498 = 275 students

2) Sample Annual Expenditures

Full-time: $9,071/month X 12 = $108,852/year

Part-time: $1,190/month X 12 = $ 14,280/year

3) Sample Annual Expenditures Per Respondent

Full-time: $\frac{\$108,852/year}{162\ students}$ = \$673/year/student

Part-time: $\frac{\$\ 14,280/year}{16\ students}$ = \$893/year/student

4) Total Estimated Annual Expenditures

Full-time: \$673/year/student X 1,487 students = \$1,000,751/year

Part-time: \$893/year/student X 275 students = \$ 245,575/year

---

b. Conservative Impact. A negative response to Question 11 was given by 58 of the 162 full-time respondents, and by 1 of the 16 part-time respondents. The reported monthly "other" expenditures were \$3,169 for full-time students and \$50 for the 1 part-time student. The estimation of the conservative impact value was as follows:

---

1) Estimated Number of Local Students Living with Parents

Full-time: $\frac{58}{266}$ X 2,442 = 532 students

Part-time: $\frac{1}{87}$ X 1,498 = 17 students

2) Sample Annual Expenditures

Full-time: \$3,169/month X 12 = \$38,028/year

Part-time: \$ 50/month X 12 = \$ 600/year

3) Sample Annual Expenditures Per Respondent

Full-time: $\frac{\$38,028/year}{58\ students}$ = \$656/year/student

Part-time: $\frac{\$\ 600/year}{1\ student}$ = \$600/year/student

4) Total Estimated Annual Expenditures (Conservative)

Full-time: \$656/year/student X 532 students = \$348,992/year

Part-time: \$600/year/student X 17 students = \$ 10,200/year

---

c. Summary. The inclusive and conservative estimates for full and part-time students were as follows:

	Inclusive	Conservative
Full-time:	$1,000,751	$348,992
Part-time:	$ 245,575	$ 10,200

The totals for both inclusive and conservative categories were as follows:

Inclusive	Conservative
$1,000,751	$348,992
10,200*	10,200
$1,010,951	$359,192

*The conservative part-time figure is used for the inclusive total because only the expenses of those part-time students whose residence was contingent on the College may be considered College-related. Stated generally, the local expenditures of H.A.C.C. students who lived at home were between $360,000 and $1 million annually.

6. Expenditures by Students for Local Rental Housing.

a. Inclusive Impact. There were 36 full-time and 16 part-time students who reported total monthly estimates of $3,297 and $2,145, respectively. The estimate for purposes of this study was as follows:

---

1) Estimated Number of Students in Population Who Rent Local Housing

Full-time: $\frac{36}{266} \times 2,442 = 330$ students

Part-time: $\frac{16}{87} \times 1,498 = 275$ students

2) Sample Annual Expenditures

Full-time: $3,297/month X 12 = $39,564/year

Part-time: $2,145/month X 12 = $25,740/year

3) Sample Annual Expenditures Per Respondent

Full-time: $\frac{\$39,564/year}{36 \text{ students}} = \$1,099/year/student$

Part-time: $\frac{\$25,740/year}{16 \text{ students}} = \$1,609/year/student$

4) Total Estimated Annual Expenditures

Full-time:	$1,099/year/student	X	330 students	=	$362,670/year
Part-time:	$1,609/year/student	X	275 students	=	$442,475/year

---

b. Conservative Impact. Of the 36 full-time respondents, 18 answered Question 11 negatively, and 3 of the 16 part-time respondents answered negatively. The monthly amounts were $1,729 and $535, respectively.

The conservative impact was then estimated as follows:

---

1) Estimated Number of Students in the Population Who Rent Local Housing and Who Would Answer "No" to Question 11

Full-time:	$\frac{18}{266}$	X	2,442	=	165 students
Part-time:	$\frac{3}{87}$	X	1,498	=	52 students

2) Sample Annual Expenditures

Full-time:	$1,729/month	X	12	=	$20,748/year
Part-time:	$ 535/month	X	12	=	$ 6,420/year

3) Sample Annual Expenditures Per Respondent

Full-time:	$\frac{\$20,748/year}{18 \text{ students}}$	=	$1,153/year/student
Part-time:	$\frac{\$\ 6,420/year}{3 \text{ students}}$	=	$2,140/year/student

4) Total Estimated Annual Expenditures

Full-time:	$1,153/year/student	X	165 students	=	$190,245/year
Part-time:	$2,140/year/student	X	52 students	=	$111,280/year

---

c. Summary. The inclusive and conservative estimates for full and part-time students were as follows:

	Inclusive	Conservative
Full-time:	$362,670	$190,245
Part-time:	$442,475	$111,280

The totals for both inclusive and conservative categories were as follows:

Inclusive	Conservative
$362,670	$190,245
111,280*	111,280
$473,950	$301,525

*The conservative part-time figure was used for the inclusive total because only the expenses of part-time students whose residence was contingent on the College may be considered College-related. Stated generally, H.A.C.C. students spent from $300,000 to almost one-half million dollars on local rental housing annually.

7. Local Non-Housing Expenditures by Students Who Rent Local Housing.

a. Inclusive Impact. The display was derived from the data reported by 36 full-time and 16 part-time students. Data was scaled upward to the estimated number of students who rent in each category, i.e., 330 full-time and 275 part-time. The two relevant expenditures in this section were "food" and "other" (which included expenses other than food and housing). The reported monthly amounts were:

	Food	Other	Total
Full-time:	$2,350	$3,561	$5,911/month
Part-time:	$1,605	$2,995	$4,600/month

---

1) Estimated Number of Students in Population Who Rent Local Housing

Full-time: $\frac{36}{266} \times 2,442 = 330$ students

Part-time: $\frac{16}{87} \times 1,498 = 275$ students

2) Sample Annual Expenditures

Full-time: $5,911/month X 12 = $70,932/year

Part-time: $4,600/month X 12 = $55,200/year

3) Sample Annual Expenditures Per Respondent

Full-time: $\frac{\$70,932/year}{36 \text{ students}} = \$1,970/year/student$

Part-time: $\frac{\$55,200/year}{16 \text{ students}} = \$3,450/year/student$

4) Total Estimated Annual Expenditures

Full-time:	$1,970/year/student	X	330 students	= $650,100/year
Part-time:	$3,450/year/student	X	275 students	= $948,750/year

b. Conservative Impact. There were 18 full-time and 3 part-time students who responded "no" to Question 11. Their non-housing expenditures were as follows:

	Food	Other	Total
Full-time:	$870	$1,380	$2,250/month
Part-time:	$280	$ 475	$ 755/month

1) Estimated Number of Students in Population Who Rent Local Housing and Who Would Answer "No" to Question 11

Full-time:	$\frac{18}{266}$	X 2,442	=	165 students
Part-time:	$\frac{3}{87}$	X 1,498	=	52 students

2) Sample Annual Expenditures

Full-time:	$2,250/month	X 12	=	$27,000/year
Part-time:	$ 755/month	X 12	=	$ 9,060/year

3) Sample Annual Expenditures Per Respondent

Full-time:	$\frac{\$27,000/year}{18 students}$	=	$1,500/year/student
Part-time:	$\frac{\$ 9,060/year}{3 students}$	=	$3,020/year/student

4) Total Estimated Annual Expenditure

Full-time:	$1,500/year/student	X	165 students	= $247,500/year
Part-time:	$3,020/year/student	X	52 students	= $157,040/year

c. Summary. The inclusive and conservative estimates for full and part-time students were as follows:

	Inclusive	Conservative
Full-time:	$650,100	$247,500
Part-time:	$948,750	$157,040

The totals of both inclusive and conservative categories were as follows:

Inclusive	Conservative
$650,100	$247,500
157,040*	157,040
$807,140	$404,540

*The conservative part-time figure was used for the inclusive total because only the expenses of those part-time students whose residence was contingent on the College may be considered College-related. Stated in general terms, the local non-housing expenditures of students who rented local housing were from $400,000 to $800,000 annually.

8. Local Non-Housing Expenditures by Students Who Own Their Homes.

a. Inclusive Impact. The following display was derived from the data of 4 full-time and 37 part-time students. Data was scaled upward to the estimated number of students who owned their homes in each category, i.e., 37 full-time and 637 part-time. The two relevant expenditure categories for this section were "food" and "other."

	Food	Other	Total
Full-time:	$ 380	$ 670	$1,050/month
Part-time:	$4,645	$4,953	$9,598/month

---

1) Estimated Number of Students in Population Who Own Homes

Full-time: $\frac{4}{266} \times 2,442 = 37$ students

Part-time: $\frac{37}{87} \times 1,498 = 637$ students

2) Sample Annual Expenditures

Full-time: $1,050/month X 12 = $ 12,600/year

Part-time: $9,598/month X 12 = $115,176/year

3) Sample Annual Expenditures Per Respondent

Full-time: $\frac{\$\ 12,600/year}{4\ students}$ = $3,150/year/student

Part-time: $\frac{\$115,176/year}{37\ students}$ = $3,113/year/student

4) Total Estimated Annual Expenditures

Full-time: $3,150/year/student X 37 students = $ 116,550/year

Part-time: $3,113/year/student X 637 students = $1,982,981/year

---

b. Conservative Impact. None of the 4 full-time students in this subgroup responded that his residency was related to the existence of the College. Of the 37 part-time students, only 1 responded that he would not be in the area if the College were not. The student spent $80 per month on food and $200 per month on other items.

Although the data were minimal, the method of estimation is presented.

---

1) Estimated Number of Local Students in Population Who Own Their Homes and Who Would Answer "No" to Question 11

Full-time: None

Part-time: $\frac{1}{87}$ X 1,498 = 17 students

2) Sample Annual Expenditures

Full-time: None

Part-time: $280/month X 12 = $3,360/year

3) Sample Annual Expenditures Per Respondent

Full-time: None

Part-time: $\frac{\$3,360/year}{1\ student}$ = $3,360/year/student

4) Total Estimated Annual Expenditure (Conservative)

Full-time: None

Part-time: $3,360/year/student X 17 students = $57,120/year

---

c. Summary. The inclusive and conservative estimates for full and part-time students were as follows:

	Inclusive	Conservative
Full-time:	$ 116,550	0
Part-time:	$1,982,981	$57,120

The totals for both inclusive and conservative categories were as follows:

Inclusive	Conservative
$116,550	0
57,120*	$57,120
$173,120	$57,120

*The conservative part-time figure was used for the inclusive total because only the expenses of those part-time students whose residence was contingent on the College may be considered College-related. Stated generally, the local non-housing expenditures of students who were home-owners were from $57,000 to $173,000 annually.

9. Local Expenditures by Non-Local Students.

a. Inclusive Impact. The amount spent in the Tri-County area per year by students in the non-local (outside of Tri-County) category was reported as $18,321 for the 55 full-time students responding and $8,200 for 16 non-local part-time students who responded.

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1) Estimated Number of Students in the Population Who Can Be Classified As "Non-Local"

Full-time: $\frac{55}{266}$ X 2,442 = 505 students

Part-time: $\frac{16}{87}$ X 1,498 = 275 students

2) Sample Annual Expenditures

This step is omitted since the raw data is already reported in terms of an annual estimate.

3) Sample Annual Expenditures Per Respondent

Full-time: $\frac{\$18,321/\text{year}}{55 \text{ students}} = \$333/\text{year/student}$

Part-time: $\frac{\$\ 8,200/\text{year}}{16 \text{ students}} = \$513/\text{year/student}$

4) Total Estimated Annual Expenditures

Full-time:	$333/year/student	X 505 students	=	$168,165/year
Part-time:	$513/year/student	X 275 students	=	$141,075/year
Total				$309,240/year

The estimate of annual expenditures within the Tri-County area by students of the College whose residence was outside of the Tri-County area was $309,240 per year.

b. Conservative Impact. The assumption was made that, in the absence of the College, expenditures within the Tri-County area by persons in this group would be lessened considerably. The residence variable (Question 11) had little meaning for this group. The assumption was that they would not have spent "locally" if they had not attended the College. The conservative impact was, therefore, entered as the same figure as for the inclusive impact because this money would have been absent if the College had not been in operation.

Capital Expenditures

There have been significant capital expenditures by the College since 1964. However, the full "multiplied" impact of these expenditures on local income, business inventories, bank deposits, and employment was not estimated. Expenditures of this type are related to a phase of high growth in facilities, a phase which is coming to an end in less than two years. The impact of the expenditures on facilities, i.e., buildings and equipment, is not a continuing input to the local economy.

The curtailment of facilities expansion had been planned. The decision was supported by leveling off of college enrollments, both nationally and locally. The Carnegie Commission on Higher Education (1970) has recommended the leveling off of an institution at 5,000 if it is to maintain the personal quality of human interaction. The College's full-time equivalent enrollment of approximately 3,300 students and the planned construction of one additional classroom building suggest that the facilities will exist to meet this level of on-campus enrollments. The College is now expanding into off-campus learning centers using existing facilities in the Tri-County area. These centers may accomodate further increases in enrollment.

The College added to the cash flow of the local economy by having local contractors construct buildings and by purchasing equipment and furnishings locally. There is some reasonable limit to the size of the College's facilities. It would be unreasonable to expect the College to maintain the current rate of growth in facilities. The key point is that the College was not created to directly increase the cash flow in the local economy, although there were some expectations that it would indirectly affect the growth and development of the area.

The focus of the study is on the continuing, reasonably stable patterns of income and expenditures generated by the presence of the College. The capital expenditures are briefly reviewed here for completeness. Appendix F has a detailed summary of major capital expenditures.

TABLE V
SUMMARY OF SOURCES OF FUNDS AND MAJOR CAPITAL EXPENDITURES
THROUGH JUNE 30, 1972

Sources of Funds			
Non-Local	Federal	$3,450,200	
	State	4,989,350	
	Total		$8,439,550
Local	Taxes	$4,158,250	
	Gifts	700,000	
	Total		$4,858,250
Total Funds			$13,297,800

Expenditures	Local	Non-Local	Total
General construction	$11,133,900	0	$11,133,900
Moveable equipment	1,081,950	$1,081,950	2,163,900
Total	$12,215,850	$1,081,950	$13,297,800

Table V demonstrates that $4,858,250, or 37 percent of $13,297,800 in funds for major capital expenditures, came from local sources. Actually, 31 percent of the funds came from local taxes. The local area invested $4,858,250 and $8,439,550 was brought to the College from outside the local area. Most of the $13,297,800 was spent locally--92 percent, or $12,215,850.

Value of Local Business Property Committed to College-Related Business

The net expansionary impact of College-related expenditures could result in the establishment of new local business firms, or the physical expansion of existing firms. No data was available that would justify numerical estimates of College-related new business parameters or general expansion. The most likely area to be affected by the College's impact is the level of business inventories. This area was the only business property item estimated by the study.

Inventory to Business Volume Ratio. Additional local business volume of any sizeable magnitude which continues over a period of time greater than that during which businessmen make decisions regarding inventory levels will result in upward adjustments of business inventories. Merchants will stock more retail goods; manufacturers serving local markets will invest more in raw materials, work-in-process, and finished goods inventories; and wholesalers will increase their levels of intermediate products and retain goods inventories. The ACE study derived a suggested inventory to business volume ratio (IBV) of .12, using 1967 Internal Revenue Service and U.S. Census data. The estimated IBV derived in this study was .128.

TABLE VI
LOCAL BUSINESS VOLUME
(In Millions of Dollars)

County	Business Sector				
	Retail	Wholesale	Services	Manufacturing	Total
Dauphin	$390	$627	$50	$700	$1,767
Cumberland	251	205	19	354	829
Perry	*	9	2	9	20
Total	$641	$841	$71	$1,063	$2,616

* Less than $1 million

Source: U.S. Bureau of Census, Census of Business, 1967, and Census of Manufactures, 1967

The value of local (Tri-County) business volume in 1967 was $2,616,000,000. Local business volume was defined in this study as the sum of wholesale, retail, services, and manufacturing business. The estimate in the ACE report was also based on Census data for 1967. More recent Census data on business activity was not available for inclusion in this study. Data is presented rounded to the nearest $1 million.

ACE recommended that a local inventory to business volume ratio (IBV) be estimated, rather than using a national average. The method employed here was to weight total U. S. Sectoral IBV ratios by the corresponding proportion of that sector in the Tri-County area business volume. Only wholesale, retail, manufacturing, and services were included, in order to have the local IBV ratio estimated on the same basis as local business volume. Finance, real estate, insurance, and construction were excluded.

TABLE VII
TOTAL U. S. SECTORAL IBV RATIOS
(Active Corporations-1967)

	Inventory*	Business Receipts*	IBV Ratios Inventory ÷ Business Receipts
Retail	$ 26.7	$216.3	.123
Wholesale	18.5	182.7	.101
Services	1.9	45.2	.042
Manufacturing	91.9	576.6	.159

*Figures in Billions
Source: Internal Revenue Service Statistics of Income, 1967

TABLE VIII
BUSINESS VOLUME AS A PERCENTAGE OF TOTAL, BY SECTOR
TRI-COUNTY AREA

	Retail	Wholesale	Services	Manufacturing	Total
Dollars*	$641	$841	$71	$1,063	$2,616
Percent	24.5	32.1	2.7	40.7	100.0

*Figures in Millions

The local IBV ratio as a locally-weighted index of total U.S. ratios was derived. Each total U. S. Sectoral IBV ratio was multiplied by the corresponding ratio of that sector's local annual activity to the total local business volume. Adding the results gave an estimate of the study area inventory to business volume ratio. The calculations were as follows:

IBV = (.245)(.123) + (.321)(.101) + (.027)(.042) + (.407)(.159)

= .0301 + .0324 + .0011 + .0647

= .1283

It is possible that this estimate of .128 may be biased upward by the inclusions in Census data of local business activities that are basically of a transfer nature, such as warehousing and physical distribution centers serving many other areas besides Dauphin, Perry, and Cumberland Counties. No data were available on which to base any adjustments of the derived IBV ratio; therefore, the value of .128 was employed.

Applying the IBV ratio to the estimated multiplied impact of College-related local expenditures, the result was the estimated increase in business inventories. This was estimated as follows:

(IBV) X net estimated conservative annual impact =

.128 X $1,949,054 = $249,479

The estimate of $249,479 was the minimum increase in the value of local business inventories attributable to the presence of the College. This procedure assumes that the IBV ratio for the time period of this study was not materially different from that of 1967, the year for which Census data was available. Because the impact value of College-related local expenditures was based on recent consumer incomes and expenditures, the inventory value estimate was reasonable to the extent that changes in the Consumer Price Index (CPI) and the Wholesale Price Index have been of proportionate magnitude. The data through 1970 suggested that the CPI had risen somewhat more rapidly; this would bias our inventory estimate upward by 2 or 3 percent of the total, a relatively small amount.

Inventory is stock, whereas income and expenditure are flows. The additional inventories held by local business represent an investment on their part, with a return on such investment to be earned from additional local spending by consumers and other business firms.

The method of inventory estimation was based on the estimated impact of College operations for a recent year, 1970-71. The College has been in operation since 1964, and the actual process of induced inventory investment has been a gradual one reflecting year-to-year increases in the level of the College's operations. Under the simplifying assumptions of this study, the computation based on the 1970-71 level of College operations was a reasonable approximation.

Expansion of Local Banks' Credit Base Resulting From College-Related Deposits

This topic could include several items such as endowments, the College's cash on hand, faculty and staff savings, and student savings. The only item included, however, was the savings of local faculty and staff. The College has no endowments per se. Also, the College is required by State Law to invest its cash-on-hand in U.S. Treasury Bills and Notes. The institution cannot invest in local bank certificates.

Estimates of savings of students would have been very unreliable because student income and expenditure patterns are likely to be relatively unstable, compared to faculty and staff income and expenditures. The one item which was investigated, therefore, was the savings of local faculty and staff.

Persons associated with the College (faculty, staff, and students) who reside locally contribute to the area's credit base to the extent that they choose to save in the form of liquid financial assets, such as checking accounts, savings accounts at banks, and deposits in accounts at savings and loan institutions.

It must be emphasized that the accumulated amounts of the several forms of financial liquid assets represent a quantity that is conceptually determined at a particular point in time. Such accumulations are properly related to many prior years as well as the current year and must not be confused with the basic annual income and expenditure flows, the estimates of which comprise the bulk of this study. It must be further noted that this study makes no attempt to assess the extent of personal saving in terms of equity in automobiles and homes or in business property, and financial assets such as stock and bonds. Liquid financial assets are more appropriate for study purposes because of the more obvious relationship to local credit conditions.

In this section, the impact of the College on the supply of local credit was estimated. The estimation procedure was based on the actual salaries of faculty and staff as determined from College records, rather than the household income amounts reported by faculty and staff respondents to the survey instrument.

This departure from the basic methodology employed elsewhere in the study requires some explanation. Trial runs with alternative survey instruments indicated a high degree of resistance on the part of respondents to any questions directly concerned with their financial asset position. Therefore, it was necessary to apply national savings rates to the respondents' reported values of household income. The ACE study cited a 1966 Federal Reserve Board (FRB) study (Projector & Weiss, 1966) that was based on 1962 data. The ACE study reproduced a small part of the original FRB data, stratified by age as "under 35" and "35 or older." The survey instrument, therefore, included an age variable of the same dimensions.

It was found that the actual 1966 FRB study, however, employed three age categories, "under 35," "35-54," and "55-64." Data contained in survey analyzed here provided no valid basis on which to split the "35 or over" respondents into "35-54" and "55-64." Calculation procedures for the estimation of total liquid financial asset savings for faculty and staff proved to be very sensitive to small variations in the arbitrary division of the "35 or over" group into "35-54" and "55-64," because the savings characteristics of the latter two groups are materially different. Sensitivity to fluctuations ruled out any further "sophisticated guesswork" regarding the age structure of the respondents.

Although the savings behavior of faculty and staff was not likely to be identical to that reflected in national estimates, the basic saving rates and motivations for saving should be reasonably similar. The saving patterns and motivations of students, on the other hand, were likely to depart significantly from national overall patterns. An estimate of student savings was, therefore, excluded from this report.

In order to have as accurate a profile as possible of faculty and staff age distribution, this study incorporates data taken directly from College files. The data as obtained included faculty and staff age, salary, and place of residence, in terms of the following categories:

1. Age. Under 35, 35 to 54, 55 to 64.

2. Residence. Local, Non-Local.

3. Annual Salary. See Table IX.

Salary brackets in Table IX require explanation. The original FRB study used a more conventional set of salary ranges based on data for 1962. The salary brackets used in this section were arrived at by a straight-forward application of the Consumer Price Index for 1970 (Economic Report of the President, 1972, p. 247) related to 1962:

$$\frac{\text{CPI } 1970}{\text{CPI } 1962} = \frac{116.3}{90.6} = 1.28$$

With the assumption that incomes are adjusted upward over a period of years in an attempt to keep pace with a rising cost of living, the salary ranges shown here are simply the 1964 FRB salary ranges multiplied by 1.28. No attempt was made to allow for possible time lags in the assumption regarding the Consumer Price Index-Gross Income adjustment process. For each income category (by age bracket) the number of faculty and staff was multiplied by the FRB sample mean reported values for checking accounts, savings accounts in banks, and savings deposited in savings and loan institutions.

TABLE IX
LOCAL FACULTY AND STAFF ESTIMATED LIQUID FINANCIAL ASSET POSITION

Age/Salary	Number of Persons (Actual Count=N)	Total Liquid Financial Assets	Checking Account	X (N)	Bank Savings	X (N)	Savings and Loan	X (N)
<35								
3840-6399	23	$ 3,910	$ 90	2,070	$ 26	598	$ 54	1,242
6400-9599	40	26,440	156	6,240	342	13,680	163	6,520
9600-12,799	38	29,070	214	8,132	376	14,288	175	6,650
12,800-19,199	12	26,748	849	10,188	640	7,680	740	8,880
19,200-31,999	0	0	972	0	1,255	0	250	0
32,000-64,000	0	0	2,240	0	1,100	0	13,250	0
35-54								
3840-6399	23	27,117	132	3,036	765	17,595	282	6,486
6400-9599	16	23,648	235	3,760	805	12,880	438	7,008
9600-12,799	30	55,530	348	10,440	660	19,800	843	25,290
12,300-19,199	19	65,189	621	11,799	1,450	27,550	1,360	25,840
19,200-31,999	1	6,240	1,255	1,255	3,190	3,190	1,795	1,795
32,000-64,000	0	0	4,475	0	9,675	0	7,225	0
55-64								
3840-6399	10	26,980	566	5,660	1,307	13,070	825	8,250
6400-9599	4	12,416	567	2,268	1,865	7,460	672	2,688
9600-12,799	10	51,590	928	9,280	3,345	33,450	886	8,860
12,800-19,199	8	44,776	922	7,376	3,103	24,824	1,572	12,576
19,200-31,999	1	18,090	3,470	3,470	8,595	8,595	6,025	6,025
32,000-64,000	1	18,730	4,390	4,390	8,885	8,885	5,455	5,455
Total		$436,474		$89,364		$213,545		$133,565

Note. Estimates based on 1962-1963 Federal Reserve Board data (Projector & Weiss, 1966; Projector, 1968) and price level adjustment for gross income categories.

The FRB published a follow-up study (Projector, 1968) which was based on 1963 data. A comparison of the 1962 data with that for 1963 showed enough variation to warrant the use of an averaging procedure for the data reported in the two studies. This comparison also provided empirical support for assertions that saving behavior in the short run is subject to considerable variations (Ackley, 1961, pp. 252-307). The working assumption on which the study estimates were based was the long-run stability of the underlying process that generated the 1962-63 results published by the FRB.

Table IX displays the computational format, which is quite straightforward. The estimated total liquid financial asset position, $436,474, was based on faculty and staff salaries, rather than household income, for the reasons discussed previously. One must use this table with some caution. Inferences made on the basis of computed subtotals, if they ignore the distribution within any age group or the distribution of financial asset types, are more than likely to be misleading except within the wide (subjective) limits of tolerance. This premise is especially true for inferences regarding any particular year. This admittedly crude attempt to estimate dollar amounts in areas of economic behavior that are both conceptually and empirically difficult, can do no more than provide a "feel" for the order of magnitude involved; a "true" value in excess of $1,000,000 would be very improbable, as would a "true" value below $1[illegible],000.

Local Business Volume Unrealized Because of the Existence of College-Operated Enterprises

College-operated enterprises compete with business enterprises in the community. The impact is profound at large universities with residential populations. In such instances college dormitories and food services do a considerable business which can directly affect local business. With no housing facilities, the community college can only help to increase the demand for housing locally. The food service at the College, which provides mainly student lunches, is a small enterprise with annual sales of $15,000 (1970-71). It is operated by a local private business. It is not College-run, so it cannot be considered as competing with the private sector.

The one College enterprise which competes with local business is the College bookstore. This operation had annual sales (1970-71) of $255,211. The sales on books, school supplies, and clothing could be realized by local businesses. This amount was entered into Table I at the beginning of this chapter as a negative amount which reduces both the inclusive and conservative totals of the estimated initial impact and multiplied impact.

It should be noted that the College's handling of book orders for students may increase the reliability of the service to the students. The delivery of small orders to several private stores could lead to

considerable problems among both purchasers and suppliers. Then, too, the central service reduces the need for students to travel, which may be a hardship for some students.

An important point is that the College-operated bookstore is not required to charge a student the 6 percent State Sales Tax. This savings can be important to the student. The bookstore does realize a net profit. This profit ($50,000 in 1970-71) goes into a general fund out of which a special scholarship fund is created. The money goes to students who cannot meet the criteria for State and Federal financial aid and yet are definitely deserving of such aid.

In summary, there was only one College enterprise, the bookstore, which could be said to be competing for any large volume of sales with a local enterprise. The "negative" economic impact is mitigated in part by the convenience to students, the removal of the 6 percent State Sales Tax for students, and the contribution to the scholarship fund.

Summary (Local Business)

The best summary of this section is found in Tables I, II, and V. In Table I, the expenditure items were summarized and totaled to an initial impact estimate. The totals (inclusive and conservative) were multiplied by a factor of 1.45, the estimated local income-expenditures multiplier. The figure of $5,857,175 was the estimated inclusive impact after consideration of the recycling on the initial expenditures in the local economy.

The authors chose to enter impact of local taxes which support the College at this stage. A tax multiplier was used to expand the initial tax impact to an estimate of the actual impact. The respective multiplied expenditure impacts were each reduced by the multiplied tax impact to arrive at a net estimated annual income-expenditure impact. The local taxes which support the College are an impact on local government. The authors chose to enter this impact here rather than let the full-estimated impacts stand. The reader shall see that the rest of the impacts on local government are trade-offs, which have the effect of increasing the level of activity with no plus or minus net economic effect.

Table II presents the estimated values for items which affect the local economy but were not of a cash-flow variety. The value of the local business inventory increased approximately a quarter of a million dollars due to the presence of the College. The credit base of local banks was increased by more than $400,000. Both of these estimates were very conservative figures.

Table V summarizes how 92 percent of more than $13 million of capital expenditures was spent in the local economy. Local taxes were the source of 31 percent of the funds for those expenditures.

Lastly, the College had only one operation which directly competed for sales with local business. Approximately a quarter of a million dollars in sales were not realized by local business because of the existence of the bookstore.

B. Economic Impact on Local Governments

Local Government is the second sector of the local economy which the ACE model considered. It was also second in that the Business sector is where the major economic impact takes place. The Local Government sector is the one where there is a "temptation to compare revenues with expenditures (ACE, p. 19)." However, Caffrey and Isaacs caution that one "cannot accept a simple balance sheet when so many important, unmeasurable, and intangible factors are beyond exact quantitative analysis (ACE, p. 19)."

The ACE model was designed for application to a relatively small geographical area with few municipalities and a large university. The local area of this study encompasses three counties and literally dozens of municipalities. The complexity of all the tax structures and the relatively small size of the institution made a detailed analysis much more difficult and of questionable value with a sample of one or zero in many categories.

Several of the components of the Government sector model and the entire Individual sector model were considered either not relevant or not feasible for this study of a community college supported by a three-county area. These components were itemized in Appendix C. Several estimates did not come from survey data. The main source of data recommended by ACE was information from the local governments. However, much of it simply was not available in the form necessary to carry out an estimate.

The key data for the Government sector were the taxes which members of the College community paid to local governments. Three limitations on the reliability and the validity of the data are noted, all of which would lead to an under-estimation of taxes paid in most categories:

1. Many members of the College community had no idea what taxes they paid (further inquiries suggest that this fact is true of many individuals) and gave no data at all. The faculty should be informed more explicitly what information will be requested of them if this survey is undertaken again. The trade-off between a take-home survey and an adequate response rate was discussed in the section on "Method."

2. Thirty-three faculty, or 20 percent of the local faculty, were new to the institution and the area. Individuals who move into local municipalities are often not informed as to their tax liability until close to the end of the fiscal year (June 30)--after the time of this survey (March). The objective of the researchers was to collect data close to the income tax deadline (April 15), but before the busy last weeks of the semester. All

factors considered, this timing is still the optimum for H.A.C.C. An institution whose Spring term ended later than H.A.C.C.'s would probably benefit from an administration a week after the tax deadline but before the end of classes.

3. A large percentage of faculty rented housing and were not aware of the exact portion of their rent which paid the taxes on their apartment or house. The only estimate of the percentage of rent which goes for taxes came from the Pennsylvania Department of Revenue. The Department may use a figure of 20 percent to supply tax relief for the elderly. Informal estimates ranged from 8 to 25 percent. This factor was too questionable to incorporate into the tax payments. The incorporation of this factor would have increased the estimated amount of taxes paid by College-related individuals.

It can be noted here that as the age of legal majority is changed from 21 to 18 for most activities, the student population in these age brackets will be called upon to share more of the local tax burden. The net result of this shift will be an increase in the taxes paid by College-related individuals to local governments if the College continues to keep these students in the area.

The ACE model emphasizes the monies brought to the local governments due to the presence of the College, especially State aid. The authors decided to present a portion of the model to demonstrate the procedure even though (1) the validity of the model is in question in terms of its feasibility with a Tri-County study area, and (2) the reliability of the data was low and all but demanded a gross under-estimate of taxes paid by College-related individuals. The survey data on local taxes was scaled upward to an estimate of population values.

The authors were not satisfied with the use of this model. A second perspective on the payment of taxes by College-related individuals which is based on informed opinion is also presented.

1. College-Related Revenues Received by Local Governments

This section demonstrates the method for estimating College-related revenues received by local governments. The reader should note the aforementioned limitations on the data.

The survey instrument asked respondents to state the amounts of taxes paid per year to "local" governments for the following categories: per capita, occupational assessment, occupational privilege, one percent wage tax, property tax, school tax, and "other" taxes. Inquires by the authors into what respondents filled in as "other" taxes suggested they were primarily property and/or school taxes, although they were not labeled by the respondent as such. The question was phrased to obtain

TABLE X
REPORTED TAXES PAID BY LOCAL RESPONDENTS TO LOCAL GOVERNMENTS

Group & Residency Factor	Nbr Resp. (Local)	Per Capita	Occup. Assess.	Occup. Privil.	1% Wage	Prop'ty	School	Other	Total
Faculty									
"Yes"	37	$1,714	$ 886	$ 450	$6,122	$8,136	$3,275	$ 884	$21,467
"No"	83	4,128	2,822	1,045	10,365	10,316	6,918	1,921	37,515
Total	120	$5,842	$3,708	$1,495	$16,487	$18,452	$10,193	$2,805	$58,982
Staff									
"Yes"	26	$1,673	$ 605	$ 330	$2,519	$3,071	$2,321	$ 640	$11,159
"No"	6	352	590	170	744	1,020	564	305	3,745
Total	32	$2,025	$1,195	$ 500	$3,263	$4,091	$2,885	$ 945	$14,904
FT Students									
"Yes"	129	$2,063	$1,235	664	$1,907	$ 962	$ 603	$ 318	$ 7,752
"No"	78	967	374	410	924	42	106	0	2,823
Total	207	$3,030	$1,609	$1,074	$2,831	$1,004	$ 709	$ 318	$10,575
PT Students									
"Yes"	65	$1,829	$1,377	$ 350	$3,971	$6,967	$1,729	$ 81	$16,304
"No"	5	50	90	40	271	46	45	0	542
Total	70	$1,879	$1,467	$ 390	$4,242	$7,013	$1,774	$ 81	$16,846

only taxes paid to local governments, including those paid by non-local respondents. The local taxes from non-local respondents were not included, however, for two reasons: (1) the validity of the data was in question by the types and amounts which were reported, and (2) some non-local respondents may have reported taxes paid to non-local governments. The act of exclusion increased the extent of the under-estimation of taxes paid to local governments.

Local tax payments by each of the major groups are shown in Table X. The tax data were summed only for local respondents. Students are not recorded on College computerized records by county, so the number of local students was estimated from survey data rather than by doing a hand count of all students. The numbers arrived at were very close to the numbers of students from sponsoring districts.

A total of all taxes paid by each group was used to estimate the total local taxes paid annually by each subgroup. With the exception of the one percent wage tax and the occupational privilege tax, the authors' subjective estimate of the component reliability was sufficiently low that reporting annual estimates for each tax component could lead to unwarranted inferences. Inclusive and conservative estimates were then developed. The concepts are analogous to those used in the Business sector, only local tax data were used.

a. Inclusive Impact.

1a) Actual Number of Local Faculty and Staff

Faculty: 161 Staff: 75

b) Estimated Number of Local Students

Full-time students: $\frac{207 \text{ local respondents}}{266 \text{ respondents}}$ X 2,442 = 1,900 local students

Part-time students: $\frac{70 \text{ local respondents}}{87 \text{ respondents}}$ X 1,498 = 1,205 local students

2) Sample Annual Taxes Paid Per Respondent

Faculty: $\frac{\$58,982}{120}$ = \$492/faculty member

Staff: $\frac{\$14,904}{32}$ = \$466/staff member

Full-time students: $\frac{\$10,575}{207}$ = \$ 51/student

Part-time students: $\frac{\$16,846}{70}$ = \$241/student

3) Total Estimated Annual Tax Paid

Faculty: $492/year/person X 161 faculty = $79,212/year

Staff: $456/year/person X 75 staff = $34,950/year

Full-time students: $51/year/person X 1,900 students = $96,900/year

Part-time students: $241/year/person X 1,205 students = $290,405/year

---

b. Conservative Impact. The residence factor was considered in the following tabulations.

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1) Estimated Number of Local Individuals in Subgroup

Faculty: $\frac{83}{120}$ X 161 = 111 faculty

Staff: $\frac{6}{32}$ X 75 = 14 staff

Full-time students: $\frac{78}{207}$ X 1,900 = 715 students

Part-time students: $\frac{5}{70}$ X 1,205 = 86 students

2) Sample Annual Taxes Paid Per Respondent

Faculty: $\frac{\$37,515}{83}$ = $452/faculty member

Staff: $\frac{\$\ 3,745}{6}$ = $624/staff member

Full-time students: $\frac{\$2,823}{78}$ = $ 36/student

Part-time students: $\frac{\$\ 542}{5}$ = $108/student

3) Total Estimated Taxes Paid

Faculty: $452/year/person X 111 faculty = $50,172/year

Staff: $624/year/person X 14 staff = $ 8,736/year

Full-time students: $36/year/person X 715 students = $25,740/yr.

Part-time students: $108/year/person X 86 students = $ 9,288/yr.

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c. Summary. The inclusive and conservative estimates of total taxes paid annually by each subgroup were as follows:

	Inclusive	Conservative
Faculty:	$ 79,212	$50,172
Staff:	34,950	8,736
Full-time students:	96,900	25,740
Part-time students:	290,405	9,288

The totals for both inclusive and conservative estimates were as follows:

Inclusive	Conservative
$ 79,212	$50,172
34,950	8,736
96,900	25,740
9,288*	9,288
$220,350	$93,936

*The conservative part-time figure was used for the inclusive total because only the expenses of those part-time students whose residence was contingent on the College may be considered College-related.

Aside from the previously-mentioned factors causing each of these figures to be an under-estimate, there was an additional one. By including only local individuals, the occupational privilege tax and half of the one percent wage tax paid to local governments by non-local individuals was excluded. In addition, the various forms of school tax paid by residents of sponsoring districts who were not "local" as defined by the study were excluded. As each of these items was difficult to estimate with accuracy, they were excluded. The error is an under-estimate, i.e., conservative--which is consistently the general direction of the study.

The local taxes which support the College were not dealt with directly in this section. They were, however, incorporated into the net impact of the College on the local economy. A tax multiplier was applied to the tax data, and the sum was then deducted from the multiplied impact figure to obtain a net estimate of annual income expenditure impact (Table I). A relatively slight over-estimate of taxes paid to local governments was built into this section because the cost of the operating and capital budgets of the Community College is met by approximately eight-tenths of one mill on the market value of local real estate. With this exception, this section excludes taxes which support the College. While local taxes which support the College were incorporated in the overview (Table I), State taxes which support the operation of the College are dealt with in Appendix B on College Revenues.

2. Public School Aid and Operating Costs Allocable to the Presence of College-Related Individuals

a. ACE model. Local communities must eventually incur additional operating costs for elementary and secondary education as a result of College-related additional enrollments. The influence of the College on local public school operating costs and State aid was estimated in this study on the basis of respondents' answers to Question 4b, the number of children in the household who attend public schools.

The estimates of this section followed the ACE model and were based on the total enrollments, total State aid appropriations, and total operating costs for the Tri-County area schools for the year 1970-1971. The data were obtained from the Bureau of Educational Statistics, Pennsylvania Department of Education. It has been assumed here that public school State aid and operating costs are directly related to the number of students enrolled. The direct relationship is not, however, linear, since appropriations are inversely related to the district's ability to support basic education.

In general, the "dollar amount per public school student" approach of this study is not an adequate model for estimating the financial impact of short-run changes in public school enrollment. It may be considered more adequate, however, for long-run changes in the overall Tri-County enrollment situation, in connection with the operation of the College.

The inclusive and conservative concepts were employed again to provide reasonable limits within which to make judgments. First, the number of College-related public school children were estimated. Then the ratio of these children to all children in the Tri-County area was used to estimate the amount of public school aid and the amount of the operating costs of the school which were allocable to their presence.

1) Inclusive Impact. In the following display, the number of children for an inclusive statement was estimated. The ratio of the number in the subgroup population, e.g., faculty (161), to the number of respondents in the subgroup (120) was used to scale up the number of public school students reported by respondents (70) to the analogous figure for the entire subgroup population (93).

Estimated Number of Public School Children
Associated With the College

Local Group	Nbr. in Subgroup	Nbr. Resp.	Nbr. of Public School Children		Est. Nbr. of Children
Faculty	161	120	70	$\frac{161}{120} \times 70 =$	93
Staff	75	32	16	$\frac{75}{32} \times 16 =$	38
Full-time students	1,900	207	53	$\frac{1,900}{207} \times 53 =$	486
Part-time students	1,205	70	55	$\frac{1,205}{70} \times 55 =$	947

2) Conservative Impact. The conservative impact value estimate included only the number of school-age children reported by those respondents who answered "No" to Question 11, i.e., they would not be in the local area because their parents would not be here if the College did not exist.

In the following display the number of children for a conservative statement was estimated. The ratio of the number of children reported by parents who were in a conservative subgroup, e.g., faculty (43), to the number of children reported by parents who were in an inclusive subgroup (70) was used to scale down the number of children estimated for the inclusive subgroup population (93). The process resulted in an estimate of the number of children in the total conservative subgroup population (57).

Estimated Number of Public School Children
Associated With the College (Conservative)

Local Group	Nbr. of Public School Children Inclusive	Conservative	Est. Nbr. of Children (Inclusive)		Est. Nbr. of Children (Conservative)
Faculty	70	43	93	$\frac{43}{70} \times 93 =$	57
Staff	16	3	38	$\frac{3}{16} \times 38 =$	7
Full-time students	53	19	486	$\frac{19}{53} \times 486 =$	174
Part-time students	55	0	947	$\frac{0}{55} \times 947 =$	0

3) Summary. The estimates for each subgroup are summarized in the following display. Impact statements for each subgroup were not deemed that useful. Totals for each concept were used to give an overall measure of impact.

Local Subgroups	Estimated Number of Public School Children	
	Inclusive	Conservative
Faculty	93	57
Staff	39	7
Full-time students	486	174
Part-time students	947	0

The totals for both the inclusive and the conservative categories were as follows:

Inclusive	Conservative
93	57
39	7
486	174
0*	0
618	238

*The totals for each concept used only the conservative estimate for part-time students because only those part-time students whose residence was contingent on the College were considered College-related.

State and Federal aid to the public schools in the Tri-County area totaled $47,278,912 (Table XI). Using a simple proportional relationship basing the estimates of the College-related population on the Tri-County population of school children, 96,562 (Table XI), the amount of State and Federal aid which was attributable to College-related individuals was estimated as follows:

Inclusive $\frac{618}{96,562} \times \$47,278,912/\text{year} = \$302,587/\text{year}$

Conservative $\frac{238}{96,562} \times \$47,278,912/\text{year} = \$116,529/\text{year}$

The total public school operating expense for 1970-71 in the Tri-County area was $88,933,844 (Table XI). Using the same simple proportional relationship as with the State and Federal aid data, the expenditure which was attributable to College-related individuals was estimated as follows:

TABLE XI
ENROLLMENTS, APPROPRIATIONS AND EXPENDITURES
TRI-COUNTY PUBLIC SCHOOLS
1970-71

County	Enrollment Elementary	Secondary	Total
Dauphin	25,293	21,366	46,659
Cumberland	23,485	19,271	42,756
Perry	3,713	3,434	7,147
Total	52,491	44,071	96,562

County	Appropriations State	Federal	Total
Dauphin	$20,968,168	$1,886,398	$22,854,566
Cumberland	18,986,715	1,372,564	20,359,279
Perry	3,951,314	113,753	4,065,067
Total	$43,906,197	$3,372,715	$47,278,912

County	Total Expenditures
Dauphin	$44,988,565
Cumberland	38,536,435
Perry	5,408,844
Total	$88,933,844

Source: Lauver, P. H. Our Schools Today: Public School Financial Statistics Report, 1970-71. Harrisburg, Pa.: Department of Education, 1972.

Inclusive	$\frac{618}{96,562}$	X $88,933,844/year	=	$569,180/year
Conservative	$\frac{238}{96,562}$	X $88,933,844/year	=	$219,199/year

There was a net difference between the public school expenditures and State and Federal aid received. This difference was made up by local taxes designated for public school use. The revenues estimated in the section on "College-Related Revenues Received by Local Governments" almost makes up for this difference. It was recognized that all of the local revenues referred to did not go to the public schools, although a large portion did. The difference was made up by taxes, especially real estate taxes, paid by businesses. No group of individuals in the population would pay personal taxes to the extent that there would be no deficit. Businesses' share of the tax burden fills this gap. The reader is also reminded of the several reasons cited for an under-estimation of the estimated taxes by College-related individuals.

As stated in the beginning of Section B of this chapter, a comparison of revenues and expenditures is difficult with the intangible factors and the weaknesses of some survey data. It is safe to say that the information presented here is in a reasonable "ball park." The impact on local government is not a plus or minus, but simply an increase in the level of activity.

b. A perspective from informed opinion. In the beginning of Section B, it was pointed out that no simple balance sheet could be worked out for revenues and costs. The model and incomplete data leave other "holes." A more subjective perspective on local governments may aid the reader.

Through contacts with the Bureau of Educational Statistics and individuals in the community, the authors drew out the following description of education taxes which make up a large share of local taxes. Taxes for schools are closely related to personal income. In fact, across the State more than 90 percent of the amount of tax money collected is from taxes which are directly related to income.

The school taxes collected in the Tri-County area for 1970-71 (Lauver, 1972) were as follows:

Tax Source	Amount	Percent of Total
Real estate	$26,807,370	62.1
Act 511	14,027,252	32.4
Per capita	966,813	2.2
In lieu of tax	63,980	0.1
Delinquent	1,390,188	3.2
Total	$43,255,603	100.0

The Act 511 taxes include wage, occupation, real estate transfer, and per capita taxes, the latter being 11 percent of all the Act 511 taxes collected that year. The net effect was that at least 90 percent of the school tax monies collected in the Tri-County area were collected through taxes which were directly or indirectly related to income level.

Most faculty and staff are in a middle-income bracket. If taxes are generally related to income, middle-income individuals in all likelihood are paying their proportionate share of school taxes.

It is difficult to say that any one group of individuals pays less or more than its share of taxes. An evaluation depends on the criteria used. Data on the proportion of gross income which individuals pay toward school taxes was not available. It was beyond the scope of this study to obtain such data.

3. Summary (Local Government)

The impact on local government is difficult to describe precisely because the impact is spread rather thinly over many municipalities. The basic flow of monies includes (1) taxes from College-related individuals and (2) State and Federal aid due to the presence of those individuals. On the other hand, the College and College-related individuals use various services provided by local government.

The main item on the tax side is the operation of public schools. College-related individuals who have children are primarily in a middle-income bracket. School taxes are directly and indirectly related to income. College-related individuals pay at least their "share" of school taxes. Their presence does increase the economic activity in the area and the amount of State and Federal aid to public schools. This fact, however, is true of the children of any resident of the local area. It is not possible to assess the extent, if any, to which College-related persons over-support or under-support (financially) the public schools. The taxes which support municipal services can be perceived in the same fashion. As an aggregate, College-related individuals pay their share of taxes for municipal services.

The lowering of the age for tax liability to 18-year-olds increases the taxes obtained from students who comprise a large portion of College-related individuals. This fact is important in that a large proportion of the College-related individuals are in this category (18 to 21 years old).

Real estate taxes foregone through the tax-exempt status of the College could be considered an important "negative" impact, at least in the City of Harrisburg, where it is located. The College does receive fire and police protection from the City. The cost of water, sewage, and refuse disposal is borne by the College.

The College, like similar public non-profit institutions such as schools, churches, and hospitals, does not pay real estate taxes. If one accepts the premise that these institutions should not pay taxes, then one may not see the taxes foregone as a negative impact.

In the particular case of H.A.C.C., the amount of taxes foregone may be nil. The College is situated in Wildwood Park. The land in the "Park" on which the College is located was a generous donation from the City of Harrisburg. Most of the land, however, was an unofficial local garbage dump, and part of it actually was a City dump. The land was not in use, and building a college was a way of developing it. Legally, could the land have been used for commercial purposes? The answer is "yes." The same law which, at the time, permitted a third-class city to turn unnecessary and unused park land over to a college also permitted a turn-over for commercial use. However, the development of the land for commercial purposes would have been extremely difficult in light of the complicated legal problems in obtaining clear title to the land. The Park is made up of several parcels of land, some of which were condemned, and others donated for recreational purposes. Two of the parcels of land on which the College is located had clauses which returned the land to the estate of the donor if the City violated the agreed-upon purposes for the land.

In sum, the land would have been difficult to develop commercially. However, 22 school districts (including Harrisburg) and the State built a college on a portion of Wildwood Park. The City receives the occupational privilege tax from all College employees and wage taxes from employees who are residents of Harrisburg or who live in municipalities which do not collect it.

An evaluation of the impact on local government is contingent on what criteria are used. The authors chose to enter the local tax monies which support the College into the estimate of the net income-expenditures impact in the overview (Table I). The impact of the services and taxes discussed in Section B cannot be described as positive or negative. The presence of additional individuals increases the need for services and increases the tax base. The result may best be evaluated as neither a plus or a minus but simply an increase in the level of activity. If the local tax monies which support the College were considered in this section, the impact on local government would be negative. Either way, the net impact of the College on the local economy was the same as described in Table I.

CHAPTER V

SUMMARY AND PERSPECTIVES

A. Summary

The study informs the community about the impact of the operation of Harrisburg Area Community College on the local (Tri-County) economy.

Impact on Business

The impact on business was measured in terms of increased cash flows in the local economy. Estimates were made of the expenditures in the local area by College-related individuals, i.e., faculty, staff, full-time students, and certain part-time students.

Two estimates were made for each type of expenditure, an inclusive estimate and a conservative estimate. Unlike most large universities, a community college has a large number of individuals who might be in the geographic area even if the institution did not exist. An inclusive estimate includes all local faculty, staff, and full-time students. The authors decided to exclude (from the inclusive estimate) part-time students, except those whose residence was contingent on the College. A part-time student is College-related, but it would have been difficult to support the premise that his expenditures are, unless his residence was also College-related.

The second type of estimate was "conservative" in that it included only College-related individuals whose residence in the area was contingent on the existence of the College. Faculty, staff, full-time students, and part-time students who responded that they would not be in the area if the College did not exist, were included in the conservative estimate.

Both the local expenditures of the College and non-local College-related individuals were included in both the inclusive estimate and the conservative estimate.

The total estimated impact on the local economy in terms of increased cash flows was $4,039,431 inclusive and $2,229,868 conservative (see Table I). When a dollar is spent, it has an even greater effect on the total community income because it cycles through the economy as it changes hands. The impact of the dollar is multiplied. The ACE manual recommended the use of 1.9 as a multiplier to arrive at the full estimated impact of the expenditures. The authors arrived at a lesser figure of 1.45 based on data on the local economy. The local multiplier was applied to the previous figure to arrive at full estimate impact figures of $5,857,175 inclusive and $3,233,309 conservative.

To be fair, the authors considered the effect of the local taxes which went to support the College. In the 1970-71 fiscal year, the sponsoring districts contributed $951,300 of tax money to the operation of the College when they sponsored students from their districts. The survey data were based primarily on the previous calendar year, 1971, so the taxes and expenditures were not exactly congruent. Enrollments were leveling off at this time, however, so that the figures were reasonable.

Taxes also have a multiplied impact. When an additional dollar is taken in taxes, the negative impact on total community income is greater than just one dollar. The authors arrived at a figure of 1.35 as a local tax multiplier. It was applied to the funds from sponsoring districts ($951,300) yielding a figure of $1,284,255 as the multiplied tax impact on the local economy.

The multiplied tax impact was then subtracted from the full estimated expenditure impact to yield a net estimated annual income-expenditure impact of $4,579,920 inclusive and $1,949,054 conservative. After the negative impact of taxes was accounted for, the operation of the College contributed 2 to 4.5 million dollars annually to the cash flow of the local economy.

Two other business-related items were estimated. The value of local business inventory committed to College-related expenditures using the "conservative" data established a bottom value of $249,479. The expansion of local banks' credit base resulting from College-related deposits was estimated at $436,474. This figure was based on personal income from the College by all faculty and staff. Data was not obtained from students.

Although capital expenditures will be curtailed considerably when the building program is completed, the extent of local capital expenditures through June 30, 1972, was summarized. The expenditures totaled $13,297,800. The sources of funds for these expenditures included Federal and State monies as well as local tax money and gifts. Local tax monies totaled $4,158,250. However, $12,215,850 of the total expenditures was spent in the local area. The income multiplier was not applied to the capital expenditures figure because the authors have chosen to separate the economic impact of growth-phase expenditures from the continuing impact of the College's annual operations.

Impact on Local Government

The College also has an impact on local governments. The major tax impact has already been mentioned, the $951,300 to sponsor students at the College. The impact on the operating costs of public schools was estimated at $569,180 inclusive and $219,199 conservative. Part of this increased expense was met by State and Federal aid to the public schools, which was estimated at $302,587 inclusive and $116,529 conservative. The local taxes paid by persons associated with the College should account for the individual taxpayers' share of College-related increased school costs.

It was estimated that College-related persons paid taxes of $220,350 inclusive and $93,936 conservative. The reasons for these latter figures being gross under-estimates were enumerated (see pages 48-49).

The real estate taxes foregone because of the presence of the College were discussed, pointing out both sides of the question but without suggesting any ultimate judgment as to a negative or positive impact.

The total impact on local government could not be summed to a net figure. In general, the presence of the College increased the amount of governmental activity. To say the net effect was positive or negative was difficult, if not impossible. The local taxes used to support the College is a negative economic impact, but the net impact including increased expenditures in the local community was definitely positive.

The study also revealed that the revenue picture was relatively positive, in that less than 30 percent of the operating budget comes from local taxes and almost 50 percent comes from non-local sources (see Appendix B). In very simple terms, the local taxpayers contributed one million dollars, annually, the local students contributed something less, and a sum approximately equal to the total of these two figures was brought into the local area over a one-year period.

What has been presented in this study is a description of the immediate short-run impact of the College on the local economy as it pursues its primary objective of meeting the educational needs of the community.

B. Perspectives

The difficulties encountered while doing this study all but forced the authors to new perspectives on the College and its activities. The study in general has been objective and conservative, with the exception of judgments on the quality of the impact. The thoughts presented at this stage, however, are admittedly value-laden. The perspectives of a college president, an economist, and a psychologist may provide some insight for the reader.

Long-Run Impact

The long-run impact on productivity and resource allocation processes is political and social as well as economic in nature. These aspects are easily overlooked when attention is directed to those factors ordinarily termed "economic," such as current flows of income and expenditure. Precisely because it is so easily overlooked in a study of this nature, the reader's attention should be brought to matters of such fundamental, long-run significance.

The long-run benefits to an individual who has been exposed to the process of higher education are never easy to define or assess. The public has been presented with a proliferation of studies since the end of World War II which purport to demonstrate the statistical relationship between higher education and enhanced individual earning power (Lawrence et al., 1970). From this point of departure, economists have introduced the concept of "investment in human capital." The increased earning ability of persons with more years of higher education is assumed to follow from the increased productivity of these persons.

To the extent that the local area is able to retain graduates of the College, the average skills level and productivity of the area's labor force should be enhanced. There is existing evidence that four out of five graduates of career (non-transfer) programs are retained by the local area (Snyder, Selgas, and Blocker, 1972). This result would constitute an obvious source of positive economic impact. The actual long-run benefits to the community would very likely be understated, however, if the entire focus were on this aspect of long-run economic impact.

The authors believe that the Community College endeavor in the Tri-County area provides the opportunity for local residents to obtain the type of educational experience which enables them to seek a greater degree of participation in community decision-making. At any point in time, the local area as a community must decide, even if by default, to what uses their limited public and private resources will be put.

Increased citizen participation in public decision-making processes will bring about the public expression of a wider range of preferences.

This process in itself does not imply a more effective or efficient long-run allocation of resources. A major factor which does imply such enhanced effectiveness is a better understanding on the part of involved citizens of the implications of their preferences, both at the individual level and in the aggregate. The framework in which such implications are most meaningful is the long-run impact of successive short-run cost-benefit trade-offs. Public choices which emerge in this type of informed participatory decision-making process will have a greater likelihood of resulting in a local social and physical environment that entails a significantly higher level of individual satisfaction with one's own community.

Accountability - Economic

In the first paragraph of this report, the concept of accountability was discussed. Some colleagues of the authors may be concerned over the consideration of economic accountability. The authors do not suggest that a college should be called upon to increase its short-run impact on the local economy. Rather, the utility of economic accountability lies in providing a frame of reference in which to evaluate a college on other more important criteria.

The net value of the services an institution provides to a community may be understood better if the community has an accounting of the institution on economic as well as other criteria. For example, if a college had a sizeable negative impact on the local economy, even 100 percent placement of the college's career graduates in local industry might not justify the presence of the college in the local economy. On the other hand, if a college had tremendous positive impact on the local economy, say $50 million, the community might tolerate only 30 percent placement in the local industry, while 70 percent of the graduates went outside the local area or even the state for employment.

Two variables are being discussed: (1) economic impact, and (2) training for a labor market. The greater the positive economic impact of college-related expenditures on a community, the more a community may tolerate the institution training for labor markets other than its own. Variable (2) is one of many other variables which can be evaluated in light of Variable (1), economic impact.

"Accountability" is the new "in" word in matters concerning American education (Hartnett, 1971). The extension of the accountability concept to include local economic relationships is not a new idea, even if it is not yet well-developed. The limited literature on economic impact on the local economy (see Fink & Cooke, 1971; and Caffrey & Isaccs, 1971) approaches the impact more from the point of view of public relations than accountability. Caffrey & Isaacs' development of the ACE manual (1971) does a lot toward making impact studies comparable and objective while reducing the public relations orientation which often overlooks negative impacts.

In fairness to institutions of higher education, it must be remembered that they really have limited control over the factors which affect the extent of their immediate short-run impact on their respective local economies. A major factor in the quality of impact, i.e., positive or negative, is their sources of funding. A second factor is whether or not college-related individuals are local or non-local to the community as it is defined for a given situation.

The sources of funding are private, State, and local. Federal support of colleges is not a major item at this time. Private funding has the most positive impact on a local economy provided it does not come from the local area. State funding does not come through "local" taxes so it has the next most positive impact. Local funding, of course, reduces the positive quality of the impact in that it reduces any net increases in the cash-flow of the local economy.

Non-local students coming into an area can have a more positive impact than students who are primarily local going to a local college, unless local students would have had to leave the area to achieve their educational objectives. The extent of the impact of the expenditures of non-local students is tied to the extent of college-run operations. If the student purchases most items through college-operated stores and services, the impact on local businesses may be minimal. The college has some control over this factor, although college-operated enterprises can be forced to fill in where local businesses cannot or do not meet the needs of students.

A recent issue of the Community and Junior College Journal (December-January 1973) deals with "Who Pays the Bill?" The article developed the case for "Total State Support for Community Colleges" (Choi, 1973). An article on "Court Decisions and Financing" (Mills, 1973) discussed the recent decisions which may force an end to the use of local property taxes to support public education and cause the state to assume most, if not all, of the cost of public education including community colleges.

State funding is "psychologically" distant compared to local funding. However, the issue of either State or local funding may be a "phony" one; in that the local taxpayer pays State taxes. It would be difficult to argue that shifting the local share to the State would reduce the total taxes paid by the local citizenry. The real issue is how higher education is to be supported financially--local, State, or Federal taxes.

In a special report of the Carnegie Commission on Higher Education (1970, p. 45), the following recommendation was made:

> "The Commission recommends that states should expand their contributions to the financing of community colleges so that the state's share amounts, in general, to one-half or two-thirds of the total state and local financial burden, including operational and capital outlay costs. The Commission opposes

> the elimination of any local share on the ground that, if local policy-making responsibility is to be meaningful, it should be accompanied by some substantial degree of financial responsibility. In addition, the Commission believes that, in providing its share, the state should ensure that total appropriations for operating expenses are large enough to permit the institution to follow a policy of either no tuition or very low tuition."

A later profile sponsored by the Carnegie Commission (Medsker and Tillery, 1971) develops several factors in a chapter on "Control and Support of Community Colleges." All factors cannot be reviewed here, but the following quote is offered as a perspective.

> "The...more important point is that the nation's needs are such that the services of the comprehensive community colleges are required for functions not fulfilled by other types of institutions. Accordingly, the intrinsic value of community colleges must justify their costs. It could be argued that the community college increases the total cost of higher education because it attracts into the college stream--even the baccalaureate stream--students who otherwise would never consider college. But this argument has to be considered in terms of the economic and social advantages--to the individual and to society--of an increase in the general education level of the population (p. 123)."

Accountability - General

The authors use the term "general" accountability to review areas of accountability over which the College has more control than the legislative decisions which dictate its source of funding.

Accountability can be looked on as having two sides. The College is accountable externally to the community and internally to the student. The external accountability is most relevant in this study.

The following is a list of questions which should be asked in an analysis of external accountability (Roueche, Baker, & Brownell, 1971, pp. 30-31).

"1. How well has the college filled the professional service needs of the community?

2. How well has the college filled the technical occupational needs?

3. To what extent have programs been undertaken to fill vocational needs of the citizens served by the college?

4. What has happened to students who have completed the transfer programs of the college? How many have entered four-year colleges? How many have persisted until graduation?

5. How well are industrial needs being met? To what extent could new industry be expected to move into the community if adequate industrial skills were available?

6. To what extent are the general education and basic education needs of adults in the community being met by the college? What proportion of the adult population is enrolled in the college in order to improve communications, or to develop new occupations and skills?"

Community colleges can and should be most accountable for these "external" factors. In fact, it is on the criteria to which these questions relate that the real economic impact may be measured. This study has dealt with expenditure items and their immediate economic impact. However, the most important economic impact may come from less obvious effects such as the impact on the labor force.

One of the factors which make community colleges so accountable to the community (in certain states) is the fact that they are supported through local taxes. The same factor, local taxes, which at least overtly reduces the impact of a college on the local economy has the positive effect of making the college more accountable on the external factors which have been enumerated.

APPENDICES

APPENDIX A

THE MULTIPLIER

The concept of the income-expenditures multiplier has, since the 1930's, become a standard tool of economic analysis. Maximum clarity is achieved by considering the multiplier as the ratio of increase in community income to the original increase in local expenditures. The multiplier is developed through an analysis of the consumer-business-consumer "recycling" process, which is associated with that increase in income, with due allowance made for the passage of time, usually taken for convenience to be in terms of one-year periods.

This admittedly oversimplified statement of the nature and significance of the "multiplier" concept unfortunately bears little resemblance to the more sophisticated approaches that have been developed since World War II. Post-war research has developed more specific, more disaggregated, and at same time more "dynamic" (in the sense of describing the likely time-path of values) multiplier concepts (Kmenta, 1971, pp. 589-593; Evans, 1969, pp. 542-594). Such concepts, like the original version, remain conceptually clearer and empirically more meaningful for "global" or "macro" investigations of large, complex, industrial economies. The application of sophisticated multiplier concepts to a geographic region the size of the study area was rendered almost impossible because of insufficient data.

The ACE report, on page 18 and in Appendix B, presents a "decomposed" multiplier concept, in which one value is used to estimate the continuing "recycling" process of consumer expenditures, and a separate value is used for estimating the extent to which local businesses purchase input materials and merchandise inventory locally, in support of college-related business volume.

A problem emerges at this point. Insofar as college-related local expenditures represent a true impact, i.e., a permanent, continuing addition to the local expenditures flow as compared to the "college-not-in-existence" situation, local inventory purchases by local businesses will increase. Then, too, part of the additional receipts by the supplying firms will accrue as additional wages, interest, rent, and profits to local residents. A linkage, or feedback effect, is established between the apparently isolated "multiplier" concepts of the ACE report. This linkage does not seem to be conceptually accounted for in their discussions. The precise formulation of their multiplier is not given; therefore, the assumptions involved are not clear to the reader. The ACE report also deals rather sketchily with the problems involved in estimating multipliers for relatively small geographic areas. For estimation purposes, they suggest a set of likely values to be "used," i.e., "plugged" into the system.

Although a brief general schema of their multiplier concept is included in the ACE report, the relationship between the general statement and the specific values recommended is, at best, a hazy one. A separate estimate of the local income-expenditures multiplier was, therefore, developed in

this study, based on the ACE discussion, existing textbook multiplier theories, national multiplier estimates, and a combinatorial calculation designed to assess the sensitivity of the computer multiplier value to variations in the values of the underlying parameters.

A diagram depicting the authors' interpretation of the ACE multiplier discussion (Caffrey & Isaacs, 1971, pp. 44-45) is presented in Figure 5. The "additional income" represents College salaries paid to faculty and staff and student incomes. On the first "round" of expenditures, "additional consumer purchases" represents local spending by College-associated persons. Successive rounds may or may not include expenditures made out of return flows to residents, but will most certainly include a very high proportion of non-College associated persons, i.e., other residents of the Tri-County area.

The data on College faculty and staff expenditures did not warrant generalization to the geographic spending patterns of the whole community. Implicitly, therefore, resident "re-spending" was taken as 100 percent local. The proportion of additional return flows to local residents was assumed to be the same for both local retail firms and supplying firms (local wholesalers and local manufacturers). The proportion of local business purchases for merchandise and materials by local businesses was assumed to be the same for all business units. These assumptions of equal proportions were equivalent to the assertion that an "average" proportion was meaningful. The return flows from businesses to residents in the form of additional wages, interest, rent, and profits was taken to be 100 percent local, i.e., it is assumed that there are no non-local recipients of additional local business-generated income. These simplifying assumptions were made for reasons of convenience and lack of data. As a general rule, any income-expenditure leakage from the Tri-County area to other areas would lower the value of the local multiplier. Offsetting this "leakage" would be any return flows, or "feedback" from outside the local area. An example would be the owner of a local business who resides non-locally, yet spends a significant proportion of his profit receipts within the Tri-County area. The estimating procedure used in this study excluded such personal income leakages and "secondary" feedback effects.

At this point, it is convenient to introduce certain symbols:

R = marginal business return flow to residents (in the form of wages, interest, rent, and profits)

S = resident's marginal propensity to spend out of gross income

M = local business firms' marginal propensity to import

Figure 6 is merely Figure 5 with the appropriate symbols attached.

Once the initial increase in local expenditures has taken place, subsequent "rounds" of expenditures are made from increased personal disposable income. A reasonable value for the community marginal propensity to consume out of disposable income of 0.93 (Evans, 1969, p. 43,

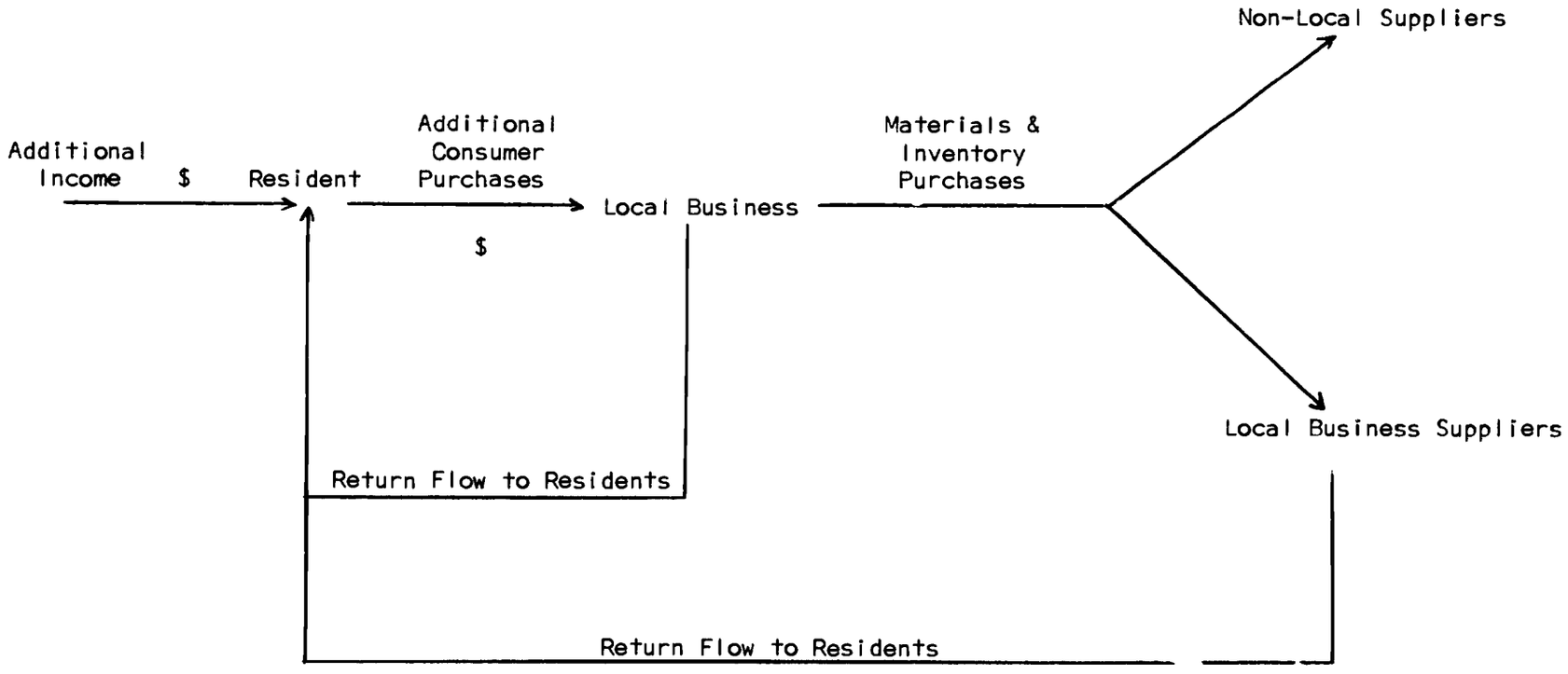

Figure 5. Income-Expenditures Re-Cycling Model
(Based on ACE (1971, pp. 44-45)

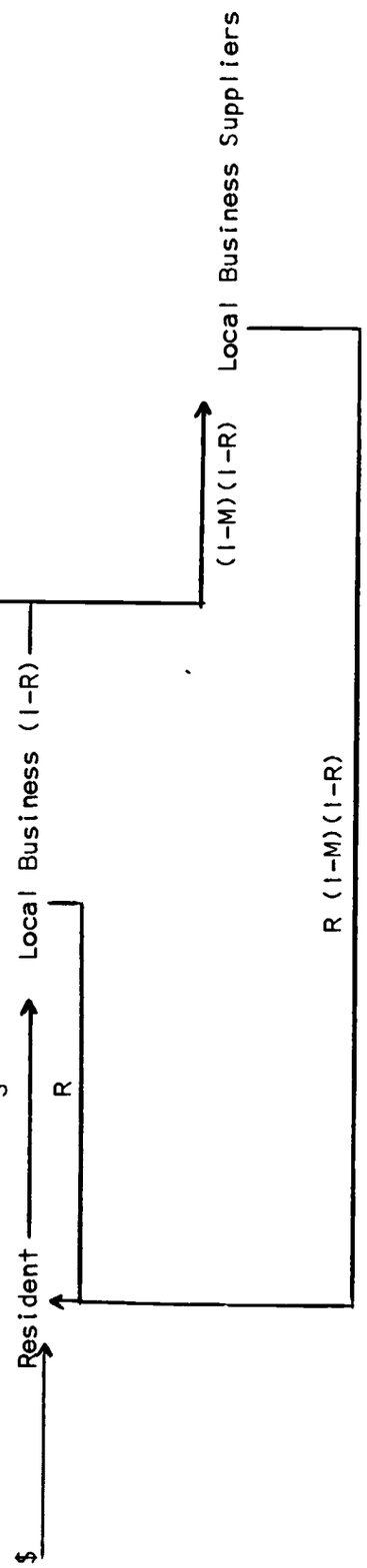

Figure 6. Symbolic Representations of Income-Expenditure Re-Cycling Model

pp. 562-563), while the reduction of gross income to disposable income is on the order of 0.70. This 30 percent reduction factor includes pension plan and "miscellaneous" deductions in addition to Federal, State, and local tax deductions. Although pension plan contributions are a form of saving, and "miscellaneous" may include employee purchases, it is not clear to what extent such "deductions" are operational substitutes for saving and consumption decisions that are made on the basis of "take-home" pay. Thus, $1,000 additional gross income per year to a resident becomes, on the average, $700 of additional disposable income, and of this amount (.93)(700) = $651 is assumed to be spent for personal consumption purposes within one year from the receipt of additional income. This study assumed that 100 percent of all such increased consumption expenditures was local. Therefore, for all expenditure rounds beyond the first, S in Figure 6 was taken as (.7)(.93) = .651.

The value suggested by ACE for the returns flow, R, was 0.35. This appeared to be reasonable, and extensive search efforts for alternative values were not likely to result in a significant revision. The value of R used was, therefore, 0.35. The area of greatest uncertainty was the "import," or "outside of Tri-County area" proportions of College-related increased business spending. Considerations of population density, geographic location, and area industrial mix pointed to a relatively high import factor. An import factor of 0.2 would be appropriate for a fairly self-sufficient region; an import factor of 0.9 would imply a very dependent area. Partly to ensure that the error was on the side of conservatism, and partly reflecting subjective opinion, the value accepted for calculation purposes was M = 0.7.

It is reasonably straightforward to establish from Figure 6 that the second round of expenditure (the first, or "recycled" round beyond the initial expenditure increase) is equal to:

$$\text{(initial increase)} \times RS + RS(1-M)(1-R)$$
$$\text{or simply, } RS + RS(1-M)(1-R)$$

if the initial increase in expenditure was conveniently set equal to unity. The quantity $RS + RS(1-M)(1-R)$ is referred to simply as "round."

The third round is then:

$$RS\,[RS + RS(1-M)(1-R)] + RS(1-M)(1-R)\,[RS + RS(1-M)(1-R)]$$
$$= [RS + RS(1-M)(1-R)]^2 = (\text{Round})^2$$

It is likewise easy enough to show that the fourth round is:

$[RS + RS(1-M)(1-R)]^3$, or, in general, the kth round is:

$$[RS + RS(1-M)(1-R)]^{K-1} = (\text{Round})^{K-1}$$

The increase in College-related spending was then conceptually the infinite summation of these terms, which become progressively smaller. That is,

$$\text{Total increase in local spending} = 1 + \text{Round} = (\text{Round})^2 + (\text{Round})^3 + \ldots + (\text{Round})^{K-1} = \frac{1}{1 - \text{Round}}$$

The details of the summation process may be found in most freshman college algebra texts.

Substituting the values selected for S, R, and M. the multiplier value was:

$$\frac{1}{1 - [(.651)(.35) + (.651)(.35)(.13)(.65)]}$$

$$= \frac{1}{1 - .272} = 1.37$$

The process of selecting values for S, R, and M leaves open the question of variation in the calculated values. The calculation procedure was, therefore, investigated for sensitivity of variations in the values of S, R, and M. Multipliers were computed for 125 different combinations of coefficient values, using the following values:

S	R	M
.4	.25	.40
.5	.30	.50
.6	.35	.60
.7	.40	.70
.8	.45	.80

The minimun and maximum multiplier values were 1.13 and 1.92, respectively. Both the minimum and maximum values imply a set of values for S, R, and M that, on rational grounds, are unlikely to occur. The value of 1.37 based on coefficient values that were selected on a basis that was partly rational was, therefore, not an unreasonable one.

The multiplier concept discussed up to this point has been that which is applicable to an increase in local aggregate demand. The local expenditures by the College and by College-related persons are of this nature.

Additional income and consumer expenditures in the community will also induce businesses to hold larger inventories. The study estimate of the induced inventory investment was discussed in Chapter 4, pp. 39-41. To the extent that additional inventory investment is obtained from local businesses, the total demand in the community is increased. It was assumed that the import factor selected in this section of 0.7 also applied to the process of inventory investment. This resulted in an "induced investment" factor of .3 X 1.28 = .038. The value of .038 should be added to the denominator of the multiplier which yields a multiplier value of:

$$\frac{1}{1 - .31} = \frac{1}{.69} = 1.45$$

The algebraic details of incorporation induced net investment coefficients into the general multiplier expression can be found in Evans (1969, pp. 542-556) and Ackley (1961, pp. 308-344).

The suggested multiplier value of 1.9 found in the ACE study implies, in terms of the above model, an import factor of .2, which can be rejected as having a high probability of being too low.

In terms of national estimates, however, a multiplier value of 1.9 for the type of expenditures involved in this study is a very reasonable one. A sophisticated simultaneous equation econometric model constructed by the Wharton Economic Forecasting Unit of the University of Pennsylvania, when employed in policy simulation studies has yielded a time-path for this type of multiplier which takes on values ranging from 1.91 to 2.35, with most of the values in the 1.91 to 2.13 range (Evans, 1969, pp. 542-594). Import equations for the U. S. economy are likely to be much less significant, however, than for an area the size of the Tri-County. Since increased import percentages yield lower domestic multiplier values, this constitutes additional support for the 1.45 multiplier value used in this study.

Quantification of a more theoretically-complete regional model could result in an estimated value for the multiplier somewhat higher than that reported in this study, but lower than the 1.9 national estimate (Richardson, 1969, pp. 254-259). Thorough evaluation of the inventory investment process would entail consideration of an inter-regional multiplier-accelerator model (Richardson, 1969, pp. 281-286). The data limitations of the study precluded estimates of this type.

Part of the tuition for the students attending the College is paid by the student's sponsoring district, and this study assumes that such tuition payments result in increased tax payments on the part of sponsoring district residents. The increased tax payments constitute a reduction in the residents' disposable income, with a consequent reduction in both consumption expenditures and current saving.

Although a given individual may make this marginal spending-saving decision in any proportion, for the community the resultant proportion is assumed to be the same as the national average, or .93 consumption, .07 saving. Example: Assume that the residents of sponsoring districts pay an additional $10,000 in taxes in support of the College. It is assumed that this results in an initial reduction of aggregate consumption expenditures of .93 X $10,000 = $9,300, and a decrease in current saving of .07 X $10,000 = $700. The initial reduction in aggregate spending is followed by successive rounds of decreased spending which become progressively smaller.

The relevant multiplier for assessing the full impact of an increase in tax collections must, therefore, include the marginal propensity to consume in the numerator. Thus, the multiplier expression presented earlier becomes:

$$\frac{-.93}{1 - [(.651)(.35) + (.651)(.35)(.3)(.65) + .038]} = \frac{-.93}{1 - .31}$$

-1.35 = tax multiplier, where a minus sign indicates that tax increases have a negative, multiplied impact on community income

An additional $10,000 of tax payments in support of the College was assumed to change total community income by -1.35 X $10,000 = $13,500.

APPENDIX B

COLLEGE REVENUES

General

Although the economic impact of the College was described primarily in terms of College-related local expenditures, the nature of College revenues is an importan part of the total picture.

Table XII presents a portion of the College's "Comparative Statement of Unrestricted Current Funds," which deals with revenues.

The questions to be asked are:

1. What portion of the income comes from the local taxpayers?

2. How much of the College's revenues come from outside the local area?

Using the 1970-1971 data, it was found that of $3,545,906 in total educational and general revenues for the operating budget, $951,345 or 27 percent was from sponsoring school districts. Therefore, 73 percent of the operating budget came from sources outside the local economy or students who actively chose to invest their money in education.

The data dis. ayed in Figure 7 is from Table XII. It shows the breakdown of revenue for the College's operating budget, 1970-1971. The amount of revenue from non-local sources approached half the revenue of the College. The College brought almost 1.7 million dollars into the local area from non-local sources.

Two items were excluded from Figure 7: conferences and workshops, and miscellaneous. The latter item was difficult to attribute to local or non-local sources. The former item deserves individual attention. Most of the income for conferences and workshops comes through the Urban Development Institute.

Urban Development Institute

The UDI is designed to be the vehicle by which Harrisburg Area Community College extends its services into and through the community. One specific objective is to provide special programs outside the normal curriculum or college setting which meet the training and educational needs of citizens in the Tri-County area. A side benefit is the positive economic impact this division of the College has on the local economy. Table XIII presents a listing of the grants which have been obtained by the UDI.

TABLE XII
COMPARATIVE STATEMENT OF UNRESTRICTED CURRENT FUNDS
(1969-70, 1970-71)

Revenues	Year Ended June 30, 1970	1971
Education and General		
Student tuition	$1,115,674	$1,303,334
Government appropriations:		
School districts	$ 803,028	$ 951,345
State government	902,820	1,038,448
Federal government	16,241	156,813
	$1,722,089	$2,146,606
Other Sources		
Income from temporary investments of current funds	$ 17,800	$ 28,995
Conferences and workshops	9,588	25,313
Miscellaneous	25,193	41,658
	$ 52,581	$ 95,966
Total educational and general revenues	$2,890,344	$3,545,906
Auxiliary Enterprises		
Bookstore (College-operated)	$ 224,637	$ 255,211
Food service (A local business)	11,295	15,033
	$ 235,932	$ 270,244
Total revenues	$3,126,276	$3,816,150

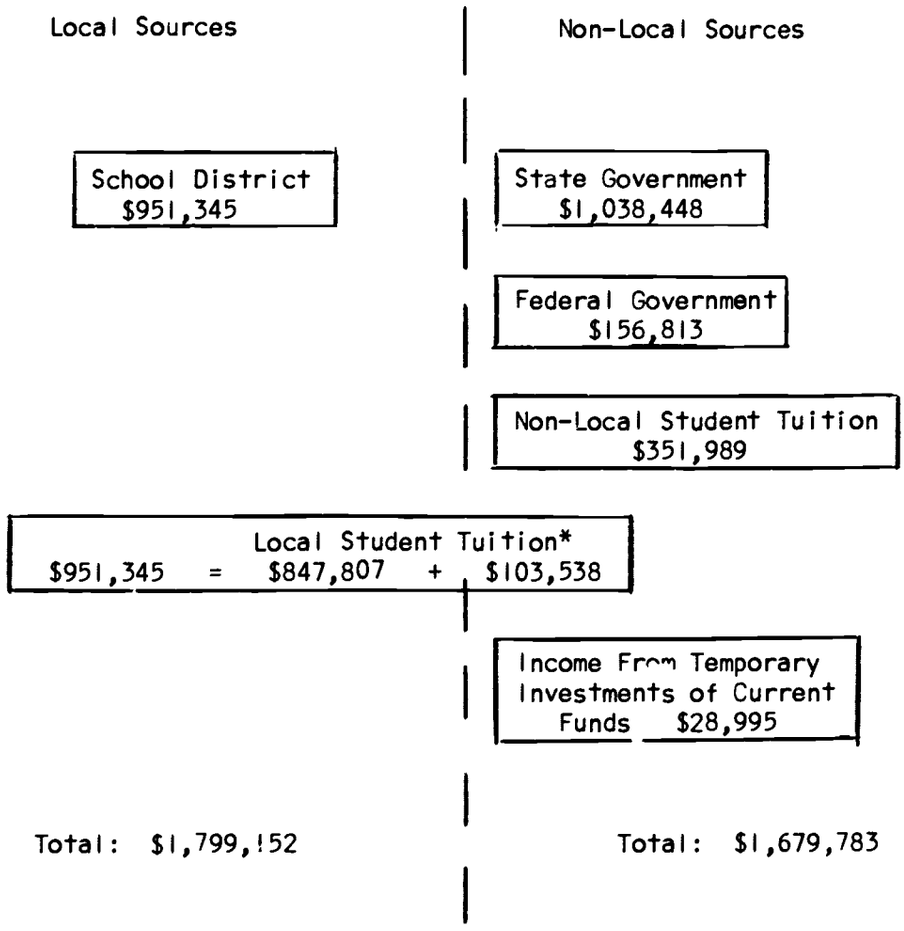

Figure 7. Major Sources of Revenue for the College Operational Budget (1970-71).

* A portion of local student tuition was paid from non-local sources of financial aid and was not repayable. See Table XV.

The UDI is an agency which helps a local community take advantage of the funds which are available from many sources. Most of the sources are "non-local," i.e., State and Federal funding agencies. The UDI is growing in size and experience. Its educational and economic impact on the local community is difficult to predict since it directly relates to State and Federal fundings. The authors believe it is safe to say that its potential for service (and economic impact) is considerable.

It should be noted that the UDI can and does do more than obtain non-local funds for local programs. It brings the regular programs of the College to the more distant parts of its sponsoring districts by way of learning centers in previously-existing facilities. The UDI also presents some special programs on a fee basis when complete financial support is not available.

From the insight gained in this study, the authors recognize the UDI as contributing to the positive impact of the College on the local economy. The current rate of over $100,000 a year in non-local funds may well increase considerably as the UDI establishes itself further. The limiting factors are: (1) the availability of non-local funds for various special programs, (2) the demand for and the utility of the programs in the local economy, and (3) the energies of the staff of the UDI.

TABLE XIII
GRANTS RECEIVED BY THE URBAN DEVELOPMENT INSTITUTE
(AS OF JUNE 30, 1972)

Title I - Higher Education Act

Grant - $17,840 - Para-Professional School Personnel Training, November, 1971
Senior Citizens Seminar, May, 1971
Drug Education for Elementary Teachers, June, 1971
Received March, 1971

First Police Recruit School

Grant - Law Enforcement Assistance Administration - $7,625
A six-week course for newly-employed police officers
Received March, 1971

Federal Protective Officers Service School

Contract - General Services Administration - $7,600
Two, four-week basic training courses for Federal protective officers.
Received May, 1971

TABLE XIII (continued)
GRANTS RECEIVED BY THE URBAN DEVELOPMENT INSTITUTE
(AS OF JUNE 30, 1972)

Service Counselors Training Program

Contract - Bureau of Employment Security, Pennsylvania Department of Labor and Industry - $7,626
A series of four, three-semester hour courses for ten labor department employees.
Received May, 1971

Criminal Justice Training Center

Grant - Governor's Justice Commission - $49,288
Establishment of a center to provide training for criminal justice personnel in an eight-county region.

Criminal Justice Training Center

Grant - Governor's Justice Commission - $63,936
Continuation and expansion.
Received July, 1972

Assistance Technicians Training Program

Contract - Department of Welfare - $1,875
Interviewing techniques for assistance technicians for State hospitals
Received February, 1972

Police Promotional Examination

Contract - City of Harrisburg - $7,471
Three levels of examinations for the Harrisburg Police Department based on ten source materials supplied by them.
Received July, 1971

Police Promotional Examination

Contract - City of Harrisburg - $2,672
A revision of the three levels of examinations for the Harrisburg Police Department written the previous year.
Received July, 1972

Teaching Methods for Day Care Center Aides

Grant - Department of Welfare - $8,094
Four courses in teaching methods for day care personnel.
Received April, 1972

TABLE XIII (continued)
GRANTS RECEIVED BY THE URBAN DEVELOPMENT INSTITUTE
(AS OF JUNE 30, 1972)

Administrative Leadership for Supervisors

Grant - Loysville Youth Development Center - $5,980
To provide an understanding of the technical, human relations, social, and psychological aspects of supervision as well as the supervisor's role in management.
Received July, 1972

Supervisory Development Training Program

Contract - Department of Community Affairs - $5,980
Training program for municipal supervisory personnel of Capital Area Region.
Submitted and approved but not received to date

Day Care Center Worker Training

Grant - Department of Education - $48,128.75
15-month training program for present day care personnel
Submitted, not received to date

Teacher Aide Program

Grant - Department of Education - $32,656
18-month program to train persons to become instructional teacher aides
Submitted and approved, returned for lack of enrollment

Teacher Aide Program

Grant - Department of Education - $84,276
Same as above.
Submitted

Financial Aid

A portion of local students' tuition in Figure 7 is located in the non-local area. This income was represented in this manner because a portion of students' tuition was paid for through financial aid from non-local sources. Table XIV displays the financial report for 19 . A large amount of this aid, including loans, did not have to be re ed to the donor. Scholarships and grants are obviously not returnable. Many

loans have stipulations whereby certain types of service, such as nursing, will result in a portion of the loan being forgiven.

Items which were from non-local sources and which might not have been returned to the donor were estimated. The total estimated forgiveable funds from non-local sources and used by local students was $103,538. To obtain this figure, the total for all students was reduced by 16 percent, which is the percentage of total credits by all students which were earned by students from non-sponsoring districts during the 1970-71 fiscal year (see Table XV). The remainder was considered to be aid to local students by non-local sources. There is a negligible discrepancy between this delineation and the study area.

Sponsoring students and sponsoring districts each paid $951,345 in tuition. However, the students' payments were met in part by forgiveable financial aid from non-local sources. The breakdown ($951,345 = $874,807 + $103,538) was entered into the display of revenues in Figure 7 as local and non-local in origin.

Information on financial aid is reported because it is a source of non-local funding. In effect, it reduces the gross amount of income from local students and increases the impact on the local economy because additional monies are brought into the Tri-County area.

TABLE XIV
COLLEGE FINANCIAL AID REPORT, 1970-71

Program		Dollars Spent	Number of Students assisted
Federal			
National Defense Student Loan		$ 82,500[1]	174
Educational Opportunity Grant		13,175	40
College Work Study Program		13,800[1]	51
Law Enforcement Education Program			
Loans	$43,346 (full-time students)		100
Grants	22,878 (part-time students)		48
Total		66,224	
Nursing Program			
Nursing Loans	$10,557		18
Nursing Scholarship	7,996		12
Total		18,554	
State			
PHEAA Loan	$108,327		144
PHEAA Scholarship	34,459		123
Total		142,786	
College			
H.A.C.C. Scholarships		7,000	41
H.A.C.C.-Matching for Federal money		10,800	
H.A.C.C. Student Employment		81,250	148
Total		99,050	
Private Scholarships			
Developmental Scholarship		6,850	41
Other Private Scholarships		62,275	243
Total		69,125	
	Total	$505,214	1,135[2]
Total Loans		$244,730	436
Total Scholarships		154,633	548
Total Employment		105,850	199
Total All Programs		$505,214	1,183[2]

[1] Federal share
[2] These are not unduplicated number of students

TABLE XV
ESTIMATE OF NON-REPAYABLE FINANCIAL AIDS FROM
NON-LOCAL SOURCES TO LOCAL STUDENTS

Program	Amount
Federal	
Educational Opportunity Grant	$ 13,175
College Work Study Program	13,800
Law Enforcement Education Program	
Loans (100% forgiveable, approx. 80% are forgiven)	
$43,346 X $\frac{80}{100}$ =	34,677
Grants	22,878
Nursing Loans (85% forgiveable, 90% are forgiven)	
$10,557 X $\frac{90}{100}$ = $9,501; $9,501 X $\frac{85}{100}$ =	8,075
Nursing Scholarships	7,996
State	
PHEAA Scholarships	34,459
Total, All Students	$123,260
	X 0.84
Total, Local Students	$103,538

APPENDIX C

OMISSIONS FROM ACE FORMAT

The ACE study shows on page II a comprehensive set of expenditure items that, in theory, should be included in an economic impact study. Several of those categories were not estimated in this study. A list of omitted items is shown below in Table XVI.

TABLE XVI
ITEMS FROM ACE MODEL NOT INCLUDED IN H.A.C.C. STUDY

1. Local expenditures by local fraternities, sororities, and other student living groups
2. Value of local business real property committed to College-related business
3. Value of local business property, other than real property and inventory, committed to College-related business
4. Real estate taxes paid to local governments by the College
5. Real estate taxes paid to local governments by local fraternities, sororities, and other student living groups
6. Real estate taxes paid to local governments by local businesses for real property allocable to College-related business
7. Non-real property taxes paid by local businesses and student living groups to local governments
8. Sales tax revenue received by local governments as a result of College-related business
9. Operating cost of government-provided municipal services allocable to College-related influences
10. Value of local governments' properties allocable to College-related portion of services provided
11. Real estate taxes foregone through the tax-exempt status of the College
12. Value of municipal-type services self-provided by the College
13. Number of jobs (other than faculty, staff, and students employed by the College) attributable to the presence of the College

TABLE XVI (continued)
ITEMS FROM ACE MODEL NOT INCLUDED IN H.A.C.C. STUDY

14.	Personal income of local individuals from "College-related" (in the sense of item 13) jobs and business activities
15	Durable goods procured with income from College-related jobs and business activities

The reasons for omission may be classified as follows:

A. Items which were not relevant to the Tri-County area as a locality

B. Items which were not relevant to the specific operating conditions of the College

C. Items for which data was not available

D. Items which represent arbitrary pro-rates to which little real meaning can be attached

E. Items which were judged on a prior grounds to represent amounts that did not justify the cost of obtaining the necessary data

Category A includes items 8 and 11 from the list of omitted items (Table XVI). The estimates of item 11 involved too many hypotheticals which were beyond the scope of this study. The presence of the College represents a long-run political and social decision that was made in the past. Assuredly, a decision before the College was built to convert the land on which the College now stands to a high-employment, high-value added industrial complex would have a far greater positive "cash-flow" impact on the local area. The fundamental purpose of a college, however, is certainly not to stimulate current consumer spending, output, and employment. It is presumed that the careful assessment of the many long-run, intangible, and general non-quantifiable opportunity cost parameters of a college's local operations was made as part of the initial decision-making process. That decision having been made, all further questions in terms of comparative employment and expenditures impact are not really germane. If the present operation of the College is economically beneficial to the community, so much the better. If the "bottom line" in money terms were negative, this would only enable citizens to determine the current cost of "having a college." The mere existence of a negative dollar impact in no way establishes a presumption in favor of "eliminating the revenue-using activity and replacing it with a revenue-earning activity."

Category B includes items 1, 4, and 5. Items 2, 3, 6, 7, 13, 14, and 15 comprise Category C, while Category D, arbitrary pro-rates, includes items 9 and 10. The only item in Category E is 12. In no instance where data of any kind was available at a reasonable cost was an item omitted.

APPENDIX D
POPULATION FIGURES OF SPONSORING SCHOOL DISTRICTS
(1970 CENSUS)

	Boro or Twp.	District	County
Cumberland County			
Camp Hill School District		9,931	
Camp Hill Boro.	9,931		
Carlisle Area School District		29,076	
Carlisle Boro.	18 '79		
Dickinson Twp.	2, 6		
Mt. Holly Springs Boro.	2,009		
North Middleton Twp.	6,572		
Cumberland Valley School District		24,354	
Hampden Twp.	11,847		
Middlesex Twp.	2,857		
Monroe Twp.	3,326		
Silver Springs Twp.	6,324		
East Pennsboro School District		13,828	
East Pennsboro Twp.	12,440		
West Fairview Boro.	1,388		
Mechanicsburg Area School District		18,483	
Mechanicsburg Boro.	9,385		
Shiremanstown Boro.	1,773		
Upper Allen Twp.	7,325		
South Middleton School District		7,521	
South Middleton Twp.	7,521		
West Shore School District		45,832	
Lemoyne Boro.	4,625		
Lower Allen Twp.	13,690		
New Cumberland Boro.	9,803		
Wormleysburg Boro.	3,192		
*Fairview Twp. (York Co.)	9,248		
*Goldsboro Boro. (York Co.)	576		
*Lewisberry Boro. (York Co.)	490		
*Newberry Twp. Dist. 1 (York Co,)	4,208		
Total for Districts Based in County			149,025

APPENDIX D (continued)
POPULATION FIGURES OF SPONSORING SCHOOL DISTRICTS
(1970 CENSUS)

	Boro or Twp.	District	County
Dauphin County			
Central Dauphin School District		58,001	
Dauphin Boro.	998		
Lower Paxton Twp.	26,517		
Middle Paxton Twp.	3,362		
Paxtang Boro.	2,160		
Penbrook Boro.	3,379		
Swatara Twp.	17,178		
West Hanover Twp.	4,407		
Derry Township School District		16,045	
Derry Twp.	16,045		
Halifax Area School District		4,614	
Halifax Boro.	907		
Halifax Twp.	2,038		
Jackson Twp.	1,156		
Wayne Twp.	513		
Harrisburg School District		68,061	
Harrisburg City	68,061		
Lower Dauphin School District		14,334	
Conewago Twp.	1,124		
East Hanover Twp.	3,091		
Hummelstown Boro.	4,723		
Londonderry Twp.	3,453		
South Hanover Twp.	1,943		
Middletown Area School District		15,387	
Lower Swatara Twp.	5,267		
Middletown Boro.	9,080		
Royalton Boro.	1,040		
Millersburg Area School District		5,792	
Millersburg Boro.	3,074		
Upper Paxton Twp.	2,718		
Steelton-Highspire School District		11,503	
Highspire Boro.	2,947		
Steelton Boro.	8,556		

APPENDIX D (continued)
POPULATION FIGURES OF SPONSORING SCHOOL DISTRICTS
(1970 CENSUS)

	Boro or Twp.	District	County
Dauphin County (continued)			
Susquehanna Twp. School District		17,008	
Susquehanna Twp.	17,008		
Upper Dauphin Area School District		8,335	
Berrysburg Boro.	443		
Elizabethville Boro.	1,629		
Gratz Boro.	675		
Jefferson Twp.	164		
Lykens Boro.	2,506		
Lykens Twp.	997		
Mifflin Twp.	475		
Pillow Boro.	332		
Washington Twp.	1,114		
Williams Valley School District		8,794	
Rush Twp.	160		
Wiconisco Twp.	1,471		
Williams Twp.	945		
Williamstown Boro.	1,919		
*Porter Twp. (Schuylkill Co.)	2,525		
*Tower City Boro. (Schuylkill Co.)	1,774		
Total for Districts Based in County			227,874

APPENDIX D (continued)
POPULATION FIGURES OF SPONSORING SCHOOL DISTRICTS
(1970 CENSUS)

	Boro or Twp.	District	County
Perry County			
Greenwood School District		3,770	
Greenwood Twp.	747		
Liverpool Boro.	847		
Liverpool Twp.	553		
Millerstown Boro.	612		
Tuscarora Twp.	624		
*Greenwood Twp. (Juniata Co.)	387		
Newport School District		5,558	
Buffalo Twp.	599		
Howe Twp.	397		
Juniata Twp.	800		
Miller Twp.	458		
Newport Boro.	1,747		
Oliver Twp.	1,557		
Susquenita School District		9,971	
Duncannon Boro.	1,739		
Marysville Boro.	2,328		
New Buffalo Boro.	150		
Penn Twp.	2,269		
Reed Twp. (Dauphin Co.)	259		
Rye Twp.	1,316		
Watts Twp.	613		
Wheatfield Twp.	1,297		
West Perry School District		9,921	
Blain Boro.	287		
Bloomfield Boro.	1,032		
Carroll Twp.	1,904		
Centre Twp.	1,109		
Jackson Twp.	413		
Landisburg Boro.	269		
Northeast Madison Twp.	419		
Saville Twp.	1,200		
Southwest Madison Twp.	537		
Spring Twp.	1,070		
Toboyne Twp. (portion)(estimate)	251		
Tyrone Twp.	1,430		
Total for Districts Based in County			29,220

* These districts or portions of districts are outside the Tri-County area and were not considered part of the local impact area.

Source: U.S. Bureau of the Census. U. S. Census of Populations, 1970. Number of Inhabitants. Final Report PC (1)-A40, Pennsylvania.

APPENDIX E

ECONOMIC IMPACT STUDIES AND COMPUTER SIMULATION

This study does not report standard errors for the various estimated mean expenditure amounts. In a study of this nature, the reader may assume that the standard errors in most cases are large. A Federal Reserve Board publication (1962) reported a standard error of $36 for a mean reported amount in checking accounts of $38, indicating a two-out-of-three chance that the true mean amount was somewhere between $2 and $74. This is not an uncommon result in economic surveys.

Several considerations led the authors to omit any calculations of standard errors from this study. The most accessible methods are those of classical statistics, which are inappropriate for most economic variables. Personal incomes, for example, are generally not normally distributed (Cramer, 1971); therefore, the application to such data of statistical methods requiring normally-distributed variables tends to produce results that vary from "difficult to interpret" to "meaningless." The reporting errors for local taxes in this study, as another example, can be safely assumed to be large enough to render further conventional statistical calculations an idle exercise. And finally, perhaps more importantly, neither the ACE nor this study was designed as a full-scale simultaneous equation econometric model of the type that meaningfully requires advanced statistical techniques.

Although experienced professional statisticians may be adept at correctly interpreting inappropriately-calculated standard errors, the great majority of those who read the study are not likely to be able to do so, and the authors do not claim this type of expertise. The problems of interpreting or refining such conventionally-calculated standard errors relative to the purpose of this study preclude their computation and presentation. The authors feel that the nature of the net economic impact of the College has been adequately demonstrated. The methodology of producing "conservative" and "total" impacts ought to reasonably bracket the "true" impact.

A more productive use of the information obtained by the study could take the form of a computer simulation technique known as "model sampling," which is a variant of a general technique usually referred to as "Monte Carlo" (Naylor et al, 1966). The essence of this technique in terms of this study consists in using information about the probability distribution associated with each of the expenditure components and underlying parameters to generate a set of values that are then used in the computation of the bottom line impact figures. Each result is one possible value for the overall net economic impact. Each time this process is repeated, a different set of numbers to be used in the impact computation is generated. Exactly how great the individual expenditure item differences are, and how frequently they differ by some amount, depends on the parameters assumed or derived for the relevant probability distributions. Repetition of this "number-generating

and adding-up" process a great many times results in a frequency distribution of final net economic impact values, from which a mean or "expected value" and some measure of the likely variation of such a value can be calculated.

At least one author (Hertz, 1964) feels that subjective probability distributions are adequate if objective data are not available. The subjective probabilities, however, are to be provided by substantive experts, and in the present case such "experts" are difficult to locate, if, indeed, they exist. Whether or not "non-expert" subjective probabilities would be adequate is an open question.

A problem of even greater proportion is the likely interdependence of the probability distributions for the various expenditure items. The standard methods for arriving at the combined effect of two or more probability distributions, whether the method is analytical or one involving simulation, assume independence among the distributions involved (Naylor, et al, 1966, Ch. 4; Feller, 1971, pp. 26-29, pp. 143-148; Hadley & Whitin, 1963, pp. 118-126). Extensions to the dependent case still appear to be exploratory or ad hoc. This, of course, is not an insurmountable barrier; given a sufficient commitment to produce computer simulation results by the method discussed, the job could be done. Interpreting the results of that, or any other type of computer simulations study, however, remains an exploratory area (Naylor et al, 1966, Ch. 8).

The primary purpose that computed standard deviations would serve in this study would be to provide a basis for a computer evaluation of the effects of interaction between the extent of variability in the underlying parameters of the study. The authors leave this extension for future efforts to estimate the economic impact of the College on the local communities.

APPENDIX F

SUMMARY OF FUNDS AND MAJOR CAPITAL EXPENDITURES
THROUGH JULY 1, 1972

The following display summarizes the major capital expenditures by the College. These expenditures were in the capital budget which is distinct from the operating budget. Capital expenditures will drop and level off considerably after the construction of the final proposed classroom building, West Hall. The capital budget will then be relatively small. The operating budget is what has been emphasized in this study, because it is what will recur as long as the College is in existence.

The expenditures for construction were 100 percent local. The expenditures for equipment were estimated at 50 percent local. Overall, 85 percent of local funds were from local tax monies; the rest was from gifts. All figures have been rounded to the nearest $100.

Summary of Funds and Major Capital Expenditures
Through July 1, 1972

EAST CLASSROOM AND LIBRARY

Income

Source of Funds for Construction:	
Federal	$1,674,500
State	1,260,600
Local	1,260,600
Source of Funds for Equipment:	
Federal	333,000
State	582,950
Local	582,950

Expenditure

Construction:	
General contractor - H.B. Alexander & Son	2,503,800
Electrical - E.C. Ernst, Inc.	549,900
Heating and ventilating - Eshenaur's, Inc.	636,500
Plumbing - Eshenaur's, Inc.	183,900
Legal	8,600
Site preparation	10,500
Capitalized interest (local banks)	70,000
Architect - Wm. Lynch Murray & Assoc.	232,500
Equipment:	
Moveable equipment	1,112,800
Library books and microfilm	386,100

SERVICE BUILDING AND COLLEGE CENTER

Income

Source of Funds for Construction:	
Federal	None
State	$ 612,300
Local	612,300
Source of Funds for Equipment:	
Federal	None
State	87,500
Local	87,400

Expenditures

Construction:	
General contractor - Spera Construction Co.	664,500
Electrical - Betterlite, Inc.	164,500
Heating and ventilating - Eshenaur's, Inc.	276,900
Plumbing - Eshenaur's, Inc.	49,300
Architect - Wm. Lynch Murray & Assoc.	69,300
Equipment:	
Moveable equipment	175,000

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SOUTH HALL CLASSROOM

Income

Source of Funds for Construction:	
Federal	$1,047,200
State	912,700
Local	912,700
Source of Funds for Equipment:	
Federal	50,000
State	200,000
Local	200,000

Expenditures

Construction:	
General contractor - H.B. Alexander & Son	1,405,300
Electrical - General Electric Service	335,900
Heating and ventilating - Eshenaur's, Inc.	507,700
Plumbing - Eshenaur's, Inc.	124,600
Architect - Wm. Lynch Murray & Assoc.	237,500
Bridge and parking lot - Kimbob	261,600
Equipment:	
Moveable equipment	450,000

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PHYSICAL EDUCATION BUILDING

Income

Source of Funds for Construction:	
Federal	$ 345,500
State	352,000
Local	352,000
Source of Funds for Equipment:	
Federal	None
State	20,000
Local	20,000

Expenditures

Construction:	
General contractor - H.B. Alexander & Son	623,200
Electrical - General Electric Service Co.	153,400
Plumbing - Eshenaur's, Inc.	109,200
Heating and ventilating - Eshenaur's, Inc.	104,300
Architect - Wm. Lynch Murray & Assoc.	59,400
Equipment:	
Moveable equipment	40,000

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ADDITION TO COLLEGE CENTER

Income

Source of Funds for Construction:	
Federal	None
State	$ 252,750
Local	252,750

Expenditures

Construction:	
General contractor - H.B. Alexander & Son	245,400
Electric - Pfenninger	68,700
Heating and ventilating - Eshenaur's, Inc.	148,700
Plumbing - Eshenaur's, Inc.	14,100
Architect - Wm. Lynch Murray & Assoc.	28,600

ADDITION TO PHYSICAL EDUCATION BUILDING

Income

Source of Funds for Construction:	
Federal	None
State	$ 388,800
Local	388,800

Expenditures

Construction:	
General contractor - Beigh Construction Co.	510,500
Electrical - General Electrical Company	59,700
Heating and ventilating - Herre Bros.	80,100
Plumbing - Lehman, Houser, and Lutz	83,300
Architect - Wm. Lynch Murray & Assoc.	44,000

FOOTBRIDGE AND ADDITION TO WEST PARKING LOT

Income

Source of Funds for Construction:	
Federal	None
State	$ 155,000
Local	24,000

Expenditures

Construction:	
General contractor - Kimbob, Inc.	168,900
Architect - Wm. Lynch Murray & Assoc.	10,100

PAVING, CURBING, LIGHTING, AND 250 ADDITIONAL PARKING SPACES

Income

Source of Funds for Construction:	
Federal	None
State	$ 77,200
Local	77,200

Expenditures

Construction:	
General contractor - Sebastian Bros.	121,200
Electrical - Betterlite Company	24,500
Architect - Wm. Lynch Murray & Assoc.	8,700

TENNIS COURTS

Income

Source of Funds for Construction:	
Federal	None
State	$ 64,800
Local	64,800

Expenditures

Construction:	
General contractor - Trindle Construction Co.	53,800
Electrical - General Electric Service	68,500
Architect - Wm. Lynch Murray & Assoc.	7,300

GOLF PUTTING GREEN

Income

Source of Funds for Construction:	
Federal	None
State	$ 3,600
Local	3,500

Expenditures

Construction:	
General contractor - Colonial Nursery	6,700
Architect - Wm. Lynch Murray & Assoc.	400

ALTERATIONS - EAST HALL (Dean of Instruction & Duplicating Room)

Income

Source of Funds for Construction:	
Federal	None
State	$ 4,000
Local	4,000

Expenditures

Construction:	
General contractor - H.B. Alexander & Son	7,500
Architect - Wm. Lynch Murray & Assoc.	500

ALTERATIONS - EAST HALL (Admissions, Records, Business Office)

Income

Source of Funds for Construction:	
Federal	None
State	$ 7,200
Local	7,300

Expenditures

Construction:	
General contractor - H.B. Alexander & Son	4,800
Electrical - General Electrical Service	2,300
Air conditioning - Eshenaur's, Inc.	6,600
Architect - Wm. Lynch Murray & Assoc.	800

ALTERATIONS - SERVICE BUILDING

Income

Source of Funds for Construction:	
Federal	None
State	$ 2,600
Local	2,600

Expenditures

Construction:	
General contractor - H.B. Alexander & Son	4,900
Architect - Wm. Lynch Murray & Assoc.	300

ALTERATIONS - EAST HALL (Trash and Secretarial Rooms)

Income

Source of Funds for Construction:	
Federal	None
State	$ 950
Local	950

Expenditures

Construction:	
General contractor - Miller & Sons	1,800
Architect - Wm. Lynch Murray & Assoc.	100

ALTERATIONS - SOUTH PARKING LOT

Income

Source of Funds for Construction:	
Federal	None
State	$ 4,400
Local	4,400

Expenditures

Construction:	
General contractor - Timco Construction Co.	8,300
Architect - Wm. Lynch Murray & Assoc.	500

APPENDIX G

HARRISBURG AREA COMMUNITY COLLEGE
SURVEY TO STUDY EFFECT OF COLLEGE ON LOCAL ECONOMY*

1. What is your status at H.A.C.C.? (Check the category representing your primary status at the College.)
   ___ Professional staff (faculty, administration, staff, paraprofessionals)
   ___ Lecturer (part-time instructor)
   ___ Non-professional staff (secretarial, clerical, custodial, maintenance)
   ___ Student: full-time (12 credits or more)
   ___ Student: part-time (less than 12 credits)

2. Please indicate your age as of your last birthday.
   ___ 35 years old or older
   ___ under 35

3. If you are a student at H.A.C.C., is a school district supporting (sponsoring) your tuition? (Check the reverse side of this sheet for list of sponsoring districts.) (If you are not a student, go to #4.)
   ___ Yes
   ___ No

4. How many persons are there in your household? ___ (Household = you, your husband or wife, and children whom you support. Do not include parents.)

   a. How many are children (18 or under)? ___
   b. How many of those children attend public schools? ___

5. Where is your local residence? (See reverse side of this sheet for list of sponsoring districts, then check one category each under both (a) and (b).)

   (a)
   ___ Sponsoring district
   ___ Non-sponsoring district

   (b)
   ___ Tri-County area (Cumberland, Dauphin, and Perry Counties)
   ___ Outside Tri-County area

6. In what type of housing do you currently reside? (Check one.)
   ___ Rent (yourself and/or with others)
   ___ Own my own home
   ___ Live with parents or other relatives
   ___ Other (specify): _____

7. Please estimate your average monthly expenditures in the following categories. (If you do not have some of these expenses, fill in none on appropriate line.)

   a. Housing expense (mortgage or rent, repairs, utilities, heat) a. $_____/month
   b. Food expense b. $_____/month
   c. All other expenses (clothing, transportation, entertainment, insurance, car, etc.) c. $_____/month

8. What is the approximate total yearly income of all persons in your household before payroll deductions? $_____/year. (Household = you, your husband or wife, and children whom you support. Do not include parents.)

   After payroll deductions? $_____/year

(continue on reverse side)

Answer 9a if you are a local resident. Answer 9b if you are a non-local resident. Local = within the Tri-County area.

9. a. Local residents. Approximately how much money have you spent while you were outside of the Tri-County area during the past year (including vacations, trips, and payments to firms outside the Tri-County area.) $_____

b. Non-local residents. Approximately how much money have you spent while you were in the Tri-County area (at H.A.C.C. or visiting the area) during the past year? (Do not include tuition at H.A.C.C.) $_____

10. How much tax does your household pay yearly to local (Tri-County) area governments? (Household = you, your husband or wife, and children whom you support. Do not include parents.)

a. Per Capita (Head) Tax	a. $_____/year
b. Occupational Assessment Tax	b. $_____/year
c. Occupational Privilege Tax	c. $_____/year
d. Wage Tax (1%) Earned Income	d. $_____/year
e. Property Tax (if separate from other taxes)	e. $_____/year
f. School Tax (if separate from other taxes)	f. $_____/year
g. Other: _____	g. $_____/year

11. Would you be living at your present residence if you were not associated with H.A.C.C.? (This is to say, Would you be living in this area if H.A.C.C. were not here?) Check one.

___ Yes
___ No

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List of Sponsoring Districts
(If you live in a sponsoring district, please circle it below)

Camp Hill	Halifax Area	Steelton-Highspire
Carlisle Area	Harrisburg	Susquehanna Twp.
Central Dauphin	Lower Dauphin	Susquenita
Cumberland Valley	Mechanicsburg Area	Upper Dauphin Area
Derry Township	Middletown Area	West Perry
East Pennsboro Area	Millersburg-Upper Paxton	West Shore
Greenwood	Newport	Williams Valley
	South Middleton	

* If you have recently moved in to or out of the Tri-County area (Dauphin, Cumberland, or Perry County), estimate items as requested basing them on your current address and rate of spending.

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Thank you for your assistance. This information will be grouped with the responses of other individuals so that it is totally anonymous. Copies of the summary will be available to you upon request to the Research Office at H.A.C.C.

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