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**A study of the determinants in selecting a successful Principles
of Economics textbook**

Tate, James Jethro, Sr., D.A.

Middle Tennessee State University, 1991

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A STUDY OF THE DETERMINANTS IN SELECTING
A SUCCESSFUL PRINCIPLES OF
ECONOMICS TEXTBOOK

JAMES J. TATE SR.

A dissertation submitted to the
Graduate Faculty of Middle Tennessee State University
in partial fulfillment of the requirements
for the degree Doctor of Arts

December, 1991

A STUDY OF THE DETERMINANTS IN SELECTING
A SUCCESSFUL PRINCIPLES OF
ECONOMICS TEXTBOOK

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ABSTRACT

A STUDY OF THE DETERMINANTS IN SELECTING
A SUCCESSFUL PRINCIPLES OF
ECONOMICS TEXTBOOK

JAMES J TATE SR.

This study involved the identification of those factors which are important to university faculty when adopting a Principles of Economics textbook which meets the needs of both students and the instructor. These factors were grouped into two classes. The first class involved the textbook itself and its ancillary materials, while the second class involved the academic environment impinging on the textbook selection process. To obtain information about the textbook features and the selection environment, a national sample was taken of 500 colleges and/or universities. The sample was drawn from among approximately one thousand schools using a random number generator. From the sample sixty-seven usable responses were received and subjected to regression analysis using the Logit Model. The model was designed to provide an estimate of the probability of a successful textbook adoption based upon the identified textbook and environmental adoption factors.

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Two measures of a successful adoption were applied in the study. The first was the textbook edition and it was designated as model 1. The second measure, or model 2, was the faculty user's rating of the textbook. Although neither model performed as expected in identifying those factors important in a successful adoption, model 2 where the criterion of a successful adoption was the user's appraisal, did perform better. Such textbook features as ancillary and support materials for the student and environmental factors as a school's accreditation and the location of the economics department in the university organization were statistically significant. But on the whole the models failed in their attempt to identify and assess those factors important to a successful textbook selection. The remaining explanatory variables either failed the test of statistical significance or registered an unanticipated sign.

Several implications emerged as a result of the study which could possibly be the basis for more effective future research into the textbook selection process. A different measure of a successful adoption might be formulated, possibly one which involved the number of colleges adopting the textbook. Instead of relying exclusively on faculty responses, another study could be designed which included student user responses. In addition, some of the more encompassing explanatory variables could be reformulated

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and specified with more precision to ensure more meaningful responses.

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CHAPTER I

INTRODUCTION

Significance of Study

To the student, textbook relevancy and clarity in relation to the instructor's exposition is paramount.¹ Identification of textbook pedagogical attributes and any academic environment influences which assist in the discovery of these attributes could add awareness for subsequent textbook adopters. The adoption of an appropriate textbook should promote better instruction of the principles of Economics and, in turn, facilitate student learning. This study attempts to provide insight into the process of selecting a textbook which is successful in achieving these ends.

There are many references in the literature to pedagogical aspects and construction of textbooks. However, linking these aspects to the effects of environmental factors on the selection of "successful" economic textbooks is not noted. In addition, most studies of textbook selection criteria have only dealt with the internal features of textbooks, their content. But increasingly textbooks are offered as a package where

¹ Joseph E. Stiglitz, "On the Market for Principles of Economics Textbooks: Innovation and Product Differentiation," Journal of Economic Education (Spring 1988):171-177.

ancillary and support materials and services are included. This study embraces the package notion by investigating not only textbook content, but also textbook integrated learning aids and ancillary/support materials as criteria for a "successful" textbook selection. The academic environment which impinges on the decision-making process in adopting a "successful" textbook is also explored.

Statement of the Problem

The larger problem dealt with here in this study is how an instructor reduces the immense complexity of economics to a comprehensible form for the student. One part of the screening process, the selection of the "proper" textbook, is literally the problem at hand. Or rather, just what criteria are used in the adoption process for a particular "successful" textbook for a specific pedagogical situation? And, how do these selection criteria relate to the environment of the selector? That is, does the actual selection result from the publisher's promotion of the instructional package bundled with the textbook, or from a conscious comparison of student needs to textbook attributes?

An interest in improving the pedagogical process for introductory economics on the part of economics instructors is assumed here. Economists are expected to be interested in the most efficient allocation of scarce resources. Instructors and students alike have a time management

dilemma. Anything that improves the communication between these groups and promotes a more effective use of time and effort is of value.

Thus the primary objective of this study is to provide insights for the instructor or departmental committee when selecting an introductory economics textbook. It is intended that this study will compare the criteria, such as textbook content, or pedagogical attributes such as rhetorical devices, style, and textbook organization used to select a "successful" textbook, while differentiating according to environmental factors. These factors are considered to be whether the school is a member of the American Assembly of Collegiate Schools of Business (AACSB) and whether the school is a private or public institution. In addition, minimum ACT requirements, and whether the economics department is in the business school or part of the humanities community will be tested for relevance.

Hypothesis

The study begins by defining a "successful" economics textbook adoption. Success involves the adoption of a textbook which is in its third or higher edition. An alternative definition of success is based upon the appraisal given by the classroom user of the textbook. The study then attempts to assess the impact on the selection process of not only the attributes of the textbook package, such as content, pedagogical features, rhetorical devices,

style, and ancillary materials, but also the impact on the selection process of the academic atmosphere in which the selection is made.

In this study, nine "new generation" textbooks, or current textbooks that are components of a publisher's instructional package, were reviewed. And for perspective, three textbooks of approximately fifteen years past were reviewed. Appendix 1 contains a list of these textbooks. In addition, the promotional literature for pertinent publications was surveyed.

An examination of these textbooks and their promotional literature suggests that textbook package attributes can be conveniently grouped into six classes:

1. Text Integrated Learning Aids (TINT) - whether the textbook contains margin glossaries, key terms, chapters previews, etc.

2. Ancillary/Support Materials for the Instructor (ANSUI) - whether the textbook has instructor's manual, transparencies, computerized test banks, etc.

3. Ancillary/Support Materials for the Student (ANSUS) - whether the textbook has study guides, newsletters, computerized tutorials, etc.

4. Organization/Format (ORFO) - whether macro or micro theory is presented first, integrated global material, paperback "splits", etc.

5. Readability and Rigor (READ) - difficulty level, depth, and style.

6. Content (CON) - topics covered: urban, radical, pollution, energy, public choice, Eastern Europe, etc.

A positive association between each of these textbook attributes and a successful adoption is hypothesized.

Environmental factors can be grouped as follows:

1. AACSB School or not (AACSB) - When an academic program has definite standards, it is assumed that a more careful analysis of textbook merits will be made, resulting in the adoption of a "successful" textbook. Thus a positive association is expected.

2. Public or private school (POP) - Public institutions have a more diverse student body which necessitates accommodations to meet the academic needs of students with a variety of academic backgrounds. Such accommodations could increase the probability of not adopting a "successful" textbook. However, whether a negative relationship between public schools and successful adoptions exists will be determined by empirical analysis.

3. Whether the economics department is in a school of business (BUS) - If the department of economics is in a school of business, the Principles of Economics Course primarily performs a service role for several business disciplines. Therefore, adaptations often must be made which could increase the chance of not selecting a

successful textbook. Again, whether a negative or positive association exists will be determined by empirical analysis.

4. Frequency of textbook changes (FRE) - If the textbook is frequently changed according to a certain time interval, it is assumed that a less careful analysis is made in the adoption process, resulting in the selection of a less "successful" book. Therefore, a negative association is expected.

5. Whether the textbook is selected by a committee for common use, or by individual faculty (COMM) - Committee selection often involves compromises on textbook features, thus decreasing the possibility of a successful adoption. But the direction of change is questionable and will be determined by empirical analysis.

6. Minimum ACT score for admission (ACT) - Where admission standards are high, it is expected that textbooks whose rigor and effectiveness have been tested by long use will be selected. A positive relationship between ACT scores and success in adoption is therefore anticipated.

Individually and collectively these textbook package and environmental factors are hypothesized to explain the process of selecting a "successful" Principles of Economics textbook. A linear multiple regression is used to estimate the relative importance of each factor:

$$\begin{array}{cccccc}
 + & + & + & + & + & + \\
 \text{SUCCESS} = f(\text{TINT}, \text{READ}, \text{ANSUS}, \text{ANSUI}, \text{ORFO}, \text{CON}, \\
 + & ? & ? & - & ? & + \\
 \text{AACSB}, \text{POP}, \text{BUS}, \text{FRE}, \text{COMM}, \text{ACT}).
 \end{array}$$

Each factor in the regression equation is specified as a dummy variable and a questionnaire is prepared with questions structured to accommodate the procedure.

Limitations of Study

The proposed study is limited to the four-year college and university economics departments that offer programs in economics. The range of textbooks considered is also limited to the books in classroom during the spring of 1991. Only entry-level Principles of Economics textbooks are included in the evaluation.

Procedures for Collecting and Treating Data

In order to collect data, a mail questionnaire was prepared with a design to elicit the cognizant decision criteria and environmental factors involved in selecting current introductory textbooks. Appendix 2 provides a copy of this questionnaire which was mailed to a sample of 500 department heads of selected four-year institutions offering introductory economics courses. Two directories were used to identify the target population: The College Blue Book, published by the Macmillan Publishing Company and The College Handbook, published by the College Entrance

Examination Board. These target schools were numbered and randomly drawn for inclusion in the 500 target sample.

The various possible responses to the questionnaire were coded in a suitable numerical range, e.g., 1,2, ..., 5-- for each possible selection, except when the answer was a purely informational inquiry. These coded responses were then tested statistically for validity against the various criteria related above.

Organization of the Study

Chapter 1 states the significance of the study, the problem to be investigated, the hypothesis, limitations, procedures for collecting and treating the data, and the organization of the study.

Chapter 2 reviews the literature and pertinent or supporting publications.

Chapter 3 explains and details the adoption criteria and impinging environmental factors.

Chapter 4 summarizes the collected data, explains the coding and encoding procedures, and analyzes the data.

Chapter 5 presents the summary, conclusions, and implications that result from analysis of the data.

CHAPTER II

SURVEY OF LITERATURE

Expanding Scope of Economics Textbooks

Most introductory economics textbooks of today trace their organizational roots to Samuelson's Economics: An Introductory Analysis circa 1948.² Bell who is, it seems, a practitioner rather than an author of an introductory textbook, observes that the Samuelson Model is fixated upon one country, usually the United States (U.S.), and the then current U.S. economic problems of economic growth, inflation, and unemployment. She implies that this closed economy model has since been the subject of feeble attempts to achieve open economy modernization by the inclusion of one or more international economics chapters at the end of the text that deal with the world economy and foreign trade. On the other hand, McConnell, who is an author, notes that the introductory economics student reader is ill prepared for the pedagogical complications of open economy macro and micro concepts such as the addition of the marginal propensity to import (MPM) in the denominator of

² Carolyn Shaw Bell, "The Principles of Economics from Now until Then," Journal of Economic Education (Spring 1988):133.

the Keynesian multiplier.³ Bell in anticipation of such an argument, offers a list of subjects that in the past were considered to be difficult for "sound teaching" such as the topics of welfare economics, cost/benefit analysis, externalities, rational expectations, flexible exchange rates, and the J-curve. After detailing her list, she wonders if recalcitrance on the part of the instructor was more a factor than concerns about rigor for the student in slowing the incorporation of these topics into the lecture and the introductory textbook.⁴

Bell's notion that the textbook is most important to the student is both supported and disagreed with by Amacher. He disagrees because of his observations that some instructors of introductory students have little training in economic theory ...other than an introductory course in economics. According to Amacher, this particular group of instructors rely heavily upon the textbook for interpretation and inspiration. The notion that the student is the intended audience is supported by Amacher

³ Campbell R. McConnell, "The Principles of Economics from Now until Then: A Response," Journal of Economic Education (Spring 1988):149.

⁴ Bell, "The Principles of Economics from Now until Then," p. 139.

with the thought that most authors hope to be included in a student's permanent reference library.⁵

Introductory economics textbooks in the United States tend to grow larger with age much like the general population.⁶ Bell attributes this tendency to the unwillingness of an author to allow any macro theory to win over a competitor theory.⁷ This same reluctance is not noted in the micro arena. In this area, Bell suggests that there are more "working examples" and less graphs and charts. Amacher holds a different view as to why introductory economic textbooks grow over time. His reason may relate to the fact that he is an author of an introductory text and it may be close to the truth for the same reason. Amacher feels that authors are not fearful of putting in too many subjects and being rejected by a potential consumer. Rather, authors fear leaving out a

⁵ Ryan C. Amacher, "The Principles of Economics from Now until Then: A Comment," Journal of Economic Education (Spring 1988):153.

⁶ Bell, "The Principles of Economics from Now until Then," p. 134.

⁷ Ibid., p. 135.

favorite topic or subject and being rejected by an instructor or a committee.⁸

Bell proposes that economics textbook authors should cite more "established" sources when including statistics on items such as black teen-age unemployment, housing expenditures, and net exports, rather than sources sometimes cited for these numbers. She feels that the Survey of Current Business, the Economic Report of the President, or the Statistical Abstract of the United States are more appropriate sources than the ambivalent "U.S. Bureau of the Census" or "Department of Labor" or "International Monetary Fund." Although she implies that these are better than citing personal savings numbers from Morgan Guaranty, and black teen-age unemployment figures from the Urban League.⁹ Her complaint seems to be that the student is not encouraged to check the data nor is he/she encouraged to learn to draw conclusions, which is a by-product of examining these data-rich sources.

Bell is joined in the call for utilitarianism with frequent examples by Steinley. Utilitarian in the sense that these ideal examples should move across age and

⁸ Amacher, "The Principles of Economics from Now until Then: A Comment," p. 155.

⁹ Bell, "The Principles of Economics from Now until Then," p. 143.

experience boundaries but somehow be specific enough to apply to the intended textbook audience. Emphasizing the fact that neophytes have difficulty with textbook content itself and that good examples are needed to understand the material, Steinley asks for appropriate examples at frequent intervals.¹⁰

Schiller, who is an author of an introductory economics textbook, suggests that current difficulties of teaching economic principles is not necessarily centered on the textbooks. According to Schiller, the student audience has experienced a significant change in the past decade that demands a downgrading of the readability and comprehension levels of textbooks.¹¹ The implication here is, it seems, that the textbooks have just not been rewritten to accommodate student learning abilities.

Whether the problem lies in the textbooks or in the student, Tyson-Bernstein implies that academics have the power to correct the problem. She also implies that current practices in academia will have to change to rectify any problems. The acceptance of publisher fees by professors for "content consultation" that is thinly veiled

¹⁰ Gary L. Steinley, "A Framework for Evaluating Textbooks," The Clearing House 61 (November 1987):115.

¹¹ Bradley Schiller, "On the Market for Principles of Economics Textbooks: Innovation and Product Differentiation--A Response," Journal of Economic Education (Spring 1988):184.

name renting, as she indicates that only the academic's name rather than his or her advice will be used by the publisher, is one of her complaints. Another would be the academic scorn of textbook writing that leads one to publish in accordance with a schedule of reward that encourages writing for journals rather than textbooks. This system does not reward a knowledge synthesizer who places his/her efforts in an introductory textbook. Bernstein continues to fault academia for participation in the two-tier review system which publishers use for introductory textbooks designed to reduce the publisher's risk. This system consist of full professors at major research institutions who review overall textbook content. But the specific intellectual content is reviewed by community college instructors and teachers of lower-division courses at state supported institutions. Implied here is the intent on the part of the publisher to get all groups to "buy into an idea" and generate a circle of champions for the textbook. What really happens, according to Bernstein, is that depth is sacrificed for coverage and the textbook becomes less coherent, factual distortions occur as a result of excessive compression of the material, and in general writing style suffers.¹²

¹² Harriet Tyson-Bernstein, "The Academy's Contribution to the Impoverishment of America's Textbooks," Phi Delta Kappan (November 1988):195.

McConnell's endorsement of Bell's "suggestion that we somehow need to do a more objective job of evaluating textbooks"¹³ raises the value of this research project. Schiller's concern "that no one is applying imaginative and convincing ways of doing comparative evaluations of economics textbooks"¹⁴ further supports this study of selection determinants of principles textbooks. Others, both practitioners and authors, have thoughts on introductory economic textbooks attributes.

Learning Objectives and The Selection of
Economics Textbooks

The textbook has taken on an "expanded role" in recent times. This was the conclusion of the 1987 Invitational Conference on the Principles of Economics Textbooks reported in the Spring 1988 issue of The Journal of Economic Education.¹⁵ However, the textbook, as part of a package is heavily promoted and advertised as a package rather than sold on the merits of its contents. Such

¹³ McConnell, "The Principles of Economics from Now until Then: A Response," p. 151.

¹⁴ Schiller, "On the Market for Principles of Economics Textbooks: Innovation and Product Differentiation--A Response," p. 184.

¹⁵ Robin L. Bartlett and Dennis J. Weidenaar, "An Introduction to the Proceedings of the 1987 Invitational Conference on the Principles of Economic Textbook," Journal of Economic Education (Spring 1988):109.

promotion methods lead to "rites of adoption"¹⁶ that subject potential textbook adopters to visits from persuasive sales people which may produce a selection directed at the instructor's needs and not at the students needs.

However, there appears to be some contention about the proper structure of the textbook as demonstrated by the proceedings of the 1987 sponsored invitational conference which considered the issues surrounding the economics textbook and its contents. The objective in selecting an introductory economic textbook should be to facilitate or enhance the student learning process. Some persons perceive the learning objectives in an economics principles course to include the following.¹⁷

Knowledge - rote memory of simple rules, facts, terminologies, sequences, and principals.

Comprehension - the translation of one level of abstraction to another.

Application - the ability to apply a principle to a new problem.

¹⁶ Ibid.

¹⁷ James M. L. Karns, Gene E. Burton, and Gerald D. Martin, "Learning Objectives and Testing: An Analysis of Six Principles of Economics Textbooks, Using Bloom's Taxonomy," Journal of Economic Education (Summer 1983):18-19.

Analysis - the breaking apart of a communication into elements, finding assumptions, identifying causal relationships, and separating facts from opinions.

Synthesis - the process of using one's knowledge base to develop a hypothesis or theory of one's own.

Evaluation - value judgments that evolve from critical evaluation of information and theories. The list is inverse in order from Bloom's cognitive domain level. It is the basis for a comparison by Karns, et al. , of the stated learning objectives of a textbook and the testing of the objectives by the accompanying instructor's manual. The study by Karns and others concluded that the stated textbook objectives were generally on a higher learning plane, but the actual test questions contained in the instructor's manual were at lower learning levels.¹⁸

Clear objectives are a part of all successful endeavors in modern life. The classroom experience is a special case of life's experiences. The need for objectives is intuitive, or so it seems to Seigfried and Fels. They present the notion that instructors should be clear to themselves first and to the students second in what these objectives might be. Further, they should be clear as to how the progress toward these goals are to be measured. There should exist an objective statement of student conditions in arriving at the learning goals and

¹⁸ Ibid. , p. 17.

the criteria used to test just how well one has done.¹⁹ With clear objectives, one should have a better chance at selecting a suitable textbook.

Karns et al. advance the notion that "Professors should be like the efficient managers we theorize about-- responsible for results."²⁰ This implies that time will have to be taken by someone to compare the internal agreement of the "textbook package" as well as time to objectively compare the merits of one package to another. The key word here is time which is one of the pressures upon modern life that is not expected to decline. Professors are allowed some leeway by Karns in that a recommendation is made that authors clearly state in some manner that there is a disagreement between the stated textbook objectives and the test banks provided in the accompanying package. One finds this a bit naive given the control exercised by publishers and the various methods used to elicit tacit approval of academia while at the same time avoiding any direct academia influence upon the final textbook package contents, as detailed by Tyson-Bernstein. One could conclude that the textbook author's clear

¹⁹ John J. Siegfried and Rendigs Fels, "Research on Teaching College Economics: A Survey," Journal of Economic Literature (September 1979):948.

²⁰ Karns, Burton, and Martin, "Learning Objectives and Testing: An Analysis of Six Principles of Economics Textbooks, Using Bloom's Taxonomy," p. 20.

statement of a possible disagreement between textbook objectives and instructor's manual objectives would either be made obtuse or removed in its entirety if such a statement put the package at a competitive disadvantage in the publishers opinion, as it most surely would.

Content of Economics Textbooks

Shackleford references Boulding and others as specifying what three things are needed to be conveyed by textbooks. The first of these is "real" economic knowledge as compared to adequate information just to pass the expected end-of-term test. This knowledge would include a clear statement of the basic subject matter, core concepts that have received unanimous agreement as to the importance and relevance to the fundamental nature of economics, a basic body of knowledge that uses these core concepts in such a manner that would aid student understanding of how a society works, and linking of this theory to the current world through stories. Included also would be a historical treatise that establishes the background of the economics discipline and transmits a "body of understanding" to the student. Finally, the textbook should convey a working knowledge of the current economic world that would allow

students to add to their knowledge base without the need of an instructor.²¹

Textbook errors of any nature, typographical or analytical, are barriers to unwary students. Because the textbook is in written form, it is taken quite literally by students. Therefore, mistakes are often accepted, especially considering the fact that beginning students quite often do not have a set of data with which to compare new data that might alert them to possible discrepancies. This can cause considerable disruption of the teaching-learning process. Even when warned, students fall victim to errors. The upscale stature of a textbook makes the student especially susceptible to these errors. Thus, Awh suggests that we simply purge these errors prior to print. For as he says "If the authors themselves are unaware of the analytical errors involved, there is a good chance that many instructors who use the textbooks may overlook them."²²

Textbooks have evolved from graded course work of past students which was bound and then studied by subsequent

²¹ Jean Shackelford, "One-Semester Introductory Economics Textbook: Echoes and Choices," Journal of Economic Education (Winter 1991):56-57.

²² Robert Y. Awh, "Barriers to Better Economic Education: Analytical Errors That Persist in Economics Textbooks," Journal of Economic Education (Summer 1986):200.

instructors and students²³ to the present state-of-the-art package. This package can consist of the textbook itself, an instructor's manual, bulletin board materials, prepared slides and projection media, and computer-based software. In some cases, this software tutors and tests students and in general relieves instructors of routine duties. Such a package is apparently one outcome that addresses the explosion of information experienced by the world in general and the classroom instructor in particular. The textbook as a package will be considered more fully in a later section of this literature review.

Tools offered by the publishers that profess to assist in the textbook evaluation may not be all that they are expected to be. For instance, a cursory check of a publisher's correlation chart that shows skills and uses within the textbook may not be adequate. As an aid in the evaluation of textbooks, some criteria are offered by Conn that are a summary of generally accepted criteria:

Organization - is there a firm forward moving framework suggested by the textbook headings?

Instructional design - is there a balance of focus between the presentation and reinforcement. Are the units "do-able" by the student?

²³ Sandra Conn, "Textbooks: Defining the New Criteria," Media & Methods (March/April 1988):30.

Questions - are the questions meaningful to the material offered?

Content - is the textbook too ambitious or too little in content?

Utilization of resources - do the outside readings and resource suggestions of the textbook and the teacher's manual "orchestrate" with what is available otherwise?

A new notion presented by Conn is the whole language approach to teaching wherein writing, spelling, and grammar will be included along with the subject at hand such as economics. The notion is not new to the primary grades. However, it is thought by some to be relevant to other levels of education.²⁴

Foster provides an example of an evaluation sheet for a textbook and instructional software to be considered for use in the evaluation process. In addition, he provides a step-wise checklist for the evaluation of a textbook. First, skim the text with attention to the chapter organization and layout, illustrations, highlighted words, headings, and overall appearance. Second, using a reading level formula read three randomly selected 100-word samples. Third, read the textbook looking for technical accuracy. If one does not have the knowledge, find an expert. Also, if possible get a second opinion. Fourth, evaluate the textbook offerings as relevant or not to the

²⁴ Ibid. , p. 64.

expected use. Finally, determine if answers to the review questions are found in the textbook.²⁵

Readability of the Economics Textbook

Readability is an important variable to consider when evaluating a textbook. Formulas have been developed to assess readability. McConnell cautions that the "nature and deficiencies of such formulas be clearly understood."²⁶ In comparing the results of nine separate textbooks utilizing four readability formulas, there was much disagreement on the readability ranking of the textbooks. The problem here is that a shrewd salesperson can find a perfect match for his/her product and its expressed use, be it a very readable textbook or one to challenge the student. Caution on the part of an adopter is in order.²⁷ To check for readability McConnell suggests a field test of a textbook with a student group that represents the intended audience. This randomly assigned student group would rate the textbook as to its readability and

²⁵ W. Tad Foster, "Making an Accurate Selection of the Most Appropriate Text," School Shop (December 1988):26-27.

²⁶ Campbell McConnell, "Readability: Blind Faith in Numbers?" Journal of Economic Education (Winter 1983):65.

²⁷ Ibid. , p. 69.

standardized tests would be used to evaluate performance while using this textbook.²⁸

An additional proposal of McConnell is that a readability checklist much like the Irwin and Davis creation for the public school teacher be used at the college level. A readability list is broader in scope and more susceptible to modification to suit the actual classroom circumstance.²⁹

As to the importance of "style" in a textbook to a student, Steinley writes about how a student must learn the material, whereas the instructor views the problem from the perspective of how to present the material. Some are of the opinion that readability is not the issue here. Rather, the quality of writing is such that the textbooks "should be left on the shelf as resources and picked up in moments of desperation."³⁰ One must note that in order to document such a strong statement of opinion it is necessary to move out of the realm of economics oriented publications and move into the realm of education orientation per se, which as a discipline is under much pressure from within and without to "fix the problem." Being the dismal science

²⁸ Ibid. , p. 70.

²⁹ Ibid. , p. 71.

³⁰ Steinley, "A Framework for Evaluating Textbooks," p. 114.

may have spared economics education direct scrutiny to date by politicians and public interest groups alike. Hopefully, some fixes will be in the offing prior to such scrutiny, if it comes. Steinley states that he looks at the content of a textbook first and then considers the style of presentation. However, he is aware that for the student the order is reversed and the student must get through the "how" to get to the "what", in his terms. Whereas for the instructor there is a reversal of priorities. Another pertinent idea posited by Steinley is subjectively.³¹ The instructor is not a good judge of a text, as his/her subjective background will cause him/her to gloss over any gaps and clear up any ambiguity. Therefore, some objective guidelines are necessary as a framework of comparison.

Citing other research results, Steinley concludes that readers and students must construct an intricate set of relationships between the text and their own set of experiences and knowledge. In addition, a set of relationships must be constructed from the content of the textbook. Steinley describes these relation sets as relating and organizing, respectively. Furthermore, Steinley brings additional research forward that has identified "considerate" and "inconsiderate" textbooks. Thus, students in their efforts to generate the relating

³¹ Ibid.

and organizing sets mentioned by Steinley must work around the inconsiderate textbook, whereas they simply make use of the considerate textbook to achieve the expected goal.³²

Again citing other research, Steinley suggests that checklists are in order when evaluating a textbook. Checklists are in order, one assumes, whenever any tedious but important task is undertaken such as aircraft pilot's checklists for just about every stage of a flight. These textbook evaluation checklists include devices that test for items pertinent to the skill of relating, such as good and frequent examples, analogies when necessary, a "human voice" behind the ideas, or a writing technique that implies a conversational tone, style, vocabulary assistance and adequate explanations and illustrations.

Devices should be used to check for items that relate to the skill of organizing, such as headings and subheadings which assist in the construction of hierarchical relationships of ideas as well as the logical relationships of ideas. Steinley also advocates an evaluation of sentence and paragraph coherence, of organization strategies for students to use for placing ideas in their proper perspective, and of the location of referenced graphs, ...charts, etc., on the page. In fact, according to Steinley organization as a thought transmittal device can be traced to the classical orators, where it was

³² Ibid. , p. 115.

used as a teaching tool to assist students and as a mental note device to aid remembrance at the moment of delivery.³³

Computer Assisted Instruction

Contrary to popular belief that computers would obviate the textbook, the opposite appears to have occurred. Computer software for education and other purposes has most definitely increased in numbers and capabilities in recent years. However, computer software has not diminished the importance of the textbook. The dismal science of economics has enhanced its unfortunate reputation by the use of computer-aided instruction (CAI). But, like many innovations the glitz of CAI faded fairly quickly as educators had less than great results in the classroom. Some disciplines and some instructors found CAI useful. However, introductory economics instruction today is primarily centered upon graphs. Graphics is one area where most computer systems are deficient, especially in a cost range of college instruction expenditures. This is changing rapidly as costs come down, capability goes up and as software is offered as textbook supplements. Khandker and Wehrs foresee CAI positively influencing economics

³³ Ibid.

instruction as the instructors learn how to effectively apply the new technology.³⁴

Miller and Weil promote the use of CAI in a guided inquiry model of instruction as opposed to the conversational style use in earlier programs. An example of conversational style of CAI would be policy games, simulations, or local lessons directed at remedial student support.³⁵ Guided inquiry is an instructor stand-in, so to speak, that uses the personal computer's best abilities rather than an instructional tool that can be used in the actual lecture with computer graphics, as proposed by Khandker and Wehrs.

The Textbook As A Package

The textbook and its associated package plays an expanded role in the classroom when compared to past experience.³⁶ In light of the computer revolution generally agreed to be upon us, this is a difficult notion

³⁴ A. Wahhab Khandker and William E. Wehrs, "Integrated Graphics and Simulation in Open-Economy Macroeconomics," Journal of Economic Education (Spring 1990):167-169.

³⁵ John Miller and Gordan Weil, "Interactive Computer Lessons for Introductory Economics: Guided Inquiry--from Supply and Demand to Women in the Economy," Journal of Economic Education (Winter 1986):61.

³⁶ Barlett and Weidenaar, "An Introduction to the Proceedings of the 1987 Invitational Conference on the Principles of Economics Textbook," p. 109.

to mentally align with our perceptions. However, Naisbitt may have struck a profound truth with the observation that "we are drowning in information but starved for knowledge."³⁷ This could possibly explain the strong reliance of some instructors upon the textbook to convey the knowledge to the student. This does not imply instructional ineptitude but rather notes the encyclopedic nature of most modern introductory economics textbooks and their accessories.

Conn embraces the instructional package notion and asks does one evaluate the package itself or rather does one evaluate the package in respect to the student's needs and the classroom setting? Is the package stifling the teacher's creativity and initiative by reducing preparation time and "teacher-proofing" the operation, as publishers are suspected by some of attempting to do? Some criteria are offered by Conn and the sources she cites that can be used to evaluate this package and make a decision about the content of the text that students will have to deal with in their efforts to understand the course material.³⁸

The market importance of this package has tended toward stifling author innovation and possibly author

³⁷ John Naisbitt, Megatrends (New York: Warner Books, 1982):24.

³⁸ Conn, "Textbooks: Defining the New Criteria," p. 30.

imagination as well as the incorporation of new material. The implication here is that a publisher does not wish to position the product very far from the perceived "norm." Historical concerns have been shifted away from an emphasis on technical mastery and technique.³⁹

Components of the textbook package can vary with the particular subject. However, the standard package consists of the student textbook, the teacher's edition of the textbook, a skills practice book (sometimes accompanied with a teacher's edition), presentation transparencies, reinforcement activities, enrichment activities, test (or test banks). Also included are lesson plans, bulletin board materials, suggestions on teaching and grading techniques, teachers resource binders, software, audio cassettes, and video cassettes.⁴⁰ Despite criticisms of this proliferation of ancillary materials, their availability seems to be a reasonable response in addressing the explosion of information in the field of Economics.

³⁹ Barlett and Weidenaar, "An Introduction to the Proceedings of the 1987 Invitational Conference on the Principles of Economics Textbook," p. 109.

⁴⁰ Conn, "Textbooks: Defining the New Criteria," p. 30.

CHAPTER III

TEXTBOOK SELECTION FACTORS

Introduction

Boskin notes that "we must reexamine what we want to achieve in a principles course before we can examine the role of textbooks in it."⁴¹ Boskin's "strongly held" view is that "the most basic analysis, facts, historical episodes, and current events concerning the United States and world economies" is what should be taught in economics principles courses. With this admonition in mind, this study attempts to identify the factors which contribute to the selection of a successful Principles of Economics textbook. Some factors are inherent in the textbook itself, or in its ancillary or support materials. Other factors are more intangible and involve the academic atmosphere within which the selection is made. Those factors relating to the textbook proper are referred to as Adoptive Criteria and the intangible influences are referred to as Impinging Environmental Factors.

Adoptive Criteria

Adoptive criteria of introductory economics textbooks for this study fall into six groups. Four of these

⁴¹ Michael J. Boskin, "Observations on the Use of Textbooks in the Teaching of Principles," Journal of Economic Education (Spring 1988):158.

groupings are items that are literally in the textbook. The final two groups are made up of support or ancillary items. All are part of the textbook package of the publisher and they are subjected to review by professors when the adoption decision is made.

Textbook integrated learning aids (TINT) are items contained in the printed matter of the textbook which are intended to facilitate the student learning process. Examples of TINT items would be margin glossaries, key term definitions contained in boxes close to the first use of a key item, previews of chapters, and biographies of prominent economists. Integrated learning aids are a very common feature of current textbooks. The actual organizational format or layout (ORFO) of the textbook involves such matters as to whether macro or micro theory is presented first, whether integrated global material is included within the general text, and whether the textbook is offered in what is known as "splits", or separate paperback editions of micro and macro theory. There is substantial variation today in the organization features of the textbooks. Content (CON) refers to the inclusion of topics designed to orchestrate with modern thinking, e.g. urban economics, privatization, radical economics, pollution, energy, public choice, Eastern Europe and the Middle East developments. The final internal adoption criterion is readability and rigor (READ) and it relates to

the difficulty level, depth, and style of the textbook. Greater variation in these features is observed among different textbooks than is observed concerning other attributes.

The group of features not contained in the textbook itself but possibly important to the instructor involves the ancillary/support material for the student (ANSUS) and for the instructor (ANSUI) which accompanies the textbook. This could be as exotic as computer software to simulate economic processes or as straight forward as test banks for the instructor to access for relevant test questions. Often available are overhead transparencies and audio/video cassettes of support materials from publishers.

It is assumed that a "successful" textbook package will contain some or all of these attributes. A positive association between each of these textbook features and a successful adoption is hypothesized. In other words, the greater the weight assigned to each of these six factors, the more likely a "successful" adoption will be made.

Impinging Environmental Factors

Assuming that the adoptive attributes have been correctly and adequately classified, the notion that there may be some interaction between the environment of the adopter and the potential adoptive attributes does not seem unusual. Six environmental factors are examined in this study.

A school that has achieved AACSB certification has definite academic standards. Such influence would lead one to conclude that a more careful analysis of a textbook's merits would be made under the auspices of stricter academic standards. Thus whether a school is accredited by AACSB or not (AACSB) is expected to be an important and positive environmental factor in the textbook adoption process. Whether a school is publicly or privately supported (POP) influences the diversity of its student body. If the institution is publicly supported, there is often the need for accommodation to a variety of academic backgrounds among the students. Just how much this diversity and resulting need for accommodation affects the textbook adoption process and in what way, is to be investigated in this analysis.

Another environmental influence on the selection process is the autonomy of the economics department. Is the department in the school of business, or is it affiliated with nonbusiness areas of the institution? If the department of economics is in a school of business (BUS), the Principles of Economics Course primarily performs a service role for several different business disciplines. Therefore, adaptations and compromises often must be made in choosing a textbook suitable for use by students with different academic and career goals. But whether this factor exerts a positive or negative influence

will be determined in this analysis. A fourth environmental factor is frequency of the textbook change (FRE). If the textbook is frequently and routinely changed according to a certain time interval (every year, for instance), it is assumed that a less careful analysis is made in the adoption process, resulting in a less successful book. However, if a new book is selected only infrequently with considerable time for an evaluation of the merits of the proposed options, a different outcome in the selection process would be possible.

Whether the textbook is selected by a committee for common use or by individual faculty (COMM) is thought to be an important environmental consideration. Committee selection often involves compromises on textbook features or the choosing of a textbook with features that coincide with the interest of certain faculty committee members, but features that have little instructive value to students. Individual faculty selection could minimize this possibility. However, no direction of the relationship between individual or committee selection and adoption success is hypothesized. The final environmental factor is the ACT score for admission (ACT) to the institution. Where admission standards are high, it is expected that textbooks whose rigor and effectiveness have been tested by long use will tend to be selected. This practice will be consistent with the institution's maintenance of higher academic

standards. Therefore, a positive relationship between ACT scores and a successful adoption is anticipated.

Individually and collectively these textbook package and environmental factors are hypothesized to explain the process of selecting a "successful" Principles of Economics textbook. As noted, in this analysis a successful textbook is defined as one in its third or higher edition or one judged so by the adopter and user. A linear multiple regression is used to estimate the relative contribution of each factor. The model is thus specified:

$$\begin{array}{cccccc}
 + & + & + & + & + & + \\
 \text{SUCCESS} = f(\text{TINT}, \text{READ}, \text{ANSUS}, \text{ANSUI}, \text{ORFO}, \text{CON}, \\
 + & ? & ? & - & ? & + \\
 \text{AACSB}, \text{POP}, \text{BUS}, \text{FRE}, \text{COMM}, \text{ACT}).
 \end{array}$$

CHAPTER IV

STUDY METHODOLOGY AND STATISTICAL DATA ANALYSIS

Questionnaire Statistics

Two directories were used to identify the target population: The College Blue Book, published by the Macmillan Publishing Company and The College Handbook, published by the College Entrance Examination Board. Approximately one thousand target schools in these directories were numbered serially and a sample of 500 schools was randomly drawn by random number generator. A questionnaire was mailed to department heads of these four-year institutions that offer introductory economics courses. Seventy-eight responses were received. However, sixty-seven responses were subjected to analysis since eleven were incomplete or unusable. This represents a 15.6 percent response rate which is not unusual for a mail survey.

Response Coding

The survey instrument contained twelve questions which were divided into two sections of six each. The first section involved the attributes of the textbook and the second section involved questions concerning the environment of the textbook selection process (See Appendix 2). That part of the questionnaire concerned with textbook

attributes asked for a response in a 1 to 5 scale, beginning with 1 as "very unimportant" and 5 as "very important." As will be explained later in the encoding section, the responses were eventually transformed into a binary format, but the questionnaire itself provided a maximum scale for the survey respondents. For a preliminary overview, all raw data responses were placed into a spreadsheet format with the rows representing the respondents and the columns representing the individual questions which were summed and averaged. This spreadsheet table is included in Appendix 3. The remaining six questions involving the textbook selection environment were presented in a different format and not on a 1 to 5 scale. These will be discussed in a later section.

Preliminary Raw Data Analysis

Of the sixty-seven usable questionnaires, forty-eight met the criterion of a successful textbook (third or higher edition). Table 1 presents the average responses in so far as the six textbook package attributes are concerned.

The possible responses for these six questions were (1) very unimportant, (2) of little importance, (3) of mild importance, (4) Important, and (5) very important. Although the range of responses in Table 1 is from the lowest (1) to the highest (5), the standard deviation is between 0.48 and 1.25. TINT with an average response of 3.25 in Table 1 implies that textbook integrated learning

aids (e.g. margin glossaries, key terms, chapter previews, newspaper excerpts, etc.) are of mild importance to the textbook adopter on the average. The organization of the textbook, ORFO, received a relatively high average response of important (3.54). With an average response of 4.75, READ or rigor and readability also appears to be very important. And, it is noted that the minimum response received for this question is of mild importance (3). This is in line with the general interest in the reading ability of students. Possible student reading deficiency makes one concerned about the readability of the textbook. Reference to Table 1 also indicates that textbook content, CON, is important (3.63) on average and like most of the other factors has a wide range of viewpoints from very unimportant (1) to very important (5). Student ancillary material, ANSUS, appears to be of mild importance on the average (3.48). An average mark of 3.65 indicates that instructor ancillary material, ANSUI, is considered more important than such material for the student.

Several patterns can be derived from this raw data analysis in Table 1. Textbook organization and format,

TABLE 1
SUMMARY OF SUCCESSFUL RESPONSES

	Average	Max	Min	Std. Dev.
Textbook Integrated Learning Aids - TINT	3.25	5	1	0.89
Textbook Organization/Format - ORFO	3.54	5	1	1.15
Textbook Rigor/Readability - READ	4.75	5	3	0.48
Content/Contemporary Topics - CON	3.63	5	1	1.16
Ancillary/Support Materials - Student ANSUS	3.48	5	1	1.25
Ancillary/Support Materials -Instructor ANSUI	3.65	5	1	1.10

Source: Data questionnaire

textbook content, and ancillary/support materials for the instructors, all with an average of near 4, are considered more important by the respondents than textbook integrated learning aids or ancillary/support materials for the student. But the most important factor of all was textbook readability and rigor, with an average mark of 4.75 and no mark lower than 3.

The remaining six factors involving the textbook selection environment were not presented on the questionnaire in a manner that permitted a range of responses. Therefore, a raw data analysis of the type made of the textbook package attributes is not practical.

Extended Raw Data Analysis

The extended raw data analysis is designed to show the interrelationships between each of the explanatory variables and the textbook adoption, whether it was "successful" or "unsuccessful". First the factors involving the textbook itself are analyzed and then the factors involving the adoption environment are analyzed. As noted, for the textbook itself, the criterion of success is a textbook in its third or higher edition. Reference to Table 2 will reveal that of the 67 responses to the survey, 48 or 71.64 percent were determined to be successful and 19 or 28.36 percent were judged to be unsuccessful, using the criterion of third or higher edition of the textbook. In

Table 2 each textbook factor is presented as "Important" or "Less Important" in the adoption process.

Text integrated learning aids (TINT) is considered important in 37.31 percent of the total adoptions and less important in 62.69 percent of the total adoptions surveyed. The TINT breakdown between important and less important is roughly in the same proportion for successful and unsuccessful adoptions, as reference to Table 2 will indicate. In other words, about 37.50 percent were marked important and about 62.50 percent were marked less important.

Organization of the textbook (ORFO) was designated as important in 53.73 percent of the total responses. The successful adoptions in this group was 52.08 percent. The unsuccessful group marked ORFO as important in 57.89 percent of the questionnaire responses. As with TINT, the breakdown between important and less important is remarkably similar to the total breakdown.

The reading level of the textbook (READ) was considered important in 98.50 percent of the total cases. Similarly, both the successful and unsuccessful groups were unanimous or near unanimous in their judgement of the importance of this textbook trait.

Further reference to Table 2 shows that actual content of the textbook (CON) was important overall in 56.72 percent of the responses. In like manner, successful

TABLE 2
TEXTBOOK FACTORS

	Total Responses		Successful		Unsuccessful	
	Number	Percent	Number	Percent	Number	Percent
Total	67	100.00	48	71.64	19	28.36
TINT						
Im- portant	25	37.31	18	37.50	7	36.84
Less Im- portant	42	62.69	30	62.50	12	63.16
ORFO						
Im- portant	36	53.73	25	52.08	11	57.89
Less Im- portant	31	46.27	23	47.92	8	42.11
READ						
Im- portant	66	98.50	47	97.92	19	100.00
Less Im- portant	1	1.50	1	2.08	0	0.00

Table continued

TABLE 2 --Continued

	Total Responses		Successful		Unsuccessful	
	Number	Percent	Number	Percent	Number	Percent
CON						
Im- portant	38	56.72	26	54.17	12	63.16
Less Im- portant	29	43.28	22	45.83	7	36.84
ANSUS						
Im- portant	31	46.27	27	56.25	4	21.05
Less Im- portant	36	53.73	21	43.75	15	78.95
ANSUI						
Im- portant	39	58.21	30	62.50	9	47.37
Less Im- portant	28	41.79	18	37.50	10	52.63

Note: Important refers to those responses marked "important" and "Very important." Less Important refers to those responses marked "very unimportant," "of little importance," and "of mild importance."

Source: Data questionnaires.

adopters marked CON important 54.17 percent of the time. But interestingly unsuccessful adopters featured CON as important even more often, 63.16 percent of the time.

In contrast to most of the other textbook features, ancillary material for the student (ANSUS) was judged important by less than one half (46.27 percent) of the total respondents. But, the successful adopters judged ANSUS important 56.25 percent of the time, as reference to Table 2 will indicate. The unsuccessful adopters considered ANSUS less important in 78.95 percent of the questionnaire responses as compared to 43.75 for the successful group and 53.73 for the successful and non-successful group combined. While instructor ancillary materials (ANSUI) was marked important 58.21 percent of the time by the total group and 62.50 percent of the time by the successful adopters, this feature was considered important by only 47.37 percent of the unsuccessful adopters.

Another aspect of the study involved the environment in which the textbook selection was made. The extended raw data analysis of the environmental factors is shown in Table 3. The table exhibits data from responses on the questionnaire and from catalog data about the colleges represented in the survey. As previously noted, of the total 67 responses, 48 or 71.64 percent were successful adoptions of textbooks as determined by the SUCCESS

criterion of a third or higher edition. On the other hand, 19 or 28.36 percent were not successful.

The response that an economics department was in a school of business (BUS) occurred in 49.25 percent of the returned questionnaires. However, adopters of successful textbooks were within the business school more often, 56.25 percent of the time. Textbook adoption success was achieved 43.75 percent of the time in situations outside a school of business even though the business/non-business division was virtually equal. There were fewer unsuccessful adoptions in a business school, with 31.58 percent as opposed to 68.42 unsuccessful adoptions in situations outside a business school.

The second environment variable in Table 3 is how often one changes textbooks (FRE). Adoptions are placed in the less frequent category of the table if they are made less often than every three years. If adoptions are made more often, they are recorded as frequent in the table. The total responses on this variable were almost equally divided, with percentages of 50.75 and 49.25. However, the successful group waited three or more years between adoptions in 56.25 percent of the cases reported. But, the unsuccessful group adopted textbooks more frequently than every three years in 68.42 percent of the cases reported.

As the analysis revealed concerning the previous two environmental variables (BUS and FRE), the committee

TABLE 3

ENVIRONMENTAL FACTORS

	Total Responses		Successful		Unsuccessful	
	Number	Percent	Number	Percent	Number	Percent
Total	67	100.00	48	71.64	19	28.36
Business	33	49.25	27	56.25	6	31.58
Non-Business	34	50.75	21	43.75	13	68.42
Less Frequent	34	50.75	27	56.25	6	31.58
Frequent	33	49.25	21	43.75	13	68.42

Table continued

TABLE 3 --Continued

	Total Responses		Successful		Unsuccessful	
	Number	Per-cent	Number	Per-cent	Number	Per-cent
Individual	33	49.25	23	47.92	10	52.63
Committee	34	50.75	25	52.08	9	47.37
Private	38	56.72	20	41.67	18	94.74
Public	29	43.28	28	58.33	1	5.26
AACSB	4	5.97	3	6.25	1	5.26
Non-AACSB	63	94.03	45	93.75	18	94.74
ACT	13	19.40	8	16.67	5	26.32
No ACT	54	80.60	40	83.33	14	73.68

Sources: Data questionnaires. The College Blue Book, published by the Macmillan Publishing Company and The College Handbook, published by the College Entrance Examination Board.

selection variable (COMM) is almost evenly divided in total between individual selection, 49.25 percent, and committee selection, 50.75 percent. The breakdown between committee selection and individual textbook selection also is in roughly the same proportion for successful and unsuccessful adoptions.

The public or private (POP) variable is not so evenly split, with 56.72 percent private and a somewhat smaller 43.28 percent public. However, a majority of 58.33 percent of the surveyed successful responses were from public sector schools. In vivid contrast, 94.74 percent of the unsuccessful cases were from private sector schools.

Most of the respondents were from schools not accredited by the AACSB (94.03 percent). In nearly the same manner these were classed as successful (93.75 percent) and unsuccessful (94.74 percent) adoptions. The responses from AACSB schools represented a very small percentage of each class, as shown in table 3.

Entrance screening by means of ACT scores (ACT) was reported by only 19.40 percent of the survey respondents. Successful adoptions were made in 16.67 percent of the group. Most of the successful adoptions (83.33 percent) were made by schools with no ACT requirement, however.

Summary of Raw Data Analysis

From the extended raw data analysis no clear conclusions seem to emerge. The intent was to demonstrate the interrelationships between each of the twelve explanatory variables and a successful as well as an unsuccessful adoption. But not all of the factors were discriminating. For two of the textbook variables, readability (READ) and instructor's ancillary materials (ANSUI), the factors were clearly important in a successful textbook adoption. These were the most often cited combinations. This was also true to a slightly lesser extent for the textbook content (CON) and student ancillary materials variable (ANSUS). In the case of textbook integrated learning aids (TINT), the factor was obviously not important. But in most instances the breakdown between important and less important was generally in the same proportion for the successful and unsuccessful selections as it was for the total of the two.

The environmental analysis yielded results that were somewhat more discriminating. Although four of the six variables, BUS, FRE, COMM, and POP were very evenly represented among the respondents, they were not so evenly divided between successful and unsuccessful adoptions. For instance, over 90 percent of the unsuccessful adoptions pertained to private schools. Likewise, over two-thirds of the unsuccessful selections were nonbusiness school

selections, as were those adoptions which were frequently made (FRE). The two remaining environmental variables (AACSB, ACT) were unique in their uneven representation among survey respondents. Over 90 percent of the responding schools were non-AACSB, and interestingly over 90 percent of the successful selections also were non-AACSB. A similar pattern was found for non-ACT schools, although the proportions were closer to 80 percent. Aside from AACSB and ACT, no other environmental variable stands out as uniquely successful, however.

Data Encoding and the Model

As one is dealing with qualitative data and attempting to determine which factors contribute to a successful textbook adoption, the influences sometimes are of a categorical variety. But often of interest is the overall probability of success of a textbook selection and the relative influence a factor has upon the probability of success. If a factor is influential, one is interested in knowing the direction and magnitude of that relationship on the probability of successful textbook selection. The Logit Model is used to provide an estimate of the probability of success or lack of success based on the

twelve textbook adoption factors, which are the independent variables in our study.⁴²

Two proxies are used as dependent variables: the edition of the textbook and, alternatively, the rating given the book by the respondent. Thus a Logit model is used to determine the probability of a successful textbook selection due to the categorical nature of the dependent variables. The range of responses allowed to the respondents on the questionnaire (1 to 5) was a facilitating action to gain the response itself. But it makes it necessary to translate or encode this response into the binary dependent variable format (0 or 1) that can be estimated by the Logit Model, with "1" indicating a successful adoption and "0" indicating an unsuccessful adoption.

The first dependent variable, SUCCESS, or the edition of the textbook, is used to reflect the attainment of success or the lack of success by considering any edition less than three as unsuccessful or 0. Editions of three and above are encoded as 1. The second or alternative dependent variable, the respondents' rating of the textbook, measures success as well. Possible responses on the questionnaire were very unsatisfactory (1),

⁴² The Logit Model yields an appropriate statistical estimation methodology when the dependent variable of a functional relationship is dichotomous. Jan Kmenta, Elements of Econometrics (New York: Macmillan Publishing Company, 1986), 550-555.

unsatisfactory (2), satisfactory (3), and very satisfactory (4). Any response below the satisfactory level, responses (1) or (2), are encoded as 0. Any responses satisfactory and above (3) and (4) are considered successful and are encoded 1. These two measures of a successful adoption, the edition of the textbook and its rating by the user, are referred to in this analysis as model 1 for the former and model 2 for the latter.

For both models responses to the six independent variables associated with the textbook itself below the level of important or (3) are coded as a 0. The remaining responses are coded 1. The reasoning here is that a variable has to be important to the adopter to be of any influence upon the success function.

The environment in which the textbook is selected is the focus of the remaining six independent variables. The first three of these variables were taken from the questionnaire responses and the remaining three from catalog data from the institution of the respondent. Whether the economics department is in a school of business (BUS) is the first of the six variables and it is coded 1 if the department is in the school of business, 0 otherwise. FRE, the interval of textbook change, is coded 0 for changes more frequent than every three years. Whereas, three or more years of use is coded 1 to indicate a successful textbook selection. Changes more frequently

than every three years are assumed to involve a less careful analysis, therefore possibly resulting in a less successful book. COMM, the third variable, indicates whether the adoption of the textbook is a group decision or not. The variable is coded 0 for committee choice as it is felt that committee decision implies compromise and a possible less than successful choice. If the individual instructor is allowed to choose, it is coded 1 to indicate that he/she is better suited to select a textbook that aligns with his/her teaching style.

The public or private institution variable (POP) is coded 0 for public institution as it is felt that public institutions are under greater pressure to be all things to all people and not allowed the privilege of "selecting" their student body. This need to accommodate and compromise could also influence the textbook adoption process. Private institutions are coded 1 since they are more free to exercise this selection option. ACT, the measure of admission standards, is coded 1 for a school with an ACT minimum entrance requirement and 0 for a school that does not have an ACT minimum requirement. Again, where admission standards exist, it is assumed that textbooks whose effectiveness have been proven will be selected. AACSB, whether an institution is AACSB certified, is the final variable and it is used to account for a school's commitment to excellence. Accreditation by

the AACSB suggests an adherence to rigorous standards in all aspects of the program, including textbook selection. Thus a 1 is assigned if the school is AACSB accredited and a 0 is assigned if it is not.

In summary, the following equation is theoretically designed to predict the probability of success of an economics textbook adoption according to the Logit Model:⁴³

$$P(\text{SUCCESS}) = 1 / (1 + e^{-S})$$

where $S = 1$ if a successful textbook was adopted and 0 if the textbook adoption was unsuccessful. Thus in model 1, S (SUCCESS) is assumed to be linearly related to the factors presented above according to the following:

$$S = b_1 + b_2 \text{ TINT} + b_3 \text{ READ} + b_4 \text{ ANSUS} + b_5 \text{ ANSUI} + b_6 \text{ ORFO} + b_7 \text{ CON} + b_8 \text{ AACSB} + b_9 \text{ POP} + b_{10} \text{ BUS} + b_{11} \text{ FRE} + b_{12} \text{ COMM} + b_{13} \text{ ACT} + \text{error.}$$

In model 2 the rating of the current economics textbook given by the respondents (RATING or R) is assumed to be linearly related to the same set of twelve factors as in model 1. That is:

$$R = b_1 + b_2 \text{ TINT} + b_3 \text{ READ} + b_4 \text{ ANSUS} + b_5 \text{ ANSUI} + b_6 \text{ ORFO} + b_7 \text{ CON} + b_8 \text{ AACSB} + b_9 \text{ POP} + b_{10} \text{ BUS} + b_{11} \text{ FRE} + b_{12} \text{ COMM} + b_{13} \text{ ACT} + \text{error.}$$

⁴³ Kmenta, Elements of Econometrics, pp. 550-555.

Both success measures are related to the textbook features and to the environmental influences, and the directional effects of these measures, if any, are assessed. The initial run using the SHAZAM program was an attempt to relate SUCCESS of an Economics textbook in its third or higher edition (model 1) to the collective set of factors.⁴⁴ The results of the first run is summarized in table 4.

The next SHAZAM run was directed at the relationship between the alternative measure of the textbook success, the adopter's rating of the textbook (RATING) and the collective textbook and environmental factors. This is referred to as model 2. An analysis of the regression results are presented in the next section.

Analysis of Regression Results

The analysis of the regression results is facilitated by reference to Table 4. In the analysis involving textbook editions (model 1), TINT has a insignificant but negative influence upon SUCCESS which is contrary to the postulated positive influence. The weak nature of the relationship could lead one to conclude that this variable is inconsequential except for the strong and statistically

⁴⁴ SHAZAM is a statistical software package for estimative relationships among socio-economic variables.

significant negative influence upon RATING that this variable displays in Table 4. The conclusion drawn from

TABLE 4
REGRESSION COEFFICIENTS OF TEXTBOOK FACTORS

Variable	Model 1 (SUCCESS) Coefficients	Model 2 (RATING) Coefficients
CONSTANT	26.0140 (.0005)	27.123 (.00004)
TINT	- .0319 (- .0429)	- 2.3294 ** (- 2.1467)
ORFO	- .8512 (- 1.1113)	- .0389 (- .0423)
READ	- 26.1880 (- .00005)	- 25.5970 (- .00004)
CON	- .7776 (- 1.0722)	.4454 (.4962)
ANSUS	2.2076 ** (2.4317)	2.6869 * (2.3888)
ANSUI	- .1826 (- .2325)	- 1.8675 * (- 1.7085)
BUS	1.7746 ** (2.3178)	.1987 (.1937)
FRE	.9636 (1.3822)	- .0056 (- .0062)
COMM	.4070 (.5719)	.7516 (.8423)

Table continued

TABLE 4 --Continued

Variable	Model 1 (SUCCESS) Coefficients	Model 2 (RATING) Coefficients
POP	- .3166 (- .4545)	.5936 (.6616)
ACT	1.4167 (1.0186)	- .5526 (- .3640)
AACSB	- .2008 (- .2383)	2.8809 (1.6496)*
LOG- LIKEIHOOD	- 30.67	- 22.48
OBSERVA- TIONS	67	67

* Significant at $P < .10$

** Significant at $P < .05$

(Values in parentheses represent t - ratios.)

this analysis is that TINT is a dissatisfier⁴⁵ and not a positive influence in the selection process as was hypothesized. The raw data summary presented in Table 1 touched on the moderate nature of the TINT responses. However, it involved model 1 only and not model 2.

ORFO, the organization of the textbook, shows a statistically insignificant relationship to both SUCCESS

⁴⁵ Dennis W. Organ and Thomas Bateman, Organizational Behavior (Plano, Texas: Business Publications, Inc., 1976) :109.

and RATING. And, contrary to expectations, the association was negative in both instances. The wrong sign and lack of significance may be explained by the limited sample and multi-collinearity. The variable is the satisfier type and as long as the textbook is reasonably well organized, one is not inclined to reject the textbook. However, there appears to be a high probability for a poorly organized textbook to be rejected.

By referring to table 4 one can observe that READ, or the measure of readability and rigor of the textbook, is statistically insignificant variable in both model 1 and model 2. The sign is the opposite from that which was hypothesized. This implies some problem with the data and model specifications as well as the wording of the question which mixed rigor and readability. There were margin comments from some questionnaire respondents that complained of this possible confusion.

The next variable, CON, which represents the content of the textbook, is a mixture of information in itself. The variable is statistically not significant and of the opposite sign from what is hypothesized in model 1. The variable is of even less importance, but of the hypothesized sign in model 2. This variable also exhibited some unexpected variation in the raw data analysis presented in Table 1, with a range of responses from very unimportant to very important.

Reference to Table 4 indicates that student ancillary materials, ANSUS, is both statistically significant and of a positive nature as postulated in both models 1 and 2. Apparently this variable has a strong influence upon the adopter in the selection of a textbook. The study guide is one example of these ancillary materials.

The instructor's ancillary materials measure (ANSUI) did not contribute to the successful selection of a textbook in both the SUCCESS and RATINGS models. The signs were both negative rather than positive and statistically significant in the latter instance. And, the relationship between ANSUI and SUCCESS and ANSUS is opposite from what one might observe in the raw data set in Table 1. ANSUS was considered of mild importance and ANSUI was judged important according to that analysis. The importance of ANSUS and the satisfier relationship between ANSUI and the measures of success are as one would expect. The lack of statistical significance of ANSUI when applied to SUCCESS or model 1 is at first perplexing. However, one can argue that by the time a textbook has achieved the third revision the instructor has probably created his/her own overhead transparencies, etc., and the need for such supplements may have diminished. But the student need as viewed by the instructor or the adopter, is still just as strong, thus explaining the differences between ANSUS and ANSUI in each model (SUCCESS and RATING).

The first attempt at measuring the environmental influence upon the textbook adoption process is a variable involving the location of the economics department in a university (BUS). This variable was included in the model to determine if housing the economics department within the school of business or as a separate entity has an impact on the textbook adoption decision. No sign was hypothesized. In model 1, the influence of having the economics department within the school of business is positive and statistically significant. The coefficient of the variable is positive, but not significant in model 2. From model 1, one may infer that in having to serve as a source of economics education for a variety of student backgrounds, a faculty member in a business school based economics department would be more careful in his or her textbook choice. The extra attention given to choosing a textbook suitable to students with diverse academic and career goals appears to have a positive impact on the probability of success in textbook selection.

Frequent textbook changes (FRE) were felt to be detrimental to the success of a textbook adoption as the instructor or selection committee would not devote sufficient time for a careful appraisal. Therefore, it was projected that a negative relationship would exist between this variable and the measures of success in both models. The relationship is found to be positive and statistically

not significant in model 1, as shown in Table 4. Perhaps instructors who are prone to change books often are also more sensitive to the requirements of an effective book. In model 2, the relationship between FRE and a successful adoption is statistically insignificant, as revealed also in Table 4.

Committee selection of textbooks (COMM) is positive in both models; however, it was not statistically significant. Possibly a group decision may not be a negative factor and whatever compromise is done in the committee selection of a book is a positive influence.

Schools that are publicly supported in contrast to private schools are thought to be under more pressure to make scholastic accommodations due to the open nature of their enrollment policies in order to receive the public funds. These academic accommodations were hypothesized to affect the textbook adoption process. As for model 1, the relationship is negative, although the variable is not statistically significant. Table 4 indicates that POP and RATING are positively related, although again not statistically significant.

Schools with an ACT minimum entrance requirement were expected to have a more homogenous and capable entering student body in so far as academic achievement is concerned. This would be a positive influence upon success of a textbook, as only a book whose effectiveness and rigor

proven with long use would be adopted. There is some evidence from the survey that this is in fact the case. In model 1, the association is positive; however, it is not statistically significant. When applied to RATING in model 2, the variable is statistically not significant and negative.

When a school receives advanced academic rating such as AACSB certification, it is assumed that such a school would apply more effort to all academic choices including textbook selection. Therefore, a positive relationship was predicted for this variable. The results in Table 4 show that this did materialize for model 2 and the variable is statistically significant; however, for model 1 the relationship was negative and statistically insignificant.

Summary of Regression Results

Several conclusions can be drawn from this analysis. Although neither model performed as expected, model 2, where the measures of a successful adoption was the user's rating of the textbook (RATING), did perform better. Two of the models's explanatory variables possessed the correct signs and were also statistically significant. These variables were ancillary and support materials for the student (ANSUS) and an environmental variable, accreditation by AACSB. Two other explanatory variables, TINT and ANSUI, were statistically significant, but they had unanticipated negative signs. In model 1, where a

textbook in its third or higher edition was considered a successful adoption (SUCCESS), only one variable was both of the correct sign and statistically significant. As in model 2, this variable was ancillary and support materials for the student (ANSUS). Although no sign was hypothesized for the economics department location variable (BUS), it possessed a positive sign and was statistically significant. Considering both models and on the whole, there was more statistical significance found among the textbook variables than among the environmental variables.

CHAPTER V

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

Summary

A search of the literature did not reveal any evidence of previous studies which dealt with the impact on the textbook selection process of textbook pedagogical attributes or with academic environmental influences. Therefore this study was undertaken with the primary objective of providing insights for the instructor or departmental committee when selecting an introductory economics textbook. It was intended that this study would identify the pedagogical attributes such as rhetorical devices, style, and textbook organization used in selecting a successful textbook, while differentiating according to environmental factors.

The study began by defining a successful economics textbook adoption. Success involved the selection of a textbook which was in its third or higher edition. An alternative definition of success was based upon the appraisal given by the classroom user of the textbook. The study then attempted to assess the impact on the selection process of not only the attributes of the textbook package, such as textbook content and pedagogical features, rhetorical devices, style, and ancillary materials, but also the impact on the selection process of the academic

atmosphere in which the selection was made. These influences included whether the school was a member of the American Assembly of Collegiate Schools of Business, and whether it was a private or public institution, as well as whether the economics department was located in a school of business or elsewhere. Other environmental influences included the presence or absence of ACT admission scores, whether the textbook selection was made individually or by committee and how often.

To obtain information concerning textbook features as well as information about the selection environment, a national sample of 500 colleges was taken. The sample was drawn by a random number generator from among approximately one thousand target schools. From the sample, sixty-seven usable responses were received and subjected to regression analysis using the Logit Model. The model provided an estimate of the probability of a successful adoption based upon the textbook and environmental adoption factors.

Conclusions

Two measures of a successful adoption were applied in the study. The first involved the textbook edition and it was designated as model 1. The second measure, or model 2, was the user's rating of the textbook. Although neither model performed as expected, model 2, where the measure of a successful adoption was the user's appraisal of the textbook, did perform better. Two of the models's

explanatory variables possessed the correct signs and were also statistically significant. These variables were ancillary and support materials for the student and an environmental variable, accreditation by AACSB. Two other explanatory variables involving textbook integrated learning aids and instructor support materials were statistically significant, but they had unanticipated negative signs. In model 1, where a textbook in its third or higher edition was considered a successful adoption, only one variable was both of the correct sign and statistically significant. As in model 2, this variable was ancillary and support materials for the student. Although no sign was hypothesized for the economics department location variable, it possessed a positive sign and was statistically significant. However, on the whole the models failed in their attempt to identify and assess the relative importance of the inherent textbook and environmental factors in a successful adoption.

Implications

As a result of this study, several implications emerged which could possibly be the basis for more effective and meaningful future research into the textbook selection process. These implications primarily involve the manner in which this study was designed and implemented.

1. The construction of the model itself could be improved over the present form. A model might be constructed with a better definition of textbook success. This is especially true concerning model 1 where a successful adoption was a book in its third or higher edition. Perhaps the number of different college adoptions of each textbook on the market could be used as the criterion of success. The underlying assumption would be that the better textbook would receive the most votes. However, such an approach would require a survey of publishers. This could raise doubts about disclosure of sensitive business information and other possible non-academic information.

2. Also further research could be done on developing a model whose explanatory variables were more discriminating and specified with more exactness. A likely candidate from the present study is the readability and rigor (READ) variable. Some survey respondents complained that they could have made a more accurate judgement or response had the variable been separated into two unique measures, one for readability and another for rigor.

3. Another possible improvement is concerned with the actual source of the data. The study relied almost exclusively on responses from the faculty users in judging the success of textbooks. A study designed to also include

student user responses might be more meaningful. The student is the ultimate consumer.

4. A study which focused more on the attributes of the textbook itself and less on the adoption environment might yield more conclusive results. Although the present study investigated both aspects of the textbook selection process, the aspect involving the textbook itself produced more significant statistical results.

5. Replication of the existing format in a study could yield better results just from the consequences of random collection of data. A single effort is subject to improvement whether the first results are conclusive or nonconclusive.

APPENDICES

APPENDIX 1

REVIEW TEXTBOOKS

Perspective Textbooks

Lewis C. Solomon, Economics (New York: Appleton-Century-Crofts Press, Meredith Corporation Press, 1972)

Daniel B. Suits, Principles of Economics (New York: Harper and Row Press, 1973)

Edwin Mansfield, Economics (New York: W.W. Norton and Company, Inc. Press, 1974)

New Generation Textbooks

Bradley R. Schiller, The Economy Today (New York: Random House Press, 1986)

Paul Wonnacott and Ronald Wonnacott, Economics (New York: McGraw-Hill Press, 1986)

Marilu Hurt McCarty, Introductory Economics (Glenview, Ill.: Scott, Foresman and Company Press, 1988)

Ray C. Fair, Principles of Economics (Englewood Cliffs: Prentice Hall Press, 1989)

David N. Hyman, Economics (Homewood, Ill.: Irwin Press, 1989)

David R. Kamerschen, Richard B. McKenzie, and Clark Nardinelli Economics (Boston: Houghton Mifflin Company Press, 1989)

Campbell R. McConnell and Stanley L. Brue, Economics (New York: McGraw-Hill Press, 1990)

Roy J. Ruffin and Paul R. Gregory Principles of Economics (Glenview, Ill.: Scott, Foresman/Little, Brown Press, Scott, Foresman and Company Press, 1990)

APPENDIX 1 - Continued

Milton H. Spencer, Contemporary Economics (New York: Worth Publishers, Inc. Press, 1990)

APPENDIX 2

QUESTIONNAIRE EXAMPLE

INSTRUCTIONS: Please rate each item as to its importance to your introductory Principles of Economic textbook selection or adoption process according to the following scale: (1) Not Important (2) Mildly Important (3) Average Importance (4) Fairly Important (5) Very Important.

1. Textbook integrated learning aids (e.g. margin glossaries, key terms, chapter previews, newspaper excerpts, etc.) _____.

2. Textbook organization/format (e.g. macro or micro presented first, paperback "splits", use of color, etc.) _____.

3. Textbook rigor and/or readability _____.

4. Content/contemporary topics (e.g. integrated global materials, topics (i.e. pollution, public choice, Eastern Europe, woman's contribution, etc.) _____.

5. Ancillary/support materials for the students (e.g. student study guides, newsletters, computerized tutorials, etc.) _____.

6. Ancillary/support materials for the instructor (e.g. transparencies, computerized testbanks, newsletters, instructor's manual, etc.) _____.

INSTRUCTIONS: Please check the number which most nearly applies:

7. Is your Department of Economics in a School of Business?
(1) yes _____, (2) no _____.

APPENDIX 2 - Continued

8. How often do you change textbooks? (1) every year _____, (2) every two years _____, (3) every three years, (4) less often _____.

9. In your department, does each professor choose his/her textbook or, is the textbook chosen by a committee for common use? (1) each professor chooses _____, (2) committee chooses _____.

10. What is the textbook title, author, and publisher of the introductory economics text used in your department?

<u>Text Title</u>	<u>Edition</u>	<u>Author</u>	<u>Publisher</u>
_____	_____	_____	_____

11. Is the above author(s) on your faculty? (1) yes _____
(2) no _____

12. Compared to previous textbooks you have used, how would you rate your current textbook? (1) Very unsatisfactory _____, (2) unsatisfactory _____, (3) satisfactory _____, (4) very satisfactory _____.

Signature

Name of Institution

APPENDIX 3

QUESTIONNAIRE RAW DATA ANALYSIS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	3	2	5	5	2	4	1	2	2	11	2	3	1	2	
2	5	5	4	5	2	4	2	3	1	1	2	3	2	2	16
3	4	5	4	3	2	4	2	2	2	1	2	3	1	2	23
4	4	4	4	4	3	2	2	3	1	1	2	4	2	1	
5	3	3	4	4	4	4	1	2	2	4	2	3	2	2	18
6	4	4	5	3	3	4	2	1	1	4	2	4	1	1	22
7	4	2	4	4	3	3	1	2	1	1	2	3	2	2	18
8	4	4	5	3	4	3	2	3	2	6	2	4	2	2	
9	3	3	5	2	3	3	1	2	1	9	2	3	2	1	23
10	1	3	5	2	4	4	2	4	2	11	2	4	2	2	
11	4	4	5	5	5	4	1	2	1	1	2	4	1	2	
12	3	4	4	3	5	5	1	1	2	7	2	3	1	2	
13	4	5	4	3	2	2	2	3	1	6	2	1	2	2	
14	4	4	5	5	2	1	2	4	1	5	2	3	2	2	
15	4	2	5	3	5	4	1	3	2	4	2	4	1	2	
16	3	4	5	2	3	3	2	4	1	1	2	4	1	2	
17	3	1	5	4	4	5	2	3	2	13	2	3	1	2	19

APPENDIX 3 - Continued

18	4	5	5	4	5	5	1	2	1	6	2	3	1	2
19	4	3	5	5	4	5	1	1	2	5	2	3	1	2
20	3	2	5	4	2	1	2	2	1	1	2	3	2	2
21	5	1	4	3	5	3	2	3	1	4	2	3	2	2
22	2	2	5	4	3	4	1	2	2	5	2	2	1	2
23	4	5	5	2	3	4	1	3	1	4	2	1	2	2
24	3	3	5	3	4	4	1	2	1	11	2	3	1	2
25	4	5	5	4	3	3	1	2	2	1	2	1	1	2
26	1	3	5	3	5	5	2	3	2	13	2	4	2	2
27	1	2	5	1	1	2	2	2	2	1	2	3	1	2
28	3	3	5	3	3	5	2	3	1	1	1	1	1	2
29	5	5	5	5	4	4	2	3	2	5	2	2	2	2
30	3	3	4	4	3	2	2	2	2	1	2	3	1	2
31	1	1	5	2	1	5	2	2	2	1	2	1	2	2
32	3	4	5	4	1	1	1	1	1	8	2	3	2	2
33	3	4	4	3	4	4	2	4	1	7	2	4	2	2
34	4	4	5	5	5	5	1	1	2	4	2	4	1	2
35	3	5	4	4	2	3	1	3	1	1	2	3	1	2
36	3	3	5	5	4	4	1	3	2	4	2	3	1	2

APPENDIX 3 - Continued

37	2	3	5	5	3	2	1	2	2	11	2	3	1	2
38	4	3	5	4	2	5	2	4	1	5	2	4	1	2 19
39	3	3	5	3	3	2	2	2	2	1	2	4	1	2 20
40	4	3	5	4	3	3	1	4	2	11	2	1	1	2
41	3	2	5	3	4	4	2	4	2	7	2	3	2	2
42	3	3	4	4	4	4	2	1	2	1	2	3	2	2
43	4	5	5	4	5	4	1	2	1	3	2	1	1	2
44	4	4	5	3	4	5	2	3	1	13	2	1	2	2 15
45	4	4	5	4	3	3	1	2	2	1	2	3	2	2
46	3	4	5	5	4	4	2	3	1	2	2	3	1	2 23
47	2	4	4	3	5	5	2	2	1	12	2	3	2	2
48	3	2	5	5	2	2	2	4	1	4	2	4	2	2
49	1	5	5	3	3	5	1	2	1	2	2	3	1	2
50	3	5	5	5	4	5	2	2	2	7	2	4	1	2 23
51	3	2	5	1	3	2	1	3	1	4	1	4	1	2
52	3	5	5	5	5	3	1	3	2	7	2	3	1	2
53	3	3	3	2	2	2	1	2	2	4	2	3	1	2
54	5	2	5	5	4	4	1	4	2	11	2	3	2	2
55	3	4	5	5	5	5	2	3	2	1	2	4	2	2
56	4	4	5	4	5	4	2	3	1	4	1	4	1	2

APPENDIX 3 - Continued

57	3	3	5	4	5	5	1	4	2	11	2	3	1	2
58	3	5	4	2	1	4	1	1	1	4	2	3	1	2
59	4	5	5	4	4	4	1	3	1	6	2	3	1	2
60	3	5	5	2	4	4	2	2	1	9	2	3	1	2
61	3	3	5	5	2	3	2	1	1	4	2	3	1	2
62	2	5	4	3	2	4	1	4	2	4	2	3	1	2
63	3	4	4	3	2	2	1	3	2	4	2	3	1	2 18
64	3	3	5	1	3	3	1	4	2	11	2	3	1	2
65	3	4	5	4	5	3	2	3	1	4	2	3	2	2
66	3	5	5	5	2	3	1	2	2	13	2	2	2	1
67	2	4	4	5	1	3	2	2	1	4	2	3	2	2
68	3	4	5	4	3	4	2	3	2	5	2	3	1	2 20 avg
69	5	5	5	5	5	5	2	4	2	13	2	4	2	2 23 max
70	1	1	3	1	1	1	1	1	1	1	1	1	1	1 15 min
71	1	1	0	1	1	1	1	1	1	4	0	1	0	0 3 std. dev.

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