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5. Double space after the author (s) affiliation and the abstract.
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A New Initiative for Dissemination of Business and Economic Conceptions:

Professional conferences as forums for the dissemination and discussion of new ideas are very important. This is the inaugural issue of a new journal; *Pennsylvania Journal of Business and Economics* which will be published bi-annually (Fall and Spring) by The Association of Pennsylvania University Business and Economic Faculties (APUBEF), an association made up of university-level scholars of business and economics. This editorial section will briefly describe the aim and the scope of the journal, APUBEF, and editorial policies and practices.

APUBEF has been formed for the purpose of:

(1) Fostering economic and business scholarship and fellowship among business and economic faculties in the State System of Higher Education in Pennsylvania.

(2) Speaking publicly and objectively on behalf of the economic and business conditions in Pennsylvania and acting as a spokeperson for the condition of economic and business education in Pennsylvania.

(3) Encouraging perfect freedom of economic and business discussion.

(4) And finally, fostering professional development of faculties, by encouraging them to engage in research and submitting papers for presentation to the annual meetings of the Association. Selected refereed paper will be published in *Pennsylvania Journal of Business and Economics* which will be a broad-based forum to present scholarly research and views on a variety of Business and Economic topics.

Editorial Policy and practices:

Through blind-referred process, we will try to provide timely and thorough reviews of manuscripts. Each manuscript will be subjected to a minimum of two independent blind reviews by members of the Editorial Review Board. The reviewers will evaluate manuscripts on the bases of their value-added contribution to theory development and practical needs of practitioners of business or pedagogy. The fundamental focus will be on timely representation of current problems or issues deemed significant domestically and globally. Critical reviews, syntheses, and integration of related disciplines such as accounting, economics, finance, management, management information systems and marketing which serve as criteria for incremental scholarly research and creation of new paradigms are specially welcomed. The economic issues concerning inflation, unemployment, taxation, and economic development are also major themes of interest.

Specifically the following criteria will be used for reviewing:

a) The degree of originality.

b). The quality of analysis and logical consistency of arguments.

c). The importance of issue(s) addressed.

These are benevolent ambitions. However, during coming years with the help of contributing authors, Editorial Review Board and with feedback and suggestions from readers, these aspirations can become realities.

I am indebted to Editorial Review Board members who accepted and responded to my request for reviewing assistance for future issues.

Beside the obvious contribution on the part of those whose papers are included tn this volume, special thanks goes to Dr. Robert C. Camp and Dr. Richard B. Hart whose generous institutional financial assistance made the publication of the first issue of the Journal possible. I also express my thanks to Terry L. Moore for final preparation of the manuscripts for publication.

Editor

Educational Malpractice Suits Are Still No Threat To The University Professor

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ABSTRACT

There is presently no likelihood that the University professor and his University will be successfully sued for educational malpractice, that is, providing the student with a sub-standard or inadequate education. In recent cases considering the question, only one small state (Montana) has recognized educational malpractice. The dominant reason why courts do not recognize educational malpractice is that courts decline to interfere in the internal operation of educational institutions. Nevertheless, universities have some legal liability for injury to their students. Nearly all states recognize that public school teachers and school districts can be sued for negligence in the care of their students, such as failing to assure the pupil's safety on the school playground. But playground cases are hardly applicable to the university professor. We can reasonably anticipate that at some future time educational malpractice will be recognized by the courts, starting in such areas as confusing educational disability (e.g., dyslexia) with mental retardation.

INTRODUCTION

University professors may wonder whether they will be subject to law suits relating to the routine practice of their profession, as most other professions have already been, such as the legal profession, and, most notably, the medical profession. Malpractice insurance has become a major expense in medical practice, even to the point of causing many physicians to retire from practice. Is such a thing likely to happen to the educational profession?

The answer to the question seems to be clearly no. Practically all states which have considered the question, most notably New York and Maryland, have refused to recognize that there is such a cause of action as educational malpractice. However, I predict that within our lifetime educational malpractice will be a recognized tort, and that will be, it seems to me, as it should be.

No doubt most of you remember in a vague way that there was a case in New York whereby a high school graduate sued the school district because he could not, although of normal intelligence, after twelve years of schooling, read and write. This is the case of Donahue v. Copiague Union School District.1 This decision was made in 1979. That was ten years ago. The fact that such a case could even be argued was considered at the time a general indictment of an educational system which was too tolerant of failure.

As teachers at the university level, we have often looked on with detachment at the perils of our fellow teachers at the primary and secondary school level, counting our blessings that we are not at risk for the failure of the educational system to teach normal students how to read and write after twelve years of effort. We get the student after they are have been exposed to twelve years of the efforts of others, and, if they have failed with them too grossly, we simply do not have to deal with these failures at all. Even with our regrettably low standards of admission, we do not see the extreme failures (that is, the functionally illiterate) at all, even though we are

now extensively involved with remedial and mathematics remedial courses at our universities. In fact, I am told that at my university, about five percent of our total instructional effort is devoted to remedial instruction to marginally qualified students.

Since the decision of the New York Court of Appeals in 1979, there have been about forty decided cases where the courts have considered the question of educational malpractice. We are not going to review or classify all of these forty cases, but are going to discuss briefly some of the cases which present problems or situations of interest to us as university professors. In other words, there is no point, as we see it, of going into detail, for example, about cases which deal with the failure of the principal to stop playground fights among eight-year old pupils, in which one of the pupils gets injured seriously, and thus sues the principal and school district for failure to prevent and/or stop the fight. It is no doubt an important problem to primary teachers to know what their responsibilities are with respect to school playground supervision, but I would suppose that an extensive analysis of this would bore university professors, and university professors would find little instruction from these cases by way of analogy to their university teaching situation.2

There are other circumstances where a school district can be liable for negligence. For example, injuries caused by negligent operation of shop classes can give rise to liability.3 Failure of a teacher to conduct classes in a safe manner can give rise to liability.4 Injuries at athletic events or practice can give rise to liability.5 And there are a variety of other circumstances which might give rise to liability on the part of the school district for improper conduct which do not admit of easy classification. A school district might be liable for false imprisonment of a student in the principal's office, so that care must be taken in using this traditional method of student discipline, the argument being made that the student was thus being deprived of the education to which he had a right.5 The school district might be liable for preventing trespassers from entering the school and inflicting harm on students (such as rape, robbery, physical injury, etc.)6 More recently, the question has come up as to how far a university has a duty to protect their students from injury inflicted on them by fellow students.6a

As can be seen from the circumstances of the cases so far analyzed, they involve nothing more than ordinary negligence which can arise in a custody situation. Persons charged with the care, custody and supervision of others must exercise reasonable care in these activities. These cases are not uniquely relevant to education. They do not involve the improper exercise of uniquely educational functions, as distinguished from custodial functions. In other words, to use an analogy with medical malpractice cases, cases where a physician is found negligent because he failed to provide physical security for his nurses from rape by an intruder in his medical office are hardly very instructive as to what the physician's duties are which arise uniquely from his profession as a physician, such as failure to operate carefully on a patient.

These "ordinary situation" negligence cases only remind us that duties which arise in other businesses (such as operating a summer camp, operating a retail store, etc.) also apply to schools and universities.

Before reviewing some of the situations which we might find relevant to university teaching, it is appropriate to discuss what the law means by "malpractice". This has become a term of art in the law these days and is to be distinguished, at least in some jurisdictions, from "negligence" and "contract". In the past fifty years, the law has greatly expanded the concept of "strict liability", "liability without fault", and "warranty". These concepts, as expanded by the legal profession, were first applied extensively to liability for defective consumer products. Thus, the issue was not whether the manufacturer was at fault (negligence) or even whether he had made an explicit promise to the consumer (contract or warranty). The issue was simply whether the manufacturer had put a defective product into the stream of commerce which the consumer had a right to expect would be reasonably safe, but the product was not reasonably safe.

As applied to professional practice, the issue has thus become whether the physician has treated the patient in accord with currently accepted

standards of practice, and not whether the particular physician has personal fault (negligence), or had created a contractual expectation in the patient which was disappointed. This is what the law means by "malpractice". The distinction between "malpractice", on the one hand, and negligence, breach of warranty, and breach of contract, on the other hand, is still not clearly defined in modern law; and it will probably be another 25 years before this distinction is fully clarified by the law. However, the decided cases on "educational malpractice" have made a clear distinction between "educational malpractice", on the one hand, and negligence, on the other hand. One recent writer on educational malpractice has suggested that the difference is whether the alleged injury is based on negligence, or on some sort of warranty or contract basis, which she calls "malpractice" as distinguished from "negligence".7 In other words, the judges in these cases have frequently said - without attempting to collect all of their quotations to this effect - "this is not a case of educational malpractice, although it may be a case of negligence." The courts have also said something to this effect: "While our law recognizes cases based on negligence in education, our courts do not recognize any doctrine of 'educational malpractice'."

The distinction between educational malpractice", on the one hand, and negligence in education, on the other hand, was probably raised because plaintiffs' lawyers had a difficult time establishing negligence in fact with regard to any one particular teacher, or, indeed, even to the school district as a whole. For example, if a graduating high school senior is functionally illiterate after twelve years of education, on which particular teacher is one going to put the blame for his illiteracy? Indeed, can one actually find fault, or negligence, with the school district at all? Which teacher, or which principal, failed to enter notations on the student's records to indicate he could not read or write? However, if it is sufficient to prove the result (that he cannot read or write), then the case can be proved more easily. It is like holding a canning company responsible for putting a can of soup with botulism on the supermarket shelves. As the old song does not go - "We don't care who put the overalls into Mrs. Murphy's chowder." A case of consumer product liability can be made out in court without having to show how or why botulism got into the can of soup.

By analogy, if it is sufficient to win a case against a school district by a mere showing that a pupil cannot read or write, it is easier to prove a case against a school district. This is "educational malpractice", and this doctrine the courts have rejected. This does not prevent the pupil from suing the school district for "negligence" or "breach of warranty", or "breach of contract", but cases based on these remedies are very difficult to prove. For example, we university professors, and our universities, are very careful not to promise our students they will actually learn anything. Hence, we cannot be sued for breach of warranty or breach of contract. As for negligence, it is very difficult to prove this, as long as we take reasonable care to prepare for our classes (as proved by our lecture notes), meet our classes regularly, grade our papers and examinations on time, etc. What were our shortcomings or failure to meet our duties? So, for this reason, a case of negligence against a university professor regarding his teaching is very difficult to prove.

We have found only one case in a state court of last resort in which the courts have recognized the possibility of liability for educational malpractice.8 All the other cases in the state courts of last resort which have considered the issue have denied the existence of an "educational malpractice" cause of action.9 However, two lower court decisions in New York recognized an educational malpractice claim, but these were overruled on appeal.10

Cases against universities for educational malpractice are very rare, and we have been able to locate only five cases involving educational malpractice against institutions of higher learning in the last ten years.11 And, as we find nothing in those cases by reason of fact that they involve universities that distinguishes them on the basis of issues or reasoning from other cases, we will discuss them according to the issues which they raise, rather than deal with these cases involving higher education as a separate class of cases.

Procedures, Educational Due Process

Cases involving failure of the school to follow proper procedures can be instructive to us. Must we make our course and degree requirements clear to students? This issue was raised in Bindrim v. University of Montana in Montana.12 In this case a music student was denied a diploma because he did not show up to take a piano performance examination; the student claimed he was not informed that any performance test was required for his degree (apparently, he was a music history or music appreciation major). The Montana Supreme Court said it was proper to deny the student a degree, without being too clear as to exactly what the University of Montana told the student at the time he entered his major program. We thus gather that a university is not obligated to make known to a student all the details of the requirements for a degree in his particular academic program at the time he enters upon his particular course of study.

However, there are cases which clearly indicate the duty of a university to follow established procedures before taking adverse action against a student. Such a case is Tedeschi v. Wagner College, where the court held that the college could not suspend a student for non-academic reasons (misconduct) without a hearing.13 However, it is clear from the cases that, while the courts will insist that schools and universities follow due process, the courts will not overturn their decisions on the grounds that they find the university's decision unreasonable.

Inadequate Instruction

We have not located any case in which any student has successfully sued a school because his instruction was inadequate, that is, that he did not obtain a reasonable amount, or a promised amount, of knowledge or skill. We have collected these cases which have denied liability for an inadequate education in an endnote.14

Private schools and universities have been just as successful as public schools and universities in defending themselves from educational malpractice claims on the grounds of inadequate instruction.15

Some of the decisions on whether inadequate instruction constitutes educational malpractice have been close. For example, both New York and Maryland decided against the existence of educational malpractice by 4 to 3 decisions.16

For this reason, we do not consider the question of whether there is a legal cause of action for educational malpractice settled. Despite the successful resistance of schools and universities during the last ten years, we believe the bastion of defense built against educational malpractice may fall sometime in the next twenty-five years, just as the bastion of defense against racial discrimination fell and as the bastion of defense against strict liability and product liability fell a generation ago. The question is still a matter of active controversy.

A heavy challenge to the existing immunity of schools and universities (and professors) from suits for educational malpractice may be found in the article of Gershon M. Ratner in an extensive article in a recent issue of the Texas Law Review.17 Mr. Ratner has been associated with the movement for effective schools for many years. Mr. Ratner, in his article, accepts the immunity of schools and universities from liability for inadequate instruction to individuals, but urges that the courts should compel school districts to reform their instruction by the use of injunctions and affirmative judicial orders directed against school districts. The analogy he makes regarding what he wants in the way of educational reform is the orders of courts directing busing. These orders do not give individual minority students monetary damages for the discriminatory and harmful education they have received.

Improper Diagnosis of Mental Retardation and/or Learning Disability

Let us call cases involving the problem of mental retardation or learning disability "misdiagnosis cases".

Every professional activity involves three states in its handling of its clients: diagnosis, prognosis, and prescription. In recent years, knowledge has advanced about mental retardation and learning disabilities, or at least

educators think it has, although it may be too early to tell yet. Parents have a real concern about this problem. In other words, educators think they can tell the difference between dyslexia and mental retardation. If educators can do this, don't they have an obligation to do it to avoid the tragedies caused by mis-assignment of intelligent dyslexic students to classes for the mentally retarded?

Public schools have responded by giving parents certain rights to have their children tested and properly assigned to appropriate educational programs. In certain instances, where the public schools cannot provide an appropriate education, the parent has a right to have the school district pay tuition to private schools which provide appropriate education. Mentally deficient children and otherwise handicapped children must be provided with a suitable education. This is held to be an individual right which is enforceable in the courts. However, individuals who have not been provided with appropriate education can only, after exhausting their administrative remedies in the school system, sue to force the public schools to provide or pay for an appropriate education; they are not yet entitled to monetary damages for harm done by the mis-assignment of a student to an inappropriate education, although they may have a right to reimbursement for tuition they paid to a private institution if such tuition was properly payable by the school district, but the school district refused to pay such tuition.

Misdiagnosis can occur because the child is found to be mentally retarded or have a learning disability, when he does not; or not to be mentally retarded nor have a learning disability, when he does. With this caution about the wide variety of possible misdiagnosis, let us look at the misdiagnosis cases.

Neither the student nor his parents have right to damages for harm to the student by reason of inappropriate education has been recognized by any state. Montana may be an exception.18 No cause of action exists in a handicapped students for denial of an appropriate education, even where the school district is aware of the handicap.19 It is difficult to imagine a more heart-rending situation, or one where greater harm is done to a child, than to assign a child of normal intelligence to a class for the mentally retarded because the child's deafness was misdiagnosed. Yet the courts have denied recovery for such misdiagnosis.20 In one case, the lower court in New York in the Hoffman case held that the failure to re-test a student every two years who was misdiagnosed as mentally retarded as required by school regulations was negligence, but the appellate court reversed the lower court because the gravamen of the case was educational malpractice, not negligence.21 Hence, the fact that the school might have discovered that the student's problem was a learning disability, not mental retardation, if the student had been properly tested, did not enable the student to sue the school district, even though in this case the student spent several years in classes for the mentally retarded, and his educational development had been irretrievably damaged. This seems going too far, where the school district's neglect to follow its own reasonable regulations made to protect the student still gave rise to no cause of action of any nature.

The Snow case decided by the Appellate Division of the New York Supreme Court22 seems to get around the ruling of the Donahue case decided by the New York Court of Appeals,23 that there is no educational practice in New York, by holding that the mis-assignment of a normally intelligent deaf student to a state institution for the mentally defective was a matter of MEDICAL malpractice, and not a matter of EDUCATIONAL malpractice. The court is quite emphatic in this. See its opinion on 469 N.Y.S.2d 961. It is puzzling why this opinion was not appealed to the New York Court of appeals. One might comment that if the court can second-guess medical opinion of physicians about the assignment of deaf students to distant institutions for the mentally retarded, it ought to be able to second-guess the educational opinion of teachers about the assignment of deaf students to special education classes for the mentally retarded right in the home town in the local school district. In fact, the courts should probably find medical opinion of psychiatrists on mental retardation more expert than the opinion of the ordinary school administrator. Yet it overrules physicians, and defers to school administrators. Miracle dictu!

Unreasonable Regulations, or Unreasonable Enforcement of Regulations, as Educational Malpractice

In the few cases involving unreasonable regulations, or unreasonable enforcement of reasonable regulations, it has been held that unreasonable regulations, or unreasonable enforcement of reasonable regulations, etc., is not educational malpractice. As we noted, a university music student's failure to take a required piano performance test in the Bindrim case did not give rise to a cause of action for the denial of a degree, even when student was not aware of the requirement.24

A particularly controversial case is where a high school student was denied a diploma because of failure to take the rather explicit sex education course in the Philadelphia public schools. The court upheld the school district in this disciplinary measure in the Aubrey case.25 This is a particularly controversial case because of the explicit nature of the sex education courses in the Philadelphia schools, which were and remain offensive to the sensibilities of the large Catholic population in Philadelphia. Of course, with the large number of illegitimate teen-age births in Philadelphia, the Pennsylvania Commonwealth Court could have well felt that the public interest in sex education outweighed moral sensibilities of many Catholics. It is rather difficult to see how this case could have been considered as an "educational malpractice" case. It seems to us that the case is one of whether students should be excused from sex education if they or their parents find such material reasonably offensive to their moral sensibilities. It seems to us that this case involves a cultural conflict where those with more liberal sexual ideas try to "desensitize" what they regard as a reactionary and Puritanical Catholic population. This is a case of conflict of cultural values, not a case of educational malpractice. Of course, the court took the ground that it was not for the courts to substitute its values for those of educational experts. Why not? Why shouldn't the court find that First Amendment free speech involves the right not to hear something as well as the right to say something, particularly when as a fact it could find that the subject matter involved is offensive to a large segment of the population, which no one can doubt? Must the courts take sides in the centuries old quarrel between Jansenists and liberals sharpened by the French Revolution?

Refusal to Accept or Re-Enroll Students as Educational Malpractice

In one case a private school had taken the money of the parents for seven long years, and then suddenly refused to take their money any more on the grounds that the student's educational progress was inadequate.26 Perhaps this is not an educational malpractice case at all, although the court stated that the parent had no right in tort or contract to sue the school for a bad or inadequate education. The real issue may be whether the school had made a contract to re-enroll students who are doing passing work, or whether it could refuse to educate students anymore who no longer met its academic standards, even when such academic deficiency was the fault of the school itself. The question presented is really whether the parents had a contract right to re-enroll their child if he did passing work, not whether the education was so bad it did not meet the promise of a good education made by the private school.

The Role of Emotional Distress of the Student in Educational Malpractice

In some few cases, the student has attempted to claim damages for emotional distress caused by educational malpractice. In the Sitomer case, the parents attempted to sue the school board because the school district refused to let their son play on the tennis team as "not physically mature enough".27 One suspects the father suffered from McEnroe syndrome (the delusion that his son was another John McEnroe).

Teacher Misconduct as Educational Malpractice

Even teacher misconduct is not educational malpractice. Hence, in the Rubio case28 the school district was not liable for the teacher introducing his students to marijuana. This is hard to understand. What if the substance had been cocaine or heroin? Or what if sexual abuse had been involved? Would the result have been the same if the school district had been negligent, in that it had reason to believe

that the teacher would do this? Is there some sort of sovereign immunity doctrine operating in the case of educational malpractice?

Educational Malpractice as Breach of Contract

Do educators promise a certain level of performance or skill will be attained as the result of education? In general, educators are careful to promise only an effort to educate the student. Educators do not promise that the student will attain a level of skill or knowledge. However, some few cases have been brought on the theory that the school implicitly promised that the student would attain a certain level of skill, etc. This is more likely to be the case with private schools than with public schools. After all, the attendance of pupils at primary and secondary public schools is involuntary, so that there is no occasion to speak of contracts, which are voluntary. However, public universities might well be thought to promise to educate the student to a certain level of knowledge or skill, since enrollment in a public university is VOLUNTARY.

Whatever theories might be raised about the matter, cases which were based on a contract theory of educational malpractice were no more successful than those which were based on a strict liability, or negligence theory. We have collected the cases where argument was made that the school had promised a certain level of skill to students who completed their education with the school in question.29 Admittedly, there would be difficulty in holding that a school had violated a contract obligation to provide a "good" education, or not to give a "bad" education. What is a "good" education or a "bad" education is difficult to say. Hence, any claim for breach of contract must be related to the student's failure to perform a particular skill. However, the inspection teams of the AASCB are currently trying in their evaluation to evaluate universities on the basis of their graduates' competence.

Just as it is not easy to tell whether a student has well or poorly learned, it is not much easier to tell whether a student is well taught or poorly taught. Student evaluation of teachers has been consistently shown by educational research to have little objective validity. But all universities consider student evaluation of teachers in faculty evaluation, knowing that student evaluation is invalid, because the universities are afraid to deny the students "input" into the educational process. We don't let patients evaluate our physicians (other than the market process of letting the patient choose his physician), but we do let students evaluate our professors.

In some cases, the skills which the school purports to teach are very specific, such as, how to qualify for a trade, become a computer operator, deliver babies properly, or do chiropractic spinal manipulation. There is no reason why a private school could not make a contract to train qualified students (or at least those whom it accepts for admission to its school) to have certain skills upon graduation, etc. This is not a vague obligation, or an unreasonable obligation. It is a normal commercial risk which private schools might reasonably assume.

Failure to Report a Child's Educational Difficulties to the Parents as Educational Malpractice

The school has, we think we can agree, a duty to make appropriate reports on the child's educational progress and difficulties to the child's parents. One case considers the failure of the school district to report the child had psychological problems, but, as usual, this shortcoming was not found to be educational malpractice. However, somewhat inconsistently, school district liability may be based on failure to report suspected child abuse.30

What is the Real Basis for the Refusal of the Courts to Recognize Educational Malpractice

One knows what judges say, but it is always speculative as to why they say it. The ultimate reason, it seems to us why judges deny the right to sue for educational malpractice is that they continue to feel that the determination of what is taught and how it is taught is a matter for the discretion of educators. And also, the judges do not want to impose large liability on schools for damages to individuals, or open the universities to a "large flood of private litigation". But the ultimate reason, in our judgment, is that stated

by the Supreme Court of Iowa in Moore v. Vanderloo,31 namely, that:

recognizing such a cause of action would force the courts blatantly to interfere with the internal operations of an educational institution. (386 N.W.2d 105)

But why, one must ask, in this day and age of judicial activism, when the courts blatantly interfere with prisons, hospitals, etc. (and schools in the matter of racial equality) should the courts be so reluctant in the case of educational quality? There really is not a good reason why the courts should be so reluctant to interfere in the case of educational matters involving standards of learning and performance when they are so ready to intervene in other matters. Education should be treated like medicine, prisons, etc. No doubt, in the judgment of this writer, courts have been too willing to intervene in matters better left to the judgment of professionals, or to political rather than judicial processes. Even the legal profession is being sued frequently and successfully these days.

Nevertheless, this writer finds it hard to accept that parents and children cannot sue their educators for monetary damages, when they have suffered incalculable and irreversible damage in the case of being treated as mentally retarded when they are only dyslexic. What a human tragedy! We are well aware that perfection does not exist in these matters, but neither does perfection in medicine. Yet individual physicians with imperfect knowledge and skill have to assume the risk of malpractice liability, at the cost of tens of thousands of dollars annually in insurance premiums, as the price for practicing medicine. Why should not professors and schools be subject to liability for educational malpractice as physicians are subject to liability for medical malpractice?

Lessons for Universities and University Professors from the Existing Decided Cases and Literature

So far, the university professor has only the most negligible risk of being sued for educational malpractice, that is, failing to teach his students, or teaching them badly and ineffectively.

Of course, the university and the university professor have some liability for active wrongs towards his students, such as discrimination in examinations and grades, physical abuse of his students, sexual harassment, denial of free speech to the students (such as low grades for students who express disagreement with his opinions), failure to exercise reasonable care in the physical custody of students (such as not providing reasonable security from rape for students who reside in university dormitories). Lafayette College did make a large settlement with the parents of a student who was raped and murdered by a fellow student who entered her room to steal, but who was surprised in his stealing by the murdered student. No judicial opinion was discovered about this Pennsylvania case.

However, this situation did come to the attention of the New York Court of Appeals in the Eiseman case, where a student admitted under the SEEK program (Search for Education, Elevation and Knowledge) did rape and murder a fellow student in an off-campus apartment.32 The murderer was a former convict admitted to the university under its program to rehabilitate former convicts and integrate them into society. The murderer had used up to 25 bags of heroin a day prior to conviction, had been diagnosed as having paranoid schizophrenia, had attempted suicide, and had had his parole revoked. The university knew of his conviction and parole revocation, but the physician at the state correctional institution omitted his psychiatric history and his record of drug-related crimes in his medical report to the university. Hence, at the time the university admitted him, it had no knowledge of these things. Does a student with such a record have a right to confidentiality in these circumstances?

But there is little or no risk because the university professor teaches badly.

However, there are more serious areas of educational malpractice than that of bad or ineffective teaching. I refer to the obligations of common honesty. We have been, in my university, making promises to students which we cannot reasonably keep. We are admitting students who have no reasonable chance by reason of inadequate ability and deficient preparation of successfully completing a

university degree program. Some day our universities will be sued for this misrepresentation and waste of the students' time and money, to say nothing of the taxpayers' money. We are making promises about the availability of programs which are demonstrably false. We tell freshmen, for example, when admitted that they can transfer to business on becoming a junior, when the admissions office knows that the student has no reasonable chance of doing so, both from lack of ability and training and from lack of professors and facilities to teach him if he were to transfer to business on becoming a junior. We are engaging in deceptive consumer practices, which, if practiced by private industry, would land the officers in jail for consumer fraud. Public universities are more deceitful than even some of the most notorious proprietary, and quasi-proprietary, institutions of higher learning in our avarice for students, and consequently, for legislative appropriations. We have, in our pursuit of growth and power, become almost devoid of ethical standards. How can the government ethically have judges enforce moral standards on private industry and criminals when the government itself commits what would be crimes if committed by private citizens?

I have been amazed that some disappointed students have not sued the Commonwealth for these deceptive practices.

Reflections on Where we are Headed - the Ratner Article Analyzed

I want to end this paper with some reflections on the Ratner article.33 I find it difficult to share Mr. Ratner's support for judicial activism, whereby every major social problem becomes a subject for judicial intervention into our social development. The resolution of social problems by un-elected judges who have no political accountability is fraught with political danger to democratic institutions. Already it has created an unacceptable gloss on the U.S. Constitution with legal theories about "suspect classes" and "fundamental rights" which (at least in my own mind) the authors of the constitution would find wholly repugnant to their temperament, and to the literal and figurative text of the constitution they wrote. Rights are rights.

I do share Mr. Ratner's belief that our public education system can do better. I am not sure that the problem is as simple as his diagnosis indicates, namely, that successful schools have five characteristics and that the courts can compel ineffective school districts to adopt and implement them. The five characteristics of successful schools, according to Mr. Ratner, who agreed with the analysis made by the late Prof. Ronald Edmonds of Michigan State University, are:

(1) the principal's leadership and attention to the quality of instruction, (2) a pervasive and broadly understood instructional focus (on the three Rs - AWG), (3) an orderly, safe climate conducive to teaching and learning, (4) teacher behaviors that convey the expectation that all students are expected to obtain at least minimum mastery, and (5) the use of measures of pupil achievement as the basis for program evaluation.34

Part of the irony of Mr. Ratner's position is that he is going to use the methods of political radicalism to implement the program of social conservatives who want to get back to Guffy's Readers.

One of the reasons why I cannot share Mr. Ratner's optimism about the success of judicial activism is simply a lifetime of exposure to the moral inadequacy of Pennsylvania legislators, judges, and university administrators. I simply cannot imagine their being primarily motivated to do good things. My nineteen years as a SSHE university professor has completely disillusioned me about the good intentions of many of its professors and most of its administrators, at least at my university. I simply cannot conceive of these morally flawed people as capable of implementing an idealistic program by authoritarian methods - i.e., by a response to the fiat of an arrogant judiciary which assumes (ridiculously) it has superior moral standards and educational expertise.

However, I see no difficulty in having morally flawed, relatively ignorant judges holding educators and schools financially responsible for failure to meet reasonable minimum standards of professional conduct, such as correctly diagnosing dyslexia and mental retardation, and

assigning handicapped students to appropriate classes.

Still, I see the most appropriate remedy for ineffective public education as political and social, not judicial.

ENDNOTES

1Donahue v. Copiague Union Free School District, 418 N.Y.S. 375, 47 N.Y.2d 440, 391 N.E. 1352, 1 A.L.R.4th 1133 (New York Court of Appeal, 1979); case in the Appellate Division of the New York Supreme Court reported at 407 N.Y.S.2d 874, 64 A.D.2d 29 (1978), and in the trial court (New York Supreme Court) at 408 N.Y.S.2d 584, 95 Misc.2d 1 (1977). An earlier lower court opinion considered a similar case, in which the educational deficiency of the student was not so great. Peter W. v. San Francisco Unified Sch. Dist., 60 Cal.App.3rd 814, 131 Cal.App. 854 (Cal. App., 1976), where the student, who graduated from high school, and was of normal intelligence, was able to read only at the eighth-grade level.

2It seems appropriate to give a list of "playground" cases we have located in our research, although we do not pretend this list is exhaustive. Dean v. Board of Education of Cecil County, 523 A.2d 1059, 71 Md.App. 92, 38 Ed.Law Rep. 626 (Maryland Appeals, 1987); Cavello v. Sherbourne-Earlville Central School District, 494 N.Y.S.2d 466, 110 A.D.2d 253, 28 Ed.Law Rep. 537 (3rd Appellate Division, New York Supreme Court, 1985) [yet here the court denied liability (erroneously, we think) in holding that a teacher's failure to stop a fight between students involved an educational malpractice situation for which no damages could be recovered]; Broward Co. Sch. Bd. v. Rui, 493 So.2d 471 (19) (lack of supervision); McClendon v. Norwood, 346 S.E.2d 1 (19) (defective condition of playground); Marcantile v. Allen Parish Sch. Bd., 490 So.2d 1162 (19) (failure to stop student roughhousing which teacher had observed); Reule v. Public Sch. Dist., 396 N.W.2d 32 (19) (student injured by another student on playground; governmental immunity applied to school district but not to teacher); Daily v. Los Angeles Unified Sch. Dist., 2 Cal.App.3rd 741, 470 P.2d 360, 87 Cal.Rptr. 376 (1970); Bellman v. San Francisco High School Dist., 11 Cal.2d 576, 81 P.2d 894 (1938): Comunitz v. Pinellas Co. Sch. Bd., 508 So.2d 705 (19) (failure to prevent assault on student).

3Paulsen v. Unified Sch. Dist., 717 P.2d 1051 (19) (hand injuries in woodworking class where shop teacher did not supervise student operation of lathe); Levine v. Live Oak Housing, Inc., 491 So.2d 489 (19) (a private vo-tech school was held liable for injury caused by a defectively spliced electric cord on an appliance despite the fact that splicing was done without the instructor's knowledge, and the student stole the appliance and sold it to the person who was injured).

4Vince by Vince v. Ringgold Sch. Dist., 499 So.2d 1148 (19) (student injured in moving piano at insistence of music teacher); Rock by Rock v. Central Square Sch. Dist., 499 N.Y.S.2d 579 (19) [rubber (?) eraser broke in two and part of the eraser flew up and hit student in the eye; no liability because student flipped his pen on eraser].

5Litominsky v. St. Charles High School, 482 So.2d 30 (19) (referee sued high school for assault on him by spectator at football game); Marcy v. Town of Saugus, 495 N.Y.S.2d (19) (student sued football coach for injuries suffered by student in tackling drill - no liability because coach's fault was non-feasance, and not misfeasance); Webber v. Yeo, 383 N.W.2d 230, (19) (improper rescue of student from swimming pool). Wicina, et al. v. Strecker, 747 P.2d 167, 242 Kan. 278, 43 Ed. Law Rep. 1149 (1988) (here Catholic high school was sued because of its failure either to provide disability insurance on student injured in football, or to inform parents of lack of such insurance so parents could obtain disability insurance for their son).

5Willoughby v. Lehrboss, 388 N.W.2d 685 (19).

6Menith v. Board of Education of Philadelphia, 513 A.2d 504 (19); Comunitz v. Pinellas Co. Sch. Bd., 508 So.2d 705 (19) (failure to prevent assault on student).

6aSee Endnote 32.

7Deborah D. Dye. "Education malpractice: a cause of action that failed to pass the test", 90 West Virginia Law Review 499 (1987). This thoughtful article deals largely with West Virginia law, and thus is not too helpful in taking a national overview of current law.

8B. M. v. State, 649 P.2d 425, 200 Mont. 58, 33 A.L.R.4th 1152, 5 Ed.Law Rep. 1285 (Montana, 1982); however, when the case came before the Supreme Court of Montana a second time in B. M. v. State, 698 P.2d 399 (Mont., 1985), it was held that there could be no recovery because the plaintiff admitted that no damages had been suffered.

9Natrona County Sch. Dist. No. 1 v. McKnight, 764 P.2d 1039, 50 Ed. Law Rep. 591 (Wyo., 1988); see also Natrona County Sch. Dist. No. 1 v. McKnight, 764 P.2d 1019 (Wyo., 1988); Camer v. Seattle Sch. Dist. No. 1, 762 P.2d 356, 52 Wash. App. 531, 49 Ed. Law Rep. 819 (1988); Sitomer v. Half Hollow Hills Cent. Sch. Dist., 520 N.Y.S. 37, 133 A.D.2d 748, 42 Ed. Law Rep. 828 (1987); Rubio by Rubio v. Carlsbad Mun. Sch. Dist., 744 P.2d 919, 106 N.Mex. 446, 42 Ed. Law Rep. 876 (N.M.App., 1987); Armstrong v. Data Processing Institute, Inc., 598 So.2d 1298, 12 Fla. Law Week 1716 (Fla. App., 1st Dist., 1987); DeRosa v. City of New York, 517 N.Y.S.2d 754, 132 A.D.2d 592, 40 Ed. Law Rep. 349 (N.Y.A.D., 2 Dept., 1987); Agostino v. Sch. Dist. of Philadelphia, 527 A.2d 193, 186 Pa. Cmnwlth. 492, 40 Ed. Law Rep. 349 (Pa. Cmnwlth, 1987); Dean v. Board of Education of Cecil County, 523 A.2d 1059, 71 Md.App. 92, 38 Ed. Law Rep. 626 (Md.App., 1987); Savino v. Board of Education of Sch. Dist. No. 1, Westbury, 506 N.Y.S.2d 210, 123 A.D.2d 314 (N.Y.A.D., 2nd Dept., 1986); Wickstrom v. North Idaho College, 725 P.2d 155, 111 Idaho 458, 34 Ed. Law Rep., 1223 (Idaho, 1986); Moore v. Vanderloo, 386 N.W.2d 108, 31 Ed.Law Rep. 1263 (Iowa, 1986); Cavello v. Sherbourne-Earlville Cent. Sch. Dist., 494 N.Y.S.2d 466, 110 A.D.2d 253, 28 Ed.Law Rep. 537 (N.Y.A.D., 3rd Dept., 1985) (it is a little difficult to see why the court denied liability here, as negligence supervision in playground situations has long been recognized as actionable negligence by school districts); Myers v. Medford Lakes Bd. of Educ. 489 A.2d 1240, 199 N.J. Super. 522, 24 Ed.Law Rep. 291 (N.J.Super A.D., 1985); Swidryk v. St. Michael's Medical Center, 493 A.2d 641, 201 N.J.Super 601, 25 Ed.Law Rep. 814 (N.J.Super L., 1985); Torres v. Little Flower Children's Services, 485 N.Y.S.2d 15, 64 N.Y.2d 119, 474 N.E.2d 223, 53 U.S.Law Week (BNA) 2351, 22 Ed.Law Rep. 1227 (1984); Village Community School v. Adler, 478 N.Y.S.2d 546, 124 Misc.2d 817, 19 Ed.Law Rep. 351 (N.Y.City Civ.Ct., 1984); Snow v. State, 469 N.Y.S.2d 959, 98 A.D.2d 442 (N.Y.A.D., 2nd Dept., 1983); Doe v. Bd. of Educ. of Montgomery County, 453 A.2d 814, 295 Md. 67, 8 Ed. Law Rep. 356 (1982), affirming Hunter v. Bd. of Educ. of Montgomery County, 425 A.2d 681, 47 Md.App. 709 (Md.App., 1981); Paladino v. Adelphi University, 454 N.Y.S.2d 388, 89 A.D.2d 85, 7 Ed.Law Rep. 191 (N.Y.A.D., 1982), overruling Paladino v. Adelphi University, 442 N.Y.S.2d, 20, 83 A.D.2d 314 (N.Y. Sup., 1981); Tubell v. Dade Co. Pub. Sch., 419 So.2d 388, 6 Ed.Law Rep. 865 (Fla.App., 3rd Dist., 1982); Aubrey v. Sch. Dist. of Philadelphia, 437 A.2d 1306, 63 Pa. Cmnwlth. 330, 1 Ed.Law Rep. 884 (Pa. Cmnwlth., 1981); Washington v. City of New York, 442 N.Y.S.2d 38, 110 Misc.2d 314 (N.Y.Sup., 1981); D. S. W. v. Fairbanks North Star Borough Sch. Dist., 628 P.2d 554 (Alaska, 1981); Helm v. Professional Children's School, 431 N.Y.S.2d 246, 103 Misc.2d 1053 (N.Y.Sup., 1980); Hoffman v. Bd. of Educ. of City of New York, 424 N.Y.S.2d 376, 49 N.Y.2d 121, 400 N.E.2d 316 (1979) reversing Hoffman v. Bd. of Educ. of City of New York, 410 N.Y.S.2d 99, 64 A.D.2d 369 (N.Y.A.D., 1978); Donahue v. Copiague Union Free School District, 418 N.Y.S. 375, 47 N.Y.2d 440, 391 N.E. 1352, 1 A.L.R.4th 1133 (New York Court of Appeal, 1979); case in the Appellate Division of the New York Supreme Court Donahue v. Copiague Union Free School District, 407 N.Y.S.2d 874, 64 A.D.2d 29 (1978), and in the trial court (New York Supreme Court) Donahue v. Copiague Union Free School District, 408 N.Y.S.2d 584, 95 Misc.2d 1 (1977).

10Hoffman v. Bd. of Educ. of City of New York, 410 N.Y.S.2d 99, 64 A.D.2d 369 (N.Y.A.D., 1978), overruled in Hoffman v. Bd. of Educ. of City of New York, 424 N.Y.S.2d 376, 49 N.Y.2d 121, 400 N.E.2d 316 (1979); Paladino v. Adelphi University, 442 N.Y.S.2d, 20, 83 A.D.2d 314 (N.Y. Sup., 1981), overruled in Paladino v. Adelphi University, 454 N.Y.S.2d 388, 89 A.D.2d 85, 7 Ed.Law Rep. 191 (N.Y.A.D., 1982).

11Bindrim v. University of Montana, 766 P.2d 981, 51 Ed. Law Rep. 387 (Mont., 1988); Wickstrom v. North Idaho College, 725 P.2d 155, 111 Idaho 458, 34 Ed.Law Rep. 1223 (Idaho, 1986); Swidryk v. Saint Michael's Medical Center, 493 A.2d 641, 201 N.J.Super. 601, 25 Ed.Law Rep. 814 (N.J.Super., 1985); Paladino v. Adelphi University, 454 N.Y.S.2d 388, 89 A.D.2d 85, 7 Ed.Law Rep. 191 (Appellate Division, New York Supreme Court); Tedeschi v. Wagner College, 427 N.Y.S.2d (19).

12Bindrim v. University of Montana, 766 P.2d 981, 51 Ed.Law Rep. 387 (Mont., 1988).

13Tedeschi v. Wagner College, 427 N.Y.S.2d (19).

14Camer v. Seattle School District No. 1, 762 P.2d 356, 52 Wash. App. 531, 49 Ed.Law Rep. 819 (Wash. App., 1988); Armstrong v. Data Processing Institute, Inc., 509 So.2d 1298, 12 FLW 1716 (Fla. App., 1987); Wickstrom v. North Idaho College, 725 P.2d 155, 111 Idaho 458, 34 Ed.Law Rep. 1223 (Idaho, 1986) (although court says here student may have a cause of action for breach of contract, but as student sued for educational malpractice, this was not decided); Myers v. Medford Lakes Board of Education, 489 A.2d 1240, 201 N.J.Super. 601, 25 Ed.Law Rep. 1227 (N.J.Super., A.D., 1985); Paladino v. Adelphi University, 454 N.Y.S.2d 388, 89 A.D.2d 85, 7 Ed.Law Rep. 191 (N.Y.A.D., 1982) - here court holds there is not even an action in contract or tort for providing a bad education, let alone an "educational malpractice" cause of action.

15Armstrong v. Data Processing Institute, Inc., 598 So.2d 1298, 12 Fla. Law Week 1716 (Fla. App., 1st Dist., 1987); Wickstrom v. North Idaho College, 725 P.2d 155, 111 Idaho 458, 34 Ed.Law Rep. 1223 (Idaho, 1986) (although court says here student may have a cause of action for breach of contract, but as student sued for educational malpractice, this was not decided); Moore v. Vanderloo, 386 N.W.2d 108, 31 Ed.Law Rep. 1263 (Iowa, 1986) (which was based on similar facts, where a chiropractor sued for medical malpractice brought in Palmer College as an additional defendant on the theory he had received inadequate instruction in spinal manipulation); Swidryk v. St. Michael's Medical Center, 493 A.2d 641, 201 N.J.Super 601, 25 Ed.Law Rep. 814 (N.J.Super L., 1985) (here physician who was sued for medical malpractice for a faulty delivery of a child brought the hospital in as an additional defendant based on the theory that he had received inadequate training in its medical resident program); Village Community School v. Adler, 478 N.Y.S.2d 546, 124 Misc.2d 817, 19 Ed.Law Rep. 351 (N.Y.City Civ.Ct., 1984); Paladino v. Adelphi University, 454 N.Y.S.2d 388, 89 A.D.2d 85, 7 Ed.Law Rep. 191 (N.Y.A.D., 1982), overruling Paladino v. Adelphi University, 442 N.Y.S.2d, 20, 83 A.D.2d 314 (N.Y. Sup., 1981); here court holds there is not even an action in contract or tort for providing a bad education, let alone an "educational malpractice" cause of action; Helm v. Professional Children's School, 431 N.Y.S.2d 246, 103 Misc.2d 1053 (N.Y.Sup., 1980).

16Doe v. Bd. of Educ. of Montgomery County, 453 A.2d 814, 295 Md. 67, 8 Ed. Law Rep. 356 (1982); Donahue v. Copiague Union Free School District, 418 N.Y.S. 375, 47 N.Y.2d 440, 391 N.E. 1352, 1 A.L.R.4th 1133 (New York Court of Appeal, 1979).

17Gershon M. Ratner, "A new legal duty for public schools: effective education in basic skills". 63 Texas Law Review 889 (Feb., 1985). Prof. John S. Elson of Northwestern University School of Law, in the same issue of the Texas Law Review, responds to Mr. Ratner in an article entitled, "Suing to make schools effective, or how to make a bad situation worse: A response to Ratner," 63 Texas Law Review 889. Mr. Ratner made a "Rebuttal of Elson" in 63 Texas Law Review 919. Dean Mark A. Yudof of the University of Texas School of Law in the same issue wrote an imaginary court opinion in which he sets forth the arguments pro and con (including several dissenting and concurring opinions) entitled "Effective Schools and Federal and State Constitutions: A variety of opinions". 63 Texas Law Review 865.

18See Endnote 8.

19Natrona County Sch. Dist. No. 1 v. McKnight, 764 P.2d 1039, 50 Ed. Law Rep. 591 (Wyo., 1988); see also NAtrona County Sch. Dist. No. 1 v. McKnight, 764 P.2d 1019 (Wyo., 1988); Myers v. Medford Lakes Bd. of Educ. 489 A.2d 1240,

199 N.J. Super. 522, 24 Ed.Law Rep. 291 (N.J.super A.D., 1985).

20See DeRosa v. City of New York, 517 N.Y.S.2d 754, 132 A.D.2d 592, 40 Ed. Law Rep. 349 (N.Y.A.D., 2 Dept., 1987) (deaf student misdiagnosed as mentally retarded); Agostino v. Sch. Dist. of Philadelphia, 527 A.2d 193, 186 Pa. Cmnwlth. 492, 40 Ed. Law Rep. 349 (Pa. Cmnwlth, 1987) (learning disability misdiagnosed as mental retardation); Torres v. Little Flower Children's Services, 485 N.Y.S.2d 15, 64 N.Y.2d 119, 474 N.E.2d 223, 53 U.S.Law Week (BNA) 2351, 22 Ed.Law Rep. 1227 (1984) (improper placement of student by social service agency resulted in poor education); Village Community School v. Adler, 478 N.Y.S.2d 546, 124 Misc.2d 817, 19 Ed.Law Rep. 351 (N.Y.City Civ.Ct., 1984) (failure to detect learning disability); Doe v. Bd. of Educ. of Montgomery County, 453 A.2d 814, 295 Md. 67, 8 Ed. Law Rep. 356 (1982) (learning disabled student assigned to mentally retarded class); Tubell v. Dade Co. Pub. Sch., 419 So.2d 388, 6 Ed.Law Rep. 865 (Fla.App., 3rd Dist., 1982) (normal student assigned to special education program); B. M. v. State, 649 P.2d 425, 200 Mont. 58, 33 A.L.R.4th 1157, 5 Ed.Law Rep. 1265 (Mont., 1982) and B. M. v. State, 698 P.2d 399 (Mont., 1985) (learning disabled student assigned to mentally retarded class); D. S. W. v. Fairbanks North Star Borough Sch. Dist., 628 P.2d 554 (Alaska, 1981) (dyslexic student assigned to mentally retarded class); Hoffman v. Bd. of Educ. of City of New York, 410 N.Y.S.2d 99, 64 A.D.2d 369 (N.Y.A.D., 1978), overruled in Hoffman v. Bd. of Educ. of City of New York, 424 N.Y.S.2d 376, 49 N.Y.2d 121, 400 N.E.2d 316 (1979) (mis-assignment of student to class for mentally retarded - case has additional fact that child was not tested every two years as school regulations required).

21Hoffman v. Bd. of Educ. of City of New York, 410 N.Y.S.2d 99, 64 A.D.2d 369 (N.Y.A.D., 1978), overruled in Hoffman v. Bd. of Educ. of City of New York, 424 N.Y.S.2d 376, 49 N.Y.2d 121, 400 N.E.2d 316 (1979).

22Snow v. State, 469 N.Y.S.2d 959, 98 A.D.2d 442 (N.Y.A.D., 2nd Dept., 1983).

23Donahue v. Copiague Union Free School District, 418 N.Y.S. 375, 47 N.Y.2d 440, 391 N.E. 1352, 1 A.L.R.4th 1133 (New York Court of Appeal, 1979); case in the Appellate Division of the New York Supreme Court Donahue v. Copiague Union Free School District, 407 N.Y.S.2d 874, 64 A.D.2d 29 (1978), and in the trial court (New York Supreme Court) Donahue v. Copiague Union Free School District, 408 N.Y.S.2d 584, 95 Misc.2d 1 (1977).

24Bindrim v. University of Montana, 766 P.2d 981, 51 Ed.Law Rep. 387 (Mont., 1988).

25Aubrey v. Sch. Dist. of Philadelphia, 437 A.2d 1306, 63 Pa. Cmnwlth. 330, 1 Ed.Law Rep. 884 (Pa. Cmnwlth., 1981).

26Paladino v. Adelphi University, 454 N.Y.S.2d 388, 89 A.D.2d 85, 7 Ed.Law Rep. 191 (N.Y.A.D., 1982), overruling Paladino v. Adelphi University, 442 N.Y.S.2d, 20, 83 A.D.2d 314 (N.Y. Sup., 1981).

27Sitomer v. Half Hollow Cent. Sch. Dist., 520 N.Y.S.2d 37, 133 A.D.2d 749, 42 Ed.Law Rep. 828 (N.Y.A.D., 2nd Dept., 1987).

28Rubio by Rubio v. Carlsbad Mun. Sch. Dist., 744 P.2d 919, 106 N.Mex. 446, 42 Ed. Law Rep. 876 (N.M.App., 1987).

29Armstrong v. Data Processing Institute, Inc., 598 So.2d 1298, 12 Fla. Law Week 1716 (Fla. App., 1st Dist., 1987) (student was unable to get job in field for which he was specifically trained because of inadequate skills); Wickstrom v. North Idaho College, 725 P.2d 155, 111 Idaho 458, 34 Ed.Law Rep. 1223 (Idaho, 1986) (student was not qualified for trade for which he was trained); Moore v. Vanderloo, 386 N.W.2d 108, 31 Ed.Law Rep. 1263 (Iowa, 1986) (chiropractor not taught spinal manipulation by chiropractic college); Swidryk v. Saint Michael's Medical Center, 493 A.2d 641, 201 N.J.Super. 601, 25 Ed.Law Rep. 814 (N.J.Super., 1985) (physician was not taught how to deliver baby by hospital where he had residency).

30Savino v. Board of Education of Sch. Dist. No. 1, Westbury, 506 N.Y.S.2d 210, 123 A.D.2d 314 (N.Y.A.D., 2nd Dept., 1986); see also Mattingly v. Casey, 509 N.E.2d 1220 (19), where it was

argued that liability was based on the failure to report child abuse to the appropriate authorities.

31Moore v. Vanderloo, 386 N.W.2d 108, 31 Ed.Law Rep. 1263 (Iowa, 1986).

32Eiseman v. State of New York, 70 N.Y.2d 175, 518 N.Y.S.2d 691 (1987). This case was the subject of an article by Dena M. Kobasic, Elizabeth R. Smith, and Linda S. Barmore Zucker in 14 Journal of College and University Law 591 (1988), entitled "Eiseman v. State of New York: the duty of a College to protect its students from harm by other students admitted under special programs." Another recent student rape case is Peterson v. San Francisco Community College, 36 Cal.3rd 799, 695 P.2d 1183 (1984), where there was a known danger of rape in the neighborhood, and the College had failed to trim foliage and warn students of this known danger.

33See Endnote 17 for citation, etc.

34See 63 Texas Law Review 777 at page 801.

Privatization of Municipal Solid Waste Disposal

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ABSTRACT

The decision to privatize or contract out municipal services to private sector firms is becoming more common today due to increased demands for a municipality's limited resources. One of the most common municipal services to be privatized is the collection and disposal of solid waste. This paper addresses this problem and specifically examines the development of relevant financial data to be used in the decision making process. By providing relevant data to elected officials, it is hoped that more efficient resource allocations can be made.

The Borough of Shippensburg was facing this particular problem in the fall of 1988 and provided a "real world" case to be used in developing the data relevant for the decision making process. The data provided by the Borough was analyzed and presented in a format to facilitate the decision. This data was then used as an input in the decision making process.

BACKGROUND

The Borough of Shippensburg entered into the solid waste disposal operation in the 1960s. At that time, the Borough, through Federal grants and the proceeds of a revenue bond issue, acquired a large tract of land at the edge of the Borough and built an incinerator on the tract. At the time, the plant was considered to be a model for small communities.

Prior to this, a number of small, private haulers were collecting solid waste and disposing of it at either the Borough's landfill or in private landfills. These haulers billed their customers directly and were under no Borough regulations. In addition, citizens were permitted to haul their own refuse to the borough's landfill for a nominal fee.

By ordinance, the Borough required that all residents have their solid waste collected by the Borough and thereby entered the business. The justification for this action was to insure that sufficient waste would be available for the incinerator. The Borough purchased trucks and hired workers to collect the refuse and to operate the incinerator. The Borough contracted with several other communities and a Federal agency to incinerate their waste also.

After several years of operation, a serious problem arose at the incinerator. By accident, the incinerator was fired at too high a temperature which caused the steel plates to warp. This caused the incinerator to be shut down. Engineering studies were conducted to determine if the incinerator could be repaired but they indicated that it would not be feasible to restart. Subsequent studies continued to show that the plant could not be repaired. The technology has advanced to a point where the Shippensburg incinerator was obsolete and a replacement was not considered feasible due to the community's small size.

The Borough continued in the solid waste disposal business by hauling its waste to private landfills. The Borough's own landfill was closed with the building of the incinerator and was not considered suitable for reopening.

As trucks were needed to replace the original equipment, the Borough purchased these using both Federal Revenue Sharing funds and funds generated by the solid waste disposal operation. Basically, the operation was never operated on a breakeven basis since other funds were available to assist in the replacement of equipment.

STATEMENT OF THE PROBLEM

As the 1989 budget was being formulated in the fall of 1988, it became evident that the Borough's continuation in the solid waste disposal operation needed to be evaluated. The existing vehicles needed replacement and the private landfill costs had increased significantly. Management believed that a decision as to the privatization or continued Borough operation of the solid waste disposal system was in order.

An analysis of the operating results of the Sanitary Fund (Borough of Shippensburg, 1983-1987) for the past five years was prepared. This information was to be used in the decision making process for the privatization question.

The operating results for the past five years are presented in Exhibit 1. These results are presented on the cash basis which is consistent with the Borough's accounting system. Although the operation has generated an Excess of Revenues over Expenditures for 1986 and 1987, the continuation of the services needed to be evaluated in light of the expected equipment replacement cost and increased operating costs. It also should be noted that the operating statement is not prepared according to Generally Accepted Accounting Principles (AICPA, 1986; GASB, 1987) in that it is prepared on the basis of a governmental type fund rather than an enterprise fund as required.

ANALYSIS OF THE DATA

The revenue category for water sales represents the sale of water to the Borough from a large spring located on the tract of land purchased for the incinerator. This sale of water will continue regardless of the possible privatization decision. It is anticipated that the revenue will be adjusted upward to $37,500 per year in 1989 to fully service the remaining debt of the incinerator and land remaining. This will fully amortize the debt

Exhibit 1

Sanitary Fund
Operating Comparison
1983-1987

	1983	1984	1985	1986	1987
Revenues:					
Collections	$195,379	$195,860	$214,155	$238,931	$293,021
Water Sales	15,366	15,253	14,003	17,850	18,298
Interest	2,841	2,530	1,547	948	1,795
Others	2,241	1,086	8,975	465	3,540
Total	$215,827	$214,529	$238,680	$258,194	$316,654
Expenditures:					
Gen. Govt.	$ 11,588	$ 11,923	$ 13,416	$ 13,320	$ 16,605
Fin. Adm.	780	820	850	900	1,181
Sol. & Leg.	1,783	704	500	666	983
Boro. Bldg.	2,821	3,668	2,864	3,172	2,245
Col. & Disp.	127,603	132,639	140,547	153,196	177,646
Debt Service	37,150	37,500	37,150	37,750	37,150
Work. Comp.	3,143	2,926	4,238	3,528	5,208
Unemp. Comp.	578	685	627	700	639
Ins. Prem.	5,845	3,576	7,908	9,738	13,455
Fringe	13,378	13,927	12,880	16,359	16,954
Cap. Imp.	20,000	10,000	25,115	--	26,941
Total	$224,650	$218,368	$246,895	$239,327	$299,007
Excess Rev. over Exp.	$ <8,823>	$ <3,839>	$ <7,215>	$ 18,867	$ 17,647

Exhibit 2

Sanitary Fund
Schedule of Allocated Costs
1983-1987

	1983	1984	1985	1986	1987
General Govt.	$10,751	$11,137	$12,699	$12,482	$15,942
Fin. Adm.	390	410	425	450	590
Sol. & Legal	882	352	250	333	491
Boro. Bldg.	2,821	3,608	2,064	3,172	2,245
Col. & Disp.	12,103	9,227	11,143	9,800	11,208
Debt Service	--	--	--	--	--
Work. Comp.	--	--	--	--	--
Unemp. Comp.	--	--	--	--	--
Ins. Prem.	1,948	1,192	2,636	3,246	4,485
Fringe	--	--	--	--	--
Cap. Imp.	--	--	--	--	--
Total	$28,895	$25,986	$29,817	$29,483	$34,961

over its remaining life. The final payment on the debt is due early in the twenty-first century.

A detailed analysis of each of the expenditures within the 11 budget categories (See Exhibit 1) provided information as to the character of these items. Each item was examined to determine if the particular expenditure was a direct result of the collection and disposal of solid waste. If a direct relationship existed, the cost was classified as a direct cost, otherwise the cost was classified as allocated or indirect. Allocated costs are those costs that will continue to be incurred regardless of the continuation of solid waste collection and disposal. These allocated costs include the costs of such things as management, the operation of the Borough office and the Public Works Building. A more detailed discussion of this form of decision analysis can be found in Garrison, 1988.

Exhibit 2 provides the indirect or allocated costs from 1983 to 1987. The methodology used here is not 100% accurate, but the amounts are relatively close approximations of the costs that were not directly related to the collection and disposal of solid waste.

Exhibit 3 presents revised operating results for the period 1983 to 1987, based on the revenues and direct costs only. As can be seen, the Sanitary Fund has generated an Excess of Revenues over Direct Expenditures each year. This Exhibit is based on actual results for the past five years and eliminating the indirect or allocated costs.

Exhibit 3

Sanitary Fund
Operating Results - Elimination of Allocated Costs
1983-1987

	1983	1984	1985	1986	1987
Excess of Revenues over Expenditures-- Ex. 1	$(8,823)	$(3,839)	$(7,215)	$18,867	$17,647
Allocated Costs-- Ex. 2	28,895	25,986	29,817	29,483	34,961
Excess of Revenues over Direct Expenditures	$20,072	$22,147	$22,602	$48,350	$52,608

Exhibit 4

Sanitary Fund
Projected Operating Statement
1989-1993

	1989	1990	1991	1992	1993
Revenues:					
Collections	$346,000	$410,054	$483,004	$574,634	$698,664
Others	2,000	2,050	2,100	2,150	2,200
Total	$356,000	$412,104	$485,104	$5,67,784	$700,864
Expenditures:					
Gen. Govt.	$ 800	$ 825	$ 850	$ 875	$ 900
Fin. Adm.	750	790	840	890	940
Sol. & Leg.	1,600	630	660	690	720
Boro. Bldg.	--	--	--	--	--
Col. & Disp.	229,000	276,250	338,810	419,050	533,190
Debt Serv.	64,374	64,374	64,374	64,374	64,374
Work. Comp.	5,200	6,000	6,800	7,600	8,400
Unemp. Comp.	700	735	770	805	840
Ins. Prem.	9,000	12,000	15,000	18,000	18,000
Fringe	18,120	20,000	22,000	24,000	26,000
Cap. Imp.	10,000	11,000	12,000	13,000	14,000
Total	$339,000	$392,804	$462,104	$548,284	$667,364
Excess of Revenues over Direct Expenditures	$ 17,000	$ 19,500	$ 23,000	$ 27,500	$ 33,500

Since the Borough of Shippensburg prepares its financial statements on the cash basis, the exhibits presented also represent cash flows. The data indicates that the Sanitary Fund has generated approximately $165,000 in positive cash flow over the past five years. This amount is computed after deducting the cash flow for debt service and capital improvement transfers.

Exhibit 4 presents the projected operating results of the Sanitary Fund for the years 1989 to 1993. These projections are based on a number of assumptions which follow the exhibit. This exhibit is based on the expected future cash flows of the continuation of the operation of solid waste disposal in the Borough of Shippensburg.

ASSUMPTIONS FOR EXHIBIT 4:

1. The revenue from the sale of water is assumed to be equal to the required debt service payments of the original bond issue. Hence, these are irrelevant to the decision to privatize since they will continue regardless of the decision.

2. Acquisition of the three vehicles and the necessary roll-on containers. This equipment requirement was established by Borough management in an earlier memo.

The estimated costs are per the above-mentioned memo and the assumed

Exhibit 5

Acquisition of Three (3) Vehicles

	Residential	Dumpster	Roll-On	Roll-On Containers	Total
Cost	$120,000	$120,000	$80,000	$20,000	$320,000
Debt Life	7 yrs.	7 yrs.	7 yrs.	7 yrs.	
Interest Rate	8%	8%	8%	8%	
Semi-annual Pay.	$11,360	$11,360	$7,574	$1,893	$32,187
Annual Payment	$22,720	$22,720	$15,148	$3,786	$64,374
Estimated Life	7 yrs.	7 yrs.	7 yrs.	7 yrs.	

acquisition date is 1/1/89. Exhibit 5 presented below outlines the relevant data concerning cost and estimated debt service for the units.

3. No indirect costs are allocated to the Sanitary Fund. These costs are not incremental to the decision under consideration. These costs, however, will have to be covered by expenditures from other funds, which will mean either increased taxes or other utility rates will have to be increased. A conservative estimate of these costs for the five years beginning in 1989 would be:

1989 - $30,000
1990 - $31,500
1991 - $33,075
1992 - $34,730
1993 - $36,475

4. Landfill costs are estimated to increase at a rate of 35% per year. This is the approximate rate increase that the current landfill has indicated will take effect 1/1/89. It is anticipated that these increases will continue into the future as more state, regional and federal regulations will continue to increase operating costs of the landfills.

5. Insurance costs are estimated to increase at a rate of 30% per year for the estimated direct cost of insurance.

6. All other direct costs are estimated to increase at a rate of 3% to 5% per year.

7. The capital improvement contribution has been set at a nominal $10,000 for 1989, with a $1,000 increase per year. This amount will obviously not provide funds for major equipment replacement, but will provide for major repairs over the life of the equipment.

8. The projected Excess of Revenues over Direct Expenditures is set at 5% of direct expenditures. This excess will provide for a cushion for budget variances in both revenues and expenditures, as well as a provision for replacement of equipment in the future. Of course, this excess should be utilized to help cover indirect costs, but this would perpetuate the hand-to- mouth operation that currently exists.

9. Collections have been established in an amount necessary to meet projected direct expenditures and the projected Excess of Revenues over Direct Expenditures. Interest revenue is projected to increase at 2-1/2% per year.

10. The Projected Operating Statement for 1989- 1993 (Exhibit 4) shows that the necessary increase in sanitary rates is 20% per year to

meet the projected expenditures and Excess of Revenues over Expenditures.

SUMMARY

Based upon the data contained in Exhibit 4 and the supporting exhibits, the Borough of Shippensburg must increase its solid waste disposal fees by approximately 20% per year to generate sufficient cash flows to cover the anticipated costs. As noted previously, this makes no provision to cover the allocated costs which will continue to be incurred regardless of the decision to privatize.

The decision analysis developed above is based on the anticipated incremental cash flows of continuing to operate a solid waste disposal system. This information should be compared to the anticipated costs that the community will incur using private refuse haulers. In addition, the qualitative factors need to be considered. These would include such items as: quality of service, reliability of service, mediation of disputes between haulers and the community, reassignment of present employees or their dismissal, and similar issues.

The decision to privatize is not an easy decision to make. A first step in the process is the gathering of relevant data based on the expected cash flows. As can be seen by the above, a great deal of energy must be expended to pull the incremental cash flow data from the financial statements. Once this data is available, the decision process can continue to the nonfinancial factors.

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Is Regulation Effective in the Coal Industry?

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ABSTRACT

This paper addresses certain major problems affecting the coal industry. The nation, most specifically Pennsylvania, needs a more balanced and socially effective system than presently exists to determine how coal may profitably and most effectively be mined, transported, and burned

A major question facing both policy makers and industry leaders is, "How will regulation affect performance?" Regulatory policy makers ignore that question at the nation's peril.

Failure to address that question damages the nation's ability to maintain price stability, and to compete internationally. The changing world order since the first oil embargo requires policy makers to now change the ways in which they assess need, then determine and implement the regulatory process. The authors believe that the U.S. coal industry's experience since 1969 provides an excellent model for revising those processes. To repeat, this brief working paper addresses such problems.

COAL DECLINING (1908-1973)

Leading the world in coal deposits, the United States secured almost 90 percent of its thermal energy from coal in 1908. By 1945, coal's share had fallen to slightly more than half, and by 1973, had fallen to approximately 17 percent of the nation's energy base (1).

COAL RISING, 1973 TO PRESENT

The Oil Embargo ended the era of abundant, cheap oil. Repeated again in 1979, the events caused a major popular rethinking of America's position on energy, apparently without significantly affecting the thinking and behavior of regulatory bodies.

Three Mile Island scorched the future of nuclear energy. Long lines at fuel pumps and rising prices of alternative energy sources gave new life to the coal industry. Exemplifying the new national concerns, the United States Synthetic Fuels Corporation (1980) was created to develop coal-based synthetic fuels; salt domes were filled with fuel for national security purposes, and a concern for energy conservation swept the nation. Coal again took on new prominence. It should have been accompanied by regulatory concern for productivity in the coal industry. It was not.

THE IMPACT OF REGULATION ON PRODUCTIVITY

The Coal Mining Health and Safety Act (CMHAS, hereafter The Act) is the most comprehensive regulatory act ever to affect U.S. coal mining or for that matter any industry in the United States. Imposed after decades of mine related illness, accidents and fatalities, The Act was a reaction to abuses that society said could and should be corrected. The Act recognizes labor's role in mine safety, but places responsibility for compliance squarely on the coal operator. The effectiveness of The Act was reviewed in 1986 by James Watt, Occupational

Health Director for the United Mine Workers. He wrote that dust and hearing loss were still major health and safety matters affecting coal miners (2).

Labor productivity increased after World War II as mechanization and new mining techniques (such as continuous mining and later long wall mining) were introduced. Productivity measured in tons per man-hour, increased through the 1960's, averaging a 6.55% increase per year. Productivity began to decrease in the late 1960's, primarily because of the Coal Mine Health and Safety Act of 1969, and other related environmental considerations. As the provisions of The Act were implemented, productivity in tons per man-hour declined, by an average of 6.97% per year, almost a 50% decrease in productivity by 1977 (see Exhibit I). In concert with The Act, the Clean Air Act of 1963 (amended in 1970 and 1977), and the Surface Mining Control and Reclamation Act of 1977 have created the most complex system in the world for establishing how coal may be mined, transported, and burned (3). The effect of the Clean Air Act in reducing the use of coal must not be ignored by policy makers, if the industry's economic health is to be restored and preserved but this is another issue that needs to be investigated.

The Data reviewed supports the conclusion that The Act came into effect following substantial technological advancement; new equipment and methods of mining had introduced major gains in productivity. Productivity increased during most of the 1960's, until passage of The Act in 1969; tons per man-hour then declined precipitously through 1977, four years after the embargo (see Exhibit I). The Act caused falling rates of productivity per worker, because it requires more personnel per facility and a higher standard of safety and training per worker.

In the same period of declining productivity per worker, a significant reduction in fatalities was achieved. This is a positive benefit from regulation. Fatalities were cut from 1.51 per million man-hours worked in 1960 to .44 per million man-hours worked in 1977, a three fold decrease in fatalities. But further investigation reveals that the injury rate during the same period increased from 51.13 non-disabling injuries per million man-hours worked in 1960 to 53.28 non-disabling injuries per million man-hours worked in 1977 (see Exhibit II). As productivity fell, production targets were harder to reach. Pressure on labor to reach these targets is reflected in higher injury rates. Reporting standards also need looking into. The accuracy of reporting comes into question at times when looking at these figures. Consistent reporting standards are absolutely necessary if consistent comparisons are to be made year to year and region to region.

Three other forces contributed to coal's declining productivity. Major industrial firms with long-term successful safety programs acquired substantial mine holdings in the 1970's. Putting their safety traditions and practices into effect in the mines, they simultaneously put their insurance rates on the line (see Exhibit III). A second force is the opening of both new an marginal mines following the Oil Embargo; and third is the influx of inexperienced, newly-employed miners.

Is regulation effective? Reduced fatalities were accompanied by falling productivity and rising injuries (see Exhibit II). There seems to be a Phillips-like relation first, between fatalities and disabilities, and second, between disabilities and productivity. As fatalities fell, injuries increased. It is especially evident during two periods of increased mining activity, 1971 to 1973 and 1979 to 1981. Is regulation effective? We think the answer is no - not in terms of productivity or safety.

A MINIMUM ESTIMATE OF THE ACT'S EFFECTS

A minimum estimate of The Act's effects on productivity can be approached by factoring into calculation the fact that each new miner must be given 40 hours of instruction before setting foot in the mine, and that all miners must be given an annual eight-hour safety refresher course. Further, if a miner is reassigned to a new job on which he had no experience in the past year, he must be given safety instruction pertinent to that new job. Finally, factoring in the number of mine employees now exclusively assigned to implement the provisions of The Act, one could then estimate minimum impact of The Act on productivity. This estimate would not include any possible adverse reaction of miners themselves to requirements imposed upon them by The Act.

More difficult to assess than the minimum estimate is the impact of The Act on "corner cutting", extensive in mining practice. It has been and continues to be responsible for many injuries and fatalities. What may be deliberate misreporting of fatalities and injuries inhibits minimization of corner cutting. Roof falls could also be taken as prima facia evidence of corner cutting. While regrettable if necessary, it may be that only when the law places responsibility for fatalities and injuries squarely on management will corner cutting be minimized if not eliminated.

A rigorous determination of just how and to what extent these laws and regulations have affected the industry must be made if we are to be able to restore productivity in this regulated industry. If we can do that, we may then be able to provide generalized guidelines to other U.S. policymakers for improving both the process and policy impact on regulated industries, so as to optimally balance environmental, price level, and competitive interests.

Investigation of the safety problems in the U.S. coal experience demonstrates the need for a new mindset, a new policy creation process, and new means of policy implementation, if society's divergent needs are to be satisfactorily balanced. Policymakers today need more than an intuitive model to formulate policy; they need an empirical model for dealing with critical energy issues. Pre-embargo thought and regulatory processes are no longer adequate. The post-oil embargo world order demands changes, changes that have not been forthcoming.

We reiterate that the U.S. coal industry provides a most appropriate body of experience for which to drive a new model or models, which will better serve regulatory, and therefore society's needs. The lessons learned here may provide insights into issues such as conservation, industry regulation, substitutability, the ability of industry to respond to shortages, and energy price escalations.

Finally, the lessons to be learned from this basic industry's experience can be readily applied by policymakers in other industries.

FOOTNOTES

(1) Beged-Dov, 1975. p.3.

(2) Coal Age, 1980. p.71.

(Note: In the early 1950's, the Associate Librarian at the Franklin Institute told Dr. MacMurray that engineering studies had shown diesel locomotives to be superior to steam locomotives, only for non-stop, long-haul runs, less than 20% of all domestic runs. GM locomotive salesmen, he went on to say, dealt with that by saying something like, "Well yes, but there are other considerations you might want to think about. By the way, my boss is a rail buff. He collects all kinds of rail statistics. When you can, would you let me know how much GM shipped over your line annually in the last five or ten years?") (Author's note: An interesting abuse of economic power?)

(3) Annual Outlook for Coal, 1984. p.5.

Exhibit I

Year	Underground Coal Mines	Production*	Man-Hrs. Worked	Tons Man-Hour
1960	8,447	293,029.4	228,272.9	1.28
1961	7,854	279,595.3	205,615.1	1.36
1962	7,848	287,995.4	198,435.5	1.45
1963	7,916	308,711.4	200,422.2	1.54
1964	7,135	328,331.9	200,458.8	1.64
1965	6,866	337,977.0	197,686.9	1.71
1966	5.675	343,325.5	179,711.5	1.91
1967	4,734	350,374.1	176,933.3	1.98
1968	4,100	344,630.4	169,645.4	2.03
1969	3,647	347,670.1	171,388.3	2.03
1970	3,256	339,562.0	184,036.2	1.85
1971	2,435	278,011.3	172,994.0	1.61
1972	1,606	287,714.2	187,552.4	1.53
1973	1,394	285,873.0	188,632.2	1.52
1974	1,448	263,962.9	191,382.9	1.38
1975	1,702	278,649.1	233,973.7	1.19
1976	1,992	278,031.5	241,874.7	1.15
1977	2,144	257,461.9	230,535.4	1.12

*Production is in 1,000 short tons.

Source: U.S. Department of Labor, Mine Safety and Health Administration, Informational Report IR1132, Summary of Selected Injury Experience and Worktime for the Mining Industry in the United States, 1931-77, pp. 32, 35, 38.

Exhibit II

Year	Fatal-ities	Fatality Rate*	Non-Disabling Injury	Non-Disabling Rate*
1960	274	1.51	9,291	51.13
1961	256	1.57	8,706	53.38
1962	244	1.55	8,567	54.45
1963	245	1.54	8,576	53.86
1964	210	1.30	8,634	53.61
1965	223	1.40	8,651	54.25
1966	194	1.26	7,965	51.72
1967	174	1.13	7,730	50.38
1968	268	1.80	7,339	49.39
1969	149	0.98	7,840	51.58
1970	206	1.25	8,906	54.11
1971	141	0.92	8,967	58.30
1972	122	0.72	9,823	57.61
1973	99	0.58	8,818	51.33
1974	90	0.52	6,309	36.38
1975	99	0.47	8,170	38.82
1976	104	0.48	10,658	48.90
1977	91	0.44	10,991	53.28
1978	67	0.07 (0.35)	10,534	10.87 (54.35)
1979	106	0.09 (0.45)	14,184	12.32 (61.60)
1980	94	0.08 (0.40)	14,004	12.57 (62.85)
1981	112	0.11 (0.44)	11.348	11.30 (56.50)
1982	83	0.08 (0.40)	10,467	10.33 (51.65)
1983	44	0.06 (0.30)	6,625	8.58 (42.90)
1984	96	0.11 (0.55)	7,176	8.59 (42.95)

*Per million man-hours worked until 1978. After 1978, figures are per 200,000 man-hours worked. Numbers in parentheses are per million man-hours worked.

Sources: U.S. Department of Labor, Mine Safety and Health Administration, Informational Report IR1132, Summary of Selected Injury Experience and Worktime for the Mining Industry in the United States, 1931-77, pp. 11, 14, 17, 20; and Mine Injuries and Worktime, Quarterly, Closeout Edition, (1978 through 1984), Table 1.

Exhibit III
Mine Safety Ranking

Mining Company	Fatality and Permanent Disability Rate	Non-fatal Day Lost Rate*
Consolidated Coal Co.	0.14	4.0
Occidental/Island Creek	0.16	3.6
Bethlehem Steel Co.	0.24	5.6
Eastern Associated Coal Co.	0.24	5.8
Exxon Corp.	0.14	6.6
U.S. Steel Corp.	0.17	6.3
Jim Walter Corp.	0.27	7.1
Sun Co.	0.29	6.2
Pyro Energy/Costain Holding Co.	0.28	5.0
American Electric Power Co.	0.21	10.1
Westmoreland Coal Co.	0.11	9.4
Sohio/Old Ben Coal Co.	0.14	9.9
Drummond Co.	0.25	8.0
Pittston Co.	0.28	9.1
Mapco	0.20	8.5

*The 15 largest U.S. underground coal producers listed in order of intermediate injury rate. Rates are average number of injuries per 200,000 employee hours from 1981 to 1985.

Source: "Center Ranks Underground Producers' Safety Records," Coal Age 91 (October 1986): 15.

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Inflation and Economic Growth in Sub-Saharan African Countries: Evidence from Granger-Causality Tests

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ABSTRACT
The issue of the effects of inflation on economic growth continues to be a much debated topic among economists and policymakers. This paper addresses a major aspect of this debate by examining the causal relations between the two variables, using multivariate Granger-causality tests. Pooled time-series cross-section data (1972-1986) from a subset of low-income and middle-income sub-Saharan African countries are employed in the tests. The results, when factors such as government spending, openness due to trade, technological change, and monetary growth, are controlled for, show that inflation adversely affects growth in the low-income countries, but that no economically important relationship exists between the two variables in the middle-income countries. The policy implications of these findings are briefly discussed.

SECTION I: INTRODUCTION

A debate has continued in the literature over the effects of inflation on economic growth. Theoretically, a number of competing hypotheses have been advanced concerning this relationship. One of these maintains that inflation contributes favorably to economic growth [see, for example, Felix (1961), Seers (1962), and Taylor (1979)]. Specifically, inflation induces forced savings which can be converted into capital formation, and therefore growth. This occurs when, for example, government borrows from the central bank (inflationary financing) and, in the absence of a complete crowding-out of private investment, uses the funds to increase real investment. Inflation-induced forced savings also occurs when nominal wages lag behind prices. In this case, income is redistributed to higher-saving capitalists. The resultant increase in savings stimulates economic growth [cf., Jung and Marshall (1986)].

A second hypothesis bearing on the inflation-growth relationship contends that inflation hinders economic growth, because it creates various output-reducing inefficiencies. The channels through which these inefficiencies are created are extremely varied, and stem mostly from government intervention in areas such as exchange rates, food prices, interest rate controls, and taxation [cf., Baer (1967), Mundell (1971), and Taylor (1979)].

A third hypothesis emphasizes the neutral effects of inflation on growth. Specifically, it maintains that inflation, when anticipated, has no net effect on output [Lucas (1973), Dornbush and Fisher (1986)]. In this case, no causal link exists between inflation and economic growth.

Given the theoretical ambiguity on the inflation-growth relationship, it would appear that whether or not inflation affects growth is an empirical issue. It is, further, an issue of significant policy interest. Policy decisions concerning the optimum strategy for capital accumulation and economic development are based on a presumed relationship between inflation and growth. If this relationship is incorrect, then necessarily the decisions will be, at least in part, unsatisfactory. It is imperative,

therefore, that the precise causal relations between inflation and growth be determined. Unfortunately, little empirical work has been conducted in this area. Recently, Jung and Marshall (1986) studied a sample of 56 industrial and developing countries to confirm or deny whether economically important relationships exist between inflation and economic growth. Using annual time-series data for each of the countries, and employing the Granger (1969) causality test in which the growth rate of real GNP (or real GDP where real GNP data are not available) is regressed on past values of itself, on past values of the inflation rate, and on a constant, they found strong evidence that inflation has no net effect on growth in 38 of the countries studied. However, they did find strong evidence that inflation adversely affects real economic growth in the remaining 16 countries.

While the Jung and Marshall (1986) study provides important insights into the inflation-growth relationship, further empirical testing, using both different data sets and new model/variable specifications, seems useful. The purpose of this paper is to contribute to this aim using a new data set which covers 19 sub-Saharan African countries1. The data are derived from the 1972-1986 period. This period is chosen on the basis of country data comparability and availability; however, the data include a considerable amount of variability in inflation and growth rates, and hence provide a good case study with which to assess the role of inflation in the growth process.

While the statistical methods follow those used by Jung and Marshall (1986), the analysis departs from theirs in major ways. First, in order to reduce the potential problems that omitted variables present for the Granger causality test [cf., Granger and Newbold (1974)], a number of factors frequently hypothesized to be important determinants of inter-country differences in growth are considered, along with the inflation and growth rate variables. Second, since inflation and growth rates differ not only between countries at the same point in time, but also over time in the same country, efficient estimates can be obtained by applying a pooled time-series cross-section method2. This method offers other advantages as well. For example, it circumvents the problem of obtaining a large number of time-series observations on many of the variables included in the analysis. Also, data pooling broadens the data base, thereby allowing greater variations in the variables than would be available using either time-series or cross-section data alone.

Finally, since few, if any, previous studies have used the time-series cross-section approach in analyzing the inflation-growth issue, it is of interest to see whether such an approach would provide additional insights.

The paper proceeds as follows. Section II briefly outlines the model and its major characteristics followed by a discussion, in Section III, of the results from the estimation. Conclusions from the analysis are presented in Section IV.

SECTION II: METHODOLOGY

Granger (1969) has provided a testable definition of causality between two stochastic time series X and Y3. Specifically, it is asserted that X causes Y if the current values of Y can be better predicted using information contained in past values of both X and Y than by using past values of Y alone. Commonly, this definition is implemented by regressing current values of Y on past values of Y, X, and a constant:

$$Yt = a_0 + \sum b_j Y_{t-j} + \sum c_j X_{t-j} + e_t, \qquad (1)$$

where a, b, and c are regression coefficients estimated by ordinary least squares, and e is an error term. F-tests are then used to test for the presence of Granger-causal relations. Specifically, X is said to cause Y if the hypothesis that the cj's are jointly zero is rejected.

In this paper, equation (1), with economic growth [the rate of growth of real GDP (RGDP)], and the inflation rate [the rate of change in the consumer price index (RP)], substituted in for Y and X, respectively, is augmented to include a number of variables which may contribute to inter-country differences in economic growth. The first of these variables is the growth of the ratio of government spending to GDP (RGOVT). The consideration of this variable is important in the light of the current debate on the role of

government in the growth process. If, as a number of supply-side theories suggest, taxes needed to support government spending distort incentives, reduce efficient resource allocation, and thus hinder economic growth, then countries with higher RGOVT's should experience lower economic growth [cf., Kormendi and McGuire (1984)]. On the contrary, however, it has been argued that government spending may have a positive effect on growth, especially if the spending is on goods complementary to private investment [Buiter (1977) and Kormendi (1983)]. The net effect of RGOVT on growth is thus ambiguous.

The growth rate of the ratio of exports to GDP (XGDP) (and alternatively, the growth rate of the ratio of imports to GDP, and of exports and imports to GDP) is included to capture the effects of openness on economic growth. It is frequently argued that openness, due to fewer trade restrictions for instance, leads to better allocation of resources as comparative advantage and production efficiency are exploited [cf., Ram (1985) and Darrat (1987)]. Also, openness increases the supply of foreign exchange, and hence the capacity to import raw materials and capital inputs essential for growth. Thus, an increase in openness is expected to impact favorably on economic growth.

The growth rate of the M1 money supply (GM1) is also considered. GM1 may be expected to affect the growth rate of output, at least in the short run. However, rational expectations models such as those by Lucas (1973) and Barro (1980) assert the neutrality of real output with respect to anticipated monetary policy. If these models are correct, then economic growth should be unrelated to the anticipated growth rate of the money supply. The inclusion of GM1 allows us to test the neutrality hypothesis in the context of sub-Saharan African countries.

A dummy variable (DOIL) is included in the regression to capture the effects on growth of supply shocks due to the OPEC oil price increases of the 1970's, while a trend variable (TIME) is included as a proxy for technical change and other trend-related influences. DOIL is expected to have a negative coefficient, and TIME a positive coefficient.

In addition to the above variables, other forces may be a source of country differences in economic growth rates. These may include factors such as basic differences in infrastructure, product and industry mix, and civil and political liberties. To the extent the countries under study differ in these factors, it can be expected that the parameters of the model will differ across countries. This fact will be taken into account partially by the estimation procedure which allows the constant term [a0 in equation (1)] to differ among countries. This is accomplished by introducing dummy variables corresponding to the different countries in the sample. Each of the dummy variables assumes a value of unity for one of the countries, and zero for every other country.

SECTION III: EMPIRICAL RESULTS

In this section, we report the results from estimating equation (1) augmented to include the variables discussed above, with data from the low-income and the middle-income sub-Saharan African countries4. Prior to estimation, the following steps were taken. First, real GDP (constant 1980 dollars), the consumer price index (base year 1980), and all other variables, with the exception of TIME and the dummy variables, were expressed as an index of their respective 1984 values. This reduces the likelihood of statistical problems common in estimation with data from countries of different sizes. Second, the annual percentage changes in the variables were computed. The data on all variables were then combined to form pooled time-series cross-section samples with 150 and 132 observations for the low-income and the middle-income countries, respectively. Finally, the lag lengths for the real GDP and inflation rate variables were determined. These values were chosen following procedures discussed recently by Batten and Thornton (1985). These procedures yielded an optimal lag of 3 for both variables, and for both groups of countries. The other included variables were not lagged to avoid a specification search.

The estimated parameters and the test results for the low-income countries are presented in Table 1:

The results indicate a reasonably good fit of the estimated equation. The F-statistic (5.8) for the regression reject the null hypothesis at better than the 5 percent level that the model has no explanatory power. This finding is corroborated by the adjusted R2 value which indicates that the regression explains over 50 percent of the observed variations in growth rates among the low-income countries in the sample5.

Turning to the individual coefficients, we see that the inflation rate variables RP1, RP2 and RP3 (Table 1) are negative, with the first and the third being statistically different from zero based on the t-statistic values. More importantly, the value of the F-statistic to test the hypothesis that all the coefficients on the inflation rate variables are jointly zero is 4.52, which is above the 5 percent critical level of 2.686. As a result, the null hypothesis is rejected. Thus, the results support the view alluded to earlier, namely, that inflation, by creating various output-reducing inefficiencies, reduces growth.

Jung and Marshall (1986) have pointed out though that output-reducing inefficiencies are not the only channels through which inflation may adversely affect growth. In particular, inflation may cause policymakers to implement contractionary monetary policy, the effect of which will be reflected in lower growth. To check the validity of this view in the context of the low-income countries under study, we test the hypothesis that inflation causes negative monetary growth. The test was implemented by regressing the growth rate of the money supply on 3 lagged values for monetary growth and inflation, the country dummy variables, and a constant (results not shown here). The F-statistic for the null hypothesis that the lagged coefficients on the inflation variable are jointly zero is 0.753, which is below the 5 percent critical level of 2.68. These results support acceptance of the null hypothesis. Thus, we conclude that the observed adverse effects of inflation on growth in the low-income countries operates through various output-reducing inefficiencies, and not through contractionary monetary policy.

The estimates and significance tests on the other variables included in the regression for the low-income countries indicate the following (Table 1). First, the openness variable (XGDP) has significant negative effects on growth. This is surprising, since openness, as explained earlier, is expected to lead to better resource allocation and an increase in the supply of foreign exchange, and thereby increasing the capacity to import raw materials and capital inputs essential for growth. However, the observed negative relationship would result, if,

TABLE 1: ESTIMATION AND TEST RESULTS FOR THE LOW-INCOME SUB-SAHARAN AFRICAN COUNTRIES*

RGDP1	0.062	TIME	3.12
	(0.540)		(7.61)
RGDP2	0.021	D1	-34.9
	(0.193)		(3.82)
RGDP3	-0.058	D2	-21.8
	(0.685)		(2.58)
RP1	-0.345	D3	-24.8
	(2.05)		(2.91)
RP2-	0.109	D4	-30.3
	(0.573)		(3.55)
RP3	-0.437	D5	-38.1
	(2.42)		(4.45)
XGDP	-0.117	D6	-38.4
	(2.30)		(4.47)
GM1	-0.019	D7	-15.05
	(1.51)		(1.78)
RGOVT	0.044	D8	-42.6
	(0.399)		(4.99)
DOIL	3.31	D9	-18.9
	(1.05)		(20.12)

adjusted R2 = 0.53F-statistic on the coefficients of the RP's = 4.52
F-statistic on the coefficients of D1, D2, ...D9 = 4.81
*The numbers beneath the coefficient estimates are the absolute values of t-statistics.

as is well known, the countries use much of their foreign exchange earnings to build expensive, nonproductive, show projects, and if a large portion of these earnings is also exported in the form of "capital flight" from these countries.

Second, the coefficient on the growth rate of the money supply variable (GM1), though negative, is insignificant at the 5 percent level. This is the expected result under the rational expectations hypothesis which suggests that economic growth is unrelated to the anticipated growth rate of the money supply. Finally, the results also reveal that neither the ratio of government spending to GDP (RGOVT), nor the oil supply shock variable (DOIL), has any impact on growth. However, the trend variable and the country dummy variables (D1, D2, ... D9) are statistically significant at the 5 percent level. The latter finding is confirmed by the results of a test for country homogeneity, which restricts all parameters to be the same across the low-income countries. Specifically, the model was estimated without the country dummy variables. The computed F-statistic is 4.81, which is considerably above the 5 percent critical level of 1.96. Thus, the hypothesis of country homogeneity is rejected. This suggests other factors are at work in causing country differences in growth rates. These factors, as mentioned earlier, may, in part, be due to country differences in basic infrastructure, product and industry mix, and civil and political liberties.

Table 2 reports the estimation and test results for the middle-income countries. The estimated model explains over 70 percent of the variation in economic growth. The F-statistic (15.7) for the regression rejects the null hypothesis of no explanatory power for the regression as a whole at the 5 percent level.

ontribute significantly to growth in the middle-income countries. More specifically, the value of the F-statistic to test the hypothesis that the inflation rate variables (RP1, RP2, and RP3) are jointly zero is 0.578, which is below the 5 percent critical level of 2.68. Consequently, the hypothesis that inflation does not affect growth cannot be rejected. This finding provides strong support for the neutrality view that inflation has no net effect on growth.

The estimation results and significance tests for the other variables included in the regression for the middle-income countries indicate that the growth rate of the money supply (GM1) has positive effects on growth, a result contrary to that found for the low-income countries.

The coefficients on XGDP and DOIL are statistically insignificant, suggesting that the openness and the oil price shock variables, respectively, do not impact on growth in the middle-income countries. The coefficient on RGOVT (the growth rate of the ratio of government spending to GDP) is negative, but it is only significant at the 15% level. Using the adjusted coefficient of determination, R2, the inclusion of RGOVT only adds 1.5% to the explanation of growth. Finally, the trend variable is positive and significant, as are the country dummy variables (D1, D2, ...D8).

CONCLUSIONS

The purpose of this paper has been to determine whether economically important relationships exist between inflation and growth, after factors such as government spending, openness due to trade, technological change, and monetary growth have been considered. Although data availability limits the analysis to focus on only 10 low-income and 9 middle-income sub-Saharan African countries, it, nevertheless, includes countries at different stages of development, and thus, a wide variety of economic contexts under which the inflation-growth relationship is studied.

The results of the study indicate that inflation had adverse effects on growth in the low-income countries over the 1972-1986 period. If true, this result has far-reaching implications for the optimum strategy for capital accumulation and economic development. Specifically, the adoption of inflationary finance policies (as a means to induce additional savings, and to increase capital accumulation) would be unwise and non-optimal.

The results for the middle-income countries suggests that no economically significant relationship exists between inflation and growth.

While the results of this paper are interesting and do conform with certain theoretical expectations, they should, however, be interpreted with caution

TABLE 2: ESTIMATION AND TEST RESULTS FOR THE MIDDLE-INCOME SUB-SAHARAN AFRICAN COUNTRIES*

RGDP1	-0.195	TIME	1.60
	(1.38)		(2.62)
RGDP2	0.172	D1	177.5
	(1.15)		(2.50)
RGDP3	0.183	D2	159.9
	(1.87)		(2.59)
RP1	-0.245	D3	143.7
	(1.08)		(2.75)
RP2	0.002	D4	132.9
	(0.007)		(2.98)
RP3	0.157	D5	98.4
	(0.674)		(2.77)
XGDP	-0.053	D6	66.4
	(1.42)		(2.51)
GM1	0.241	D7	40.07
	(3.46)		(2.20)
RGOVT	-0.0005	D8	43.4
	(1.70)		(4.39)
DOIL	-1.97		
	(0.725)		

adjusted R2 = 0.74
F-statistic on the coefficients of the RP's = 0.578
F-statistic on the coefficients of D1, D2, ...D8 = 8.98
*The numbers beneath the coefficient estimates are the absolute values of t-statistics.

because of the small sample size. At the very least, however, the results cast doubt on the view that inflation causes higher real growth, a finding which supports that of Jung and Marshall (1986).

Additional work on the inflation-growth process is needed. There are many opportunities to add valuably to the empirical findings. Further research in these matters must strengthen the specification, measurement, and sample size aspects of the analysis.

ENDNOTES

1The World Bank classifies the sub-Saharan African countries into (a) the low-income countries (per capita income less than $370), and middle-income countries (per capita income above $370). Of the 19 countries being studied, 10 (Burundi, Ethiopia, Lesotho, Madagascar, Malawi, Rwanda, Sierra Leone, Sudan, Tanzania, Togo, Zaire) are in category a; the remaining 9 countries (Botswana, Cameroon, Ghana, Ivory Coast, Kenya, Senegal, Swaziland, Zambia, Zimbabwe) are in category b. The analysis is limited to these countries due to data availability problems.

2The Granger causality test is commonly applied to time series data. However, Steinnes (1977) has shown that the test may also be applied to pooled time-series cross-section data provided autocorrelation and heteroscedasicity are not a problem.

3For a discussion of the methodological and philosophical problems with this test see Zellner (1979).

4The data are taken from various issues of the International Financial Statistics, published by the International Monetary Fund.

5An examination of the residuals provided no indication that serial correlation or heteroscedasticity was a problem.

6The test statistic of the null hypothesis that a set of regression coefficients is zero is

[(RESS - UESS)/UESS] [N - K]/R

where RESS = error sum of squares in the restricted model

UESS = error sum of squares in the unrestricted model

N = number of observations

K - number of parameters in the unrestricted model

R = number of restrictions.

The test statistic will have an F distribution with R degrees of freedom in the numerator and N - K in the denominator.

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Some Models of the Wage, Price, and Money Supply Block for Bangladesh *

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ABSTRACT

The interaction between wages, prices, and money supply in Bangladesh is explored in this paper. Wages are affected by inflationary pressure and productivity growth. Prices are influenced by money supply. An attempt to implement the rational expectation approach yields results that are not satisfactory. Money supply in Bangladesh reacts to inflationary pressure, trade deficit, and budget deficit. A disturbing result seems to be that the Bangladesh Bank validated inflation in recent years rather than fighting it. There is room for improving on these preliminary results.

Objective and Methodology

The objective of this paper is limited and narrowed by data availability. In this background, an effort will be made to see how the pressure of inflation is generated, how it works through the goods market and the labor market, and thereby makes the drive towards economic development more difficult.

It is well-known that monetary factors are related to inflation. It is also recognized by now that supply-side factors may be influential in this context. In addition, it is well-established in the literature that wages and prices are related. Expectations are said to play a crucial role. Specifically, in the context of Bangladesh, it is the intention of this paper to explore the connection, if any, between wages and some supply-side factors, besides prices, between money supply and some possible factors to which the monetary authorities might be responding, and between prices and expected money supply.

Annual data are used. Level, rather than rate of change, is used to conserve data. Ordinary Least Squares method is used for estimation, with corrections for auto-correlation. Other refined methods of estimation have not been attempted at this stage. (Work is in progress on some quarterly models with a few selective data that are available and the results will be reported separately.) The data for this paper are mostly from the IMF, ILO, and FAO sources. Data in dollars were converted into Taka (Bangladesh currency) at the prevailing exchange rate. Indices with different bases were spliced together, as needed. Only post-independence data are used as available from these sources. The results are influenced by the small size of sample, the methods of estimation, and by the occasional arbitrariness that had to be imposed to conserve the degrees of freedom. Some of the equations should be re-estimated. Moreover, the quality of the original data has not been questioned, whatever is the source. Interpretation of the results should be attempted only in this spirit.

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The rest of the paper develops a wage rate equation at first. The supply of money is investigated next. Finally, price equations are attempted. The paper ends with a brief conclusion.

Wage Rate Equations

In the wage rate equation, agricultural wage rate is used as the dependent variable, simply because this series has more coverage of the post-independent Bangladesh. We formulate a simple wage rate equation of the following type:

$$w = f(P, P^e, PR) \qquad [A]$$

where, w = wage rate, P = price level, Pe = expected price and PR = productivity. We test the hypothesis that price level, expected prices, and productivity increases are expected to be positively related to wages. The higher the price level and the expected prices, the higher would be the wages, as the workers would like to maintain their standard of living. Productivity increases would lead to claims for higher wages. Productivity increases would also enable the producers to pay higher wages. A secondary hypothesis tested is that food prices are expected to dominate consumer prices in determining agricultural wage rate. Prices are represented by their respective indices. Productivity is proxied by the agricultural production index. Some selective results are shown in Table 1 with alternative formulations of equation [A]. Both food and general consumer price levels are found to be significant in explaining agricultural wages. Productivity can be significant up to one lag in our formulations, as it was also found in some early attempts for this equation for Bangladesh (Papanek, 1981). This implies that the growth of agricultural output was accompanied by an increase in agricultural wages. If expected inflation is measured by current and lagged prices, this has caused an upward pressure on the wage rate. This is in accordance with the argument in the literature that workers would like to catch up with inflation in terms of their buyingpower. Price of food seems to be more important in determining agricultural wage rate as expected.

Money Supply Process

The money supply process is modeled as a reaction function to capture the revealed preference of the TABLE 1 monetary authorities. In this regard, there exists a considerable body of literature. Following this approach the money supply equation is postulated as follows:

$$MS = f(P^e, TD(t\text{-}i), BD) \qquad [B]$$

where Pe = expected inflation, TD (t-i) = lagged trade deficit, and BD = budget deficit. The monetary authorities could fight inflation. They could counteract the monetary implications of a trade deficit by increasing money supply. Money supply could be increased to finance the budget deficit of the central government. For this paper, money supply was modeled for both M1 and M2 (quasi-money) as a function of lagged money supply, lagged price level, lagged trade deficit, and the overall budgetary position of the central government. Other likely factors were either not available to the author or did not change much during the same period under consideration. Some results of this experiment are reported in Table 2. All the coefficients are significant, looked at from the point of view of the t-statistics. Inflationary pressure seems to be validated consistently. This may have been done to supply the transactions demand for money, simply because more money may be needed to transact the same volume of goods and services. Other results, not reported here, also point to the same hunch that the Bangladesh Bank did not have a revealed policy to fight inflation in recent years. One point increase in lagged CPI seems to have been associated with an increase of money supply of anywhere from 325 million Taka to 1044 million Taka. Trade deficit in Bangladesh has been a common feature for a long time and it seems to have led to some increase in money supply, even though the magnitude of such an increase is small but significant. (This could have been done by the authorities to counteract the negative effects of trade deficit on money supply.)

The same is probably true about the contribution of budget deficit to the increase in money supply. In this sense, it could be argued that the overall budgetary position of the central government did not contribute much to the increase in money supply, in so far as the domestic component of financing the budget is concerned. The outside pressure to keep the central government budget nearly in surplus or

in balance to keep money supply from growing too fast seems to have worked, but not in spirit. The validation of inflationary pressure, rather than fighting it, seems to have kept the flame burning despite the early success in reducing inflation drastically.

Following Barro (1977), the predicted values of the money supply equations would be used as the proxy for anticipated money supply and the residuals would be used as the unanticipated money supply in the price equation.

Price Equations

In the spirit of rational expectation analysis, it can be argued that inflationary pressure should not be related to the expected money supply. Only the unexpected money supply would cause further inflation. This is said to be true if the agents are "rational." In addition to monetary factors, we use per capita real domestic product to capture any partial effect of the supply-side. In order to control for the effect of expected money supply, we also include the anticipated money supply in our equation. Thus the price equation is written as:

$$P = f(AM, UM, NRGDP) \qquad [C]$$

where AM = anticipated money supply, UM = unanticipated money supply, and NRGDP = per capita real gross domestic product. Some variants of equation [C] are used in the empirical analysis. The equations are not well-behaved, as shown in Table 3. The supply-side variable is not significant. Its positive sign indicates a non-dampening effect on the price level. We get higher coefficients for some of the unanticipated money. In equation [1] it is also significant but has the wrong sign, while the anticipated money supply proxy is insignificant as argued in the literature.

However, in equation [1a] and [2a], the anticipated money is significant, with current anticipated money having the wrong sign and the lagged anticipated money being significant.

This is a mixed result that does not support the argument that only unanticipated money supply would add to inflation (see also Mishkin, 1982 and 1983). Of course, the size of the sample and the method of estimation could, indeed, affect the outcome. But as it stands, it does not support the rational expectionist position.

Conclusion

Given the sample size and the methods of estimation, a lot is left to be desired than has been attempted here. However, there is a nagging feeling that the Bangladesh Bank does not have a revealed anti-inflationary policy in recent times. (Whether it is politically able to pursue an independent anti-inflationary policy is beyond the scope of this paper.) This is disturbing, since wages seem to be significantly affected by inflation, increasing the cost of production and thus leading to a vicious cycle. The recent increase in wages may not seem different than what is just logical to have happened.

Table 1
Wage Rate Equations (Annually in Agriculture)
(Selected Results)

Dependent Variable	Independent Variables													
WRA	C	PF	PF (-1)	CPI	CPI (-1)	CPI (-2)	AGPI	AGPI (-1)	AGPI (-2)	R^2	RHO	F	DW	N
#1 (OLS)	.46			.15						.98		727.06	1.66	14
(t-stat)	(.79)			(26.96)								(1,2)		
#2 (AR)	-1.60	.17								.96	-.02	288.86	1.81	12
	(-1.45)	(16.99)									(-.06)	(1,10)		
#3 (OLS)	-.30	.48	.09							.97		199.57	2.11	13
	(-.32)	(1.84)	(2.28)									(2,9)		
#3A(AR)	-1.67	.12	.61							.95	.13	93.68	1.37	12
	(-1.12)	(2.63)	(2.63)								(.46)	(2,8)		
#4(AR)	17.57	.11					.21			.98	-.44	386.75	2.35	12
	(-3.04)	(5.63)					(2.80)				(-1.71)	(2,9)		
#5 (AR)	-.23	.10					.16	.20	-.06	.98	-.20	171.51	2.11	11
	(3.03)	(4.12)					(1.33)	(2.41)	(-.5)		(-.69)	(4,6		
#6 (AR)	-.36			.18	-.02					.97	.04	295.46	1.92	12
	(.41)			(3.43)	(-.43)						.12	(2,9)		
#7(AR)	21.17			-.17	-.08		.13	.15		.99	-.37	405.00	2.46	12
	(-3.64)			(5.32)	(2.17)		(1.59)	(2.19)			(-1.38)	(4,7)		
#8(AR)	27.22				.16	-.07		.20	.16	.98	-.21	98.97	2.37	11
	(-2.55)				(2.73)	(-1.07)		(1.60)	(1.40)		(-.71)	(4,6)		

AR=COCR PF=Price of Food (index) CPI=Consumer Price Index AGPI=Agricultural Production Index

Table 2
Money Supply Equations
(Annually): 1974-1986: AR COCR

Dependent Variable	Independent Variables											
	C	M1(-1)	M2(-1)	CPI(-1)	TD(-1)	BD	R^2	Rho	F	DW	S.e.e.	Mean
M1	-10,900.51	.35		325.45	.31	.42	.99	-.06	428.42	2.26	1,219.88	26,239.9
(t-Stat.)	(-4.18)	(2.46)		(4.65)	(2.51)	(4.63)		(-.22)	(4,7)			
M2	-45,670.09		.35	1,042.83	1.16	.62	.99	.12	1,952.78	2.81	1,347.13	50,599.0
	(-9.60)		(4.27)	(9.76)	(6.80)	(6.50)		(.43)	(4,5)			

M1=Money as defined in the IFS (millions Taka)
M2=Money + Quasi-money as defined by IFS (millions Taka)
CPI=Consumer Price Index
TD=Trade Deficit (millions Taka)
BD=Budget Deficit (millions Taka)

Table 3
Price Equations
(Annually)

Dependent Variable	Independent Variables														
CPI	C	AM1	AM11	UM1	UM11	AM2	AM21	UM2	UM21	NRGDP	R^{-2}	F	DW	N
#1	-7757.19	-.01		-.31						3.63	.47	4.05	1.43	11
(t-Stat)	(-1.71)	(-.057)		(-2.29)						(1.65)		(3,7)		
#2	-2202.57					.004		-.26		.95	.50	4.35	1.86	11
	(-.54)					(.78)		(-1.67)		(.50)		(3,7)		
#1a	-271.17	-.05	.09	.02	-.005						.73	7.19	2.02	10
	(-1.163)	(-2.25)	(2.99)	(-.12)	(-.046)							(4,5)		
#2a	-220.69					-.02	.03	-.06	-.03		.78	9.01	1.87	10
	(-2.97)					(-2.12)	(2.86)	(-1.13)	(-.51)			(4,5)		

t-Statistics in parentheses ( )
AM1=Anticipated money: M1
AM11=Anticipated money lagged one period: M1
AM2=Anticipated money: M2
AM21=Anticipated money lagged one period: M2
UM1=Unanticipated money: M1
UM11=Unanticipated money lagged one period: M1
NRGDP=Per capita real gross domestic product
(all in millions of Taka)
Equations 1,2: 1975-1986); Equations 1a, 2a: 1976-1986)

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Ethics and Multinational Corporate Conduct

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ABSTRACT

The purpose of this paper is to highlight ethical issues related to Multinational Corporations (MNC's) conduct toward Less Developed Countries (LDC's). MNC's have become vehicles for the internationalization of economic life. Consequently, the twenty first century is likely to witness unprecendented globalization of multinational enterprises.

Hence within this massive growth, the conduct of MNC's has increasingly been scrutinized. The amount of criticism leveled at MNC conduct has subsided somewhat during Reaganomics but is again on the rise as the world has experienced such disastrous events as Bophpal, India and Valdez, Alaska.

This paper also reviews the Code of Conduct instituted to curtail unethical conduct characteristic of MNC's. The paper concludes by recommending that MNC's forego the use of political conspiracy and financial corruption in their dealing with LDC's and pursue their enlightened self-interest by taking charge of developmental responsibility for the long-term betterness of MNC-LDC relations.

The powerful influence of multinational corporations (MNCs) stands out as one of the fundamental realities of the world political economy in the last decade of the twentieth century. In the half-century after World War II, MNCs have emerged as the great vehicles for the internationalization of economic life through trade, technology transfer, foreign investment, manufacturing and services. By the mid-1970s, few countries had remained outside the scope of MNCs' penetration. Indeed, during the last decade MNCs have been invited to enter even the Communist Block in a selective manner. In China, Deng Xiao Ping's policies of liberation included a major role for Western MNCs. With the emergence of Mikhail Gorbachev and his perestroika, the Soviet Union and East Europe have provided a welcome mat for international business.

Consequently, the 21st century shall witness an unprecedented globalization of multinational enterprise. In view of this reality, there is likely to be growing public clamor about the impact of the MNCs, particularly focusing on their dysfunctional practices.

A retrospective look indicates a significant pattern of societal and scholarly concern with MNC operations. The early 1970s saw a growing critical trend among scholars toward the MNCs. Much of the criticism was "reformist", mainly coming from liberal economists and political scientists. Some of these critics presented constructive criticism aimed at improving certain aspects of MNC performance and limiting their negative impact (Vernon, 1971, 1972; Turner, 1973). In contrast, other scholars presented more comprehensive and radical critiques focusing on the fundamental socioeconomic problems associated with MNCs' impact (Hymer, 1970; Muller and Morgenstern, 1974; O'Conner, 1974). From this perspective, MNCs have been criticized historically for their detrimental effect, not only on the economy of Third World host countries, but for their damaging impact on the quality of life and destruction of culture in these developing nations (Marks, 1982, p. 429).

During the era of Reaganomics in the 1980s, there was a significant change of attitude toward multinational business. In fact, the ideological environment of the Reagan years was not

conducive to criticism of business; hence the decline of critical study of MNC operations.

A further change seems to have occurred in the late 1980s, which may presage a new era of criticism, triggered by the destabilizing economic impact of Reaganomics, as well as major MNC-induced environmental disasters such as Bhopal and Valdez. Below are a few examples of MNC operations which have been widely criticized as well as a few suggestions based on ethical considerations for improving MNC-host country relations.

Case Study

One area of MNC operations that has received significant criticism has been their involvement in political and economic corruption. In a sense, MNCs sometimes have become the conduits of illegal practices between host and home country elites. Table 1A and 1B demonstrate transactions of nearly fifty million dollars distributed among individuals of three nations. The funds originally came from oil revenues siphoned to the palace represented by Pahlavi Foundation and passed on to MNC managers, U.S., British, and Iranian officials.

It was no mere accident that starting in 1975 the United Nations began to develop a Code of Conduct designed to curtail MNC corrupt practices. Under Item 21: Abstention from Corrupt Practices (a and b) of the Code of Conduct, these companies are to refrain from corrupt practices as follows:

(a) Transnational corporations shall refrain, in their transactions, from the offering, promising or giving of any payment, gift or other advantage to or for the benefit of a public official as consideration for performing or refraining from the performance of his duties in connection with those transactions.

(b) Transnational corporations shall maintain accurate records of any payments made by them to any public official or intermediary. They shall make available these records to the competent authorities of the countries in which they operate, upon request, for investigations and proceedings concerning those payments (United Nations, 1988).

It is important to note that the foregoing two items do not fully cover the unique case of illegality found in the Iranian case, i.e., the bribery received by corporate managers and government officials. Clearly, the Code of Conduct would require an additional item to cover such cases of "reverse bribery".

Perhaps more serious is the charge that MNCs interfere in the political affairs of the host countries. Here the MNCs' objective is to create a more hospitable environment for themselves by overthrowing host country regimes with the help from home country governments.

This is precisely what happened in such less developed countries (LDCs) as Chile and Iran. In Chile, ITT led the U.S. government-sponsored effort in 1973 to overthrow President Allende (Alexander, 1978); Kaufman, 1988). In Iran the nationalization of the Anglo-Iranian Oil Company triggered U.S.-British action to overthrow the government of prime minister Mosaddegh in 1953 and the reinstallation of the monarchy under the Shah (Zabih, 1982). In order to discourage such use of coercion and interference in the affairs of host countries, Items 16 and 17: Non-Interference in Internal Affairs of Host Countries were included in the U.N. Code of Conduct:

Transnational corporations shall not interfere in the internal affairs of host countries, without prejudice to their participation in activities that are permitted by the laws, regulations or established administrative practices of host countries.

Transnational corporations shall not engage in activities of a political nature which are not permitted by the laws and established policies and administrative practices of the countries in which they operate (United Nations, 1988).

An Ethical Perspective

To some who believe in realpolitik in international business and politics, considerations of ethical conduct are irrelevant. Yet for the general public of the "global village" the ethical perspective is imperative (Tavis, 1982, p. 427).

Source

TABLE 1A
PAHLAVI FOUNDATION
CHECKS DRAWN ON ACCOUNT 214895.20/H/CPTE$
UNION BANK OF SWITZERLAND, GENEVA
ON FEBRUARY 5, 1962

RECIPIENT	NATIONALITY	POSITION (1962)	AMOUNT ($)
Royal Family	Iranian	Shah's relatives	29,000,000
Mrs. Loy Henderson	U.S.	Wife of former U.S. ambassador	1,000,000
Hossein Ala	Iranian	Former Prime Minister	1,000,000
Henry R. Luce	U.S.	Publisher Time, Life, Fortune	500,000
Allen V. Dulles	U.S.	Director, CIA	1,000,000
Seldin Chapin	U.S.	Former Ambassador to Iran	1,000,000
George V. Allen	U.S. Former Assistant Secretary of State	Former Ambassador	1,000,000
P. A. Pigot	U.K.	British Admiral	1,000,000
T. W. Piper	U.K.	British Admiral	1,000,000
William Warn	U.S.	Director of Point Four of Iran 51-55	1,000,000
Ali Amini	Iranian	P.M. of Iran 61-62	2,000,000
David Rockefeller	U.S.	Chm. Chase Manhattan Bank	2,000,000
Ardeshir Zahedi	Iranian	Former Admin., Deputy USAID	3,000,000

Source: "America's Shah, Shahanshah's Iran", MERIP Report, #40, September, 1975, pp. 14-15.

TABLE 1B
PAHLAVI FOUNDATION
CHECKS DRAWN ON ACCOUNT 214895.20/H/CPTE$
UNION BANK OF SWITZERLAND, GENEVA
ON APRIL 2, 1962

RECIPIENT	NATIONALITY	POSITION (1962)	AMOUNT ($)
Edwin Thorne	U.S.	Sr. V.P. Mid-East Affairs, First National City Bank	500,000
Charles M. Cardiddi	U.S.	Secy. U.S. Embassy, in Teheran	100,000
Howard W. Page	U.S.	V.P. Standard Oil N.J.; Director Aramco Director Near East Foundation	300,000
Adolphe A. Juviler	U.S.	Chm., Thompson-Starrett Co.	300,000
Lyle J. Hayden	U.S.	Exec. Dir. Near-East Foundation	500,000
J. Ward Keener	U.S.	Chm. B.F. Goodrich	500,000
Harold E. Gray	U.S.	Exec. V.P. Pan-American Air Way	500,000
James L. Tollion	U.S.	Exec. Bank of America International	500,000
George Parkhurst	U.S.	V.P. Standard Oil of California	500,000
Cleveland E. Dodge	U.S.	V.P. Phelps-Dodge	500,000

Source: "America's Shah, Shahanshah's Iran", MERIP Report, #40, September, 1975, pp. 14-15.

In the Iranian case, the American and British governments had joined to bring about the overthrow of a democratically elected constitutional regime which had dared to nationalize the Anglo-Iranian Oil Company. This act in itself not only broke the rules of international law, but was also morally reprehensible. Moreover, the fact that the two Western powers proceeded to return the Shah to power and helped him establish a brutal dictatorship further deepened the ethical dilemma.

Similar ethical questions emerge when one considers the U.S. role in overthrowing Allende. Despite his self-styled socialism, Allende had taken power constitutionally through a democratic process centered on a popular election. He was overthrown precisely because he was perceived as an enemy of U.S. MNCs working in Chile. Even if Allende intended to make Chile a communist state, did the United States have a right to overthrow him? Both from the ethical and international law perspectives, Allende's overthrow could not be justified.

In today's world, MNCs have a clear choice between playing politics in LDCs and assuming what Lee Tavis calls "developmental responsibility" (Tavis, 1982, p. 432). Indeed, it would be far more profitable for MNCs to forego the use of political conspiracy and financial corruption in their dealings with LDCs and pursue their enlightened self-interest by taking charge of developmental responsibility for the long-term betterment of MNC-LDC relations.

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Market Share Elasticity: A Measure of Market Power

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Abstract
Traditional measures of market power use the notion of a firm's ability to price above marginal cost as a measure of such power. This fails to incorporate other factors such as product differentiation, output reacton of competitive firms, and degree of market concentration. A new index is developed using the concept of market share elasticity, that includes the above factors. Interpretation and implications of the index are discussed.

Market power is the ability to influence market price perceptibly. The key word here is 'ability' .... Stress on ability is important because pricing behavior is not, in and of itself, a feature of market structure. Structure does, however, determine ability." It is well known that a firm in a perfectly competitive industry cannot influence the market price; hence, it has no market power. A monopolist, on the other hand, is assumed to tend to fix the price at the level at which he makes the greatest profit; thus he has some market power. The most commonly used measure of the market power is the Lerner index, (P - MC)/P, which measures a firm's ability to set its price above its marginal cost. At the profit maximizing equilibrium, it can be shown that the index is equal to the reciprocal of price elasticity of demand. As pointed out by Professor Lerner, "the monopolist always has power in excess of this; but as the employment of it can only bring him loss, he normally does not use it intentionally. If he chooses to use it he can, of course, by continuing to diminish the amount he produces. Potential monopoly power is only used to its maximum when the monopolist stops all production." The Lerner index therefore gives the degree of monopoly power in force. In other words, it is a measure of actual conduct -- a measure of exercise of power rather than its mere existence. In an excellent paper Landes and Posner (1981) have analyzed, in considerable detail the issue of market power theoretically as well as in the context of antitrust cases. They have discussed various problems in inferring market power by using Lerner's index. They concluded that even in a case of pure monopoly, "the Lerner index yields an upper estimate, rather than a precise estimate, of the proportional deviation of the monopoly from the competitive price." In the real world, however, most markets are rarely characterized by these two polar extremes; instead, the market structure of many industries is oligopoly. In the absence of a general theory of price determination in an oligopolistic type of market structure, the market share of a firm within an industry has played a dominant role in the analysis of the structure, the study of conduct, and the evaluation of the economic performance of an industry. Traditionally, in an oligopolisitic type of market structure, the market share of a firm has been used as a proxy to infer market power, especially for the enforcement of the antitrust laws. In a theoretical formulation, Johnson and Helmberger (1967) linked elasticity and structure in "an industry comprised of n firms, producing a homogeneous output with the sensitivity of market price changes in a single firm's output depending on that firm's market share and elasticity of market demand". Commenting on their result McKean and Peterson (1973) noted that "market power cannot be implied from market share unless price elasticity of market demand is also given; as elasticity increases, the power over market price (for a firm with a given market share) decreases at an increasing rate" (page 206). Johnson and Helmberger in their analysis completely ignored the supply response of the remaining n-1 firms in the industry, therefore their formulation overstates the market power of a particular firm. Landes and Posner have attempted to incorporate the supply response of other firms in the industry under a very special type of oligopolistic market structure.

Specifically, they propose a measure of market power in an oligopolistic type of market with the following set of assumptions: (a) the product is homogeneous, (b) the market is well defined, (c) there is a single dominant firm and a large number of price taking, perfectly competitive rivals, each with a very small market share, and (d) the dominant firm sets the market price. Their index of market power depends on firm and market price elasticities of demand, firm's market share and the elasticity of supply of the firms constituting the competitive fringe. Therefore, they conclude that market share alone is misleading and other parameters mentioned above must be taken into consideration to evaluate the market power. Their index again is a modified version of Lerner index and measures the dominant firm's ability to set the price above its marginal cost. As noted by Schmalensee (1982), because of restrictive assumptions regarding the structure and the product homogeneity employed in Landes and Posner's analysis, their model cannot be used to analyze oligopolistic market, which are characterized by several large firms. Moreover, the assumption of product homogeneity is clearly violated in many industries. In view of these limitations, Schmalensee concluded that, "in a particular case, if any of the assumptions of Landes and Posner 'example' are clearly inconsistent with relevant facts, it makes little sense to use that model as an analytic tool or take seriously the formulae it implies."

The Lerner index is a measure of conduct. Though market share is used to measure size distribution of firms and concentration is an important element of the structure, an index based solely on market share ignores other structural variables (e.g.; product differentiation and entry barriers), and therefore such an index tends to overstate the market power. Since all three structural factors contribute to market power, the need to develop an index which incorporates other structural variables is quite obvious. The purpose of this paper, therefore, is to develop a measure of market power of a firm when the industry is comprised of several large firms with differentiated products. The number of firms depends on barriers to entry. When a product is differentiated and has close substitutes, there is a difference between a firm's ability to influence the market price and its ability to set price above its marginal cost. Product characteristics such as quality, color, style, and durability may give a particular firm a greater ability in terms of setting its price above the marginal cost, enabling the firm to extract larger profits. For example, because of its product characteristics, Mercedes-Benz may be able to set its price considerably above its marginal cost and therefore may have greater market power measured in terms of the Lerner index. But does the greater ability in setting price above marginal cost also imply greater ability in terms of influencing the market price? The answer to this question, in general, is "no." Because product differentiation, though, is an important source for market power, other factors such as entry barriers and market share must be taken into consideration to assess a firm's ability to influence the market price.

The Index

As mentioned above, the index will measure a firm's ability to influence the market price. We will assume that the industry is comprised of n different sized firms producing a differentiated product. Since the purpose is to measure a firm's ability to influence market price, it is further assumed that only a single firm changes the price of its product. The rival firms are assumed not to change their price but find their demand shifting outward or inward depending on the direction of the price change by the firm. Before we proceed to develop the index, certain problems inherent in this type of analysis merit some brief discussion. While it is true that in the case of product differentiation any meaningful industry analysis requires a broader product definition -- for example, soft drinks versus cola, lemon-lime, fruit flavor, diet, etc., -- apriori there is little theoretical basis for defining the market. Therefore, the market definition has to be somewhat arbitrary. There does not seem to be a satisfactory alternative to overcome this market boundary problem. The industry structure can only be analyzed in the context of a particular market definition and whether a firm has an influence over market price subject to a particular market definition depends on prevailing market demand conditions -- at least some control of supply or demand or both. We can now develop the index as follows.

Consider an infinitesimal price change by a single firm, i of a given proportion dPi/Pi at the initial equilibrium, resulting in a simultaneous proportionate change in output equal to dXi/eiXi, where ei is the price elasticity of its demand. Since the demand for each of the remaining n-1 firms will shift, the change in output by each of the other firms at any given price can be given as follows:

$$dXj = Xj\,(dPi/Pi)\,Eji = (Xj/Xi)\,(Eji/ei)\,dXi \qquad (1)$$

where Eji is the cross-price elasticity of demand and is allowed to vary among firms. The total output change, dQ, in the industry is6

$$dQ = dXi + \sum_{1}^{n=i} dXj$$

$$dQ/dXi = 1 + (\sum dXj/dXi) \qquad (2)$$

The firm's ability to influence market output and hence the market price will depend on the magnitude of term dXj/dXi in equation (2). For example, if this term is zero, the change in market output is exactly equal the change in the firm's output; therefore, the market price change will equal to change in the firm's price. The firm in this case is a monopolist. On the other hand, when this term is -1, a change in output by firm, i, is anticipated to be precisely offset by change on the part of other (n-1) firms. In this case, even though the number of firms is finite, the industry is competitive. The individual firm's output (price) decision has no effect on market price. The term $\sum dXj/dXi$ measures the "degree of competitiveness" of an industry. Thus, if a firm has any influence on market price, then7

$$-1 < dXj/dXi < 0$$

and therefore from equation (2)

$$0\ dQ/dXi\ 1$$

Essentially, the inequalities above state that when a firm successfully differentiates its product then as a result of its price change, the change in its output will not be equal to the total change in all other firms' output. For example, when the firm raises its price some of its customers will reduce the amount of their purchases, others will substitute rival firms' product and some may withdraw from the market altogether. The net effect of a price increase on the firm's output therefore will exceed the change in market output; i.e.l the reduction in the firms' output will not be completely offset by the gain in all other firm's output. When the change in the firm's output equals the total change of all other firms' output, there is no effective product differentiation. In this case the firm cannot influence the market output, and hence it has no influence on market price. In order to measure the market power of a firm, well define the following elasticities.

ai = market-price to firm-price elasticity = (dP/dPi)(Pi/P)

bi = market-output to firm-output elasticity = (dQ/dXi)(Xi/Q)

ci = output elasticity of market share of a firm = (dSi/dXi)(Xi/Si)

di = price elasticity of market share of a firm = (dSi/dPi)(Pi/Si)

where Si = market share of firm i.

The index of market power can now be derived as follows:

$$Si = Xi/Q$$

$$dSi/Si = (dXi/Xi) - (dQ/Q) \qquad (3)$$

$$dQ/dXi = (1/Si) - (1/Si)(dSi/dXi)(Xi/Si) = (1/Si)\,(1 - ci)$$

$$(dQ/dXi).Si = (dQ/dXi)(Xi/Q) = bi = 1 - ci$$

But,

$$bi = (e/ei)(dP/dPi)(Pi/P) = (e/ei).ai = 1 - ci \qquad (4)$$

$$ai = (ei/e)(1-ci) = (ei - ei.ci)/e$$

Note that ei.ci = di, therefore

$$ai = (ei - di)/e \quad (5)$$

It is easy to see that 0 ai 1. Note that ai attains its maximum value of ei/e when di = 0. When di =0, ci must also be equal to zero and bi = 1 - ci = 1. Hence, dXi/Xi = dQ/Q and dPi/Pi = dP/P. The firm in this case is a monopolist, and ei = e and a max = 1. However, when other firms products can be substituted, di is greater than zero; hence, ai will be between 0 and 1. When ei = di, then ai =0, and no single firm has the ability to influence the market price. Since (ei - di)/e is always less than one, therefore (ei - e) is less than di. Thus, the difference between firm and market price elasticities constitutes a lower bound on the price elasticity of market share, the upper bound, of course, being the price elasticity of firm's demand, ei. Therefore, the range of di is (ei - e)< di<ei. One would expect the price elasticity of market share to be related to the price elasticity of demand and cross price elasticities. Note that the price elasticity of market share is the weighted average of firm's price elasticity of demand and cross price elasticities between its product and its substitutes, the weights being the market shares. The smaller the cross-price elasticities, the larger is the difference between ei - di, and the firm need not consider the effects of its pricing policy on the makers of substitutes since the effect of any one rival is small. In this case, therefore, the firm is closer to monopoly. On the other hand, when the cross elasticities are of substantial magnitude and there are enough good substitutes, the difference ei - di will be small and the industry is closer to being competitive (but not necessarily perfectly competitive) because in this case the firm's pricing policy has very little influence on the market price.

Based on the above analysis, let ai = (ei - di)/e be an alternate measure of market power. The index is explained as follows: when a single firm changes its price, output for all firms also changes, resulting in a change in the industry output. The numerator ei - di measures the net change in the industry output resulting from a firm's price change. Given the industry's output change, the denominator gives the net change in the market price. Therefore, the measure developed above is more general and appropriate because of the following reasons:

(a) it directly measures a firm's influence on the market price,

(b) it considers the firm's ability to set price above its marginal cost through its price elasticity of demand, while

(c) it also incorporate rival firms' output reaction through price elasticity of market share, which to a large extent depends on the degree of product differentiation (cross elasticities) and the number of substitutes available,

(d) it measure the degree of competitiveness in a range between zero (competitive) and one (monopoly),

(e) it not only considers the magnitude of the market share but explicitly takes into account the sensitivity of market share to price change.

ESTIMATION AND INTERPRETATION OF THE INDEX

Since perfect competition is rarely encountered in the real world, almost all firms have some market power. The relevant question in antitrust cases therefore is not whether a firm has market power, but whether it is significant. The assessment of significance of market power requires estimation of the relevant parameters. The index of market power ai developed above depends on the price elasticities of firm's and market demand and the price elasticity of market share. The measurement of market power therefore requires estimation of firm and market demand functions and a firm's share function. In spite of several measurement and data problems (Markel, Strickland, and Neeley, 1988), conceptually at least the specifications of demand functions need little discussion. However, the specifications of market share function and the nature and importance of variable affecting share function merit some discussion.

Mathematically, the share function is a 'fractional function' of two functions, namely, firm demand function and market demand function. Both the

firm demand and market demand functions are multivariate. Pashigian (1968) discussed some important variables affecting the share function. He noted that market share depends on a number of variables, only a few of which are under the firm's control. Variables under a firm's control, such as price and advertising, are the more important ones affecting market share. Other important variables include product characteristics and flow of technical information to competitors. To a large extent, both of these variables are related to the degree of product differentiation and entry barriers. Since the share function depends on demand function, variables which affect demand function would also affect the share function. Conceptually, however, the advantage of using share function is that it incorporates the effects of a firm's market policy on it rivals via market output.

There are to major obstacles in the empirical estimation of the parameters: the definition of the market, and the measurement and availability of relevant data. The market definition is very critical because both d and e depend on it. Since there is no unique market definition, the workable solution seems to be to use alternate market definitions if micro-level data is available. For many industries, e.g., soft drink, cigarette, automobiles and cereal, etc., brand level data is available. Therefore, one can use alternate market definitions, for example, cola, lemon-lime, fruit flavor, diet; lot war, high tar; compact, intermediate, luxury, etc. Once the industry is defined satisfactorily, the problem of how to measure market price and market share must be resolved. If the data on price and share of all firms in the industry is available, the market price can be computed as : $P = \sum pjSj$, where Sj is the jth firm's market share defined in units and pj is the jth firm's price. In the absence of such data, one could use price indexes or other such data; however the problems in obtaining and using these data for industry analysis are enormous and well known. The market share can be either be measured as fraction of total output (as defined in this analysis) the differences in prices are implicitly attributed to market power but may be associated as well with other product characteristics mentioned earlier. Since product differentiation is an important source for market power, the index measures the contribution of product differentiation to the firm's market power.

If the problems with estimation cannot be overcome because of limitations due to availability of data and other factors discussed above, the index can be interpreted for policy guidelines as follows.

In order to see that, let us construct bounds on ai in terms of important parameters. It can be shown that $bi<ai<(ei.Si/e)$ or, alternately, $Si - \sum(SjEji)/ei<ai<(ei\ Si)/e$ or $2Si - (e/ei) < ai < (eiSi)/e$. Though for the exact magnitude of market power, ai, one needs to have reliable estimates of all three parameters, namely, ei, di and e. However, one can infer relative degree of market power from a firm's market share. It should be noted that ei, di and e are interrelated and market share is a very important variable affecting the relative magnitudes of these parameters. First, note that $e > eiSi$. However, the higher the magnitude of Si the smaller is the difference between ei-e; in a limiting case as $Si>1$; $eiSi>e$. Second, the difference ei - di also depends on the market share. The smaller the market share the lower will be ei and di, and ei - di approaches its maximum value of e when $ai>1$, Therefore, for a given value of e, the numerator of the index ei -di increases with the market share. For policy purposes, therefore, irrespective of market definition (broader or narrower), a large market share provides evidence of substantial influence over price in that market. For assessing the welfare implications of such market power, the market definition becomes very critical. For example, consider two markets, A (broadly defined) and B (narrowly defined). Assume that two firms, X in market A and Y in market B, have same market share, say 0.9. Since both firms have large market shares, it is quite likely that the magnitude of ax and ay will not be significantly different in their respective markets. This is so because in each market the ratio of firm demand elasticity to market demand elasticity will be very close to one, and the market share will provide a good proxy for the market power. However, for policy purposes one should be more concerned about the market power of firm X in market A then the market power of firm Y in market B. As mentioned earlier and elsewhere in the literature that there is no theoretical basis to resolve the "relevant" market definition problem satisfactorily, the pragmatic approach one can take is to use several alternate market definitions and then infer

the market power based on how the market share of a particular firm changes under different market definitions.

In summary, a firm's ability to influence market price depends on three parameters: firm and market price elasticities of demand and firm's price elasticity of market share. Since estimation of these parameters may not be always possible, market share can be used as a proxy for assessing the influence a firm has over the market price. Therefore, market share may help the antitrust enforcers in merger analysis. For antitrust and other policy issues it is a firm's ability to influence market price -- not its ability to extract profits is more relevant. The often asked question in approaching merger analysis is that if a particular merger is allowed, would there be an increase in the likelihood and ability of the remaining firms to raise prices? This analysis answers that question to a large extent. If merger results in a substantial increase at least in the short run. In the long run, whether this power will increase or decrease depends on entry conditions and how other structural parameters change.

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A Proactive Marketing Approach to Business Development with Emphasis on the Emerging Role of the University

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ABSTRACT

Marketing's role in industrial new product development has been criticized as inhibiting or even destructive. Indeed, through zealous implementation, marketing does come into conflict with the corporate need for technological innovation because marketaing typically is cast as an adversary to a bottom-up approach to new product development. A solution to this problem for firms interested in maintaining a technology-directed, new product effort could be marketing advocacy. That is, new ideas are squelched because the technical and marketing adversaries are mismatched. Firms desiring to pursue significant internal development possibilities could use a marketing advocate who acts as the representative for technical personnel in preparing the best possible case for a new idea. Although this concept has not found wide acceptance in industry, there is some indication that universities may play this role for start-upbusinesses. Some experiences of the author are discussed in this context.

INTRODUCTION

Advocacy has been presented as a model for a "fairer" treatment of high technology, fundamental R&D projects in ongoing corporate reviews on the basis of the author's experience in industry and academia (Wilson, 1985). Frankly, this proposal received only marginal consideration in review processes although effective firms have endorsed aspects of this proposal in assembling project teams. Broadened missions of universities to include regional economic development, however, gives some cause to reconsider a marketing advocacy model because the assistance required in these situations involves many aspects of advocacy. The advocacy model is therefore reviewed and application is discussed in terms of the author's consulting experience with a mid-western university's industrial development function.

THE PROBLEM

Inadvertently, marketers may have contributed to one of the severest problems that American business faces. This problem is the conservatism that has affected the nation's technical effort. In addressing the patterns apparently developed in the 1970's, the following trends were noted in corporate funding allocations:away from basic research into improvements of existing products, out of new ventures, out of long-term projects into projects with shorter term payoffs (Ricci, 1978).

Particularly threating appeared to be the erosion of the U.S. competitive position as indicated by the trend of fewer patents being issued to U.S. companies and more patents being issued to foreign companies, particularly the Japanese (Bueche, 1978). Cooper has assessed the role that marketing has played in these developments and noted that the marketing concept and a strong marketing orientation may have had a negative effect on industrial and high-technology innovation (Cooper, 1982).

Marketing does come into conflict with the corporate need for technological innovation because the marketing function typically is cast as an adversary of a bottom-up approach to new product development. That is, firms frequently depend upon their technical personnel for innovative, business-expanding ideas. At the

point of project initiation, however, these ideas tend to be judged on their marketability and not technical content. "Market directed" development requires both early screening and evaluation, as well as an analysis, before technical development starts (Booz, Allen and Hamilton, 1982). In this situation, marketing's role frequently is to ask the questions, while the technical personnel are supposed to provide the answers. Although technical personnel can respond readily with technical support for proposals, marketing support tends to be beyond the scope of their resorces. Even basic "how, when and where" questions are difficult for them to answer.

As Cooper notes, existing marketing research on innovation is based on products that were commercialized but ignores the many products that never were developed, were missed altogether, or killed because of a preoccupation with the marketplace (Cooper, 1982). The prevalent system can squelch innovative ideas. Early questioning can inhibit innovation. Perhaps nothing is as vulnerable as an idea in its development stage. Brainstorming practitioners appreciate this fact and routinely do not permit criticism or challenges in their development sessions (Geschka, 1981). David has recognized this danger as it relates to evaluating business implications of technical-based projects (David, 1978). Indeed, marketing support for true innovations may be very difficult to develop because of the unspecified nature of both the market and product.

It is the "never developed, missed and killed" projects, however, that future developments in marketing must address. Clearly the problelm is important. Each year the Department of commerce lists the industries expected to grow rapidly in future years. As in the past, this year's group (1989) is dominated by export-oriented, high-technology industries (USIO, 1989). Thus, if marketing is to constructively contribute to growth and benefit from the gains growth brings, marketing approach systems must promote innovative, high-technology ideas.

THE SOLUTION

The problem is to remedy a system that tends to screen out difficult to support ideas, where difficulty is induced by a poor marketing justification. The proposed solution is to provide better marketing justification for initial project proposals. In other words, the present system's failure is not that it raises questions too soon; the present system's failure is that nonexistent or weak answers cannot be used to justify support for projects. Solutions that defer the time when questions are asked only prolong the inevitable. Invariably, deferral only means technical support gets better. Marketing support remains weak. Marketing questions are addressed only when they are asked. Whatever criticisms are made of market directed directed systems, these systems provide a basis for economically allocating funds. To do anything else is to trust to happenstance, which managers normally avoid.

If the problem is information input, then the solution should deal with information input. A reasonable approach is advocacy. Technical personnel require marketing representation in stating their case. There is nothing inherently wrong with an adversarial system in which proposals are challenged; there is something wrong, however, when one side "wins" consistently and whole companies, even whole economies, tend to lose.

Advocacy is not a new idea. The American judicial system is based on advocacy. Each individual is permitted to have an advocate, who renders legal assistance and pleads the case. The advocate does not prejudge guilt but rather has the sole responsibility of providing the best possible case for the client (Black, 1968). For example, the United States had a situation recently where a man shot our president, was captured immediately at the scene, and the episode was filmed to be broadcast on television to the whole country. John Hinckley was permitted and advocate, actually a team of advocates, to support his case. If John Hinckley could not have afforded an advocate then the court would have appointed one. The system has recognized that all individuals cannot agrue equally in court; rather expertise is necessary and is therefore provided.

Similarly, it is proposed that technical personnel within established R&D programs be provided with marketing advocates for their proposals. Associating marketing with R&D is not a new idea (Wilson, 1981). In fact, any of the

evaluation processes for screening ideas presupposes some sort of marketing/R&D affiliation. It is only when it is proposed that this marketing support will take on a role of "providing the best possible case" that this proposal becomes unique. The marketing support will not require an individual to both evaluate and support proposals. Rather, a support system will be generated where one marketing arm in the firm solely provides support for technical personnel and another arm has the conventional duty of challenging this support. The technical supporters are the advocates. They thus become the adversaries of the challengers in a business -- evaluation scheme.

ROLE OF THE ADVOCATE

The general role of the advocate is to be the friend of the innovative engineer. In this role the advocate is counsel, confidant and spokesman. The advocate's value will be most apparent to both the engineer and company at proposal review time when a primary responsibility is to present the best possible case for support. This period is "trial time" for new ideas. Frequently, support requires framing arguments in terms of "need satisfaction," "user demand," "market leverage" and "return on investment" suitable for business analysis instead of the "technical breakthroughs" familiar to engineers. One valuable contribution that the advocate makes is thus the structuring of an argument. He further is expected to state the case and write the briefs required for review.

The skillful preparation of the support for initiation will serve to provide a buffer to the early critical challenge to evolving ideas that induces conservatism in R&D. Creativity is thus provided in an environment in which analyses are also made. By better matching opponents, the firm has an opportunity to both evaluate proposals and get innovative ones through the system. The importance of relieving the advocate of evaluation responsibilities in preparing these cases is self evident. He simply could not be expected to prepare a "best" case unless he was freed of any evaluation responsibility during the time of this assignment. Instead, he serves only one individual, the engineer. Anything else that needs to be done by the firm in evaluation is accommodated in the review system.

Preparation of the initial support may be just the start of a lasting interplay with marketing expertise for the engineer. There is a tendency to think of the marketing study in successful project initiation. Actually, there are at least three points where marketing information contributes to the success of a project. These points are in concept development, market analysis, and business evaluation. Typically these tasks are approached sequentially and are refined as information becomes available from both technical and marketing studies. A sequence of interactions with technical functions is shown in Figure 1.

The initial need for interaction in case preparation occurs during concept development. That is, the development of a basic phenomenon has generally been recognized by the engineer and there is a broad recognition of need. At this point, success in presenting a case usually results in a request to perform some systematic experiments.

Forward thinking is directed toward the need for the concept, product requirements, characteristics of the market and the nature of the competition. The objective of the advocate at this point is to establish the market feasibility of the concept as a basis for a go-no-go decision. If a discussion of these items is included in the initial proposal and the technical approach appears reasonable sound, then the project should be acceptable. The market will get a rough scoping initially. In this respect, an assessment is made of where the concept is likely to be applied and the characteristics of these markets. A real market analysis, however, requires some refinement in what the product will actually do for the user, which will be consequence of the initial systematic research.

Only after some initial definition of the product is made can a market analysis proceed for technology driven innovations. Corey captured this thought in his assessment, "a product is what a product does" (Corey, 1976). Systematic experiments will show what a product "does." At this point, advocacy is required to provide definition of market opportunities for project continuation. Definition of these opportunities provides input for estimating ROI, payback and growth opportunities for the firm. Arguments will

be based upon segments that will find the development beneficial, market trends and potential, competitive segment structures, pricing and distribution in these segments, and other variables of particular importance such as ease in entry. Success at this stage results in focused development efforts where the product is developed for specific market opportunities. It is during this stage that test partners are sought to evaluate the product as it evolves.

The final stage in advocacy is establishment of a business evaluation. In a sense, if developments have proceeded successfully, this task may be straightforward. That is, if the focused development has been successful, then determination of financial implications of continuation and provision of a statement of strategy should be a direct consequence of preceding developments. The case for continuation is structured around a business plan for the first time. Included in this plan are pro forma income statements, pro forma net assets employed, potential customer profiles, and a market entry and development strategy. Emphasis, of course, is on timing, i.e., when events can be expected to happen and costs, which should be quantifiable by this point in time. A major cost in development expenditures is the next stage, process development for manufacturing the new product, which can equal total development expenditures to date.

These three steps, concept development, market analysis and business evaluation are starred in Figure 1. They represent required advocate/engineer interactions in successfully overcoming hurdles introduced by screening procedures. These stages are critical in successfully initiating and continuing the really new projects that provide for internal growth opportunities. It is in these stages that advocacy is required. Table I has been included to summarize the objectives and research concentration of the function during these phases.

Commercialization and post entry development are included in Figure I for completeness. Problems may be encountered in these stages. Transfer of responsibilities to other groups, for instance, may cause difficulties, but these tend to be handled by conventional approaches and conventional means. The advocate and developer may be involved, but in most instances this involvement will be in an advisory capacity. Their job has been successfully completed--the opportunity has been developed and failure rates from this point on are much lower than preceding development stages (Booz, Allen and Hamilton, 1982).

It should be evident that a close association is required between innovator and advocate from the preceding discussion. The closeness of this relationship requires an organizational scheme that will facilitate this relationship. A number of schemes will accommodate advocacy. One, of course, is to place an advocate on a R&D Directors staff. Another is to draw from existing marketing departments as a need arises, matrix fashion. Still a third possibility is to have an advocacy department the same way that firms have a patent department. In a period of advocacy infancy many organizational possibilities will do the job. This flexibility is further enhanced by the flexibility attendant the R&D function. The important consideration is longevity--an advocate must be available during the development period, which may be 3 to 7 years.

APPLICATIONS

There is no indication that an advocacy approach is in the process of being broadly accepted by U.S. industry. Some anecdotal evidence exists that aspects may have been applied in isolated instances (PDMA Conferences 1987 and 1988). Marketing's role in most firms appears yet to challenge athe market worthiness of technical ideas. University experience, on the other hand, may be a different matter.

The university as a source of development has been broadly recognized (Aaron, 1988; Bartlett, 1988; Neiman, 1983; Scherer, 1988; Smilor, 187). Approaches to development have ranged from university/industry research cooperation to development of life support incubators for entrepreneurial firms during their formative sages. The author has been fortunate to have been involved with several of these efforts, and aspects of advocacy appear applicable. Experiences in two instances are thus related to illustrate applications.

The university in question is located in the mid-west and the author's association has been as an external marketing consultant to a university-associated, but autonomous, industrial evelopment group. The university president is on record as indicating a need for universities to be "concerned and creative partners" in transferring technology to the marketplace. The university clearly has internal R&D projects that could be commercialized. Its faculty of nearly 400 conducts research in all departments as well as in several university-affiliated research agencies. To expedite this commercialization, as well as participate in the development of the surrounding economy, the university has an industrial development group. This group has provided business management services, applied business research, entrepreneurial education, and initiatives intended to strengthen the base economy of the surrounding area.

The two programs in which advocacy has played some role have been an inner-oriented initiative and an outer-oriented one.

Inner-directed University Programs

The inner-oriented program was a state supported program. The state has sought to focus resources on a limited number of specific basic and applied research projects in designated academic settings. The state views this funding as a tool for creating the infrastructure necessary for improving the state's competitive position in development of new technologies in the state. Each project supported by this funding source was to include economic impact and technology transfer statements as well as project descriptions.

A specific development of this university, which makes it somewhat unique, is that included with its submission was inclusion of a separate project that dealt specifically with the transfer and commercialization of projects. Funding for this commercialization project was to be maintained on a percentage of total funding basis.

Nine technical projects were funded under this program. The commercialization program was included as a tenth project. Developments under this program will be discussed elsewhere, but it is appropriate to note the necessity here to work closely with university R&D personnel in an advocacy manner. In each of the projects there was a need to determine possible applications, develop concepts, and do preliminary market analyses as suggested in Figure 1. Projects tended to be in a state of technology development; a determination of product possibilities was necessary to expedite commercialization. Further, commercialization had to be explored in a manner that left the R&D personnel clearly in control and funding alternatives open.

These conditions have been maintained while commercialization has been pursued. A specialist has been working with internal R&D staff to do the studies that promise to generate the resources necessary to complete projects. Additionally, information has been prepared for the trade press; trade shows have been attended, and technology licensing has been initiated with an experienced patent broker. The author's experience in this process has been an initial two-day seminar that focused on advocacy and technolgy transfer processes. Semi-annual progress update meetings have since been maintained.

Outer-directed Programs

The outer-directed program was a local program that had composite funding support. It was a pilot program designed to help manufacturing companies learn how to market their products more effectively. Specialists were made available at a low initial cost to solve specific marketing problems. Funds were to be replentished on a revolving fund basis. Initial payments were to be at a rate of 15 percent of total estimated cost. Final payment of the 85 percent were to take place if marketing goals were attained.

Initially interviews were held with 17 firms who had expressed an interest in pursuing this program. A number of traditional businesses signed contracts to receive help and received traditional marketing consultation. There were two cases, however, that were particularly interesting because they tended to fit an advocacy type treatment. These two cases involved a start-up specialty chemical business that required business replication advice and an industrial materials recycling project.

The specialty chemical business was special because of the sensitivity that an engineering entrepreneur had for controlling his business. The recycling project held special interest because it appeared to be a classic development of the early stages of Figure 1. It will require input from characterizing applications to determination of entry strategy. Sensitivity and "best case" approaches appear needed in both situations. The model thus appears to have external as well as internal applicability.

WHY ADVOCACY WILL WORK

Advocacy will work because it is needed. If firms truly want to establish organizations and procedures that will develop internal growth opportunities, advocacy will be adopted. It is a logical solution to a pressing problem. Essentially, advocacy permits the firm to develop some of the characteristics that have made venture capital sponsored spin-offs so successful (Malone, 1982). The marketing person is being added early in the project's life and this presence will lend direction and opportunity.

The downside risks, of course, are twofold. first, use may become expensive and second, use may distort programs from their present conservative orientation to an equally objectionable exploratory orientation. The Hinckley decision, for instance, has been criticized as being a particularly evident weakness of advocacy at work in our legal system.

Cost is always of concern and propagation of a system is always a possibility. Advocacy, however, would seem to be a cost that would tend to be closely controlled. Inherently, it would tend to be charged against development accounts and these budgets tend to be rather stable for mature companies. Further, actual costs for advocacy services would tend to be charged against projects and these costs themselves are controlled by research managers. Thus, it is unlikely that advocacy costs will be items subject to escalation within a firm.

Potential excesses of advocacy likewise appear to be minimal. Unlike the legal system, decision makers within a firm are not bound by procedures and precedents that give rise to Hinckley-type possibilities. Further, although Hinckley could only be subjected to single jeopardy, projects constantly are on trial and routinely receive annual evaluations. Agreements are thus reversible and projects may be stopped at any point during their lifetimes.

Advocacy thus should be adopted by firms. It provides a means for getting better information upon which to make crucial decisions. Advocacy should likewise be embraced by the marketing profession. It opens up possibilities for further contributing to the profitable internal growth of firms.

It is interesting that universities may be playing a lead role in establishing advocacy systems. The system has been observed to have both internal- and external-development applications. Marketing acadamicians might therefore watch for these trends -- both to study and also to exploit on a consulting basis.

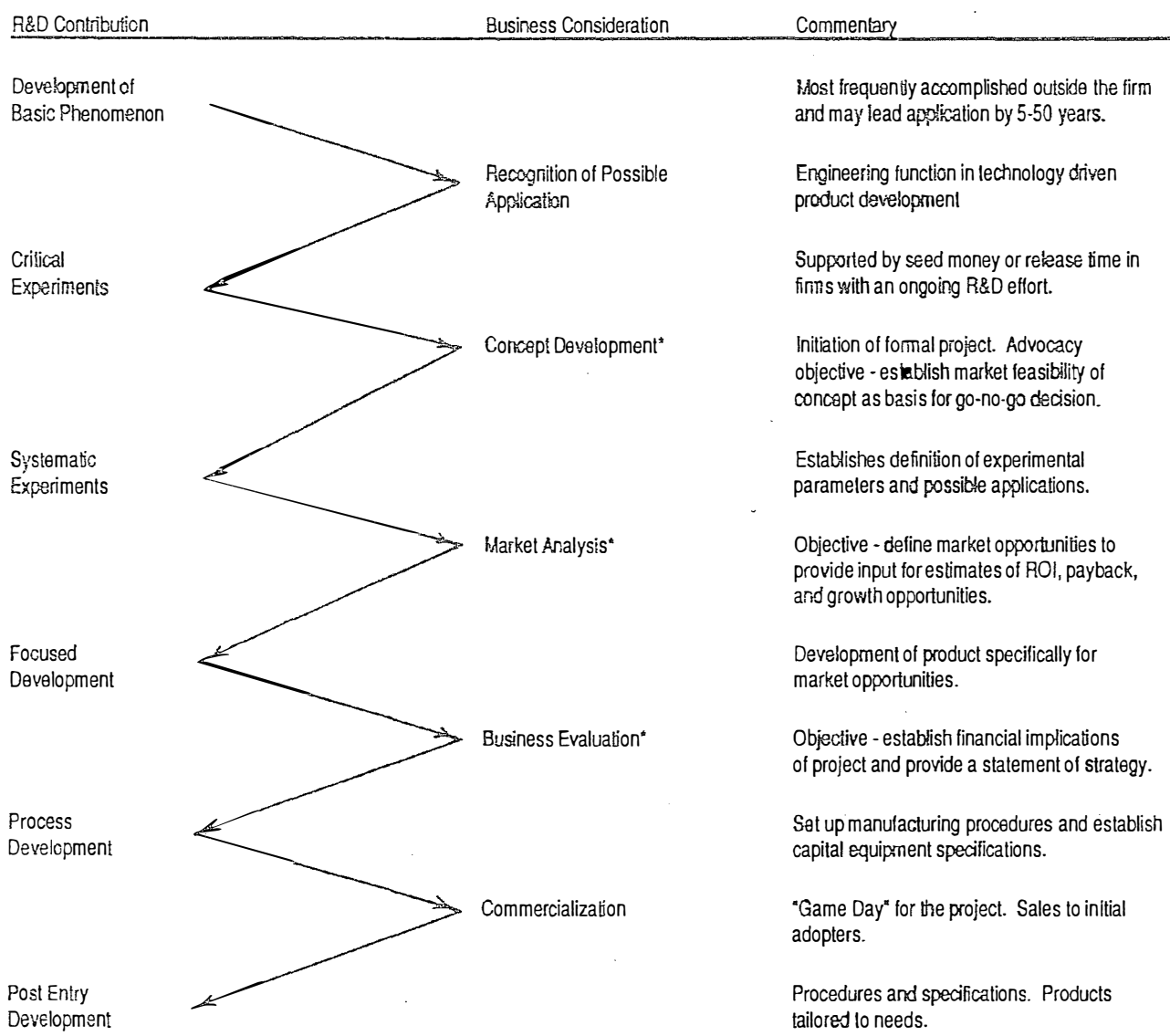

FIGURE I
TECHNOLOGICAL APPROACH TO PRODUCT DEVELOPMENT
(* - Required Advocate/Engineer Interaction)

Stage	Objective	Research Concentration
Concept Development	Ascertain Market Feasibility of Concept as Basis for Go-No Go Decision.	Need for Concept Characteristics of Market Nature of Competition Product Requirements
Market Analysis	More Clearly Define Market Opportunities to Provide Input for Estimates of ROI, Growth.	Market Segmentation Market Trends and Payback, and Potential Refined Competitive Structure Pricing and distribution Other Critical Variables
Business Evaluation	Determine Financial Implications of Project and Provide a Statement of Strategy.	Pro Forma Income Statement Pro Forma Net Assets Employed Potential Customer Profiles Market Entry and Development Strategy

TABLE I
RESPONSIBILITIES OF ADVOCATE
IN A TECHNICAL APPROACH TO PRODUCT DEVELOPMENT

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Corporate Brand Targeting Strategies for Selecting Spreadsheets and Computers

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ABSTRACT

When the automation of certain office and management decision functions become necessary, corporate decision makers generally go through four phases of a decision model in determining the brands of computers and software to recommend. These phases are need analysis, brand consideration, brand targeting, and brand recommendation. This study focuses on the brand targeting phase which reflects strategies used by major corporations for selecting microcomputers and spreadsheets. This phase determines availability of vendor technical support to customers and compatibility of the equipment with existing equipment. The cost, ease of operation, speed of operation, and use of the equipment by other business are factors in this phase also. Some of the factors such as how adaptable/flexible is the software, whether it is an integrated package, and the number of cells are related to spreadsheets purchase decisions alone. All corporations agree to varying degrees of importance of these factors.

Introduction

The impact of computer and software technology in the decade between the year 1990 and the year 2000 will exceed what has happened within this past decade in the same industry. This impact would be felt immensely in spreadsheet development and usage.

The use and capabilities of spreadsheets determine the type of spreadsheets chosen by a business. Spreadsheets are used extensively in accounting, engineering, education, management etc. According to Mazhin, 1987, the construction of a cost-volume-profits (CVP) analysis to determine the break-even point is accomplished with a spreadsheet program. Spreadsheets can be used to calculate and perform sensitivity analysis as showed by Kapor, 1986. Spreadsheets are used for presentation graphing and forecasting. King, 1985, suggested that in the acquisition of an electronic spreadsheet one needs to consider the relative cost, convenience, hardware compatibility, the needs of the users, ease of use of the program and its manual, and the memory required. He said that price be given little weight.

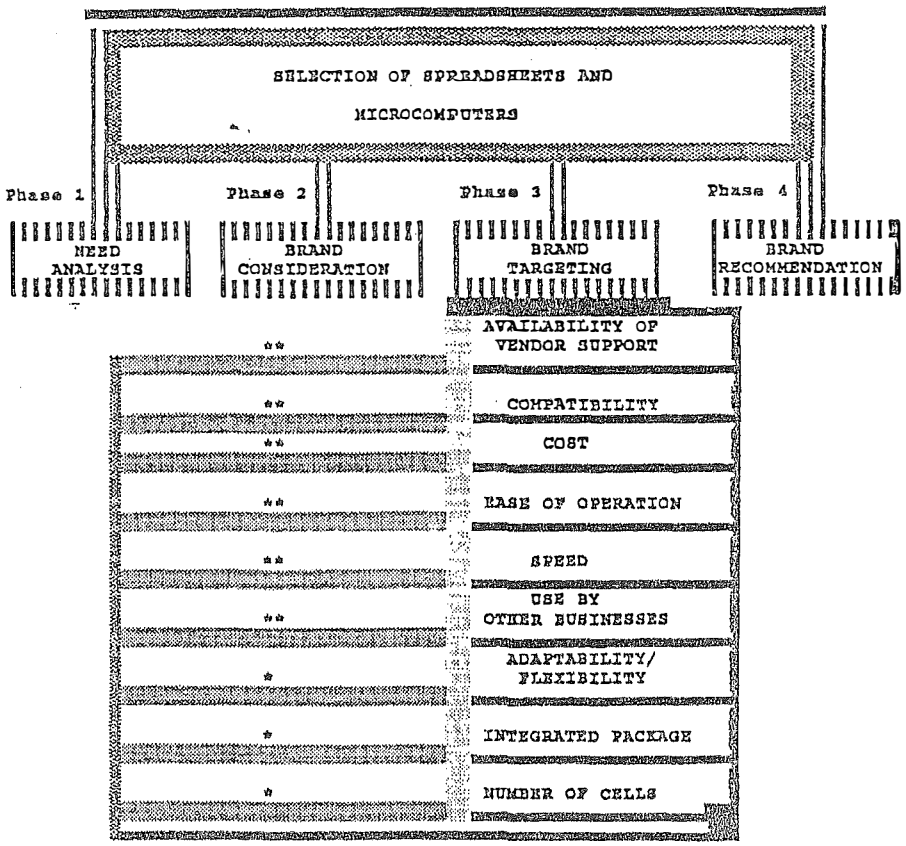
As businesses decide to purchase and use computers and spreadsheet programs four phases of decision making, Model 1, are envisioned.

Four phases of microcomputer and spreadsheet selection are:

1. Need Analysis: the phase in which it becomes clear that some office and management tasks can be accomplished more efficiently with the use of computers and spreadsheets.

2. Brand Consideration: phase in which different brands of computers and spreadsheets are noted. In this phase, sorting of computers and software magazine occur with the hope of identifying brands. A number of brands are identified and a specific brand with certain attributes is selected. These attributes are found in the brand targeting phase.

A MODEL FOR SELECTION OF SPREADSHEETS AND MICROCOMPUTERS



MODEL 1

** Factors relating to microcomputers and spreadsheets
* Factors relating to spreadsheets alone

3. Brand Targeting: The phase in which different decision factors are used to determine the computer or spreadsheet to recommend. The number and type of factors differ from software to software but are generally the same for microcomputers.

The decision and selection factors identified for microcomputers are: (1) Availability of vendor support (2) Compatibility (3) Cost (4) Ease of Operation (5) Speed (6) Use by other businesses

The decision and selection factors identified for spreadsheets are: (1) Availability of vendor support (2) Adaptability/Flexibility (3) Compatibility(4) Cost (5) Ease of operation (6) Integrated package (7) Number of cells (8) Speed (9) Use by other businesses

4. Brand Recommendation: Based on the weight each factor receives in the third phase a specific brand is recommended for purchase.

Purpose

The purpose of this study was to compare the brand targeting strategies used by major U.S. corporations when choosing spreadsheet packages and microcomputers. The study focused on corporate information systems departments.

Methods and Procedure

To determine the strategies by which companies choose spreadsheets and microcomputers, a questionnaire was developed and evaluated by instructors and users of spreadsheets in 26 companies and 11 colleges in the Memphis area. The surveys were also evaluated by statistical personnel of the Memphis State University Academic Computer Services.

Population

The 1987 special issue of the Business Week Magazine provided the Top 1,000 U.S. corporations from which 300 or 30% were randomly selected for this study. The survey was sent to all Information Systems departments identified by The 1987 Standard and Poor's Register of Corporations, Directors, and Executives of the 300 companies. A total of 215 (72%) usable surveys were used.

Findings

Secondary source:The special issue of Business Week, (April, 1987), disclosed that the Top 1,000 corporations had annual revenues in 1986 of $2.9 trillion compared to the annual sales of all U.S. corporations in the same year which were more than $8 trillion dollars (a ratio of nearly 1:3). The 1986 market value (share price multiplied by latest available common shares outstanding) of the highest ranked company and the least ranked company is in a range of $90,055 million to $381 million. The Top 15 companies ranked according to profits published profits totalling $32.4 billion dollars in 1986. The Top 15 companies ranked according to assets have total assets of $1,282.3 billion. The ten largest industries ranked according to market value have a total market value of $1,469.5 billion.

Primary source: All the companies studied use microcomputers and spreadsheets. Five industries most frequently represented in this study are manufacturing (28%), financial (12%), service/health care (12%), communications/office equipment (6%), and natural resources (6%). About 77% use IBM microcomputers thus agreeing with Lehman, 1984, that IBM is widely used among Accounting, Legal and Medical firms. About 95% use Lotus 1-2-3 among other spreadsheet packages. The five most recurrent applications of spreadsheets in these companies are accounting (93%), budgeting and monitoring (89%), forecasting/graphics (78%), internal reports (78%), and decision making (65%). The least five applications are risk code assignment (7%), credit scoring (7%), credit quality evaluation (8%), note payments (12%), and data communications (23%).

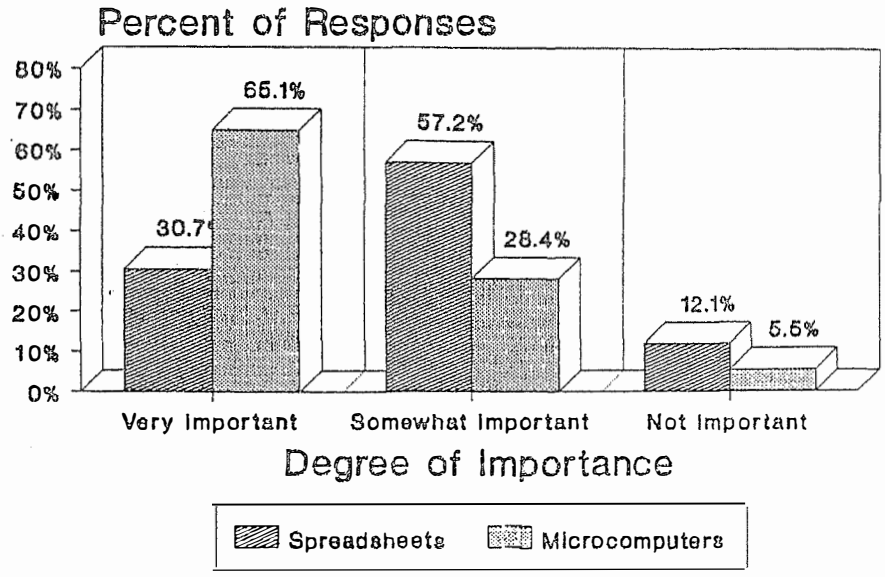
Brand Targeting

Respondents were asked to rate choice-control factors on a scale of 3 very important, 2 somewhat important, and 1 not important regarding spreadsheets and microcomputers.

Availability of Vendor Support

Figure 1 shows that the importance of availability of vendor support is more than twice higher for microcomputers than for spreadsheet.

Figure 1
Availability of Vendor Support

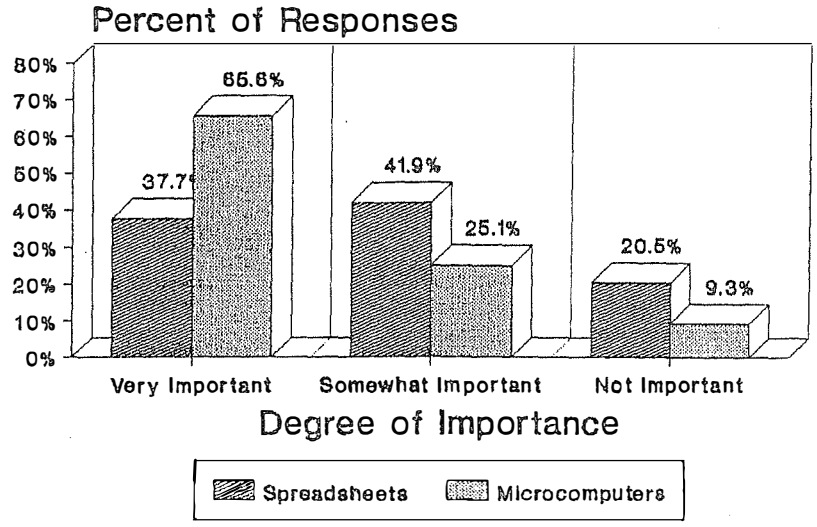


Spsheet/Microcomputer Selection Factors

Compatibility

As seen in Figure 2, compatibility is a more important factor when considering microcomputers than when considering spreadsheets.

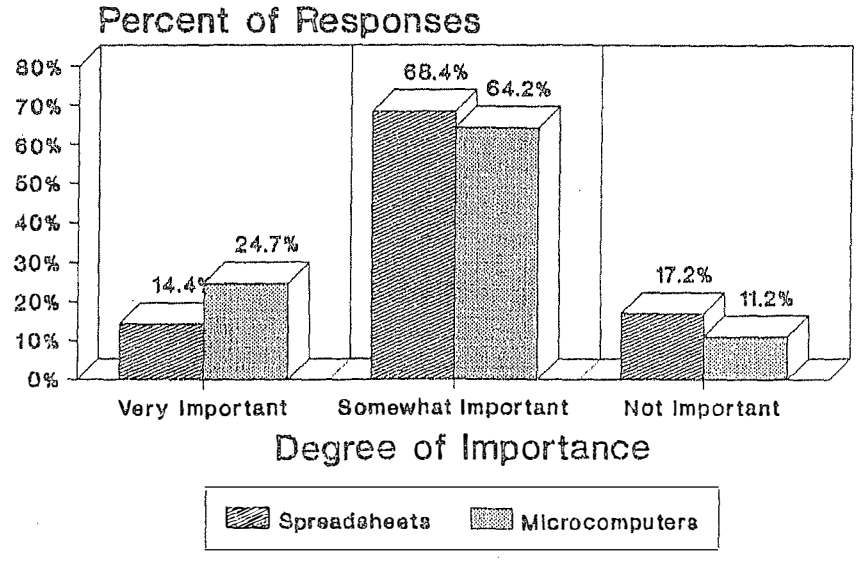
Figure 2
Compatibility



Cost

Cost is only somewhat important when choosing microcomputers and spreadsheets as found in Figure 3.

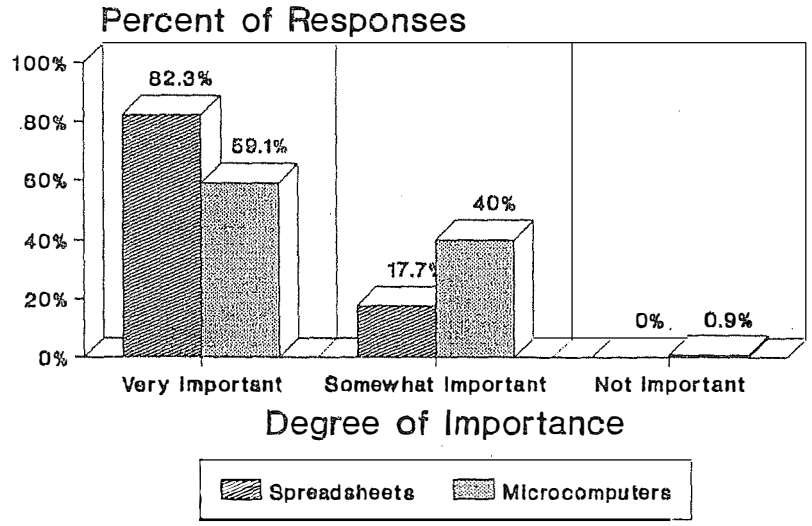
Figure 3
Cost



Ease of Operation

Displayed in Figure 4, ease of operation is considered to be a more important factor for spreadsheets than for microcomputers.

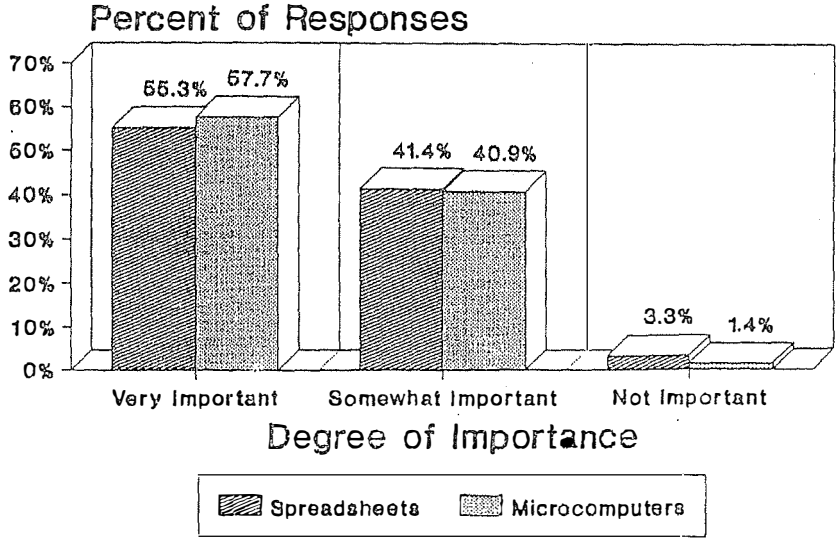
Figure 4
Ease of Operation



Speed

Figure 5 shows that speed is considered almost equally important when choosing spreadsheets and microcomputers.

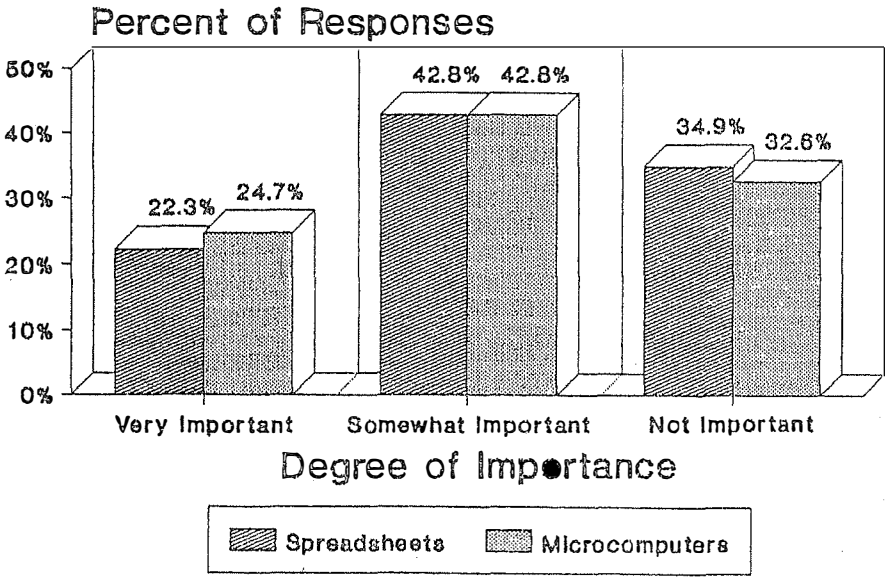
Figure 5
Speed



Use by Other Businesses

Use by other businesses, Figure 6, is almost equally important for spreadsheets as well as microcomputers.

Figure 6
Use by Other Businesses



Spsheets/Microcomputer Selection Factors

Responses to other spreadsheet choice-control factors are:

Adaptability/Flexibility: very important (82.2%), somewhat important (16.3%), and not important (.9%).

Integrated package: very important (21.4%), somewhat important (48.4%), and not important (30.2%).

Number of cells: very important (33%), somewhat important (57.7%), and not important (9.3%).

Conclusion

Analysis of the results of this study leads to several conclusions.

Spreadsheet-based conclusions

1. Developers of spreadsheet software who do not provide extensive vendor support will not loose their sales standing in the market. This conclusion is drawn from Figure 1 where less than 31% of major corporations rated "availability of vendor support" as very important in the purchase of spreadsheets.

2. The element of "compatibility" with other spreadsheet packages is less likely to prevent a particular spreadsheet from being purchased by major users. Figure 2 shows less than 38% of respondents rating compatibility as very important.

3. Companies will continue to purchase spreadsheets irrespective of cost but that cost should not be prohibitive. This is demonstrated in Figure 3 where more than half of the respondents indicated that "cost" is only somewhat important in the decision to purchase spreadsheets. This supports King's, 1985, suggestion that price should not be given too much weight in spreadsheet purchase decision.

4. A spreadsheet has to be easy to operate for major corporate institutions to purchase it. Figure 4 shows that more than 80% of the top 1,000 companies in the U.S. in 1987 indicate that

"ease of operation" is a very important factor in making spreadsheet purchase decisions.

5. Companies purchase a particular spreadsheets mainly because of its speed of operation and calculation. This is demonstrated in Figure 5 where almost 97% of the respondents agreed that speed is very important.

6. Companies do not generally buy a brand of spreadsheet because other companies are using that brand. They, however, consider "use by other businesses" as somewhat important in making their purchase decision. Nearly 35% responded that "use by other businesses" is not important (see Figure 6.)

Microcomputer-based conclusions

1. The brand of microcomputer procured by giant corporations in America is roughly a function of the type of "vendor support" provided by the manufacturers or distributors of that microcomputer. This fact is supported in Figure 1 by 65% and 28% who indicate that "vendor support" is both very important and somewhat important respectively.

2. Computers that are generally compatible with each other are more likely to be purchased than those that are not compatible. Figure 2 with 66% rating of very important for compatibility supports this conclusion.

3. Companies will buy the computers they need regardless of price though the higher the price the more cautious they may tend to be. A shown in Figure 3 less than 25% of respondents rated "cost" as very important.

4. Microcomputers that are easy to operate are more likely to be purchased by large corporations. Figure 4 shows almost 60% rating of very important and 40% of somewhat important to support this conclusion.

5. The higher the operating speed of a computer the more likely it is that major corporations will purchase it. This factor is rated very important by 58% and somewhat important by 41% of respondents as shown in Figure 5.

6. Corporations do not necessarily purchase a particular brand of microcomputer because that microcomputer is widely used by other businesses. They, however, do not completely discountenance "use by other businesses" as an unimportant factor in their decision to purchase hardware. As seen in Figure 6, only 25% rated this factor as very important and 43% rated it as somewhat important.

Implications

The study provides three frameworks for educational institutions to use when considering the purchase of microcomputers and spreadsheets. In the first framework, educational institutions should separate microcomputer and spreadsheet choice-control criteria before making their purchase decision. In the second framework, educational institutions should take microcomputer choice-control factors into consideration when making purchase decisions. In the third framework, educational institutions should consider spreadsheet choice-control factors when making spreadsheet purchase decision. It is possible that companies that do not consider vendor support to be an important decision factor have in-house technical support personnel.

Suggestions for Further Research

Small business enterprises and educational institutions can be studied using this survey. The small business population is a very important because small businesses recently provided more than half of the new jobs created in the U.S. according to Rachman and Mescon, 1987. Brand targeting strategies for word processing, dbase, graphics, and desktop publishing packages can be researched.

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Educational Business/Economics Application Software

Accounting Spreadsheets Using Microsoft Excel Millersville University of Pennsylvania's

Computerization of business administration majors does not require the traditional three credit course taught by either the computer science department or in the business school.Most business schools have long stopped requiring programming languages in favor of courses designed to familiarize the students with the more necessary applications of word processing, spreadsheets and data base. We determined that the three credit course in computer applications was not meeting our needs. The reliance on MS-DOS based systems caused the devotion of an inordinate amount of class time on mastering the computer, and only relatively simple examples of the applications were finally produced by the student. The student, upon arriving in the upper level finance or accounting course, did not have the tools to preform sophisticated spreadsheets or data base solutions. Our answer was the Apple Macintosh computer.

The Macintosh computer has an easy to learn interface. The student need only invest two to five hours to master the basics. In addition to the easy to learn interface, the software all follows similar formats, making the learning transferable from one software package to the next. Literally, students move from word processing to spreadsheets to data base without difficulty. Accordingly, the class time can be spent on the business applications and solutions, rather than answering the student's "computer questions."

One additional benefit of the easy to learn interface is the transfer of knowledge from one student to the next. Students enjoy the use of the computer for term papers and data analysis. Faculty are enjoying the benefits of term papers submitted with magazine quality type styles and graphics.

The Computerization Project

At Millersville University of Pennsylvania, we do not require any computer course outside of the sequence described below. We also choose to use the laboratory approach to computer availability rather than universal computer ownership. While the business department has chosen the Macintosh computers for the burden of computerization, all business majors get experience on MS-DOS in our English Department and use the IBM mainframe computers in upper-level courses, where appropriate.

The laboratory available for business assignments includes twenty-eight Macintosh computers, fourteen IBM computers, three dot matrix printers, one highspeed line printer, two laser printers, and three file servers (Two- Mac based, One- IBM based). This laboratory network allows very efficient management of student assignments and available software. It has increased security and cut down on lost software over the original "disk based" laboratory we ran for the first year of the project. All faculty in the department have at least one Macintosh computer in their office to facilitate working on the assignments and their own research.

Computerization begins in Principles of Accounting I, continues through other core courses: Principles of Accounting II, and Managerial Finance I, and concludes with the Management Information Systems course. The expectations increase from simple word processing through spreadsheets to data base.

As the course level increases, the expectations on the assignments increase. By the end of the process, students are creating spreadsheets and data base solutions which are authentic, and perhaps even marketable solutions.

In Principles of Accounting I, students are expected to have no computer background. This assumption is becoming increasingly unrealistic because of high school training, but we continue the assumption, none the less. The first assignment uses the "get acquainted software" provided by Apple Computer and does a complete job of initial training. We then use a program to familiarize the students with spreadsheet program Microsoft Excel. Our Excel introduction uses another Macintosh software package that has real potential, HyperCard. Students in this first course must produce one word processing document, taking advantage of some of the nice formatting options available on the Macintosh computer. They develop from scratch only one spreadsheet, a trial balance. This very simple spreadsheet does introduce them of all the basics of data entry, formula entry, and formatting and printing. The remaining assignments in this course use already developed spreadsheets. Using these spreadsheets, the student develops an appreciation for the power available, and by requiring some limited spreadsheet editing, they are exposed to more sophisticated formulas. The expectations in this course are only introductory.

Principles of Accounting II continues the process of a mixture of original spreadsheet development and the use of existing spreadsheets. The expectations are higher. For example, the students use spreadsheets to analyze cost behavior with regression and cost-volume-profit analysis. Graphics becomes a requirement because cost behavior lends itself to graphics. The course also makes use of a comprehensive master budget spreadsheet. Word processing is continued in this course by requiring assignments to be performed on the computer.

Managerial Finance I requires more sophisticated linked spreadsheets and very detailed graphic assignments. The assignments in this course can be divided into two categories, Theory of the Firm and Cash Flow Analysis.

The Management Information Systems core course continues computerization by emphasizing the use of data-base software. The students develop portions of an information system appropriate to their discipline. The course is making use of dBase III for the Macintosh. The emphasis is on data manipulation into formats suitable for decision making.

The Microsoft Excel Spreadsheets in Principles of Accounting I and II

The collection of spreadsheets available for the use in Principles of Accounting courses is extensive, giving each instructor plenty of flexibility. These spreadsheets include:

The business department developed these spreadsheets because of a lack of publisher support for the Macintosh computer. Presently

Financial Accounting Spreadsheets

A. Accounting Equations
B. Accounting Worksheets
C. Accounts receivable aging
D. Bank reconciliation
E. Depreciation
F. Discounted Notes Receiveable
G. Effective interest amortization
H. Inventory-FIFO/LIFO/Wt. Avg
I. Journal Entries-Financial Statements
J. Journal Entries-Trial Balance
K. Preferred Stock Dividends

Managerial Accounting Spreadsheets

A. Actual/Job Costing
B. Breakeven/chart
C. Breakeven
D. Capital Budgeting
E. FlexibleBudgeting
F. Master Budgeting
G. Present Value-Tables
H. Regression Analysis
I. Ratios
J. Tax

the majority of these spreadsheets are available through Prentice-Hall, Inc., as a supplement to the new Accounting, by Horngren and Harrison. In addition, all these spreadsheets are available for the Microsoft Excel package on the IBM.

Some of the spreadsheets are very simple as in the following spreadsheet that allows the student to practice the accounting equation.

File Edit Formula Format Data Options Macro Window

F4 =IF(F3<>"",F3,"")

Accounting equation

		53,800			B	= 100	+ 53,700
	Cash	Acc.Rec.	Off.Sup.	Land		Acc.Pay	O.L.Cap.
1	+50,000	A					+50,000
Bal	50,000						50,000
2	-20,000			+20,000			
Bal	30,000			20,000			50,000
3			+500			+500	
Bal	30,000		500	20,000		500	50,000
4	+5,500						+5,500
Bal	35,500		500	20,000		500	55,500
5		+3,000					+3,000
Bal	35,500	3,000	500	20,000		500	58,500
6	-2,700						-2,700
Bal	32,800	3,000	500	20,000		500	55,800
7	-400					-400	
Bal	32,400	3,000	500	20,000		100	55,800
8							
Bal	32,400	3,000	500	20,000		100	55,800
9	+1,000	-1,000					
Bal	33,400	2,000	500	20,000		100	55,800
10	+6,000			-6,000			

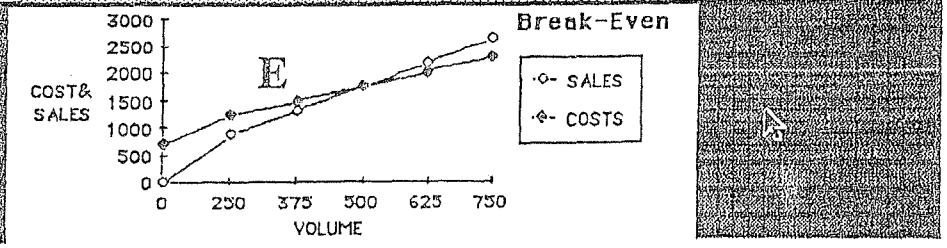
While other spreadsheets are more sophisticated and make use of Excel's fine graphics capabilities.

File Edit Formula Format Data Options Macro Window

B11 0

Break-Even

VARIABLE COST/Unit- IF KNOWN	2.1		ALSO OPEN BREAKEVEN CHART	
Selling Price/Unit-Please enter	$3.50	100%	Variable Costs in Total	
Cost of each item/Unit	A $2.10	60%	Direct Material	
Contribution Margin/Unit	$1.40	40%	Direct Labor	B
If Var. Cost/Unit is given it overrides total var.cost			Variable Indirect Manuf.	
Fixed Costs in Total			Variable Selling Expenses	
Fixed Indirect Manufacturing	$700		Variable Admin. Expenses	
Fixed Selling Expenses	B		Total Variable Costs	$0
Fixed Administrative Expenses			NUMBER OF UNITS IF KNOWN	15,000
Total Fixed Costs	$700		Break Even Dollars	$1,750
Enter Desired Net Income	0 C		Break Even Units D	500



Assessment of the Computerization Project.

We have not performed an exhaustive assessment of the project. It is our opinion that students are excited about the computer as a tool. They seek out opportunities to use the computer in their classes, in and outside of the business department. Seniors, who were not computerized through this project, have voiced regret over not having participated. The computerization of the business curriculum has also improved the image of the business department across the campus. Admittedly, our choice of the Macintosh is still viewed as eccentric. They will figure out sooner or later that all those nice term papers are being done in the business department's Macintosh lab.

Business Applications Software and Classroom Applications

Virginia L. Luizer
Kutztown University

ABSTRACT
The following is a summary of a workshop presented at the spring meeting of the Association of Pennsylvania Universities Business and Economics Faculty. The purpose of the workshop was:

1) to provide an understanding of the appropriate use of four types of business applications software (word processing, data bases, spread sheets, and graphics),

2) to compare two approaches (integrated and dedicated) to the packaging of the four business applications software , and

3) to investigate various classroom uses of business applications software, focusing on the knowledge which the student and faculty must possess in order for the student to gain an appreciation of the value of the computer as a tool.

At the workshop, most of the topics discussed were illustrated with the aid of a computer.

BUSINESS APPLICATIONS SOFTWARE

Business applications software can be divided into four types--word processing, data bases, spread sheets, and graphics. Each type of software is designed to aid the computer user with specific tasks.

Word Processing Software

Word processing software is designed to assist the computer user in creating and modifying documents. This paper is an example of the type of document the computer user can create using word processing software.

Word processing software is more than an alternative to a typewriter. It provides the computer user with the ability to make on-the-spot corrections, to identify alternative ways of verbalizing ideas, and to verify the accuracy of spelling and grammar. All of these tasks can be accomplished without re-typing or re-reading the document, and without paging through dictionaries and thesauruses. The use of word processing software can significantly reduce the time required to create a well-written document.

In addition to reducing the time required to create a document, word processing software can be used to alter documents. For example, the abstract of this paper could easily be moved to the end of the paper. Similarly, the title of this section could be centered without re-typing. These two revisions can be accomplished in only slightly more than the time required to print this document. The ability to alter documents without the need to re-type them is probably the most attractive feature of word processing software.

Data Base Software

Data base software provides an organized method for storing vast amounts of data. For example, a faculty member could use data base software to record the names of students, the grades each student earned on various

assignments, and a wide variety of other facts about each student.

In addition to providing an organized method for storing data, data base software allows the computer user to calculate a variety of summary statistics, to organize the recorded data according to a multitude of different schemes, and to display selected data. All of these tasks can be performed in approximately 10 to 20 minutes, depending on the complexity of the formulas involved.

Spread Sheet Software

This type of software presents the computer user with an electronic equivalent of a paper work sheet designed to facilitate the development of complex quantitative models. As with the pencil and paper version of the work sheet, the computer user must enter the data to be used by the model, and then develop the formulas required to implement the model. A forecast of cash flows is an example of a model which could be designed using a series of work sheets. The model used to forecast cash flow requires the preparation of a sales forecast, departmental budgets, a consolidated budget, a proforma profit and loss statement, and a cash flow forecast. The partial sales forecast, presented below, is intended to demonstrate the differences between a manually constructed work sheet and an electronic work sheet.

The data required to develop the sales forecast includes last year's sales, estimated growth rates for the coming year, and the portion of the year's sales earned in a given month (monthly indexes). Regardless of the type of work sheet used, the user must define and enter this data. After entering the data, a formula must be developed to calculate the forecasted sales. The formula used above is:

FORECASTED SALES = LAST YEAR'S SALES X (1 + GROWTH RATE) X INDEX

The final step, if using a traditional work sheet, involves utilizing the formula developed to calculate each month's sales, to record the results of the calculations, and to total the results.

Several advantages derived from the use of an electronic work sheet are noted below. First, since the user of the electronic work sheet records the formula as opposed to the result of the calculation, one advantage of the electronic work sheet is the elimination of arithmetic errors which may result in the need to re-work the entire work sheet. A second advantage, again resulting from the fact that only the formula is recorded, is that changes in any one of the assumptions will automatically be reflected in the work sheet. Finally, use of an electronic work sheet can significantly reduce the amount of time required to develop a quantitative model. For

	Sales Forecast	Assumptions
Year >	88	
	Last Year	Growth Rate
Product Standard	750,000	10.00%
Deluxe	800,000	15.00%

Sales Index — Monthly Indexes Must Total 100%

	Jan 88	Feb 88	Mar 88	...	Dec 88
Standard	15.00%	25.00%	5.00%		10.00%
Deluxe	10.00%	10.00%	5.00%		25.00%

****

Projected Sales

	Jan 88	Feb 88	Mar 88	...	Dec 88
Standard	123,750	206,250	41,250		82,500
Deluxe	92,000	92,000	46,000		230,000
Total	215,750	298,250	87,250		312,500

example, the user of the traditional work sheet would be required to make 24 separate calculations. The electronic work sheet user, on the other hand, enters the formula one time. The formula can then be copied to the remainder of the work sheet.

The advantages discussed above--namely, reduction in the time required to develop a work sheet, improved accuracy, and the ability to perform sensitivity analysis, enable smaller businesses to use quantitative models that, in the past, were too time consuming to be practical. As is the case with any tool, however, the electronic work sheet can be misused and actually reduce productivity. The most frequent misuse of electronic work sheets involves the application of sensitivity analysis. Frequently, the user becomes so involved with this type of analysis, that he completely loses sight of the validity of the assumptions being tested.

Graphics

Graphics software allows the computer user to use information from data bases or spread sheets to generate pictorial representations such as the one illustrated below.

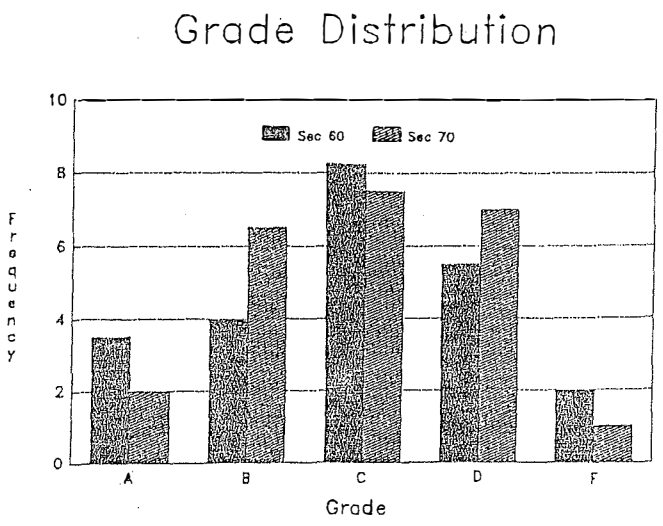
Because of the ease with which such graphics can be prepared, almost all formal presentations now include graphics. Another, benefit is that graphs can be used to uncover trends and relationships that might otherwise have been overlooked. That is, in addition to being used to communicate, graphs can also be used as an analytical tool.

APPROACHES TO PACKAGING BUSINESS APPLICATIONS SOFTWARE

A point often overlooked in most discussions of the advantages and productivity gains associated with types of business applications software, is that the benefits are dependent upon using the right tool for the right job and using the tool effectively. In fact, use of the wrong tool or ineffective use of a particular software tool can result in productivity losses. The computer user must understand the strengths and limitations of each tool as well as the mechanics of the software. In addition to choosing the right tool, the computer user will be faced with a choice between different methods of packaging these tools. The two most common methods of packaging business applications software are 1) to concentrate on a specific type of software (dedicated packages) or 2) to combine one or more of the types of software into a single package (integrated packages).

Dedicated Packages

Dedicated packages are designed to perform one task. Typically, this type of package will provide the computer user with many features. For example, a software package designed for word processing will provide the user with options which go beyond changing print styles and defining paragraph settings. The options provided may include displaying a draft copy on the screen, superscription of footnotes, including footnotes at the bottom of the page in which they appear, and the ability to include tables with



arithmetic calculations. A dedicated spread sheet package will automate complex procedures such as regression analysis and matrix operations. A dedicated database will usually provides the computer user with both a formal programming language and facilities which simplify the process of generating polished reports and programs.

There is, however, a price to pay in return for the wide array of choices provided by dedicated packages--complexity. The menus or languages associated with dedicated software packages can get quite complex and require a great deal of time to learn. A second disadvantage arises when an application which requires the use of more than one tool, i.e. a data base and a spread sheet. Developing a breakeven model is a good example of this type of situation. Part of the model involves collecting and storing historic data (a data base application), while another part involves the development of a quantitative model (a spread sheet application). Faced with this situation, the user of the dedicated package has two choices.

1) Weigh the need for spread sheet model building against the need for data management and choose one of the two packages.

2) Use the data base software to manage the data, and then translate the results into a form which is readable by the spread sheet software.

In either case, the computer user must be proficient with each of the two software packages involved.

Few business applications fall neatly into either the data base category or the spread sheet category. This creates a market for packages which are designed to accommodate more than a single application--integrated packages.

Integrated Packages

Integrated packages can be used to produce a document which includes portions of a spread sheet, data base, and graphics all on a single page. No translating procedures are required. More importantly, the applications may be linked. Linking applications enables changes made in one application to be automatically reflected in each of the remaining applications. In addition to the benefits derived from combining several tools, the user of an integrated package does not have to learn the mechanics of several different pieces of software.

The final advantage of the integrated package is directly related to the primary disadvantage of this type of software. Integrated packages are usually quite simple to use. This simplicity results from the fact that each of the individual tools are limited to basic operations. Typically, there are no report writing facilities, no program generating facilities, no automation of regression or matrix operations, etc.

When deciding which approach is best, the computer user must weigh his desire for simplicity against his need for features offered only by dedicated packages.

CLASSROOM USES OF THE COMPUTER

Regardless of the way in which the computer is introduced into a non-computer course, the overriding objective should be to convince the student of the computer's value as a tool. To this end, care must be taken to ensure that the student's experience is a positive one. Generally this means avoiding the frustration associated with 1) inadequate preparation, either on the part of the student or the faculty, and 2) inadequate facilities, either physical facilities or the lack of adequately trained consultants. The demands placed on both students and faculty depend upon task to be accomplished--promoting computer literacy or demonstrating the productivity gains which can be achieved within a specific discipline.

Literacy

One approach to utilizing the computer in the classroom, is to require that students prepare all papers and case studies using the appropriate computer software. Usually the goal associated with this approach is to promote computer literacy. This approach leaves the students largely on their own, both in terms of choosing the software and applying the selected tool. This being the case, the student should have "successfully" completed some type of introductory applications course. It should not be

assumed that any computer course will provide the required level of expertise. Most courses offered by computer science departments are not designed to provide more than an incidental exposure to business applications software. Instead, a full semester course designed to develop concepts common to all spread sheet, data bases, or word processing software, as well as to develop proficiency with specific packages, is desirable.

If the student has the appropriate level of training in this area, the demands on the faculty will be minimal. If either the student does not have the necessary skill, or if there are little if any trained consultants available, the demands on the faculty will increase.

Applications within a Specific Discipline

There are two ways of demonstrating the usefulness of the computer within a specific discipline--applying specific software or using fully automated packages designed to mimic the types of systems students will encounter during their careers.

Specific Software Applied

An example of applying specific software is the use of spread sheet templates designed to help students solve accounting problems. A template is a spread sheet for which the design has already been determined, but none of the formulas have been included and nothing has been automated. All of the responsibility for completion of the spread sheet is placed on the student. This approach requires essentially the same level of expertise as is required by the literacy approach. However, the demands on the faculty are likely to be greater. The faculty must be proficient with the software being used--at least to the point where they can thoroughly evaluate the templates and/or assignments, and answer questions regarding the use of the software.

Fully Automated Software

General ledger packages and menu driven linear programming packages are two examples of fully automated software. Typically these packages can be operated by students with little or no computer background. In fact, the limited demands placed on students represent the primary reason for choosing this type of software. In this situation, however, someone must stand ready to help students with hardware, software, and media problems. Unless there are a sufficient number of qualified consultants on staff, this person is usually the faculty member. In addition to the increased demands from the students, the faculty should realize that a good number of automated packages currently on the market are of dubious quality. This being the case, the faculty member should be capable of thoroughly testing all software being considered. Even if the software is of good quality, no software comes ready to use. If you are using a specific software package, Lotus or dBase, it has probably been prepared for you. This will not be the case when students purchase their own software. Typically, either the instructions for preparing the software are inadequate or the procedures cumbersome. Again the faculty member will be called upon to assist students with this task. Ironically, the simplest use of the computer will probably place the greatest demands on the faculty member.

In summary, any faculty member planning to use the computer as a supplement to a non-computer course must assess his students' level of expertise, gear the applications to that level of expertise, and possess enough expertise to evaluate software and/or assist the students in their use of the software.

SUMMARY

While the use of the computer can result in significant increases in productivity, either as a personal tool or in the classroom, there are a number of factors to consider. These factors include which tool to use, the specific type of package which best fits your needs, and the level of expertise required by both the faculty and the student. Making decisions relative to each of these items requires more than the ability to use a particular software package. Good decisions require not only a basic knowledge of the appropriate uses of the four types of business applications, but also the strengths and weaknesses of the software packages being considered.

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