The Evolution of Economics-Based Empirical Research in Accounting

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by
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1. INTRODUCTION

An enormous change has occurred in accounting research since I first came to this country in 1966. This change is well illustrated by the difference in the composition of the participants at the first Chicago Annual Conference on Empirical Research I attended (1967) and the most recent Accounting Conference I attended at the University of Chicago, the 1982 Conference on Current Research Methodologies in Accounting. The first conference included the Managing Director of the AICPA among those presenting papers and among the discussants, three accounting practitioners, two finance practitioners, one economist and one behavioral scientist. The most recent conference included a well known economist and a well known behavioral scientist among those giving papers and three top financial economists and a behavioral scientist as discussants. Further, several well known economists even paid their own expenses to attend the Conference (including my own colleague Bill Schwert). No practitioners (finance or accounting) appeared on the program in 1982. (1)

Accounting research has attained a degree of academic respectability among economists far greater than I would have thought possible in 1967. But, at the same time it has become more removed from the practitioner. What are the reasons for those changes? First, accounting research has become much more scientific; more rigorous and sophisticated in its analysis and empirical work. This has gained the respect of economists, but at the same time it has made it much more difficult for practitioners to read and understand the literature. (2) Second, the topics addressed by accounting researchers are very important to the economists' new found interest in the theory of the firm. This has attracted the interest of the economist, but the result of this recent shift in topics has not yet begun to be translated for professional consumption. Practitioners are still confronted with the view that the EMH implies that if accounting procedures do not affect taxes they do not affect stock prices. (2)

The application of scientific methodology to interesting accounting topics has not only gained the respect of economists, it has produced some robust empirical results which were previously unknown (to me at least). An example is the result that the higher the leverage of a firm the more likely it is to use accounting procedures which increase the present value of reported earnings. Such results, together with the insights produced by the analysis, suggest that the current thrust of economics-based accounting research will provide a better explanation for accounting practice. If it does, I expect practitioners to be more actively involved in the accounting research process.

The economics-based empirically-oriented research literature which attracted top economists to the 1982 Chicago Conference did not emerge full blown, it was an evolutionary process. The process followed naturally not only from the greater training accounting researchers received in the discipline of
economics, but also (from the mid-60's on) from those researchers' exposure to the oral empirical tradition, to the research methods used in science.

This exposure to the research methods of science came not from formal courses in scientific method, but from exposure to numerous workshops where empirical studies in finance and economics were criticized and from the advice of experienced empirical researchers. However, I would hasten to add that as the area has matured, or better, perhaps, as some of us have grown old, accounting empiricists have read the philosophy of science literature. That is appropriate in my opinion because an understanding of that literature is difficult unless one has had experience of empirical work.

The objective of this talk is to trace the evolution of economics-based empirical research in accounting and to relate it to the oral tradition, as I perceive it, and to developments in financial economics. An understanding of this evolutionary process is important to the practitioner who wants to understand the empirical literature in accounting. It is crucial to the accounting student who aspires to become a successful researcher. An understanding of the process enables the researcher to identify and pursue important new research topics, rather than replicate the studies of others.

Before I trace the evolution of the empirical work and relate it to the oral tradition, let me give a brief outline of my view of theory under the oral tradition.

2. THE NATURE OF THEORY

a) Objective of theory.

Under the oral tradition a theory is designed to:

i) **explain** associations between observable variables, for example between firms' debt/equity ratios and their use of straight-line or accelerated depreciation. Such explanations allow one to attach causality to a variable (e.g., that differences in debt/equity ratios cause differences in depreciation methods);

ii) **provide predictions** about relationships not yet observed. For example, before investigating and observing stock prices, some researchers predict based on their theory that a change to straight-line depreciation, per se, does not affect stock prices because it does not affect the firm's cash flows.

A theory of accounting should explain why different firms and industries use different accounting procedures. For example, it should explain why firms in the mining and construction industry recognize profit at production and other firms recognize profit at sale. Further, it should enable one to predict which procedures firms with particular characteristics will use.

b) Importance of theory

The corporate manager trying to be successful in his own career often has to make accounting decisions, for example, the choice between accelerated and straight-line depreciation. In making those decisions, the manager would like to know the effect of his choice on his career. He wants to know the answer to **what if** questions. If he chooses accelerated depreciation, what is its effect on the firm's cash flows, its stock price and his own welfare. The manager will have his own ideas about those effects and will make decisions on the basis of those ideas. However, if a theory is produced which "better" predicts and explains the effects than his own implicit theory, he will tend to use the new theory. If he doesn't, he will tend to be surpassed by managers who do use the new theory. So "better" theories are important to the manager.

The public accountant would also like to know the effect of accounting decisions such as the choice of
accelerated or straight-line depreciation. If he is to recommend the method to a client he would like to know the effects of the method on the client and himself.

Those who would demand accounting theories include lending officers of financial institutions, financial analysts, investors and those who regulate accounting and promulgate accounting standards. I think the FASB members would have liked to be able to predict the reaction to FASB Statement number 8.

c) The success of theories

How do researchers determine which are the "best" theories? A simple answer to this question is that in the long term the researchers do not have the choice, the users will determine which theories are successful.

Users of theories will not wait for a perfect theory (i.e., one which predicts and explains every observation). They will choose the one out of the available imperfect set which is best for them. For example, suppose a given model of bankruptcy predicts a firm will go bankrupt within a year and there is substantial evidence that model's predictions are right 95 percent of the time. Would a lending officer who, before learning of the model's prediction, predicted a probability of bankruptcy of .01, ignore the model's prediction of bankruptcy? No. He'll use the model if it is more accurate than his own predictions and weigh the expected costs of type I and type II errors in making his investment decision.

The successful theory is the one which is most useful to users. As Popper (1959, p. 108) writes: "We choose the theory which best holds its own in competition with other theories; the one which, by natural selection, proves itself the fittest to survive." This suggests that there is no natural significance level for hypothesis testing such as the commonly used five or 10 percent. If there are no better theories available 20 percent could be acceptable. The choice is always between imperfect theories or between an imperfect theory and no theory at all.

The acceptance of imperfect theories by users is not unique to the social sciences. For example, Newtonian physics are still used for many purposes. And, theories of aerodynamics were used despite the fact that until recently they predicted that the bumble bee would not fly. The issue is one of costs versus benefits to the user.

d) Role of a Meory's assumptions

In developing a theory researchers make assumptions, define variables and then use logic (including mathematics) to derive relationships between variables. Finally, substantive hypotheses are derived for empirical testing. Of necessity assumptions are not completely realistic. Theories try to generalize across more than one observation, so they abstract from certain characteristics of variables and concentrate on others. In choosing assumptions the researcher tries to capture the essence of the Phenomena. For example, the assumptions of perfect competition while not perfectly descriptive may capture the essence of the competition among a large number of traders in the commodities markets and as a result produce a theory which has substantial predictive and explanatory power for many purposes.

Because of their abstractions, all our theories in economics and accounting will not explain every observation. We will always be able to find contrary examples. This is something non-empiricists and practitioners find very hard to understand.

Assumptions are very important in developing a theory. Contrary to Friedman (1953) we do not have to worry as to how descriptive they are because that will affect their ability to predict and explain phenomena.

e) Role of mathematics
The use of mathematics, per se, is not a criterion in determining the success of a theory. Mathematics is one way of applying logic to the assumptions and definitions to derive propositions. An important criterion in choosing among theories is simplicity. If a point can be made without complex mathematics it should be made in that fashion. Complexity, per se, is "bad" because it imposes costs on the user of a theory. Unless the complexity provides additional insights or testable propositions it should not be employed. This point is frequently overlooked by our colleagues involved in model building.

f) Relationship between theory and normative propositions

Over the years accounting research has been driven by the desire to make normative propositions, to answer the question, what accounting method should be used? Pressures have been put on the SEC, the CAP, the APB and the FASB to reduce the diversity of accounting procedures and this led the researchers of those bodies to seek guidance from accounting researchers as to what procedures should be allowed. Likewise as indicated previously, corporate managers also seek the answer as to what procedure should they use.

As accounting researchers have come to recognize (see Beaver and Demski), theory alone cannot answer these questions. In order for the theorist to answer his question, the user (FASB or manager) has to specify the objective function. This makes the question a "what if" type and theory can be used. If the manager specifies the objective as maximizing the value of the firm, an accounting theory which explains the effect of accounting methods on stock prices can provide an answer. The "what if" question is testable and evidence can be applied.

Having briefly outlined some aspects of theory as I see it viewed in the oral tradition, let me now turn to the evolution of empirical research based on economics.

3. THE EVOLUTION OF EMPIRICAL RESEARCH

Accounting research has always tended to borrow from economics rather than lend to economics and the beginning of economics-based empirical research in accounting is no different. There were a smattering of economics-based empirical studies appearing in the mid-60's on income smoothing (Gordon, Horowitz and Meyers, 1966) and on financial distress prediction (Beaver, 1966) and even one on the relationship between earnings and stock prices (Benston, 1967) but the paper which generated accounting researchers' interest in empirical work based on financial economics was Ball and Brown (1968). A recent informal survey of leading accounting academics by Dyckman and Zeff (1983) found that Ball and Brown was cited as one of the most important contributions to accounting in the last two decades more often than any other article. In fact, it received more than twice as many votes as its nearest competitor.

The Ball and Brown paper led to an outpouring of economics-based empirical work in accounting. The paper was originally rejected by the Accounting Review because it was not an accounting manuscript. Hence, it was accepted by the Journal of Accounting Research (see Dyckman and Zeff, 1982, p. 22) and the flood of research which followed helped carry the JAR to prominence as the leading academic accounting journal. In fact, I suspect the JAR played an important innovative role in developing empirical research.

Given the role of the Ball and Brown paper in generating research it is instructive to evaluate the paper in terms of the oral tradition on the evolution of research.

a) Ball and Brown (1968)

In the 1960's most of the papers published in the Accounting Review or the JAR were what Dyckman and Zeff (1983) call "a priori" research. They were concerned with arguing for or against particular accounting procedures. The best of these papers assumed an objective function, assumed that certain
hypotheses about the use of accounting data and other phenomena were correct and attempted to logically derive which methods would maximize the objective function. Of course, given their objective function and that their logic is correct, the prescriptions of these papers (e.g., current value accounting) are only as good as the weakest of the hypotheses underlying them. If one hypothesis is not descriptive, the prescriptions would not achieve the objective.

From the early to mid-60's on some Ph.D. programs placed emphasis on finance and economics training for their accountants. Ball and Brown recognized from their finance training that many of the "a priori" papers relied on an hypothesis that was at odds with an hypothesis which had a great deal of supporting evidence in the financial economics literature the efficient markets hypothesis. In particular, many accounting researchers assumed that published accounting numbers are the only source of information on a firm. Hence, they assumed managers could adopt an accounting procedure which increased earnings but didn't affect cash flows (for example, a switchback to straight-line depreciation for reporting) and increase stock prices. In essence, share prices would react mechanistically to published earnings. The essence of the Efficient Markets Hypothesis is that there is competition for information in the capital markets and information which is readily available to a large number of people (such as a change in depreciation methods) which would be recognized and impounded in the firm's share price. Hence, in assessing a firm's earnings the stock market would discount the effects of any change in depreciation methods if it were announced. If it weren't announced the market would make a prediction as to the likelihood the firm had changed and its estimate, on average, would be correct.

The efficient markets hypothesis and the mechanistic hypothesis are competing hypotheses about the reaction of stock prices to accounting earnings. Since they give different predictions for those reactions, under the oral tradition the expected procedure for Ball and Brown to follow would be to test which reaction is consistent with the evidence, to discriminate among the theories. But, they didn't do this. Instead, they examined the stock price reaction to earnings announcements and interpreted the results assuming the Efficient Markets Hypothesis was correct. They learned that changes in earnings and stock prices were highly associated, that much of the stock price change occurred before the announcement and the rest at the time of the earnings announcement, but they didn't discriminate between the hypotheses.

One can speculate why Ball and Brown did not attempt to discriminate. With hindsight, it appears obvious that they should have tried. However, the paper was partially inspired by a paper in finance by Fama, Fisher, Jensen and Roll (1969) which used a new event methodology to look at the stock price effect of stock dividends. In their haste to introduce the new methodology into accounting, Ball and Brown may have overlooked the step of discriminating between the competing hypotheses.

While Ball and Brown did not discriminate between the competing hypotheses they did follow a rule which is important in first investigations of an area-start with simple aggregate models and look for large aggregate relationships first. Additional complexity increases the number of assumptions necessary and the likelihood of introducing assumptions which are not descriptive. Under the Efficient Markets Hypothesis the market reacts to unexpected earnings on the announcement date. Hence, Ball and Brown required a model for the market's expectation of earnings. They chose a very simple model - the earnings are expected to be the same as the earnings of last year. With hindsight we know that is a very good model for predicting earnings, and had they chose a more complex model they might not have observed the expected relationship between earnings and stock price. (4)

Attempts to remedy the failure of Ball and Brown to attempt to discriminate between the mechanistic and Efficient Markets hypotheses were eventually forthcoming in 1972 in the studies of Ball and Kaplan and Roll. These were followed by a whole spate of studies of the stock price effects of changes in accounting techniques.

b) Studies of changes in accounting procedures
Ball and Kaplan and Roll attempted tests which would directly discriminate between the mechanistic and Efficient Markets hypotheses. The basic proposition was that changes in accounting procedures such as switchbacks to accelerated depreciation for reporting purposes do not affect cash flows and therefore under the Efficient Market Hypothesis should not affect stock prices on average. Under the mechanistic hypothesis such changes would affect stock prices in the direction the change affected earnings. If it increased earnings stock prices should rise, if it decreased earnings stock prices should fall.

Despite their conclusions to the contrary, the Ball and Kaplan and Roll studies did not distinguish between the two hypotheses. The studies have too many methodological problems (see Watts and Zimmerman, 1983) for us to discuss here, but one important defect is related to what is called an "ex post selection bias." Both studies found that firms which change procedures have on average been performing poorly over a long period of time. By selecting firms which change, you select losers. However, Ball's evidence indicated that firms which switch to LIFO have been superior stock price performers in the year before the change. Later studies confirmed that LIFO switchers are also superior earnings performers. Thus, in looking at the stock price effect of any particular type of procedure one would want to adjust for the earnings announced at the same time. The early studies did not make that adjustment.

These studies showed us that discriminating between the two hypotheses was not easy. It emphasized that theories are not developed and tested in any one study. Patterns only begin to emerge from a series of studies. Hopefully, each study learns from the studies which precede it. Ball and Kaplan and Roll narrowed in on the discrimination among theories neglected by Ball and Brown. Later studies try to remedy the lack of earnings control and problems which were indicated by the Ball and Kaplan and Roll studies -- it is an iterative process. The journey has to begin with one small step and Ball and Brown was that step.

The Ball and Kaplan and Roll studies and those which followed began to raise even more serious questions about accounting. Those studies were aimed at discriminating between an hypothesis for which there was considerable empirical support in the finance literature and an assumption of the "a priori" accounting literature. In that sense, they served to eliminate non-descriptive hypotheses from accounting theory. However, with that non-descriptive hypotheses they eliminated explanations for why managers choose particular accounting procedures. As a result they left a vacuum, they did not provide any explanation for the choice of accounting procedures. The finance theory underlying most of these researchers' view of accounting was the capital asset pricing model. In that model information is costlessly available to everyone and there are no costs of organizing firms or contracting, In short, there is no role for accounting. Accounting is irrelevant.

The preceding conclusion is what practitioners, forced to confront the Efficient Markets Hypothesis studies, regard as an implication of that hypothesis. It is not. It is the CAPM and the Modigliani and Miller (1956) worlds which led to the interpretation that accounting procedures do not have cash flow effects and therefore do not affect stock prices. The Efficient Markets Hypothesis is an hypothesis about the level of competition in the capital markets and does not assume no cash flow effects for accounting procedures.

For an accountant trained in the oral tradition the vacuum left by the assumptions of the change studies was intolerable. Accounting and auditing existed for centuries before they were required by law. Therefore under one of the most useful tautologies in science (the survival of the fittest -- see Jensen, 1983) it must have some benefits. Further, in examining Kaplan and Roll's changes we found whole industries (paper and steel) changing depreciation methods in one year. Such systematic change suggested some systematic benefit to the managers.

One alternative is that managers obtain some satisfaction out of changing accounting methods. However, that seems unlikely and empirical work has taught us that explaining phenomena in terms of
individual's preferences is unlikely to produce predictive theories. The other alternative is that accounting procedures have cash flow effects.

Fortunately, at the same time as accounting researchers were undergoing a search for cash flow effects of accounting procedures, financial economists were engaged in a similar search. The Miller and Modigliani papers had eliminated the fuzzy logic that had previously supported the notion of optimal debt/equity ratios. But, financial economists still observed that debt/equity ratios varied systematically across industries (e.g., utilities have much larger leverage ratios than computer software companies). This led to the introduction of costs into the finance literature to explain optimal debt/equity ratios. The first was the cost of bankruptcy. Then the costs of contracting were introduced. Together with taxes these costs could explain cross-sectional variations in debt/equity ratios.

The introduction of the costs of contracting provided a potential explanation for changes in accounting procedures and for there being stock price effects of those changes. They opened up the potential for a theory of accounting in the absence of government regulation. They could not explain the SEC's ASR's and Standards issued by the FASB. However, at the same time as these costs were introduced, the interaction of the empirical evidence and the normative demand for prescriptions for regulatory purposes was producing a fledgling theory to explain the effect of regulation on accounting practice.

c) The effect of the normative demand on accounting theory

Prior to Ball and Brown and the Efficient Markets Hypothesis, accounting researchers had justified the regulation of disclosure in terms of the managers' monopoly over information on the firm, naive investors, the claimed mechanical relationship between earnings and stock prices and other arguments which failed under the Efficient Market Hypothesis. Leftwich (1981) gives a full explanation for the failure of each of these arguments, but a notion of why they fail can be obtained by considering the argument that the diversity of accounting procedures enables managers to mislead investors.

If the capital market has rational expectations, as implied by the Efficient Markets Hypothesis, its assessment of the implications of each firm's accounting numbers for the value of the firm will on average be correct. Hence, the investor can protect himself against the effects of diversity by holding a portfolio of securities so the markets' errors in expectation will average out. The market price of securities will adjust for the diversity of procedures and managers cannot systematically use that diversity to mislead investors. If you want to protect the small investor, require him to hold a descriptive portfolio rather than regulate disclosure.

The demand for theories to support regulation led to accounting researchers adopting arguments from economics which are consistent with the Efficient Markets hypothesis. These arguments are market failure arguments. A market failure exists when the quantity or quality of a good produced in a free market differs from the supposed social optimum. The social optimum is defined in terms of some social welfare function. Optimum is only attained if the price of good produced equals their social marginal costs. Individuals will produce a good to the point where their own private marginal benefit equals their private marginal cost. If private costs are less than social costs, too much will be produced (overproduction) and if private benefits are less than social benefits, too little will be produced (underproduction).

An example often used to demonstrate a market failure is that of the bee keeper and apple grower. A bee keepers keeps his bees in a field adjacent to an apple orchard and the bees pollinate the apple orchard. The bee keeper isn't paid for this pollination service so he makes his decision on how many bees to keep and how much honey to produce ignoring the benefit of the pollination service. As a result he under produces. Social benefits are larger than private benefits.

Two types of market failure arguments have been made in accounting, the public good argument and the signalling (or speculation) argument. The public good argument is the bees argument. Information in accounting reports provides benefits to investors other than the shareholders who pay for it. Those
other investors receive the benefit for free. They can read the information in the *Wall Street Journal*. Because shareholders are not rewarded for the information produced for outsiders their marginal benefit from the information is less than the benefits to society, hence there is an *underproduction* of information.

The signalling problem involves situations where one party to a transaction has more information than another. As a result an individual who has information that he is more productive or a manager who has information that his firm is worth more than its current market value engages in costly underproductive efforts to discriminate him or his firm. There is *overproduction* of information.

The presentation of these arguments led to further analysis in economics and it was perceived that once contracting and information costs are considered it is not clear there is a market failure. For example, consider the bees argument. Why doesn't the bee keeper charge the apple grower for the bees' service? Presumably because it is too costly to write and enforce those contracts. Given those costs, regulation can only improve welfare if the government can, through its regulations, achieve the same or higher level of production more cheaply. The question becomes one of relative costs of government and private actions. "A priori" it is not clear that government action is cheaper.

Disillusionment with these new rationales for regulation led economists to ask whether in practice regulation was designed to remedy market failure. They looked at the regulation of such industries as the taxi cab industry and found that regulation was very difficult to explain in terms of a market failure. What was the market failure in taxi cabs? These questions led economists to consider the government not as one person, but as a set of interactions among individuals who are all motivated by self-interest. Politicians are considered to be no different from businessmen in that they also maximize their utility. Politics itself is viewed as a competition for the use of the coercive power of the government to maximize self-interest.

The disillusionment with the view of government as an individual interested in remedying market failures and maximizing social welfare and the alternative view of government as a competition among individuals has been adopted by some accountants who have begun to use it to try to predict and explain accounting practice to the extent it is affected by regulation. In that view of the political process, information costs enable accounting procedures and standards to affect the outcome of the competition for the use of the coercive power to transfer wealth. As a consequence, accounting procedures can affect a firm's cash flows.

### a) Summary of the evolution of empirical research in accounting

From the preceding we observe the influence of financial economics and industrial economics on the development of accounting research. The empirical work in accounting which followed from the development of the Efficient Markets Hypothesis and the CAPM in finance led to the discarding of old theories about the relationship between accounting procedures and stock prices. However, the CAPM world left no place for accounting.

Fortunately, at the same time, financial economists realized that the CAPM and the Miller/Modigliani world (even with taxes) gave no explanation for systematic variations in debt/equity ratios and other financial policies. They introduced the costs of contracting as a factor which, with taxes, could explain those variables.

Contracting costs also enable accounting procedures to have cash flow effects and therefore could also explain cross-sectional variables in accounting practice and why firms and industries change accounting procedures. As a consequence, accountants eagerly adopted contracting costs as an explanation for accounting; as a building block in an accounting theory. As we shall see that role for accounting is essentially the old stewardship function which was given prime place in early accounting texts.

At the same time as the contracting explanation for accounting was being developed, developments in
the economic analysis of government regulation were also producing a means by which accounting could affect cash flows (i.e., via its effects on government regulation). Accountants also adopted this potential explanation for the choice of accounting procedures.

4. A VERY BRIEF OUTLINE OF THE ACCOUNTING THEORY BUILT ON CONTRACTING AND POLITICAL COSTS

a) Contracting

In the last five years much research has gone into development of a theory of accounting based on contracting costs. This research has taken two major complementary directions. One is a mathematical modelling approach, the other is an empirical approach. Because of the limited time and my relative abilities I shall summarize only the empirical approach.

Under this approach there is no such thing as a firm. Instead it is a collection of contracts between various parties, shareholders, bondholders, managers, employees, suppliers, customers, etc. By working together the parties can increase the size of the pie to be split amongst them. However, the individual parties can also take opportunistic actions which are designed to increase their share of the pie at the expense of the size itself. The contracts between the parties are designed to encourage value increasing actions and discourage opportunistic actions.

The contracts do not emerge by accident. In capital markets characterized by rational expectations, on average the price of share of a newly floated firm will reflect the opportunistic actions the market expects the promoter/manager to take after the firm goes public. Hence, the promoter bears the effect of those actions on the value of the firm in a reduced selling price for the shares. This encourages him to write contracts which restrict those actions. The contracts take the form of the corporate by-laws, incentive compensation schemes, etc. Likewise bondholders will be price protected and this will encourage managers to write debt contracts which also restrict their actions. In general, the losses which occur by opportunistic actions encourage all parties to try to contract to restrict those actions.

Contracts will not be expected to be effective unless they are monitored and enforced. Herein enters accounting and auditing. Accounting numbers are used to restrict actions in by-laws and debt contracts and are used to encourage the manager to maximize the value of the firm in compensation plans.

Different accounting procedures can be optimal for different firms. To illustrate this consider a sand mining firm I audited in Australia. That firm prepared weekly financial statements based on the recognition of profit at production. To avoid problems with the auditors they would have a ship load all their inventories at the end of the fiscal year so that the production basis produced the same net income as the sale basis. When I asked the controller why they used the production basis he pointed out that they had contracted with DuPont for the sale of all of their production of their main product, titanium dioxide, for several years into the future at the prevailing world price. The major variables the managers could control were the level and cost of production. So as a result they had a bonus scheme based on profits recognized at production which went all the way down to the foremen. The controller's argument is sensible, but imagine what would happen if we implemented recognition of profit at production and a bonus scheme in a normal manufacturing firm. The manager would have every incentive to produce for inventory and no incentive to sell. The results would be disastrous.

From the preceding example you can see that a change in an accounting procedure could potentially affect the value of the firm; the size of the pie. Changes in accounting procedures can also affect the size of the pie, the share of one part to the firm. For example, a manager could change accounting procedures and increase the size of his bonus which depends on accounting numbers, if the compensation committee of the board of directors does not always adjust bonuses for changes in accounting techniques. If the manager is successful his wealth is increased and the shareholders' reduced.
The preceding examples only provide a small extremely simplified glimpse of the volume of analysis underlying the contracting effects of accounting procedures, but they should be sufficient to explain how accounting procedures can have cash flows or wealth effects.

b) Political Process

The analysis of the political process is not as well developed as that of the contracting process. However, as the contracting effects of accounting procedures depend on the costs of contracting, information and monitoring, the political effects of accounting procedures depend on the costs of forming coalitions and costs of information in the political process. The basic proposition is that the incentive to gather information in the political process is less than in the market process, so that those costs become very important. To illustrate this point consider a firm whose management is inefficient. Individuals in the market have incentives to invest in gathering such information because they can, by buying shares of the firm, assuming control and changing the management's policies, capture the gain from elimination of the inefficiencies. Those individuals could be wealthy individual entrepreneurs (e.g., the Pritzkers) or managers of corporations whose compensation is highly dependent on their corporation's share price (e.g., by options).

Now consider an inefficiency in government. For convenience assume that the City of Rochester provides a garbage collection service which has a market value of $750,000 but the service costs the city and the city charges the taxpayers $1 million for the service (ignore any tax deductibility). There is an inefficiency of $250,000 a year, the present value of which will be impounded in the market value of land in the city. Can any individual gain the present value of the $250,000 by discovering the inefficiency? No! To capture that value the individual would have to buy all the land in Rochester (to capture the increase in value when rates are reduced), then bribe enough voters to have the garbage service and the $1 million charges eliminated. The relative cost of performing that feat is prohibitive. Consequently, individuals will not invest as much in learning of these inefficiencies as in learning of undervalued corporations. The incentives are not as great. If we extend the problem to the State and Federal government the likelihood of individuals being able to capture the benefit of eliminating inefficiencies is even smaller and the incentives poorer.

Of course while taxpayers may not be informed of the benefits from eliminating the garbage service because it doesn't pay them individually, the union of municipal employees who run the garbage trucks will be informed as to the costs to them of the service being eliminated. The relative amount they stand to gain per person by being informed is more and because the union is already organized the marginal cost of acquiring information and lobbying is much less. Hence, any politician considering making the inefficient garbage collection an issue stands to lose the votes of the municipal employees without gaining many votes from taxpayers (who rationally discount his story).

Given these information costs, accounting can play an important role in the political process. It is used in many situations to regulate price (e.g., utilities). Further, reported profits affect the likelihood of costly government regulations and taxes being passed. As a consequence, changes in accounting procedures and standards can affect a firm's cash flows.

As an example, consider the release of the third quarter profits of oil companies in 1979. At the time of the release of Exxon's profits the House had decontrolled the pump price of gas. After the report of a 200 percent increase in Exxon's profit over the third quarter of 1978, profits which the media labelled "pornographic," controls were reimposed on the pump price.

An explanation of the article in Barron's on October 29, 1979, suggests that much of the increase in Exxon's profits was due to accounting standards rather than changes in Exxon's cash flows. In July of 1979 the FASB (in FASB Statement No. 31) had ruled that certain deferred taxes on oil inventories forgiven by the British government had to be brought into the third quarter earnings of the oil firms. The present value of these deferred taxes was undoubtedly much less than their book value. In addition, part
of the third quarter profits were due to exchange gains under FASB Statement No. 8.

Exxon did not try to explain to the voters that much of their profits were just book despite the effect of the profits on government action. The individual voter has little incentive to be informed and as we all know the cost of understanding FASB statements is large to accountants let alone a layman.

The preceding example gives an idea of the way accounting procedures and standards can affect cash flows via the political process. It is a simple caricature and does not capture the full subtlety of the arguments, but it does convey the primary idea.

5. EMPIRICAL REGULARITIES FOUND IN TESTING THE CONTRACTING AND POLITICAL COST THEORIES OF ACCOUNTING

Under some very strong simplifying assumptions testable propositions or hypotheses have been derived from the theory of accounting outlined above. Two of those hypotheses have been consistently confirmed by empirical studies (see Watts and Zimmerman, 1983, Chapter 11).

The first of those is the one mentioned in the beginning of the talk, the higher the firm's debt/equity ratio the more likely the firm is to choose accounting procedures which increase the present value of reported earnings. This association is predicted on the basis of debt contracts. Basically firms with higher leverage have incentives to be closer to the constraints in the debt agreements, including the constraint on leverage and are therefore more likely to have to use earnings increasing procedures to avoid default.

The second hypothesis which has been consistently confirmed is that the larger the firm the more likely the firm is to use and lobby for accounting procedures which reduce the present value of reported earnings. This association is predicted on the basis of the proposition that large firms are more susceptible to wealth transfers in the political process and therefore have a greater incentive to reduce reported profits to reduce attention from the media. There is a threshold effect in this result (i.e., only firms above a certain large size level exhibit the tendency). In addition the results suggest that the association is primarily driven by the oil industry (see Watts and Zimmerman, 1983, Chapter 11).

Another hypothesis for which there is some supporting evidence is that managers influence the firm's net accruals (the difference between net income and operating cash flows) in a manner consistent with them maximizing the present value of their bonuses (Healy, 1982).

Empirical research testing these hypotheses is in the early stages and is relatively crude. It is possible that the associations found are the result of forces other than those hypothesized. However, the observation of empirical regularities in accounting procedures so early in the literature's history does suggest that the research will be very productive.

6. SUMMARY AND CONCLUSIONS

The history of the evolution of economics-based empirical research that I have related to you is very selective. I concentrated on a very narrow group of the empirical studies applying financial economics to accounting following the Ball and Brown paper. There have been several other avenues of research apart from the stock price effects of changes in accounting techniques including large literatures on the time series of accounting numbers, on the prediction of financial distress, on the association between accounting numbers and measures of risk and on the information content of earnings, among others.

The narrow concentration has been a deliberate attempt to focus on how the research has evolved, how the conclusions are based on aggregate data rather than single observations, and on the studies in general rather than one study, how one study builds on another and how accounting follows the trends in economics, particularly financial economics.
My intention has been to give a "feeling" for the research process to those involved in the process and to give the beginnings of an understanding of the process to practitioners. I hope I have had some success.

FOOTNOTES

(1) The absence of practitioners from the Chicago Conference in 1982 was partially due to the nature of the topic, but the decline in the number of practitioners appearing at the influential Chicago Conference is well documented by Dyckman and Zeff.

(2) Oscar Gellein, a retired FASB member, recently wrote "standard setters and auditors, despite considerable efforts, on the part of some at least, to understand the results, have not been able to reach a level of understanding sufficient to establish confidence in the results... They wonder because they do not understand. They do not understand partly because what they read is not geared to their training and experience.... This is a plea, however, for attention by EMH researchers to ways of communicating with lay parties who are very much interested in the research." (Gellein, 1981, p. 49)

(3) Note Gellein's plea in fn. 1, above.

(4) The lack of association Benston (1967) found between earnings announcements and stock price changes can be partially attributed to overly complex earnings expectation models. Ball and Brown did have some evidence of the predictive ability of this model from the evidence in Brown and Ball (1967).