

## POSITIVE ACCOUNTING THEORY: A REVIEW\*

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### Abstract

Watts and Zimmerman's *Positive Accounting Theory* provides a refreshing, controversial and important contribution to accounting thought. It is important because of its vigorous emphasis on the entity's actual choice of financial accounting technique (or, more broadly, financial reporting activity). It is controversial because the theory and empirical techniques it conveys are not fully developed. It is refreshing because it challenges us to expand our thinking about the nature of accounting institutions.

In this essay, I try to document these claims about the content and significance of *Positive Accounting Theory*. The first section presents my interpretation of the work. The next section lists some concerns which I feel are important in consuming the work and in providing directions for continued labor. The third section discusses some unusual strengths in the work, while the final one provides some speculation about where accounting thought might next venture.

Before proceeding, though, a *caveat emptor* warning must be issued. This essay presents both aspects which I learned about and also those which I worried about while consuming *Positive Accounting Theory*. It is an experiential report.

### AN INTERPRETATION

The central theme in *Positive Accounting Theory* is choice of accounting method. Empirically, the work focuses on financial accounting method as a dependent variable. Theoretically, the work stresses the identification of the circumstances which produce a particular choice of financial accounting method. To illustrate, we want to predict choice of inventory method through time in the empirical domain; and we seek theory to guide this empirical quest. More broadly, we worry about the entire domain of financial reporting activities, ranging from choice of method through time, to audit arrangements, to political activities.

This amounts to a revealed preference approach. The basic data consist of entity choice and circumstance. From these data we hope to infer the forces, economic in this particular paradigm, that produced the observed choices.

In turn, theory is used both to guide us in the search for independent variables and to focus the inference task so that it can be accomplished or rationalized with an appropriate cost–benefit calculus.

This line of enquiry has a long tradition in economics. Consider a simplistic setting where an individual selects quantities of three goods subject to a budget constraint. The price vector is denoted  $p = (p_1, p_2, p_3)$  and the quantity vector  $q = (q_1, q_2, q_3)$ . Consumption of vector  $q$ , therefore requires expenditure of  $p \cdot q = p_1q_1 + p_2q_2 + p_3q_3$ . The empirical domain of neoclassical economics consists of prices and quantities. The revealed preference question is when can an external observer note  $p$  and  $q$  and make inferences about the individual's preferences? The economist, of course, typically exploits rational behavior; rational in the sense that it is sufficiently consistent to be represented by a utility measure. This focuses the observation question

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even further, to the point of asking when price and quantity observations can be used to construct the individual's utility function.<sup>1</sup>

For our purposes, there are three aspects of this exercise to keep in mind. First, the observables are prices and quantities. The direct analogy to accounting would have us observe accounting method prices and the accounting methods actually chosen by the entity. Second, the inference exercise is subject to a regularity condition that the observed prices and quantities be sufficiently consistent that they can be represented by some utility function. The direct analogy to accounting would have a consistency condition that the observations be consistent with some cost-benefit calculus. Finally, the individual's tastes are taken as a primitive. The direct analogy to accounting would have us regard the entity's tastes for accounting method as a primitive in the observation and inference process.

The analogy is strained because observation and choice in the accounting domain are not clear-cut, and this sheds light on the delicacy of revealed preference experimentation in accounting. We observe, more or less, the entity's choice of financial reporting method, along with the contemporaneous specification of GAAP. Prices are another matter. Likewise, there is a sense in which the entity's tastes are not primitive.<sup>2</sup> More broadly, we view the firm as selecting an "optimal" mix of inputs and outputs, including contracting arrangements. Accounting is but one factor of production in this larger problem. The entity's tastes for accounting, then, depend on the prices of other factors. Thus, the notion of preference for accounting method is a notion of induced preference. To illustrate, let us return to the simple setting with three commodities. We speak of preference for the first two, by associating with each pair of  $q_1$  and  $q_2$  the conditionally best  $q_3$  (depending on

wealth and prices). The induced preference for the first two, in other words, depends on market circumstances and taste for all three. In this way, we recognize that focus on an entity's choice from GAAP is an induced preference exercise where we match each reporting method with its conditionally best mix of other factors. Cross-sectionally, then, we would like to control for this movement to induced preference by acknowledging the mix of other factors in the experiment. Similarly, in a time series experiment we would like to acknowledge the time series nature of GAAP, as well as of the entity's production function and conditionally "optimal" mix of other factors.

It is also useful to notice that the revealed preference theme has, in various forms, a long history in the accounting literature. This theme, for example, is apparent in the human information processing literature (e.g. Libby, 1981, in particular, or Kahneman *et al.*, 1982, more generally). Broadly construed, we offer the subject some information processing opportunities and ask him or her to respond with a "choice" of processing. As the data base of choices builds, we begin to see patterns. Examples are conservative information processing or anchoring (relative to Bayesian processing). The basic data, in other words, are the subjects' actual choices. Contrary to the economist's rationality focus, however, rationality (as defined by Bayesian revision and a consistent approach to risk aversion) is not documented or inferred. Rather, the focus is on documentation of systematic tendencies relative to this norm.

The revealed preference theme is also apparent in field studies (e.g. Hopwood, 1972; Brownell, 1986; Banker & Datar, 1987) where we study budget mechanisms in their natural environment. Here we envision a broad set of budget devices, including such things as how to mea-

<sup>1</sup>The standard consistency condition is the strong axiom of revealed preference. Casually, this states that if commodity bundle  $q^0 = (q_1, q_2, q_3)$  is revealed preferred to bundle  $q^1$  ..., is revealed preferred to bundle  $q^n$ , then  $q^0$  must also be revealed preferred to  $q^n$ . See Henderson & Quandt (1971), Varian (1971) and Chipman *et al.* (1971).

<sup>2</sup>In particular, I speak of the "entity's choice" or the "organization's goals" in this essay. But a deeper understanding would allow us to treat the entity's tastes as endogenous. Recognize, therefore, that when I speak of the entity's choice I am sidestepping basic questions of how this entity forms and operates.

sure performance, what non-financial information to use and evaluation "style". Links to the entity's environment and mix of productive factors are sought in turn, so as to make some inference about the taste for (or appropriateness of) the procedures and infrastructure that are observed.

In my view, then, *Positive Accounting Theory* is an exercise in revealed preference. We have some experience with this art form, especially in the human information processing and intra-organization reporting settings. The novelty of *Positive Accounting Theory* is its emphasis on economic constructs in the financial reporting domain. Studies of this genre include Hepworth (1953), Archibald (1967) and Gagnon (1967). Recent work takes advantage of developments in economic theory, and empirical techniques and opportunities. *Positive Accounting Theory* stands out for its coherence and broad application, for its attempt to structure financial accounting debate within a single framework of efficient organizational arrangement.<sup>3</sup>

#### SOME CONCERNS

This work has generated concern in response to the identification of its precise nature (e.g. Christenson, 1983) or the execution of particular studies (e.g. McKee *et al.*, 1984; Holmstrom, 1982). Maintaining the view that the work is an exercise in revealed preference focuses my task of placing the work in perspective. On the one hand, the application of revealed preference to the financial accounting domain is novel, and we should therefore expect a refinement in theory and empirical application as the art form progresses. On the other hand, the work has an extensive pedigree, and we should therefore expect to exploit this pedigree in developing the art form. Some insights along this line flow from the in-

duced preference nature of the application. Others flow from surrounding applications.

Stepping back from the specific studies, though, I identify several common themes which I think are useful to keep in mind when working through this material. My first such concern is the rhetoric of perfect markets. Market value maximization, present value and wealth are useful constructs from the world of perfect and complete markets. Accounting is most (or perhaps only) interesting when markets are not pristine. Contracting and political costs emerge in *Positive Accounting Theory* as an important acknowledgement that markets are not perfect. What, then, would the organization's goal become? Is market value maximization sufficiently descriptive? Is present value sufficiently well defined in a world of significant market imperfections? What is wealth in a world where professional managers face significant and largely uninsurable career risks? Limited marketability and non-financial concerns enter here, and we are led to search for a mechanism to rationalize the entity's goals. Unfortunately, we have little theory to guide us. *Positive Accounting Theory* cannot be faulted for this shortage of theory; but it is important to keep in mind that the rhetoric of perfect markets is a substitute for inadequate theory.<sup>4</sup>

My second concern is covered by the question: what is endogenous here? Revealed preference has its roots in individual choice and, aside from complaints that advertising creates (a lack of) taste, the primitive in the system is the individual's taste. Here, however, we are worried about a major corporation's choice of public reporting method at a particular time in its history. Is it sufficient to focus the exploration of something like bonus plan characteristics or the structure of debt contracts? More generally, these contractual relationships are endogenous.<sup>5</sup> What characteristics of the production function,

<sup>3</sup>Broad structures are in abundance in the literature, e.g. Canning (1929). Also, it seems more correct to view *Positive Accounting Theory* as offering a broad structure of accounting, not simply financial accounting. But the book is confined to financial reporting experiments and I therefore carry along the financial qualifier.

<sup>4</sup>Recall my *caveat* in note 2.

<sup>5</sup>Leftwich *et al.* (1981), for example, provide a model based on exogenous supply and demand for monitoring, where demand is driven by size, debt, preferred stock and price.

along with the labor, capital and product markets, conspire to lead the organization to these choices? Formal agency theory (e.g. Hart & Holmstrom, 1987) concerns itself with the link from environment to contractual relationships, and therefore to induced organization choices.

More specifically, the entity's choice of reporting method is one among countless factor choices. Most of these choices are decentralized, and the managers and the control systems under which they labor are endogenous. Linking accounting choice to particular contractual arrangements (such as a debt covenant or a formal bonus plan) is interesting, but we want a more primitive identification. What environmental factors are associated with the combined arrangement of contracting and accounting choice?<sup>6</sup> An economically designed organization orchestrates the behavior of its actors. The more important question, then, is not how accounting method choices vary through time and circumstance, but why the organization has been designed to motivate this particular behavior in the accounting domain. Returning to the three commodity vignette, it is as if the third commodity had disappeared from the analysis. This casts, it seems, considerable noise (if not bias) into the empirical exploration. There is a tendency here to treat the endogenous as exogenous.

A third, and closely related, concern deals with the level of integration among the various components of the labor, capital, product, information and political "markets". In building a model or seeking an empirical identification we always employ judgment in defining the boundary of the exercise. But it strikes me that considerable care is required in understanding where the boundaries appear to be drawn in *Positive Accounting Theory*. One illustration of where this boundary concern appears is in the focus on accounting earnings. Competing sources of information are always present. In studying accounting, then, we want to recognize the existence of this other information. This drives us to

worry about conditional instead of marginal probabilities in defining information content. It also drives us to worry about the comparative advantage of accounting. Thus, it would seem that the information content of actual techniques given that we already know the information conveyed by the cash outcome would be a useful way to structure the debate. Similarly, searching for correlation between the "performance index (earnings) ... [and] the effect of the manager's actions on the value of the firm" (p. 206) misses the importance of other information. The correlation should be a partial correlation, recognizing the existence of the other information (e.g. cash). In each instance we want to ask what we are learning, given what we have already learned from other sources. Drawing the boundary a little less tightly would carry along the idea that we must be ever cognizant of the other sources of information.

Another illustration of this boundary concern arises in the political sector of the argument. Political activities are important in understanding regulatory phenomena. Formal economic modeling of multiperson phenomena uses the notion of equilibrium behavior. Here, by contrast, we see extensive use of behavioral constructs instead of formal equilibrium analysis. For example, a common theme is that politically sensitive firms seek to minimize short-run reported income (though apparently not in the obvious fashion of designing and producing unsalable products). Yet this activity is successful in the political arena because of "information costs". This strikes me as an unusual equilibrium, but I have no formal model to offer or cite.<sup>7</sup>

Another example is the use of political costs (which are then measured by size) in the argument. A good analogy here is the stockout cost in a conventional inventory model. We posit particular ordering and holding costs, and then round out the model with some generic cost number to link the analysis to the back ordering, rescheduling and demand shift activities that are

<sup>6</sup>In contrast, the intra-organization studies tend to focus on environmental explanations, but without use of (induced) economic incentives as an intervening variable.

<sup>7</sup>A parallel comment applies to the notion that lobbying activity is useful in the political arena, or "market".

likely to accompany a stockout. I liken this to asking for a cost number to surrogate for that part of the analysis too difficult to formalize (and this is likely to be part and parcel of an efficient decision analysis technique). When reading *Positive Accounting Theory* we want to acknowledge the importance of political activity in the revealed preference analysis. But we do this by envisioning a political cost term without examining (equilibrium?) behavior in a larger model. Once this is recognized, we begin to understand that political cost is an equilibrium notion that is vital to integrating the argument. At this point we have a label for this important link; but its theoretical and empirical nature remain a mystery. *Positive Accounting Theory* is candid about the under-development of the political cost notion. My suggestion is that it is usefully thought of as an equilibrium notion, linked to where we circumscribe the argument. [Moreover, the equilibrium behavior we are trying to intuit may be counter intuitive. For example, in equilibrium a tightening up of GAAP to more informative disclosure mechanisms may reduce the amount of disclosure, as in Dye (1985).]<sup>8</sup>

A final concern is one of empirical aggressiveness. To argue by analogy, we do not see industrial organization economists examining the settings on screw machines in their empirical work; they tend to be more macro, concerning themselves with such things as cost curve estimation or documenting aggregate regulatory effects. The question is, at what point do we outstrip the empirical technology in this domain? (I have no answer.) One example is a focus on switching phenomena. With a larger model of the accounting method choice problem, it seems that the switchers at any particular point would be those who are closer to the margin. Does this suggest unusual empirical noise in the quasi experiment? Another example stems from regulatory activities. A regulatory announcement does

more than change the list of regulations. It conveys that now was an opportune time to change the list of regulations, and thus may convey something about future regulatory manoeuvres. Preservation of the current list of regulations has a similar interpretation. What control variables can we access to acknowledge that how the game is played may be a source of information to the game's participants?

Another example is the importance of other sources of information. Again using the three commodity vignette, choice of  $q_2$  and  $q_3$  will generally depend on the prices of all three commodities. Ignoring other sources of information (as well as substitutes for lack of information) amounts to ignoring the first price in this illustration. At present we have limited insight into the importance of this myopia. Presumably, field studies, with an emphasis on documenting the actual reporting choices along with an enormous amount of detail about other sources of information and the local environment, can be focused on this question.<sup>9</sup>

#### SOME UNUSUAL STRENGTHS

Two features of *Positive Accounting Theory* are, in my mind, sufficiently important to warrant emulation. The first is sheer novelty. Revealed preference work has been a familiar activity in some areas of our literature. Moving it into the financial reporting sphere in a vigorous fashion is a major improvement in our literature. In fact, it forces me to think in more expansive ways about accounting, and to be more judicious in attempting to link the various strands of our literature.

The second important feature is risk taking behavior. Novelty is not in abundance in our literature, perhaps because producing novel lines of thought is a risky business. The work in *Positive*

<sup>8</sup>Notice how far we have moved from the single person specification of the usual revealed preference experiment. Strategic behavior is now a possibility, thus raising additional concern over how widely the experimental net should be cast.

<sup>9</sup>Yet another example concerns the choice among indifferent alternatives. From a preference perspective, we regard the exercise as well structured up to the identification of equivalence classes. Yet the array of informationally equivalent accounting choices, especially when other sources of information are present, may be large. See Antle & Demski (1988).

*Accounting Theory* resulted from a willingness to take research risks. The bet was an under-developed theory coupled with under-developed empirical techniques could be combined to teach us something. On the surface, it is not apparent that this is a wise bet (though it has surely been revealed to be so). Even at this juncture, we are not yet assured that this particular line of activity will continue to occupy a major portion of the literature. That depends on the success of the next generation of studies. However, at this time in our literature, it is clear that *Positive Accounting Theory* has catalyzed considerable thought. Risk taking behavior produced this catalyst. Where are the new risk takers?<sup>10</sup>

#### SOME SPECULATION

Assuming that *Positive Accounting Theory* is the state-of-the-art in revealed preference work at this level, what might we speculate to be the next direction that this line of thought will take? Williamson's (1985) notion of governance strikes me as a likely candidate. The most haunting thought that occurs when studying this literature is how little it tells us about accounting. We have an unusual mixture of mandated, delegated and regulated reporting — all in an environment of political oversight and occasional political onslaught. Why do we allow managers freedom, of a sort, to select a reporting method? Why do we entrust dynamic adjustment of GAAP to the FASB along with dynamic adjustment of GAAS to the AICPA? (Why do we have separate entities for governmental reporting, not to men-

tion railroads?) What explains the governance structure before us? What is it about financial reporting that creates a demand for such an elaborate governance structure? Demand for governance, it seems to me, is needed to round out the theory and empirical work. We have an unusual institutional structure in accounting, complete with an unusual governance structure. Accounting research will, one hopes, address this landscape.

#### CONCLUSIONS

The test applied to *Positive Accounting Theory* in this essay is utilitarian: given the state of our literature, does this addition contribute to our stock of knowledge? To me, the answer is affirmative. *Positive Accounting Theory* offers novelty and vigor. Many questions remain because the theory is scant and because the empirical techniques are at the early stages of development. The short-run success of this research activity is assured by the questions posed. The long-run success is linked to progress in dealing with these questions.

Refinements in theory and empirical technique can be anticipated on this score, as can gradual expansion to include the issue of governance. Scholarship, though, is an interactive process. Revealed preference is a well-practiced art form in other settings, and it seems that *Positive Accounting Theory* has something to learn from these complementary enterprises, just as they have something to learn from *Positive Accounting Theory*.

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<sup>10</sup>This may tell us something about the infrastructure of our scholarly enterprise.

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