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INFORMATION VERSUS MEASUREMENT SCHOOL IN THE HISTORY OF ACCOUNTING THOUGHTS

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Abstract

What is the economics substance (or core) of accounting? What is the function and value of accounting and accountants in our society? With the development of accounting and scholarly accounting research, two schools of thought emerge and play an essential role in understanding the efficient functioning of accounting, namely the information school and the measurement school. This paper reviews and compares the information and measurement school in the history of accounting thought. Moreover, we propose a third integrated methodology. It might be helpful to have a complete picture of accounting subjects. In the end, some potential research directions are offered as well.

Keywords: Accounting, Information school, Measurement school, Accounting Thought.

1. Introduction

What is the economics substance (or core) of the accounting discipline at a fundamental level? Or put it more directly, why do we need accounting and accountants? In practice, we find that accounting is essential, and it serves as the language of the business. It is hard to imagine that all kinds of companies can function well without accounting, let alone the market and society as a whole. The natural questions arise? How to provide better incentives for personnel in the organization? What is the optimal way of performance measurement? How to minimize the cost and increase firms' profits?... Most of the issues we encounter and struggle with in reality are more or less related to accounting and accounting research. Looking back to history, the industrial revolution witnessed the emergence and development of accounting. Someone believes that it may be challenging to say the needs during the Industrial Revolution are responsible for the emergence of accounting, or accounting boosts the Industrial Revolution. Taken as a whole, it is natural to reach the consensus that accounting is the key to our society.

As with the development of accounting scholars, two schools of thought emerge and play essential roles in understanding the functions of accounting. Admittedly, both the information school and measurement school are imperative towards a complete understanding of accounting. On the one hand, accounting is redundant in a world with a perfect and complete market. Morris and Shin (2007) propose that "in an ideal world, accounting numbers are just a veil and would not matter. That they matter so much is indicative of the imperfections pervading financial markets."

On the other hand, it is hard to justify what accountants are doing in reality without measurement rules. Thus, it is desirable and attractive to put them together and have a unified theory of accounting. Liang and Zhang (2008) point out a potentially promising direction. They propose two paths to follow. As mentioned in their paper, "first, go back to the measurement world-view and treat accounting as mainly an engineering task..... The alternative is to push forward with the information world-view. Following this path requires us to believe/admit information problems as the key problems and then place economics at the center of accounting theory." However, this task may be somewhat challenging because, toward this end, we are always confronted with the dilemma of whether accounting is more of engineering issues or informational issues.

Given this difficulty, should we be comfortable living in a world of accounting with the duality of information and measurement, it is not always necessary to spend tremendous efforts to argue whether information or measurement is of first-order importance. It reminds us of the heated debate regarding the nature of light in physics in the late 19th century. On the one hand, the Particle Theory asserts that the property of particles is imperative since experiments showed that the photons travel through space and carry energy. On the other hand, the scholars in the school of Wave Theory carried out experiments to verify the existence of an electromagnetic wave. The physicists struggled with the anomaly involving the contradiction between the theories of light in wave school and particle school for many decades. At first glance, it seems that the wave theory and particle theory are incompatible with each other. Here is an excellent quote by Einstein about the wave-particle duality: "it seems as though we must sometimes use the one theory and sometimes the other, while at times we may use either. We are faced with a new kind of difficulty. We have two contradictory pictures of reality, separately neither of them fully explains the phenomena of light, but together they do". This is precisely the issue we are struggling with in accounting theory nowadays. In 1924, the particle-wave duality theory put forward by Brogile successfully explained the puzzles and enhanced our understanding of light, painting a complete picture of the nature of light. Moreover, in light of the duality theory, every particle exhibits the properties of both wave and particle. Accounting theory can potentially encompass both information school and measurement school. We should not take the position that one school is inferior to another.

2. A Unified Theory of Accounting

Unlike Liang and Zhang (2008), a third way towards a unified theory of accounting may also be possible. Consistent with the duality argument, the information approach may not be more important than the measurement approach or the other way around. Instead, accounting is an information system designed to minimize contractual costs and thus, facilitate free trading. At a more fundamental level, the solutions to informational and measurement problems are to reduce the contractual costs arising from the incompleteness, non-commitment, implementation of contracts. The real world is rather complicated and to some extent, 'unmeasurable'¹, leading to the inherent incompleteness of contracts. On top of that, the legal system is far from perfect.

In the following, we will put together the four building blocks (income, principles, information, and measurement) within the contractual framework of accounting.

2.1 principles and standards

A unified accounting theory needs to say that self- or regulation-imposed restrictions are pervasive in accounting practice.

After the stock market crash in the late 1920s, misleading financial statement information was one of the major reasons for inflating stock prices. Then the necessity to establish uniform accounting standards gave rise to the CAP (Committed on Accounting Procedure), the first private sector to set up accounting standards. In 1959, the APB (Accounting Principles Board) took the place of CAP until 1973, when the FASB (Financial Accounting Standards Board) was established. To facilitate comparing financial statement information among firms, the GAAP (generally accepted accounting principles) specifies many guidelines for the firms to follow in financial reporting. It is hard for a firm doing business in several countries to comply with different accounting standards from an international perspective. Therefore, in 1973, the IASC (which later became IASB in 2001) was formed to develop global accounting standards. From IASB's website, the IASB's main objective is to "develop a single set of high-quality understandable and enforceable global accounting standards to help participants in the world's capital markets and other users make economic decisions". In the past decade, there were tremendous efforts spent to convergence US and international accounting standards.

¹ "Unmeasurable" is trickier than ambiguity; under ambiguity, agents are only uncertain about which distribution to draw from; but given a certain distribution, the spaces are still measurable.

In the following, we will explain the existence of self-imposed or regulation-imposed restrictions in the real world. To begin with, with the aid of standards and principles, it is easier and less costly for the stakeholders to know about the firms. For instance, equity investors in the financial markets may invest in several companies simultaneously. If all firms disclose the financial statements under the same standards, the investors do not need to spend much time and effort figuring out each firm's specific rules of financial statements. The accounting standards and principles provide the market participants with the language of business, thus, reducing the transaction cost significantly. In addition, without standards and principles, auditing the firms' financial statements is highly costly, if not impossible. The ex-post behavior of cheating makes the market participants unwilling to get involved, reducing the possible gains from trades.

2.2 Income

Income is one of the most critical concepts in accounting. Historically, economists and accounting scholars put forward different concepts of income. In Hicks' view, income is "the maximum value which one can consume during a week and expect to be as well off at the end of the week as he was at the beginning (Bromwich et al. 2010)". More specifically, the Hicksian No. 1 concept defines income as "the maximum amount which can be spent during a period if there is to be an expectation of maintaining intact, the capital value of prospective receipts (in money terms)." If we calculate income using all information available at the beginning of the period, it is the income from the ex-anti perspective. Alternatively, if the income number is computed at the end of the period, we call it the ex-post income. According to Beaver and Demski (1979), only under a complete and perfect market can we reach a conclusion that "more income is always better."

Why is income so crucial in accounting? From the economic perspective, the objective of profit-oriented firms is to maximize the firm value. The valuation approach expresses the value of the firm's equity as the sum of all discounted future cash flows (or dividends). The amount of dividends the firms can give out and whether they can successfully fulfill their liabilities depend heavily on the income.

From the contractual point of view, ex-anti, the firm signs tons of contracts with other parties. For example, the company signs contracts with debt holders on when and how to pay back the principles and interests. The firm also signs contracts with workers and supplies, specifying the responsibilities the firm needs to fulfill. However, whether the firm can satisfy the duties ex-post depends heavily on the firm's income, so the stakeholders care so much about income. We can potentially explain why we use accrual accounting rather than cash flow accounting within the contractual framework since income is a better indicator of the entity's future operating cash flows than the

current cash flow. The operating cash flows in this period and the future are crucial for the firms' liabilities in the contract. To summarize, (ex-post) income is the surrogate of the firm's ability to fulfill the responsibilities specified in the (ex-anti) contracts.

2.3 Information

With the development of information economics, particularly the asymmetric information approach, the information paradigm offers new insight into accounting thought. The American Accounting Association 1957 committee mentions that "the primary function of accounting is to accumulate and communicate information essential to an understanding of the activities of an enterprise." The information perspective assumes that accounting information users need to make a decision under uncertainty. Accounting information (the number of incomes, assets, liabilities, etc.) serves as signals to inform the users, to some extent, of the underlying state. Thus, an accounting information system can improve users' decision-making under uncertainty like other information sources. These ideas are truly revolutionary and have far-reaching effects in accounting theory and even in other subjects like economics. Nowadays, the information perspective is more popular than the income measurement paradigm. Beaver and Demski (1979) argue that the income measurement only exists under a complete and perfect market. Otherwise, we need not be able to conclude that more income is always better. The nature of accounting is not income measurement. Instead, they "offer a reinterpretation of income reporting and accrual notions in a cost-effective communication procedure." It is imperative to consider the effects of information asymmetry. In reality, adverse selection and moral hazard problems are pervasive because of asymmetric information. Moreover, information asymmetry is at the center of the modern theory of the firm. Corporate finance studies firms' financing and investment activities under asymmetric information. Similarly, the accounting research is mainly about financial reporting and contracting under asymmetric information. Due to the seminal work by Joel Demski (e.g., Baiman and Demski 1980; Beaver and Demski 1974; Demski 1973; Demski and Sappington 1990), among others, accounting research with the application of information economics flourished in the past four decades.

Although the information approach is relatively fruitful, it is also somewhat limited because it lacks a general ordering among all possible information systems. For instance, the critical Blackwell theorem states that if the signal in information system A is just the signal in system B plus noise, then information system B is unambiguously preferred to A. However, the assumptions for the Blackwell theorem may not hold under most scenarios. This is the issue raised by Beaver and Demski (1979) that the income measurement only makes sense under perfect and complete markets. As Ohlson (1987) argued, the dependence of the usefulness of information on stockholder unanimity is so strong that we can say nothing about the informational role of income.

If we put the role of income measurement and information within the framework of contractual information, they are not contradictory with each other anymore. The solutions to informational issues in accounting practice are to minimize the contractual costs. For example, the informative condition in Holmstrom (1979) means that if an additional signal can tell us something about the underlying state and actions taken by the agent, the optimal contract should be conditional on this other signal. The relative performance measurement evaluation can reduce the information rents the agent can get under the principal-agent setting, thus reducing the principal's contractual costs. Therefore, the additional signal reduces the contractual cost and makes the principal more willing to participate in the market to trade, enhancing the principal and agent's welfare. This is perhaps why information has value.

2.4 Measurement

Generally, accounting measurement means "the computation of economic or financial activities in terms of money, hours or other units. An accounting measurement is a unit of some measurable element used to compare and evaluate accounting data". In the first half of the twentieth century, there was a consensus that the primary function of the accounting system was measurement. Then the problem confronted by accountants is just an engineering issue, i.e., how to measure the "absolute value" as best (by best here, I mean accuracy, reliability, relevance, verifiability et al.) as possible. Following the measurement approach, the key concepts are income determination, cost allocation, matching principle. Paton (1940) mentioned that "the essence of the accountant's task consists of the periodic determination of the net revenue and the business' financial status". From a tentative statement of accounting principles affecting corporate reports in 1936, "the income statement for any given period should reflect all revenues properly given accounting recognition and all costs written off during the period, regardless of whether or not they are the results of operations in that period." Yuji Ijiri (Ijiri 1965; Ijiri 1975; Ijiri and Jaedicke 1966) contributes to this line of research in a significant way. As Ijiri (1975) proposed, "Measurement is the core of accounting, and without an understanding of what is measured and how it is measured, proper comprehension of accounting is totally impossible." In the book, Yuji formalizes a structure of measurement theory in accounting, built on some fundamental axioms, to explain the accounting practices. He treats accountability as the significant function of accounting and provides his justification for the historical cost. The conflicts of interests among stakeholders call for unequivocal and hard performance measures. Here, unlike objectivity, hardness suggests that it is difficult for people to disagree. Although fair value is more popular nowadays than historical cost, Yuji's emphasis on accountability, which is based on the actual transaction, is still insightful. Yuji favors the measurement school over the information perspective of accounting since the information approach overlooks the conflicts between accountant and accountee.

The solutions to most informational and measurement issues are to reduce the contractual costs. Recently, Bertemew and Liang (2006) propose a new Classical Income measurement using a choice-axiomatic approach. Gao (2013) proposes a two-step representation of accounting measurement and shows that, through some examples, that it can improve the understanding of accounting's institutional features and clarify some controversies under debate in accounting practice.

From the contractual view of accounting, the requirement for hard information can reduce contractual costs significantly. If two parties disagree over the measurement under specific rules, it is somewhat challenging for them to sign contracts with each other to gain from free trade. They should spend tremendous time and effort to reach a consensus on specific measurements before contracting. The costs can be so high that some mutually beneficial transactions are impossible. Therefore, the most overriding function of accounting is to provide an information system where the disagreement over measurement, and thus, contractual costs can be minimized.

A unified theory of accounting needs to shed some light on the existence of all kinds of measurement rules in practice. The measurement rules are established to minimize the contractual costs and facilitate Pareto-improving trades among agents in the economy.

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