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An Essay on Data, Propositions, and Truth in Accounting and Auditing

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Abstract

This paper attempts to critically examine the nature of the propositional statements as presented in financial statements that are prepared based on a set of data partially derived from observable economic events of external nature and partly from non-observable business transactions of internal nature such as adjusting entries. The examination is conducted along the philosophical line of metaphysics–man's philosophical search for truths and absolute knowledge about the reality.

The subject of data reliability has occupied a great deal of space in the history of philosophy. The fundamental assumption for the philosophical excursion over data reliability by many philosophers is that truth is revealed only through reliable data. Data may be formulated from pure logical reasoning as in the case of Euclidian Geometry, from man's perceptions as in the case of sense data, from scientific observations and analyses of the cause-effect relationships of events as in the case of positivism, and from man's subjective evaluation based on a set of biased rules and dogmas. Thus, there are three basic accounting data: empirical, logical, and ethical. These three basic data, after entering the accounting system, are aggregated in the accounting cycle and the results are aggregated data with those three elements. These aggregated data then serve to present financial propositions in the form of the financial statements.

Financial assertions based on accounting data have been assumed to be empirical only. Consequently, the AICPA's Statement of Auditing Standards recommends that sufficient competent evidential matter is to be obtained through inspection, observation, inquires and

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confirmation. The recommendation implies that all accounting data are verifiable through senses. The AAA's A Statement of Basic Accounting Theory suggests that "verifiability" is a necessary attribute of accounting data. However, logical and ethical primitive data and aggregated data of combined empirical, logical, and ethical contents are not empirically verifiable and therefore, accounting data of this nature are not ascertainable and financial propositions cannot be confirmed to be truths.

Accordingly, accountants avoid the data reliability issue by adopting the fair concept - which means that they will present the best approximation of the financial reality of the firm. The best approximation is implied when the generally-accepted accounting principles are followed. The fair concept derives its powerful utility force from the fact that it is widely accepted in business practice and the fact that it is legally sanctioned by governments. It is embraced psychologically by investors and creditors alike. Accounting creates not sheer numbers, but psychic numbers.

> It is easy, therefore, to understand what terrible confusion may arise if all the data that can be alleged on all these contexts are lumped and mumbled together in one amorphous, indiscriminate mass; and I fail to see how any intelligible or serviceable theory of knowledge can emerge from such confusion. ----F. C. S. Schiller

1. INTRODUCTION

The pursuit of truth is one of the most discussed and debated issues in the history of accounting research. Contemporary accounting, with its root in Economics and Statistics and its added-vitality in behavioral and information sciences, has been viewed as more a science than an art, and accounting theory viewed to discover truths about the financial reality of the firm. Researchers, represented by Canning, Paton and Littleton in the 50's and 60's used the deductive approach to develop elegant financial accounting theory to attempt to portray the business entity's operations and financial condition faithfully. Littleton (1953, p. 10) flatly stated that "truth in accounting is partly economic and partly statistics", --it implies scientific search for truth about the reality. Contrary to earlier researchers, researchers in the 70's and early 80's, typically represented by the positivistic school of accounting, used the inductive method for theory formulation. Beginning in the 90s, the development of accounting theory to explain the realities of business enterprises has flourished with multiple research methodological philosophies, including those grounded on behaviorism and historicism.

The question of truthful representation of the financial reality of a business enterprise is part of the general question addressed by philosophers of every century, i.e., what is the Reality? Thus, it will be helpful to examine how some philosophers espouse their perceived truths about the reality. Descartes and other philosophers of the Age of Reason argues that "it is only on the evidence of our reason, not on that of our imagination or senses, that we ought to be persuaded of truths of anything, and that the truth of an indubitable proposition that must be *intrinsic* to it, is not dependent on any external circumstances." (Hampshire 1956, p. 63) Since Descartes, there is an added complication in the form of a general doctrine about knowledge, i.e., empiricism. Although rationalists view Newton's mechanical laws of motion and the physical universe as a construction from a deductive logical system of truths, or reasoning from basic concepts such as mass, energy, and the laws of motion, the empiricist looks at the work of Newton just the opposite to Descartes's. Newton began with observation of facts, with data of sensory experience aided by new scientific instruments. It is, according to empiricism, only with observations of events and data of experience that Newton was able to construct a logical system out of the laws he discovered.

Refuting the above two levels of knowledge, the low-level ordinary knowledge of the sensible world which Plato called true opinions and Descartes called confused ideas of senses, and the superior level of knowledge based on reason as its source, Hume claimed that scientific knowledge is nothing but ideas based on the laws of association of ideas. Hume's perception of ideas is nothing but reflection of one's impressions of the physical world. Thus, true knowledge is founded, not on the perceptional (sensual) and the rational (axiomatic) levels, but on a higher level of association of ideas: resemblance, contiguity, and cause-effect. This line of philosophical thinking about truths, certainty and knowledge was evolved from the earlier thinkers of the Age of Enlightenment such as Isaac Newton, John Lock and Voltaire and was perpetuated through the 19th century by Hegel, Marx, Nietzsche, and Sartre, and culminating with the school of logical positivism or empiricism, commonly identified with the Vienna Circle in the early 20th century. The doctrine of logic empiricism about knowledge is that it consists of a framework with empirical data at the top supported by logical inferences at the foundation. The vital weaknesses of this doctrine, however, are that empirical data based on observations through senses may be fallible and, most of all, the principle of verifiability, its piercing knife to destroy all knowledge which is not empirically verified, could not explain man's innate and common-sense knowledge and knowledge about tradition, ethics, morality, and religion.

If truths are products of empirical data (observations through senses), non-empirical data (reason), and association of ideas (cause-effect), data reliability is undoubtedly a very fundamental question in every branch of science. Unfortunately, it has been and still is a subject remote from the center of the realm of accounting research. Thus, in auditing, where the fundamental concepts of accounting measurements and data reliability are never precisely defined and critically examined, auditors appear to be engrossed in a futile effort in ascertaining the financial picture of the firm, based on financial data as provided by the firm and/or gathered by auditors themselves. Consequently, as the concept of data reliability is fuzzy, different auditors may reach different conclusions even though they are reviewing a same set of data.

This paper attempts to critically examine the nature of the propositional statements as presented in financial statements that are prepared based on a set of data partly derived from observable economic events of external nature and partly from non-observable business transactions of internal nature such as depreciation and other adjusting entries. This examination is conducted along the philosophical line of metaphysics, --man's philosophical search for truths and absolute knowledge about the reality. Specifically, the following questions will be posed for investigation:

1. What is the nature of the raw accounting data at the transaction level?
2. What is the nature of aggregated accounting data based on generally accepted Accounting principles?
3. What is the rationality of the aggregation rules (the GAAPs)?
4. What is the flaw of the auditor's verification concepts as currently espoused by the generally-accepted auditing standards?
5. What is the truth that the financial statements attempt to portray the reality of the organization?

2. EMPIRICAL DATA AS THE BASE OF SCIENTIFIC INVESTIGATION

Why are data so critical in our pursuit of truth? Accounting researchers, so far, has not attempted to answer this question. Fortunately, contemporary philosophers have provided general explanations and laid groundwork suitable for our research on this question in accounting. As a response to this question, Russell (1929, p. 74) made the following assertion:

> "When we reflect upon the beliefs which are logically but not psychologically primitive, we find that, unless they can on reflection be deduced by a logical process from beliefs which are also psychologically primitive, our confidence in their truth tends to diminish the more we think of them."

What Russell asserts is that logically deduced beliefs cannot be true unless they are based on the psychologically primitive data, which is derived from researchers' direct reservations (Russell 1929, p. 77). The derivative data are demonstratively inferred from the primitive ones and are less certain than premises from which they are drawn (Russell 1940, p. 164-200); and the inferred beliefs are not certain since they may be founded on psychological inference as follows:

> "Psychological inference, in its simplest form, means this: given a stimulus S, to which, by a reflex, we react by a bodily movement R, and a stimulus S' with a reaction R', if the two stimuli are frequently experienced together, S will in time produce R'." (Russell 1927, p. 13)

Furthermore, original data are not all of the same degree of certainty. Data may be formulated through "our acquaintance with particular objects of daily life," through "the extension of such particular knowledge of particular things outside our personal experience," and through "the systematization of all this knowledge of particulars by means of physical science, which derives immense persuasive force from its astonishing power of foretelling the future." (Russell 1929, p. 70) Thus, three types of original data may be formulated according to Russell. The first type, the factual or empirical data, is formulated through our sensual experience. The second type is formulated by our extension of other people's experience or knowledge, the logically-deduced data. Finally, the third type is a product of scientific investigation of the cause-effect relationship of events; it is inferred from primitive empirical data and may be called the inferred empirical data. Note that these three types of data correspond to the three sources of truth as just pointed above: observations, logical reasoning, and cause-effect relationships.

According to Russell, the primitive datum of experience consists of perceptions which are held to be known non-inferentially. Ernest Nagel questions what reasons are there for regarding perceptions as the most indubitable data of knowledge. But he points out that "sensory qualities and relations are obtained only as the end of products of a deliberate process of discrimination and analysis, a process which is carried on within the framework of a 'common sense' knowledge of physical objects." (Nagel 1960, p. 58) However, Whitely (1964, p. 440) points out that "scientific concepts are related to sense experience in a remoter and more complex fashion than common-sense concepts of physical objects." Lewis (1964, p. 411) flatly states that "…Empirical truth cannot be known except, finally, through presentation of sense." In his discussion of the pros and cons of sense data, Henry Price (1933, p. 19) concluded:

> "The term sense-datum is meant to be a neutral term . . . The term is meant to stand for something whose existence is indubitable (however fleeting), something from which all theories of perception ought to start, however, much they may diverge later."

In spite of the above controversy, scientific theories in the past all originated with sense data, whether primitive or not. Locke and Berkeley called them *ideas of sensation*, Hume considered them *Impressions*, many contemporary writers labeled them as *sensa*. In science, the process of deducing empirical theories generally begins with observations from which preliminary senses or empirical data are collected and consequently hypotheses are formulated, based on logical analysis, and ends with rejection or acceptance of hypotheses through a verification process of empirical tests; this is the basic tenet of logical empiricism.

Two pertinent questions must be posed at this time. First, does accounting deal with primitive and empirical data? This question has been answered by Goldberg (1965, p. 36), who explains that "as a first approach, the facts of accounting may be postulated as objective data which can be observed, and comprising things and persons possessing a certain physical objectivity." He further delineates objective accounting data as follows:

> "When we speak of Thomas Smith being the owner of a store, or of Edward Jones being a debtor, or of Arthur Robinson being a shareholder, we have for these personal names specific referents outside ourselves which be readily comprehended. When we speak of buying a roll-top desk, or installing a blast furnace, or selling a high-speed lathe or ..., we have again specific referents, within

> fairly narrow limits, to inanimate things which we normally experience little difficulty in understanding. These, it is suggested, are the basic data for accounting." (Goldberg 1965, p. 37)

What Goldberg refers to is the primitive empirical data.

Second, are inferred accounting data based on cause-effect relationships? To answer this question, the financial accounting model (Assets = Liabilities + Owners = Equity) must be elucidated with regard to its underlying logic and assumptions. The model serves as the basis for collecting, measuring, aggregating, and summarizing business transactions or economic events of a firm. The products of collecting and measuring business transactions are the primitive raw data and the products of aggregating and summarizing the inferred data. The theory of financial accounting gives rise to how financial transactions of a firm are measured and the financial accounting model gives rise to the inferred data. The process of formulating accounting theory begins with observations of economic events of a firm, proceeds to define some basic financial concepts based on the results of observations and logical reasoning, and ends with recommendations on how to measure, aggregate, and present financial events of the firm. The priori definitions serve as axioms to logical reasoning from which the normative accounting theory (or principle) is derived.

The general accounting model based on predefined concepts has been developed in the following manner:

Axiom 1: A business transaction is defined as having a debit entry and a credit entry with a same dollar amount.

Axiom 2: Assets (A), expenses (E), and dividends (D) are defined generally to have debit balances.

Axiom 3: Liabilities (L), capital stock (C), beginning retained earnings (RE) and revenues (R) are defined generally to have credit balances.

Axiom 4: Net Income (NI) is defined as the difference between revenues and expenses.

Theorem 1: Based on axiom 1, it must be true that: debit balances = credit balances for all business transactions in a given accounting period.

Theorem 2: Based on axioms 2 and 3 and Theorem 1, it must be true that:

$$A + E + D = L + C + RE + R, \text{ or}$$
$$A = L + C + RE + R - E - D$$

Theorem 3: Based on axiom 4 and Theorem 2, it must be true that:

$$A = L + C + RE + NI - D$$

This model that is limited to measuring those predefined concepts in relation to mostly historical events, is not a cause-effect model. Beginning with mostly collecting original empirical data, the model proceeds to develop inferred data of logical and subjective natures in the accounting process as the inevitable outcome of applying normative accounting theories of measurement. Because of its definitional and logical nature, the model also draws data from the realm of accountants' logical reasoning and subjective judgments. Figure 1 indicates that original data emerge directly from the activities in the firm and that inferred data were directly from the accounting model. It also depicts three levels of questions associated with the accounting model: first, the question of the original data that emerge directly from the activities of the firm; second, the question of the inferred data as the output of applying the GAAP to the accounting model; and third, the question of propositions to portray to the financial condition of the firm.

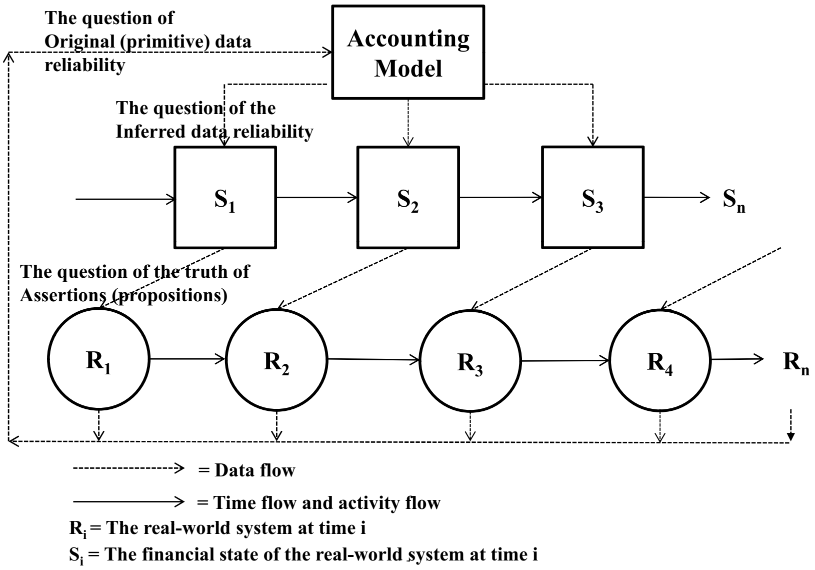
The question of Original (primitive) data reliability
Accounting Model
The question of the Inferred data reliability
S_1
S_2
S_3
S_n
The question of the truth of Assertions (propositions)
R_1
R_2
R_3
R_4
R_n
= Data flow
= Time flow and activity flow
R_i = The real-world system at time i
S_i = The financial state of the real-world system at time i

Figure 1 A general accounting model explaining the real-world business organization (system)

The theme of this paper includes critically examining: (1) accounting data underlying financial statements (posed as Questions 1, 2, and 3 on Page 5), (2) verification of propositions as asserted in the financial statements in relation to truth, as well as to the concept of "fairness" (Questions 4 and 5 on Page 5). The examination of types of accounting data provides a background for a subsequent discussion of the issue of verification and truth which, in turn, serves as the basis for a discussion of the concept of fairness.

This paper consists of six major sections with first section, as presented above, introducing the issues to be addressed at. The second section delineates the scientific approach to ascertain truths or knowledge. The first two sections provide a background in which the nature of accounting data is critically examined in the third section. The fourth section addresses the relationships between data, propositions, and truth in financial accounting. Finally, the last section analyzes the concept of fairness in the context of accountants' failed attempt in search for truth.

3. ACCOUNTING DATA

There are three basic primitive types of accounting data in financial accounting reporting: empirical, logical, and ethical data. Empirical data reflect mainly the perceptions, through observations, of accountants regarding a firm's business activities, internal and external. Accountants transform their perceptions into ideas that are then expressed with symbols in the form of names and monetary units. Names are logically defined to correspond to what accountants understand as the external referents, physical and intangible objects. The basic function of names is to classify business events or transactions in accordance with pre-defined concepts such as assets, liabilities, revenues and expenses. The monetary units used to capture the essence of business events are based a nation's currency system, which is a product of a nation's politico-economic system and is considered as the common-sense knowledge. The assignment of monetary units to a business event (generally referred to as assignment to an account) gives rise to initial quantitative measurements of that event and is called the basic accounting data by Goldberg (1965, p. 37) or the original data by Russell (1929, p. 70). If business events are the exchanges of goods and/or services between two parties, the basic accounting data to describe these events are observable and therefore correspond with the definition of sense or empirical data as expounded by Henry Price (1933).

The basic empirical accounting data can also emerge from accountants' direct observations of the causes and effects of external events and may also be labeled as cause-effect data. This type of data is created through manipulating models; it provides what is generally called scientific proofs, which are of the predictive and causal-effect nature. As an example, the uncollectible amount from sales, based on observations, is determined with a predictive model:

Bad debts = $a + bX$, where X represents sales and a and b are two constants.

Some data originate from accountants' logical reasoning without reference to any part of the empirical world, the so-called basic logical data. For example, the process of determining depreciation expenses is a series of logical steps such as the following:

Step 1	Office furniture and fixture have 5 years of life (accounting policy specified in a firm’s accounting handbook).	(presupposition 1)
	An office table is a piece of furniture.	(presupposition 2)
	Therefore, the table has 5 years of life.	(conclusion)
Step 2	If an office table has 5 years of life.	(presupposition 1)
	If an office table costs $500 and will have no salvage value.	(presupposition 3)
	The arithmetic average of annual depreciation is $100.	(conclusion)

Unlike logical data and empirical data, ethical data have a strong connotation of subjective values. Ethical data are simply derived from measurers’ application of their own beliefs or ethical accounting theories. A generally accepted accounting theory dealing with the creation of good will through business combination (purchase) permits a firm to create an asset labeled as good will. Good will is an example of ethical data because the theory has no empirical proof or unassailable logical support. It may actually create a loophole in which income is inflated through the delay of recognition of expenses incurred in a business combination. Many accounting principles allow accountants to choose one out of several options to measure business transactions. This type of principles is subject to accountants’ or management’s manipulation to create ethical accounting data, thereby leading to the possibility of income smoothing through expense understatement or revenue overstatement, or both. The intention of their manipulation is to make financial reports look good to external information users. The word “good” is subjective, because what is good to one person may not be good to another person. Thus, ethical data cannot be objectively or empirically verifiable.

Based on the financial accounting model, the above three basic types of data are then aggregated in the accounting cycle in the following forms:

(1) The aggregation of empirical data with logical data,
(2) The aggregation of empirical data with ethical data,
(3) The aggregation of logical data with ethical data, and
(4) The aggregation of empirical, logical, and ethical data.

Table 1 presents a classification of accounting data as generally reflected in financial statements: three basic and four aggregated data types. Virtually, all inferred data through the accounting aggregation process have empirical, logical, and subjective characteristics.

The classification in Table 1 is in terms of the major or more significant characteristics and, to some extent, arbitrary. Thus, it requires explanations. Empirical data generally can be supported by objective evidence and can also be empirically verified; examples are cash, sales and capital stock. The long-term investment in stocks increases or decreases are based purely on the logical consideration that, if Company A contributes 10% of Company B's capital stock, it should earn 10% of Company B's profit in the case of profitable operation, or 10% loss if otherwise, according to the equity approach. Thus, it is a logical datum in nature if the firm recognizes unrealized gains. Goodwill and reserves for contingencies may be considered as subjective data because they reflect accountants' subjective judgments in choosing a not-empirically -grounded accounting theory. Costs of goods manufactured, based on actual cost flow methods are generally determined from original empirical data coupled with logical reasoning, and thus may be considered as empirical-logical data. Organizational costs are initially an empirical datum, but, when it is arbitrarily written off periodically, it has the subjective content and is considered ethical in nature. Depreciation as illustrated earlier may be derived from logical reasoning, but when depreciation methods are chosen, based on tax consideration only, then it possesses the logical and the ethical contents. Most data in the income statement are the results of undergoing a long series of aggregations of empirical, logical, and subjective data. In particular, net income, resulting from a countless series of aggregations of the three basic accounting data, has a high degree of logical and ethical contents, and this explains why net income is such an illusive concept that the capital market based on accounting information will never achieve perfect efficiency.

Table 1 Classification of Basic and Aggregated Accounting Data

Types	Examples of Accounting Data
(1) Empirical	Cash; Marketable Securities; Accounts Receivable; Accounts Payable; Wages Payable; Long-term Marketable Securities; Bonds Payable; Capital Stock; Sales.
(2) Logical	Long-term investment increase or decrease based on the equity method; Classification of costs as product or period.
(3) Subjective	Goodwill; Reserve for Contingencies
(4) Empirical-Logical	Inventory (based on cost flow method)
(5) Empirical-Subjective	Amortization of Organization costs; certain cost classifications.
(6) Logical-Subjective	Depreciation; Deferred income tax liability; Estimated bad debt expenses.
(7) Empirical-Logical-Subjective	Net Fixed Assets; Cost of Goods Sold; Gross Profit; Net Income; Earnings Per Share.

Aggregation Process - Review

Figure 1 is a schematic picture that depicts the accounting model which measures transactions and develops basic accounting data and then aggregates the latter into macro accounting data serving to portray the state of a business organization viewed as a system. The question that should be asked at this point is: How reliable is the financial information based on the macro or inferred accounting data as presented in the financial statements to describe the state and activities of the business firm? To answer this question, it is necessary to review the aggregation theory in economics in order to understand implications of aggregating micro-accounting data.

Let us review aggregation theory in economics. Consider a system G, and another system G', and a function f which maps G into G'. Then we have:

$fA = A'$ for $A \epsilon G$, and $A' \epsilon G'$

Where $A = (a_1, a_2, ..., a_n)$, and $A' = (a'_1, a'_2, ..., a'_n)$. G and G' are isomorphic if and only if for any a in G, fa is in G', and for b' in G' there is a b in G such that fb=b', and if R is a set of relations for A in G, the fR is a set of relations for A' in G' such that FR = R'. And conversely, if R' for A' is in G', then there is a corresponding R for A in G. G is mapped by f one-to-one onto G'. In measurement theory, G may be said as an empirical system (e.g., a business firm), G' is a numerical system (e.g., an accounting double-entry system), and f a measurement function (e.g., GAAPs) (Pfanzagl 1968). The 1-1 mapping function as stated above is said to be a totally consistent measurement function.

In aggregation theory, G may be any micro-system and G' any macro-system. An aggregation function f maps G onto G', not on a 1-1 basis, but on the m-n basis, where m>=n or n>=m. When G^m is mapped onto G^n and n>m, f is said to be a disaggregation function, (where $G^m = (A, (R_i)_{\iota}\epsilon_I)$, $A = (a_1, a_2, ..., a_m)$, and $G^n = (A', (R'_i)_{\iota}\ \epsilon_i)$, $A' = (a'_1, a'_2, ..., a'_n)$).

Aggregation theory, in essence, deals with an aggregation function which relates the variables in a micro-system to those in a macro-system. In economics, the problem of aggregation has been raised in demand analysis (Farrell 1953; Green 1964) and input-output analysis (Ara 1959; Leontief 1967). In accounting, the chief concern in aggregation of data, so far, is the loss of information through aggregation (Lev 1968). It appears that no one in the aggregation literature has attempted to discuss the nature of the basic accounting data and the mapping of micro- to macro-accounting data, even though it has been recognized that a perfectly consistent measurement function can hardly be determined for measuring economic behaviors of the firm.

Accounting measurement is far from perfect at its current state of the science as both original and inferred data pose the issue of their reliability and verifiability. Even original empirical data may not be absolutely verified as we know from the debate about the very essence of logical empiricism--that is, only the propositions that can be empirically verified can be considered as truths. Micro-economics uses such terms as marginal utility, marginal cost, and long-run average cost, in economic analysis of the behaviors of the firm, but it seems seldom for economists to bother with the question of how these variables can be measured in the complex real-world business system. If, in reality, the reliable ways of assigning values to those variables are not certain, then the concepts of those variables have no practical purposes in spite of their logical appeal. If through data aggregation based on accounting measurements (e.g., variable/fixed costs, incremental costs, and average costs) produce data of questionable reliability, economic analysis based on accounting data will be futile, since conclusions derived from such an analysis are unlikely to be correct.

The lack of perfect measurement perhaps explains why it is difficult to have perfectly consistent aggregation function[1]. Thus, some economists settle at partially consistent aggregation function[2], or attempt to measure errors and bias[3] in aggregation. These approaches, however theoretically justified, offer no solutions to practical problems as in the case of aggregation of accounting data--problems being: (1) What is the reliability of the basic accounting data? (2) What are consequences of aggregating basic accounting data of different nature? and (3) How truthful is the picture portrayed by financial statements composed of aggregated accounting data? We now turn into the next section dealing with truthfulness of financial statements.

4. DATA, PROPOSITIONS, AND VERIFICATION

The aggregation theory presented above assumes that data used in aggregation are all empirical data and that measuring errors through empirical observations can be quantified. Aggregation in accounting, however, deals with, in addition to empirical data, logical and ethical data that do not have the measuring errors in the empirical sense. Logical data can be claimed to have a logical basis, otherwise, illogical; they are either totally logical or totally illogical. Ethical data are strictly good or bad, depending on whether one accepts the beliefs used in creating those data. When the three types of basic data are aggregated in the accounting process, the result is data of the hybrid nature, not purely empirical as generally understood.

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[1] If a system G is defined asG = $(A, R_i, i\epsilon I)$,and another system G' is defined as G' = $(A', R'_j, j\epsilon J)$, where A = $(a_1, a_{2\ldots}\ a_n)$ and R = a relation set of A in G, then, an aggregation function f is perfectly consistent if and only if $R_i(a_1, a_2, ..., a_n) = R'_i(f(a_1, a_2, ..., a_n))$ (Equation 2.1) for all elements of A in R_i and for all i contained in I.

[2] In partial consistency, the equality of Equation 2.1 for perfectly consistent aggregation function will not hold for all $(a_1, a_2, ..., a_n)$ in R_i but will only hold for some of $(a_1, a_2, ..., a_n)$ in a proper subset of R_i.

[3] There are several methods proposed for measuring aggregation errors and bias. The rationale behind this approach is that if perfectly consistent aggregation functions cannot be obtained in practical situation we can attempt to measure the aggregation errors and bias. Refer to Ijiri (1966, 1971).

If logical and ethical data have no objective connotations in terms of reliability, what exactly is the picture of the firm which a set of financial reports attempt to portray? It is generally understood that financial reports, consisting mainly of an income statement, a balance sheet, and a cash flow statement, present a set of propositional statements, representing assertions by management about a firm's financial condition at a point in time and results of operations for a period of time. How can those propositions assert the facts or truths about a firm when they contain data which are partially inferred from basic logical and ethical data? A proposition that the depreciation expenses for a period of time were, say, $1 million, is tautological, having no truth content, since it was based on the concept and methods of depreciation defined and exposed by GAAP's, which are grounded mainly on logic rather than empirical proofs. A proposition that net income for a period was, say, $10 million, is amorphous since its truth depends not only on our ability to decipher the truthfulness of its empirical content but also to analyze validity of its logical and ethical contents, both of which cannot be empirically confirmed to be either true for false.

Income statement presents a set of propositions containing data inferred from multiple steps and levels of aggregation in the accounting process. Gross margin, operating income, and income before taxes are examples of data inferred from various steps of aggregation with three basic accounting data and four aggregated data. The aggregation process begins with the three basic accounting data and eventually transforms them, based on the accounting model as defined and delineated above, into aggregate data with a conglomerate of empirical, logical and ethical dimensions. The ethical dimension of data may emerge from applying accounting principles incorrectly, from intentional manipulation of accounting principles in applications, and from intentional errors such as abusing a company's assets and creating fictitious transactions. Thus, net income, for example, is not confirmable empirically and, accordingly has no truth content in the empirical sense. Likewise, the concept of earnings per share that is widely used by investors in making investment decisions, is, at best, a tautological truth, and at worst, a pure illusion so much so that it leads to making investors chase a phantom. Basically, aggregations in the accounting process compound the reliability issue about financial data and consequently the truth issue about accounting propositions, as presented in financial statements. No wonder, Porter (1995, p. 11) asserts that "the credibility of numbers, or indeed of knowledge in any form, is a social and moral problem."

Types of Propositional Statements

To extend the above analysis, let's explore the issue of what types of proposition presented in the financial reports. Here again, I would like to borrow a few relevant concepts advocated by philosophers in history. According to Humean empiricism, meaningful propositions can be divided into two kinds, relations of ideas and matters of facts. Brown (1977, p. 16) explained these two types of proposition as follows:

> "...statements of relations of ideas assert connections which hold between ideas, their truth-value being determined solely by reflecting on these ideas. Knowledge of relations of ideas is a priori, and is the only form of a priori knowledge which Hume will admit; all true statements of relations of ideas are necessary truths and all false statements of relations of ideas are self-contradictory. Statements of matters of fact refer to the experienced world and the truth-value of such statements is determined by reference to experience. Every statement of matters of fact is ultimately equivalent to a set of assertions about what kinds of impressions occur in conjunction with each other, and we test these statements by observing the occurrence or non-occurrence of these impressions."

Most propositions asserted on the balance sheet are mainly matters of fact; examples are the assertions about cash balance, marketable securities and inventories both measured at historical costs. Most propositions on the income statement are relations of ideas since their assertions contain the empirical, logical and ethical dimensions of data, which are grounded on relations of ideas expressed with definitions. Thus, gross margin is defined as the difference between net sales and costs of goods sold, costs of goods sold defined as beginning finished goods inventory plus costs of goods manufactured less ending finished goods inventory, costs of good manufactured defined as... and on and on. It becomes obvious that there are definitions within definitions in the structure of accounting concepts; it is essentially a pyramid of definitions. Assertions of relations of ideas are either necessary true or contradictory, according to Hume. Thus, arithmetic and algebra that can logically link a set of non-empirical ideas and prove a proposition of relations of ideas to be certain and true, are admitted into the realm of science by logical empiricists. Unlike arithmetic and algebra, assertions of relations of ideas in accounting cannot be proved to be either true or false; the truth or falsity of accounting assertions depends on definitions of accounting terms (ideas) as well as interpretations, careless or willful, of accounting principles (relations of ideas).

Even confirmation of empirical propositions has its logical flaw as has been pointed out by Carl Hempel (1945a, 1945b). According to Hempel's concept of paradoxes of confirmation, for a given scientific law of the form "$(x)(P_x \supset Q_x)$" any observation sentence of the form "$Pa \cdot Qa$" is a confirming instance while any observation sentence of the form "$Pa \cdot {\sim}Qa$" is a disconfirming instance. This plausible confirmation can then lead to a difficulty. For the proposition "$(x)({\sim}Qx \supset {\sim}Px)$" is logically equivalent to "$(x)(Px \supset Qx)$" and also equivalent to "$(x)[(Px \cdot {\sim}Qx) \supset (Rx \cdot {\sim}Rx)]$." While the first equivalent indicates that confirmation depends on not only the content of the propositional statement but also its formulation, the latter simply means that confirmation is impossible. Let's take a balance sheet account for an illustration. Supposing that an audited balance sheet indicates the inventory account balance of \$1 million, we will take it to mean that the inventory, valued at something equivalent to \$1 million, has been confirmed. The equivalence here depends, to a great extent, upon what is defined as inventory and how dollars are assigned to inventory. The interpretation of what is inventory and how dollars are assigned to it, in turn, depends on how accounting principles are applied, and the interpretation of accounting principles depends, in turn, on accountants' and auditors' beliefs, and so on and so forth. You now can see that the auditor's confirmation will take a long-winding and never-ending process if he/she tries to be complete in the confirmation process. When it is done by the auditor finally, there is a huge gap between the original proposition and the final confirmation of whatever that is; it is doubtful that the equivalence still exists.

Another difficulty in confirming accounting propositions is that they are the so-called molecular propositions each of which compose of a number of atomic propositions; their truth-values are determined by first determining the truth-values of the constituent atomic propositions and then applying the definitions of the logical constants (Brown 1977, p. 23). The assertion about a firm's earnings is generally grounded on thousands and thousands of transactions, factual, logical, and ethical, each of which represents an atomic proposition. Many of the atomic propositions are inferred directly from other atomic propositions and are called immediate propositions (Stebbing 1953). Thus, if, for example, we try to determine the truth or falsity of a firm's earnings p, we have to infer it from its immediate propositions, q_1 (income before taxes), and q_2 (taxes), which, in turn, have their immediate propositions, and on and on. According to logicians, between p and q stand seven possible logical relationships (Stebbing 1953, p. 57-59). To confirm p, one has to start with the relationships of p (earnings) to all its immediate propositions which, in turn, are inferred from their immediate propositions which, in turn, ... and on and on, aside from overcoming the fact that data used to express proposition in the financial reports possess the combined three dimensions of empirical, logical, and ethical contents, and also from the fact that the terms or variables, such as net income, used in formulating propositions are tautological. To trace earnings p to all its constituents ($p = f(s_1, s_2, ..., s_n)$) is an impossible task as far as confirming the truth or falsity of earnings is concerned. Net income, artificially created by accounting principles, exists on the paper only, not on the sensual world for empirical observation. Accordingly, propositions as expressed in the financial statements are not confirmable, logically and empirically. As pointed out above, each immediate proposition most likely is a molecular proposition, composed of a large number of atomic propositions. For a large firm with millions of transactions, it is, first of all, economically impossible to examine and verify all transactions in the current audit practice, and then to determine the truth-values of propositions embodying all of the empirical, logical and ethical dimensions of millions of data.

The State of the Art in Audit Regarding Confirmation

That the approach that the auditing profession has adopted for gathering audit evidence to support or refute financial statements is that "sufficient competent evidential matter is to be obtained through inspection, observation, inquiries, and confirmation to afford a reasonable basis for opinion regarding the financial statements under examination" (AICPA 1973, p. 5) is empirical in nature. This empirical approach is obviously inadequate in verifying logical reasoning and ethical beliefs. But even for verifying molecular propositions, the empirical approach through inspection, observation, inquiries, and confirmation is most likely incomplete as explained above. Furthermore, they are constructed with many fluid concepts of the value system which characterizes the market-oriented capitalistic economy (MacNeal 1939, Ch. V; Scott 1973, Ch. V; Paton 1962, Ch. XIV; Edwards and Bell 1961, Ch. IX; Goldberg 1965, Ch. 15; Chambers 1969, p. 621-630). Finally, all aggregate financial data have the blending of data of the empirical, logical, and ethical dimensions; they are not all ascertainable with the above audit approach.

The empirical data will be the basis for formulating empirical statements that describe observed facts. Empirical statements, as a general rule, are not confirmable in the conclusive way for two reasons (Waismann 1945): (1) because of the existence of an unlimited number of tests; (2) because of the open texture of sense-data.

The first reason leads to the establishment of the probabilistic empirical statement. For example, the data for such items as cash, marketable securities, accounts receivable, and accounts payable will never be precise enough in order for an auditor to make assertions about them with absolute certainty. It can only be said that the probability of the existence of the cash balance of a certain amount is at a point somewhere between 0 and 1. The cause-effect data as explained above will always be subject to revision as the result of a new experiment through inspection or observation. In this vein, Ayer (1946, p. 98-99) says:

> What is the criterion by which we test the validity of an empirical proposition? The answer is that we test the validity of an empirical hypothesis by seeing whether it actually fulfills the function which it is designed to fulfill. … Accordingly, if an observation to which a given proposition is relevant conforms to our expectations, the truth of that proposition is confirmed. One cannot say that the proposition has been proved absolutely valid, because it is still possible that a future observation will discredit it. But one can say that its probability has been increased.

The second reason for inconclusive verification of empirical statements is due to the open texture of most of our empirical concepts. Open texture may be better explained by saying that a statement P is connected with a set of statements $\{s_1, s_2, s_3 \ldots\}$ which provided evidence for P but the statements in the set, when combined, do not necessarily entail P. First of all, the set of evidence is an open set for one cannot identify all the available evidence. Secondly, all the statements in the set combined cannot completely describe an empirical statement (P) made up of empirical data. P, explained in this context, is a molecular proposition. Let's use the inventory example again for illustration. Suppose an auditor has to verify a statement such as "the inventory account balance of the firm is $1,000;" suppose he/she goes to the warehouse and checks the number of units and then multiplies units by unit cost indicated in the inventory ledger. Is this enough to prove the statement? Or must he/she, in addition, has to prove that inventory in the warehouse is legally owned by or consigned to the firm? Or must he/she, in addition, examine goods in the warehouse to prove that they possess certain standard qualities and are salable? Or must he/she also verify that unit costs used in determining the inventory value were based on fair prices? And, supposing that he/she had done all those things, can he/she then be absolutely certain that his/her assertion about the inventory value is true? The fact that, in many cases, there is no such thing as a conclusive verification is connected with the fact that most of our empirical concepts are not limited in all possible directions.

Logical data and ethical data are the basis for formulating logical and ethical statements. The truth for logical statements is based on our "acceptance of basic postulates and assumptions of mathematics" (Mautz and Sharaf 1961, p. 71). Although a set of accounting postulates has long been suggested (Moonitz 1961; Paton 1962), they have never been accepted to be absolute. The statement that 1 + 1 = 10 is true if we accept the basic assumption of a binary number system. The truth for logical statements is also based on reasoning methods. For example, if A is greater than B, and if B is greater than C, then a logically valid assertion can be made that A is greater than C. The trouble with logical statements in accounting is that postulates and reasoning methods used in generating logical data are not necessarily and completely grounded on pure logic such as logic of mathematics, but, in many cases, on normative theories. As to ethical statements based on men ethical beliefs and biases, they cannot be confirmed or rejected with physical evidence. The statement that "sales grew at 25% this past year" is ethical when a significant portion of the sales were fictitious sales. Depreciation expenses possess the ethical content when the method of depreciation chosen is purely based on the profit consideration.

From the above discussion, the following conclusions may be drawn:

1. The third audit field standard that "sufficient competent evidential matter is to be obtained through inspection, observation, inquiries, and confirmation" appears to rely on sensual verification, which are not appropriate for verifying accounting propositions formulated with logical and ethical data, besides empirical data.

2. Empirical statements (assertions and propositions) based on empirical data cannot be

confirmed conclusively because of the existence of an unlimited number of tests and the open texture of the empirical concepts in accounting.

3. Empirical data can at best be used to describe facts in a probabilistic sense.
4. Propositions based on logical data and ethical data cannot be confirmed with physical evidence for there is no such evidence in existence.
5. Ethical data are related to men's beliefs and value judgment just as logical data related to men's reasoning and rationality. Since ethical data are the expressions of men's feelings, they are subjective and biased; they cannot be proved to be true or false in terms of logical reasoning or empirical investigation.

5. "FAIR" – A PSYCHO-PRAGMATIC CONCEPT

As pointed out above, the concept of truth has neither theoretical support nor practical applications, in the accounting and auditing professions. The verification of accounting data in order to confirm the truthfulness of propositions as expressed in a set of financial statements is a mission impossible. If financial statements do not portray a firm's operations and financial condition truthfully, what then do they serve when the Western capitalistic economic system is largely based on free flows of financial information provided from the corporate financial accounting system? It has been generally acknowledged, however, that the capital market will not function efficiently and effectively without financial information of business organizations. As pointed out by Edwards and Bell (1961, p. vii), "free enterprise economy is one of the key elements of information upon which the functioning of a private, free enterprise economy depends."

What is the objective of audit if financial statements cannot reveal truth? "The objective of the ordinary examination of financial statements by the independent auditor is the expression of an opinion on the ***fairness*** with which they present financial position, results of operations, and changes in financial position in conformity with generally accepted accounting principles." (AICPA 1973, p. 110.02). Thus, "financial audit is not associated with the correctness or the accuracy of accounting books, but with the fair presentation of financial statements." (Toba 1975, p. 13-14).

Fairness, according to the Webster's Collegiate Dictionary, is synonymous with "just", "equitable", "impartial", and "dispassionate". This concept of fairness is laden with so much ethical contents that operationalizing this concept in accounting is a daunting task. Thus, the audit profession defines the concept in a technical manner as follows:

> "The auditor's opinion that financial statements present fairly an
> Entity's financial position, results of operations, and changes in
> financial position in conformity with generally accepted account-

> ing principles should be based on his judgment as to whether (a) the accounting principles selected and applied have general acceptance; (b) the accounting principles are appropriate in the circumstances; (c) the financial statements, including the related notes, are informative of matters that may affect their use, understanding, and interpretation; (d) the information presented in the financial statements is classified and summarized in a reasonable manner, that is neither too detailed nor too condensed; and (e) the financial statements reflect the underlying events and transactions . . ." (AICPA 1975, p. 2).

The above concept of fairness is also espoused by Mautz and Sharaf (1961, p. 158) when they state:

> "In our view, the concept of fair presentation is composed of three sub-concepts, which, ..., require independent consideration. These are:
> 1. The concept of accounting propriety.
> 2. The concept of adequate disclosure.
> 3. The concept of audit obligation."

The concept of accounting propriety is similar and related to the AICPA's first two criteria for fairness as quoted above, i.e., the accounting principles selected and applied have general acceptance and the accounting principles are appropriate in the circumstances. The concept of adequate disclosure is to promote the AICPA's other three criteria that financial statements are informative of matters which may affect users' decision making, that financial information is aggregated at an appropriate level, and that financial statements reflect the underlying events and transactions. The concept of adequate disclosure requires special attention here. First of all, the underlying principle of adequate disclosure is premised on the truism that it would be reasonable to contend that any given financial statement was correct. At best, financial reports can give but an ***approximation*** of what took place in the enterprise (Mautz and Sharaf 1961, p. 165-166). Since a faithful portray of a firm in financial terms is unattainable, accountants settle at the second best--approximation of the financial reality of the firm. Fairness is synonymous to the accountant's best effort in approximating the reality[4].

The application of the AICPA's criteria to determining the fairness of financial reporting may be summarized as follows:

Let X be a molecular proposition about the fairness of financial statements,
P be that the accounting principles selected and applied have general acceptance,
Q be that the accounting principles are appropriate in the circumstances,
R be that the financial statements are informative,

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[4] About truth of accounting, Hines (1988, p. 257) states: "We create a picture of an organization, ..., whatever you like, and on the basis of that picture (not some underlying 'real' reality of which no-one is aware), people think and act. And responding to that picture of reality, they make it so; it becomes 'real in consequences'." For further discussion about reality created by the accountant, refer to Morgan (1980, 1986, 1988) and Miller (1990).

S be that the information presented in the financial statements is neither too detailed nor too condensed, and

T be that the financial statements reflect the underlying transactions.

The relationship of X, P, Q, R, S and T may be expressed as

$$X \rightarrow (P \cap Q \cap R \cap S \cap T).$$

Since P, Q, R, S, and T are also molecular propositions, they may also be expressed in a similar vein as follows:

$$P \rightarrow (p_1 \cap p_2 \cap p_3 \ldots \cap p_m)$$

$$Q \rightarrow (q_1 \cap q_2 \cap q_3 \ldots \cap q_m)$$

$$T \rightarrow (t_1 \cap t_2 \cap t_3 \ldots \cap t_m).$$

The further identification of the lower level immediate propositions continues until every last immediate proposition in a given set is explained by a set of atomic propositions such as: $p_i = \{a_{i1}, a_{i2}, a_{i3}, \ldots, a_{in})$. Note that each element in the $\{a_{im}$, where $m = 1, 2, 3, \ldots, n\}$ set represents a single economic event--simply stated, a matter of fact for an empirical event or a relation of ideas for a non-empirical event. The process of confirming the general proposition that financial statements are fairly presented, through layers of immediate propositions to the lowest level of propositions, i.e., the atomic propositions, is a task impossible, except in an arbitrary manner as prescribed by the AICPA for conducting a financial audit.

In his A Search for Fairness, Spacek (1969, p. 172) states that "...He (auditor) is like the blind man who went to see the elephant, felt only of its legs and thus visualized the elephant as being similar to a tree trunk." He proceeds to state that "practicality in financial reporting is the standard of accountability that is consistent with public morals and acceptance..." (Spacek 1969, p. 172) Indeed, accounting is one of the best applications of public morals and acceptance; it conveys the philosophy of pragmatism, which asserts that "truth in our ideas means their power to 'work'" (James 1991, p. 29) and that "they (ideas) become true just in so far as they help us to get into satisfactory relations with other part of our experience, ..." (James 1991, p. 28).

Then, truth is not an operable concept in auditing and accounting, but fairness is. Truth is an idealistic concept, whereas fairness is a pragmatic concept. For when an auditor has reached the conclusion that financial statements he/she has examined have been prepared in accordance with the generally-accepted accounting principles appropriate in the given circumstances and have adequately disclosed significant business transactions, he/she could express an opinion that financial statements present fairly, but not truly, an entity's financial position, results of operations, and changes in cash flows. And, best of all, the financial and the equity markets believe in it. The fair concept appears to serve as an invisible hand in the capital market, presumably facilitating efficient allocation of scarce economic resources among firms in the economy. The matter of the fact is that the concept of fairness is so nebulous that auditors and accountants alike cannot prove what it is in scientific terms. As pointed out earlier, accountants can only attempt to depict the financial reality of the firm as close to truth as possible. Since what is the truth is not known, then what is next to the truth cannot be known either. Yet, in spite of the fact that some firms that had been certified to be fair first and then had turned out to be unfair and finally doomed to fail, it is of no doubt that corporate financial reporting today plays a major role in sustaining the functioning of the global economic system. Indeed, fairness is a ubiquitous utility concept. Its magic power lies in society accepting it, governments supporting it, and people using it. The concept becomes an intrinsic part of the national and international business cultures. Pragmatically speaking, "it is true because it is useful". (James 1991, p. 90) To state it differently, the concept of fairness is psychologically imbued with financial information users in the capital market. The capital market machine is built around the investors' psychological confidence in the reliability of financial information. Fairness of financial information has, so far, sustained the investors' psychological confidence.

But, not until one day, when corporations can no longer create paper profits and when the investment market collapses, people will continue to chase the profit phantom backed by the muddy concept of fairness.

6. CONCLUSION

The subject of data reliability has occupied a great deal of space in the history of philosophy. The fundamental assumption for the philosophical excursion over data reliability by many philosophers is that truth is revealed only through reliable data. Data may be formulated from pure logical reasoning as in the case of Euclidian Geometry, from man's perceptions as in the case of sense data, from scientific observations and analyses of the cause-effect relationships of events as in the case of positivism, and from man's subjective evaluation based on a set of biased rules and dogmas.

In social sciences, the empirical approach, the logical (normative) approach, and the subjective (dogmatic) judgment are all coming into interplay in the process of developing a theory. Consequently, social sciences are relatively weak in their power of predicting the future, as compared with natural sciences. However, the aggregation theorists in economics try to bypass subjective value judgment and pure logical reasoning by confining themselves to the empirical world. Thus, in input-output analysis, the aggregate relationships of variables in a macro-economic system may be constructed from the relationships of similar variables in the micro-system.

However, the empirical approach adopted by the aggregation theorists offers no solution in accounting. Accounting develops financial data from its logical model, from empirical observations and from subjective value judgments. The obvious example of subjective values is the assignment of dollars to represent something valuable. A unit of currency is not the same as a unit of length, for the latter is a fixed measurement, whereas the former is a dynamic measurement.

Accounting data are derived from a logical system as explained in Section II of this paper. Being logical in nature, the system can be judged as either valid or invalid, logically, but not as either true or false, empirically. The system offers almost no information about cause-effect relationships of the reality (business firm). Accordingly, accounting data are limited to supplying information about what has happened, empirically, logically, and/or ethically, but not what will happen if something else has happened.

Financial assertions based on accounting data have been assumed to be empirical only. Consequently, the AICPA's Statement of Auditing Standards recommends that sufficient competent evidential matter is to be obtained through inspection, observation, inquiry and confirmation. This recommendation implies that all accounting data are verifiable through senses. The AAA's A Statement of Basic Accounting Theory suggests that verifiability is a necessary attribute of accounting data. However, it does not discuss the technical problems involving the application of empirical verification to logical and ethical data as well as aggregate data of empirical, logical and ethical dimensions, which leads to the formulation of propositions in the financial statements. Accordingly, accountants avoid the data reliability issue by adopting the fair concept - the concept which defines the best approximation of the financial reality of the firm. The best approximation is implied when the generally-accepted accounting principles are followed. The fair concept derives its powerful utility force from the fact that it is widely accepted in business practice and the fact that it is legally sanctioned by governments. It is embraced psychologically by investors and creditors alike. Accounting produces not sheer numbers, but psychic-numbers.

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多重主理人與多重代理人下代理問題之策略分析

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摘要

本研究有鑑於當代企業所有權與經營權分離的現象盛行，擬在所有人與經營人皆非僅一人的代理問題進行研究，並獲得四項主要結論。第一，當兩位主理人決定共同合作時，主理人給予代理人的邊際獎酬等於主理人的邊際收入，兩位主理人才能達到聯合利潤最大化。第二，在市場需求彈性大時，主理人給予代理人的獎酬與代理人的產量成正相關；而在市場需求彈性小時，則主理人給予代理人的獎酬與代理人的產量成負相關；當市場需求彈性係數等於 1 時，主理人給予代理人獎酬越高，反而會導致主理人的利潤下降。第三，當主理人持有的股份將資金成本加以考慮進去時，當利潤大於資金成本時，假設兩位主理人同時作決策，便會形成兩位主理人各持有一半股份的情況，若假設兩位主理人並非同時做決策，便會形成單一主理人與多位代理人情況；反之，當利潤小於資金成本時，兩位主理人都不會持有股份。最後，如果將利率設定為股份的函數時，若利率函數一階微分等於 0，則結果會與當主理人持有股份並將資金成本加以考慮進去時之經濟意涵相同。

關鍵詞：代理問題、資訊不對稱、道德危機、獎酬計畫、公司治理

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Strategy Analysis for Agent Problems Derived from Multiple Principals and Multiple Agents

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Abstract

This research is conducted under the premise that it is quite common the ownership of the contemporary enterprise is separated from the right to operate; therefore under the circumstances that the owner and the operator are not the same person status will be researched as result. There are four major conclusions of this research. First, when both principals decide to jointly cooperate with each other, the marginal reward offered to the agent by principal should be equivalent to the marginal income for the principal; then, both principals can reach the goal of maximizing their joint profits. Secondly, when elasticity of demand in the market is big, the agent's reward offered from the principals is positively correlated with agent's output; when elasticity of demand in the market is small, the agent's reward offered from the principals is negatively correlated with agent's output; when elasticity of demand in the market is equal to 1, the higher principals give the agent reward will lead to decrease profits of the principals. Thirdly, as the principals holding shares with the cost of capital to be taken into account, when the profit is greater than the cost of capital, each of the two principals holds half of the shares assuming they make decisions with the same time, or, the principals will form a single case with a number of agents assuming they are not making decisions at the same time. Conversely, when the profit is less than the cost of capital, the two principals will not hold shares. Lastly, if the interest rate is the function of shares and interest rate function first-order differential is equal to 0, the result is the same with the economic content of the cost of capital to be taken into account.

Keywords: *Agent problem, Information asymmetry, Moral hazard, Compensation contract, Corporate governance*

壹、前言

一、研究背景與動機

管理會計的議題種類非常多，代理問題便是其中一種議題，當代企業盛行所有權與經營權分離的經營型態，然而，大多數的主理人或許不具備專業知識，亦可能自我時間與利益調配之考量，主理人將經營權委任給代理人執行，主理人和代理人間便存在代理關係。Jensen and Meckling（1976）將代理關係定義為一個或多個主理人根據契約聘請代理人去執行有關主理人的服務，包括一些決策權的代理。然而，由於主理人和代理人間存在資訊不對稱，代理人基於自利行為，往往可能無法與主理人的目標一致，因而產生道德危機問題。Berle and Means（1932）指出，「當企業所有權與經營權分離之後，將造成企業行為偏離『利潤極大化』的軌跡。」當代理人因為自我利益而使公司偏離利潤極大化的軌跡時，將會發生代理問題。

Jensen and Meckling（1976）與 Easterbrook（1984）分別提出增加經理人的持股比例和增加支付的股利兩種方法解決代理問題。許多學者也提出其他解決代理問題的方法，洪駿（2004）發現，（1）內部人持股比例高可減緩代理問題的發生；（2）法人對企業有較強的制衡與監督能力，因此，法人持股比例高，可減少公司代理成本；（3）企業績效可藉由公司治理機制降低及控制代理成本而提升。Agrawal and Mandelker（1987）及 Haugen and Senbet（1981）研究證明，股票選擇權可以減緩有關外部融資的代理問題。Kao, Ghiou and Chen（2004）研究發現，債權人及股利政策可以有效減緩股權質押所產生的代理問題。DeAngelo, DeAngelo and Stulz（2004），證實發行股利有助於減輕代理問題。Harver Lins and Roper（2004）則指出，藉由負債可以減少代理成本。

除了利用監督機制外，主理人也可藉由設計契約的方式來減輕代理問題。Baron and Besanko（1987）研究代理問題時，認為最理想的契約主要由四個因素組成：（1）減輕供應商的風險；（2）供應商需承擔行為後果之代價以減緩道德風險問題；（3）利用自我選擇機制來減少資訊之經濟租；（4）利用監督來改善風險分擔及減少資訊之經濟租，並誘發更多的努力。

在早期有關代理理論相關文獻中，例如，Spence and Zeckhauser（1971）探討單一主理人與代理人間的相互關係。不同於單一主理人與代理人的代理模型，Demski and Sappington（1984）研究一位主理人和兩位代理人的相互影響，該文認為主理人在設計契約時，需考慮兩個代理人間誰擁有較多關於生產力的私有資訊。

Ma, Moore and Turnbull（1988）指出當主理人雇用兩位或兩位以上的代理人時，主理人給予代理人的獎酬，將會比較其他代理人的相對績效給予代理人

獎酬，換言之，代理人的績效越高，代理人所獲得的獎酬就越多。而 Bernheim and Whinston（1986）研究多個風險中立的主理人試圖影響共同代理人，認為多個主理人勾結將會是最好的均衡行為，Martimort and Stole（2002）則認為資訊揭露不適用於共同代理人下的賽局。由上述的代理理論相關文獻，可將代理模型分為三種：(1）一對一（單一主理人與單一代理人）的代理模型；(2）多對一（多重主理人與一位代理人）的代理模型；(3）一對多（一位主理人和多重代理人）的代理模型。若將代理模型延伸為多對多時，多重主理人與多重代理人間會發生什麼相互關係呢?這也是本研究著手研究的動機。

二、研究目的

過去有關代理問題的文獻中，過去有關代理問題的文獻中，將代理模型分為一對一代理模型、一對二代理模型及二對一代理模型三種。本研究欲彌補傳統文獻尚未對二對二代理模型深入研究，探討兩位主理人與兩位代理人之間的交互作用。本研究之目的略述如下：

1. 當主理人所持有股份為外生性時，探討兩位主理人給予代理人最適的獎酬為何。
2. 兩位主理人共同合作時，探討兩位主理人如何達到利潤最大化。
3. 當主理人所持有的股份為內生性，並將持有股份的資金成本考慮進去時，探討兩位主理人會有什麼樣的交互關係。

上述為本研究為了彌補既有文獻不足的主要目的，及其衍生的三項研究議題。主理人與代理人為二對二模型或多對多模型在既有文獻上尚未探討，但在實務上卻早已存在，例如，一般的公司董事會成員為多數董事，而公司的員工則為多數成員。因此，本研究欲以二對二模型為出發點，加以探討二對二模型所衍生之代理問題與一對一、一對二、二對一之代理問題有何不同之處。

首先，一對一的模型其權責分明，容易發生的代理問題為資訊不對稱之下，代理人可能產生怠惰行為，其研究方向為主理人如何設計誘因機制，使代理人願意完成主理人的目標。第二，一對二的模型其權力清楚，但責任則不清，容易發生的代理問題為代理人之一可能衍生搭便車（free rider）的現象，其研究方向為主理人如何設計一套競爭的獎酬機制，以防止代理人因搭便車而使績效不佳的現象。第三，二對一的模型其權力不清，但責任清楚，容易發生的代理問題為多重馬車之現象，代理人莫衷一是，其研究方向為主理人如何協調其權力分配，使代理人足以完成多重目標。最後，二對二的模型其權力與責任皆不清，兼具上述三類所產生的問題，如何解決錯綜複雜的代理問題為本研究的主要目的。

貳、文獻回顧

一、公司治理與代理問題相關文獻

當代企業盛行所有權與經營權分離的經營型態，主理人常將經營權委任給代理人執行，過去有許多探討公司治理與代理問題之間的文獻。黃勝平（2005）探討負債與代理問題之間的關聯性，研究發現，低成長的高自由現金流量公司可藉由發行長期負債來減緩代理問題的發生；另外，當代理人持股比例較低時，長期負債可減少代理問題的發生，此時，負債便可做為監督機制。

楊士奇（2004）將代理問題分成股權結構、第三人監督及董事會規模與結構來探討。股權結構方面，內部人持股比例低容易出現過度成本的發生，因此，內部人持股比例與代理問題有顯著關係。第三人監督方面，台灣上市公司中，債權人可能因為搭便車行為，而喪失扮演一個好的監督者，因此，楊士奇認為負債比例高的公司代理成本較大，公司規模越大代表透明度越高，代理問題會較小。董事會規模與結構方面，董事會規模越大，代理問題就越嚴重。

洪駿（2004）發現，（1）當內部人持股比率愈高代表自身利益與企業利益愈一致，內部持股比例高可減緩代理問題的發生；（2）法人對企業有較強的制衡與監督能力，因此，法人持股比例高，可減少公司代理成本；（3）企業績效可藉由公司治理機制降低及控制代理成本而提升。

董監事持股質押與代理問題議題方面，高蘭芬（2002）發現集團企業比非集團企業能有效利用機構投資人、債權人及股利政策等三種監督機制降低董監事持股質押所帶來的代理問題。相對於非集團企業，集團企業公司績效比較會因為董監事持股質押所帶來的代理問題使公司績效下降。

董監事的聘任宣告與代理問題減緩的相關性之議題，游昀玲（2004）研究結果顯示，董事長兼任總經理的公司與外部董監事的聘任宣告效果呈現正相關。也就是說，當公司的董事長兼任總經理情況下，能透過引進外部董監事有效的監督以減輕代理問題。另外，投資人與公司之間存在資訊不對稱，資訊不對稱會導致代理問題的發生，因此，資訊不對稱愈大的公司與外部董監事的聘任宣告效果呈現正相關。

國外也有許多研究減緩代理問題的文獻，Fama（1980）認為在競爭市場下，低成本的控制機制是可以存活的，而董事會就是一個低成本的控制機制，並能有效解決代理問題。Fosberg（2004）發現可以藉由大股東的監督來減緩債務融資的代理問題。

Agrawal and Knoeber（1996）使用七個控制機制來檢驗股東和經理人之間的代理問題，這七個控制機制分別為內部人持股、大股東持股、機構法人持股、採用獨立董事、舉債融資、經理人之人力市場及市場對公司的控制。結果與公

司績效有關係的只有內部人持股、獨立董事、負債和市場對公司的控制。其中內部人持股與公司績效呈正相關，代表內部人持股比例愈高，公司代理問題就愈小。其餘三個則與公司績效呈負相關。另外，Agrawal and Mandelker（1987）及 Haugen and Senbet（1981）研究證實股票選擇權可以減緩有關外部融資的代理問題。

二、不同的主理人與代理人組合方式與代理問題相關文獻

1.單一主理人與多重代理人

從過去代理文獻可發現主要有三種不同代理模型，從單一主理人與多重代理人模型來看，王貞靜（2003）利用多層代理模型來分析代理問題，其主要研究結論如下：第一、主理人設計誘因機制需要考慮兩位代理人之風險厭惡程度與現金流入變異之不確定性、產品單價、經理人投入作為考慮之重要變數。第二、當產出的不確定性愈大以及兩位代理人的風險厭惡係數越大時，主理人應以雙重績效指標作為經理人之績效衡量較為適當。第三、除了特殊條件成立下，主理人才得以將一般定義之成本中心、收入中心與典型的利潤中心作為衡量該企業之最適中心，否則最適責任中心為修正式利潤中心。

陳建中（2000）探討多代理人間私下溝通與監督機制對組織的影響，其研究結果主要有兩點：第一、當團隊工作之資訊系統為一致貢獻型且代理人溝通能力不小時，主理人需增加代理人更高薪資契約之誘因，以防止代理人有溝通怠惰行為，進而對主理人形成溝通勾結威脅。第二、當團隊工作之資訊系統為個人貢獻型且代理人監督能力不小時，則主理人可藉由誘發代理人間互相監督工作行動以減少道德風險問題的發生。黃建銘（2006）發現主理人為了避免代理人間發生搭便車行為，因此在訂定代理人誘因契約大多採以個人績效表現為基礎之資訊衡量系統。由於團隊研發之工作特性，為防止代理人有矇混彼此各別績效資訊衡量系統的機會，主理人可藉由選擇不同團體績效衡量資訊系統種類來避免代理人搭便車行為的發生。

若從國外單一主理人與多重代理人文獻來看，Demski and Sappington（1984）研究單一主理人與多重代理人時，認為主理人在設計契約時，需考慮兩個代理人間的生產力的私有資訊，每個代理人的生產力私有資訊會提供其他代理人的生產力資訊，當只有一個代理人時，私有資訊對主理人來說可能是沒有價值的。

Nalebuff and Stiglitz（1983）藉由錦標制度的獎酬規劃，來解決代理人道德危機問題。Ma, Moore and Turnbull（1988）指出當主理人雇用兩位或兩位以上的代理人時，每個代理人的獎酬將會根據其他代理人的績效來衡量，主理人可以利用最適契約的特性，與一個代理人監督其他代理人的方法，來防止代理人的欺騙主理人最適契約之行為。

2.多重主理人與單一代理人

代理模型除了單一主理人多重代理人外，國外也有研究多重主理人與單一代理人之相關代理文獻。Bernheim and Whinston（1986）研究多個風險中立的主理人試圖影響共同代理人，發現多個主理人勾結將會是最好的均衡行為，並且會有好的結果，作者也證明綜合獎酬規劃以某種意義上來看代表用最小的成本實現均衡行為。另外，Martimort and Stole（2002）認為資訊揭露不適用於共同代理人下的賽局。

三、其他代理問題相關文獻

Jensen and Meckling（1976）將代理關係定義為一個或多個主理人根據契約聘請代理人去執行有關主理人的服務，包括一些決策權的代理。跟以往文獻不同的地方，Jensen and Meckling 研究如何在不確定性和不完善的監督下，設計主理人和代理人間的契約誘使代理人做出最好的選擇，使主理人的效用極大化。Ang, Cole and Lin（2000）發現當公司的經理人為外部經理人時，所產生的代理成本將會比公司的經理人為內部經理人時還要高。

代理問題的另一個議題為設計契約，Baron and Besanko（1987）認為最適的契約主要由四個因素組成：（1）減輕供應商的風險；（2）供應商需要承擔行為後果的成本以減輕道德風險問題；（3）利用自我選擇機制來減少資訊之經濟租；（4）利用監督來改善風險分擔及減少資訊之經濟租，誘使代理人更多的努力。

Malcomson（1984）認為即使在資訊不對稱下，獎酬契約應該根據員工績效的排名。作者將這類型的合約分為五種特質：（1）依據工資結構的等級劃分；（2）內部晉升；（3）工資率的上升與資歷和經驗相關；（4）收入會跟著經驗增加；（5）工資率附加在工作（wage rates attached to jobs）而不是參考外部市場的工資。

主理人和代理人間存在資訊不對稱，代理人基於自利行為，往往可能無法與主理人的目標一致，因而產生道德危機問題。McAfee and McMillan（1991）認為一定條件下，逆選擇、道德風險和最適契約會影響團隊的產出。

Shavell（1979）設計主理人付獎酬給予代理人時，如果要成為 Pareto 最適狀態，必須將風險附加在代理人的行為後果，並且建立適當的誘因機制，亦即，Pareto 最適薪資的特性需考慮主理人及代理人對風險態度。

誘因制度也有利於改善代理問題，Fudenberg, Holmstorm and Milgrom（1988）研究各種的誘因機制用於不同的勞動者，發現管理人員的薪資不同於銷售員或工廠勞動者，是因為管理人員的貢獻直接反應在未來的生產，而不是當前的業績。此外，Holmstrom（1979）認為在資訊不對稱下，主理人和代理

人間的關係需要考慮道德風險。

参、模型架構

本文模型如圖一所示，建立一個二對二的代理模型，是由主理人j和代理人i所組成，$j=\{1,2\}$，$i=\{1,2\}$。本研究考慮主理人數目$m=2$，代理人數目$n=2$，加以研究與分析，未來的研究方向將可以此為基礎，進行一般化的擴展與應用。並假設主理人為風險中立者，代理人為風險厭惡者。參考 Nalebuff and Stiglitz（1983）的代理模型設定，首先，代理人i的可觀察產出Q_i，設定為由個人的努力e_i、環境變數β及干擾變數ε_i所共同決定。

$$Q_i = Q(e_i, \varepsilon_i, \beta) \tag{1}$$

參照 Nalebuff and Stiglitz（1983）分析時的兩個限制，（a）$Q_{e\beta} \neq 0$，不同環境下會影響努力所獲得的報酬；（b）因為資訊不對稱，所以無法從Q_i和β推斷出e_i的水準，否則可能藉由產出來觀察到代理人的努力水準。並假設代理人的效用函數是由從主理人所得來的獎酬Y_i和努力e_i所組成，代理人的目標函數為預期效用函數：

$$\max_{ei} E\left[U(Y_i) - V(e_i)\right] \tag{2}$$

其中$U(Y_i)$為收益的正效用，$V(e_i)$為努力導致的負面效用。假設收益的邊際效用為正但是會逐漸下降，而邊際努力的負面效用為正並呈現遞增：

$$U'(Y_i) > 0, \mathrm{U}'' \le 0, V'(e_i) > 0, V''(e_i) > 0 \tag{3}$$

基於資訊不對稱，本文假設主理人只能觀察代理人產出水準$Q=(Q_1, Q_2)$，主理人並無法直接觀察代理人的努力水準。因為只能觀察$\{Q_i\}$，主理人給予代理人的總獎酬契約我們設定與 Nalebuff and Stiglitz（1983）一致：

$$Y_i = Y(Q_i) \tag{4}$$

代理人i的個人化獎酬是根據代理人本身的產出來決定，本研究與 Nalebuff and Stiglitz（1983）的個人化獎酬設定相異，本文假設主理人 1 給予代理人 1 之個人化獎酬是根據主理人所持有的股份θ所決定：

$$Y_{11} = \theta Y_1(Q_1) \tag{5}$$

主理人 2 給予代理人 1 之個人化獎酬為：

$$Y_{21} = (1-\theta) Y_1(Q_1) \tag{6}$$

將第(5)式與第(6)式相加，主理人 1 與 2 給予代理人 1 之個人化獎酬為：

$$Y_{11} + Y_{21} = Y_1(Q_1) \tag{7}$$

另外，主理人 1 給予代理人 2 之個人化獎酬為：

$$Y_{12}=\theta Y_2(Q_2) \tag{8}$$

主理人 2 給予代理人 2 之個人化獎酬為：

$$Y_{22}=(1-\theta)Y_2(Q_2) \tag{9}$$

因此，主理人 1 與 2 給予代理人 2 之個人化獎酬為第（8）式與第（9）式相加：

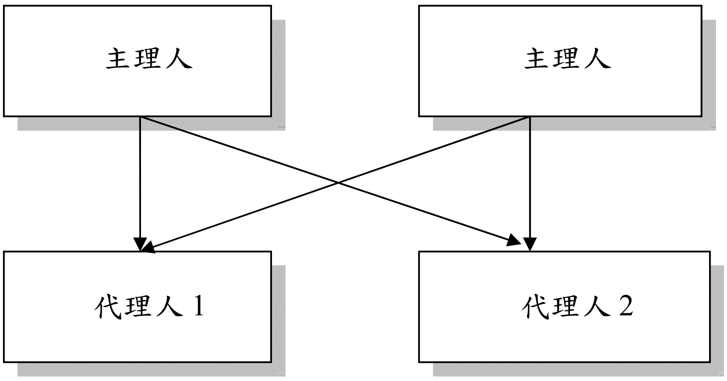
$$Y_{12}+Y_{22}=Y_2(Q_2) \tag{10}$$

本研究的產出與 Nalebuff and Stiglitz（1983）設定一致：

$$Q_i=e_i\beta+\varepsilon_i \tag{11}$$

由(11)式可得知產量受到代理人本身的努力與環境影響。

圖一顯示本研究之模型架構，為兩位主理人與兩位代理人之關係結構，箭號之指向係為主理人給予代理人的獎酬契約。主理人 1 給予代理人 1 與代理人 2 的薪酬分別為上文中的(5)式與(8)式；主理人 2 給予代理人 1 與代理人 2 的薪酬分別為上文中的(6)式與(9)式。主理人 1 與主理人 2 之間的關係為兩者持有的股份分別為θ與$1-\theta$；代理人 1 與代理人 2 之間的關係為各自努力，兩者產出的水準分別為$Q=(Q_1,Q_2)$。



圖一 兩位主理人與兩位代理人之代理模型

肆、命題與分析

本研究將主理人所期望的利潤設定為π^j，主理人j決定所持有的股份θ或$1-\theta$及代理人銷售額$P\sum_{i=1}^{2}Q_i$來分配利潤π^j，P為代理人所生產一單位產品之價格，主理人目標函數分別如下：

$$\max_{\theta,Y_{11},Y_{12}}\pi^1=P\theta\sum_{i=1}^{2}Q_i-Y_{11}-Y_{12} \tag{12}$$

$$\max_{1-\theta, Y_{22}, Y_{21}} \pi^2 = P(1-\theta)\sum_{i=1}^{2} Q_i - Y_{21} - Y_{22} \qquad (13)$$

假設下述命題一到命題二將θ設定為常數，而命題三與命題四之θ設定為內生性，當主理人 1 與主理人 2 決定共同合作追求利潤π，TR 為主理人 1 與 2 之總收益 $P\sum_{i=1}^{2} Q_i$ ，TC_i 為兩位主理人之總成本，其中，$TC_1 = Y_{11} + Y_{12} = \theta[Y_1(Q_1) + Y_2(Q_2)]$ ，$TC_2 = Y_{21} + Y_{22} = (1-\theta)[Y_1(Q_1) + Y_2(Q_2)]$。兩位主理人共同合作追求利潤的目標函數：

$$\max_{y_1, y_2} \pi = \max_{y_1, y_2} TR - TC_1 - TC_2 = \left(P\theta\sum_{i=1}^{2} Q_i + P(1-\theta)\sum_{i=1}^{2} Q_i \right) - Y_1(Q_1) - Y_2(Q_2) \qquad (14)$$

可得到如下命題：

命題一：當兩位主理人決定共同合作，主理人給予代理人的邊際獎酬等於主理人的邊際聯合收入時，兩位主理人才能達到聯合利潤最大化。

為求聯合利潤最大化，將第(14)式的獎酬Y_i微分，可得到：

$$TR' - TC_1' - TC_2' = MR - MC_1 - MC_2 = MR - MC = 0 \qquad (15)$$

在這一命題中，我們從第(15)式可瞭解到 $MR = MC$ ，此命題的主理人之邊際成本為主理人給予代理人的個人化獎酬，發現當兩位主理人的邊際收入須等於邊際成本時，兩位主理人才能達到利潤最大化。此性質告訴我們一個涵義：主理人可藉由控制邊際獎酬來節省邊際成本。

在命題一的基本假設為兩位主理人決定共同合作，亦即為兩位主理人的協議若藉由有形的勾結，例如，兩位主理人簽訂合作契約，則此項協議將不會受到破壞，此一模型的兩位主理人的行為模式，將會產生與單一主理人的行為模式相同。

本研究將兩位代理人所生產的一單位產品價格設定為P，假設代理人只有兩種努力行為可選擇。換言之，代理人可選擇努力工作或者偷懶。代理人 1 生產的銷售額S_1為：

$$S_1 = P \times Q_1 \qquad (16)$$

代理人 2 銷售額S_2為：

$$S_2 = P \times Q_2 \qquad (17)$$

主理人 1 利潤最大化下為：

$$\pi^1 = (\theta PQ) - Y_{11} - Y_{12} \qquad (18)$$

$$Q = Q_1 + Q_2$$

同理，主理人 2 利潤極大化下為：

$$\pi^2 = [(1-\theta)PQ] - Y_{21} - Y_{22} \tag{19}$$

第(5)式和第(6)式取反函數$Y_1^{-1}(\cdot)$依序如下：

$$Q_1 = Y_1^{-1}(\frac{Y_{11}}{\theta}) \tag{20}$$

$$Q_1 = Y_1^{-1}(\frac{Y_{21}}{1-\theta}) \tag{21}$$

另將第(8)和第(9)式取反函數$Y_2^{-1}(\cdot)$依序如下：

$$Q_2 = Y_2^{-1}(\frac{Y_{12}}{\theta}) \tag{22}$$

$$Q_2 = Y_2^{-1}(\frac{Y_{22}}{1-\theta}) \tag{23}$$

由第(20)、(21)、(22)、(23)式可得知Q_1為Y_{11}和Y_{21}的函數，Q_2為Y_{12}和Y_{22}的函數。$Q = Q_1 + Q_2$，因此可得到：

$$Q = Q(Y_{11}, Y_{21}, Y_{12}, Y_{22}) \tag{24}$$

將第(16)、(17)式分別除以Q_1和Q_2可得到：

$$P = \frac{S_1}{Q_1} \tag{25}$$

$$P = \frac{S_2}{Q_2} \tag{26}$$

由第(25)、(26)式可得知P為Q_1和Q_2的函數，$Q = Q_1 + Q_2$，故可推得：

$$P = P(Q) \tag{27}$$

分別對第(18)式之Y_{11}與Y_{12}對π^1偏微：

$$\frac{\partial \pi^1}{\partial Y_{11}} = \theta Q \frac{\partial P}{\partial Q} \times \frac{\partial Q}{\partial Y_{11}} + \theta P \frac{\partial Q}{\partial Y_{11}} - 1 = 0 \tag{28}$$

$$\frac{\partial \pi^1}{\partial Y_{12}} = \theta Q \frac{\partial P}{\partial Q} \times \frac{\partial Q}{\partial Y_{12}} + \theta P \frac{\partial Q}{\partial Y_{12}} - 1 = 0 \tag{29}$$

另將第(19)式之Y_{21}與Y_{22}對π^2偏微：

$$\frac{\partial \pi^2}{\partial Y_{21}} = (1-\theta)Q\frac{\partial P}{\partial Q}\times\frac{\partial Q}{\partial Y_{21}} + (1-\theta)P\frac{\partial Q}{\partial Y_{21}} - 1 = 0 \tag{30}$$

$$\frac{\partial \pi^2}{\partial Y_{22}} = (1-\theta)Q\frac{\partial P}{\partial Q}\times\frac{\partial Q}{\partial Y_{22}} + (1-\theta)P\frac{\partial Q}{\partial Y_{22}} - 1 = 0 \tag{31}$$

將第(28)式之$\theta {}^{\partial Q}\!/\!_{\partial Y_{11}}$ 提出：

$$\theta\frac{\partial Q}{\partial Y_{11}}\left(Q\frac{\partial P}{\partial Q} + P\right) = 1 \tag{32}$$

第(32)式改寫為：

$$\theta\frac{\partial Q}{\partial Y_{11}}P\left(1+\frac{Q}{P}\times\frac{\partial P}{\partial Q}\right) = 1$$

$$\theta\frac{\partial Q}{\partial Y_{11}}P\left(1-\frac{1}{-\frac{P}{Q}\times\frac{\partial Q}{\partial P}}\right) = 1$$

$$\theta\frac{\partial Q}{\partial Y_{11}}P\left(1-\frac{1}{\varepsilon}\right) = 1 \tag{33}$$

ε為需求價格彈性。

同理，第(29)式可改寫為：

$$\theta\frac{\partial Q}{\partial Y_{12}}P\left(1-\frac{1}{\varepsilon}\right) = 1 \tag{34}$$

將第(30)式之$(1-\theta){}^{\partial Q}\!/\!_{\partial Y_{21}}$ 提出：

$$\frac{\partial \pi^2}{\partial Y_{21}} = (1-\theta)\frac{\partial Q}{\partial Y_{21}}\left(Q\frac{\partial P}{\partial Q} + P\right) = 1 \tag{35}$$

第(35)改寫為：

$$(1-\theta)\frac{\partial Q}{\partial Y_{21}}P\left(1+\frac{Q}{P}\times\frac{\partial P}{\partial Q}\right) = 1$$

$$(1-\theta)\frac{\partial Q}{\partial Y_{21}}P\left(1-\frac{1}{-\frac{P}{Q}\times\frac{\partial Q}{\partial P}}\right)=1$$

$$(1-\theta)\frac{\partial Q}{\partial Y_{21}}P\left(1-\frac{1}{\varepsilon}\right)=1 \tag{36}$$

同理，第(31)式可改寫為：

$$(1-\theta)\frac{\partial Q}{\partial Y_{22}}P\left(1-\frac{1}{\varepsilon}\right)=1 \tag{37}$$

從第(33)、(34)、(36)、(37)式可得到下述命題：

命題二：在市場需求彈性大的情況下($\varepsilon > 1$)，主理人給予代理人的獎酬與代理人的產量成正相關。而在市場需求彈性小的情況下($\varepsilon < 1$)，則主理人給予代理人的獎酬與代理人的產量成負相關。當市場需求彈性係數等於1的情況下($\varepsilon=1$)，主理人給予代理人獎酬越高，反而會導致主理人的利潤下降。

我們可從命題二得到以下三點經濟意涵：

1. 當$\varepsilon > 1$，即$P+Q\,\partial P/\partial Q > 0$ 時，主理人給予代理人的獎酬與代理人的產量成正相關。在市場需求彈性大的情況下，以一般民生產品為例，民生產品替代性較大，當產品價格上升時，民眾還是有其他的產品可選擇。一般民營企業通常以利潤最大化為目標，假設代理人都選擇努力工作，主理人給予代理人的獎酬越多，則可誘使代理人生產量增加。

   將此結果進一步延伸思考，一般企業通常會以年資來計算薪資獎酬，換言之，當代理人待在某一企業越久，所獲得的年資獎酬相對會比較多。假若一位年資較深的代理人與一位年資較淺的代理人，年資較淺的代理人可能努力工作，但所獲得的薪資獎酬卻比年資深的偷懶代理人還少。因此，企業若能把獎酬與代理人的績效結合起來，不以年資來計算薪資獎酬時，相信一定可以誘使每位代理人加倍努力工作，並減緩代理人偷懶的情況發生。

2. 當$\varepsilon < 1$，即$P+Q\,\partial P/\partial Q < 0$ 時，則主理人給予代理人的獎酬與代理人的產量成負相關。在市場需求彈性小的情況下，以製米業為例，台灣地區以米食為主要糧食，因此，米對台灣人來說可替代性相當小。當米的價格上升時，消費者還是會選擇購買。假設代理人努力行為選擇偷懶，此時，主理人給予代理人再多的獎酬，代理人並不會選擇努力工作，代理人所生產出的產品量並不會因為更多的獎酬而使產品量增多。

主理人可藉由監督機制或懲罰機制來防止代理人偷懶，Fama（1980）研

究代理問題時，認為在競爭市場下，董事會就是一個低成本的控制機制，並能有效解決代理問題。陳建中（2000）探討多代理人間私下溝通與監督機制對組織的影響，發現團隊工作之資訊系統為個人貢獻型且代理人監督能力不小時，則主理人可藉由誘發代理人間互相監督工作行動以減少道德風險問題的發生。因此，一個監督機制完善的企業，能使代理人努力工作，並減緩代理問題的發生。主理人可藉由監督機制或懲罰機制來防止代理人偷懶，將來的研究方向將可擴展模型當如何設計監督機制或懲罰機制，以減緩代理問題。

3. 當$\varepsilon = 1$，即$P+Q\partial P/\partial Q=0$時，則$\partial\pi^1/\partial Y_{11}=-1$，$\partial\pi^1/\partial Y_{12}=-1$，$\partial\pi^2/\partial Y_{21}=-1$，$\partial\pi^2/\partial Y_{22}=-1$，主理人給予代理人獎酬越多，反而會導致主理人的利潤下降。將結果(2)與結果(3)作比較，我們發現主理人給予代理人獎酬越多，結果(2)會使代理人所生產的產品量下降，結果(3)卻造成主理人的利潤下降。如果代理人所生產的產品量越多，則可能破壞市場行情，導致主理人所獲得的利潤下降。因此，主理人會設定一個最適產量，以減少利潤下降的情況發生。將來的研究方向將可擴展朝向最適產量如何得之才能減少利潤下降。

本研究在上述旨在分析雙主理人與雙代理人所衍生的代理問題，在下文即將探討的命題三與命題四，則將探討主理人數目內生化的議題，以彌補既有文獻主理人數目考慮為外生性之不足。有鑑於過去的文獻探討主理人持有股份時，並未對資金成本加以考慮進去，我們假設主理人總持有股份必須支付資金K，r為每單位的資金成本。則主理人 1 利潤為：

$$\Pi^1 = (\theta PQ) - Y_{11} - Y_{12} - \theta Kr \tag{38}$$

主理人 2 利潤為：

$$\Pi^2 = (1-\theta)PQ - Y_{21} - Y_{22} - (1-\theta)Kr \tag{39}$$

我們將股份設定為內生性，將第(38)式及第(39)式之θ和$(1-\theta)$微分：

$$\frac{d\Pi^1}{d\theta} = \frac{d\Pi^2}{d(1-\theta)} = PQ - Kr = 0 \tag{40}$$

從第(40)式可推導得下述命題：

命題三：當主理人持有的股份將資金成本加以考慮進去時，(1) $PQ > Kr$時，則$(\theta, 1-\theta) = (1,1)$，有以下兩種結果：(i) 假設主理人 1 與 2 同時作決策，兩位主理人所持有的股份會形成兩位主理人各持有一半股份的情況；(ii) 假設兩位主理人並非同時做決策，主理人 1 具有先行者優勢，便會形成單一主理人與多位代理人情況。(2) 反之，當$PQ < Kr$時，則$(\theta, 1-\theta) = (0,0)$，兩位主理人都沒有持有股份。

從命題三可得到以下經濟意涵：

1. ${}^{d\Pi^1}\!\big/_{d\theta} = {}^{d\Pi^2}\!\big/_{d(1-\theta)} = PQ - Kr > 0$，當 $PQ > Kr$ 時，則 $(\theta, 1-\theta) = (1,1)$，有以下兩種結果：

   (1) 假設主理人 1 與 2 同時作決策，兩位主理人都想持有股份最大化，但這種情況並不是如願的。因此，兩位主理人為追求持有股份最大化，便會進行角力。此時，兩位主理人所持有的股份會形成兩位主理人各持有一半股份的情況。

   (2) 假若兩位主理人並非同時做決策，主理人 1 具有先行者優勢，此時，主理人 1 為追求持有股份最大化，主理人 1 便會持有所有的股份。主理人 2 則無法持有股份，便會形成單一主理人與多位代理人情況。

2. 反之，${}^{d\Pi^1}\!\big/_{d\theta} = {}^{d\Pi^2}\!\big/_{d(1-\theta)} = PQ - Kr < 0$，當 $PQ < Kr$ 時，主理人持有的股份較多時，利潤則會下降。因此，$(\theta, 1-\theta) = (0,0)$，兩位主理人都沒有持有股份。換言之，此公司並不存在。

由於命題三中 r 為常數，本研究進一步假設主理人總持有資金為外生變數，亦即為常數 $K = \overline{K}$，如此將可以進一步放寬 r 為常數假設，如此將可以探討主理人持有股份比率較一般化的議題。假設每單位資金成本為持有股份比率的函數，r 為 θ 之函數，並將 $1-\theta$ 設定為 z，意即 $1-\theta = z$，對主理人 1 而言 $r = f(\theta)$，對主理人 2 而言 $r = f(z)$。且持股比率越高，所需資金越多，每單位資金成本呈現加速遞增之趨勢：$f'(\cdot) \geq 0$ 且 $f''(\cdot) \geq 0$。我們考慮單期模型，此時一階必要條件為內部解，主理人 1 利潤為：

$$\Pi^1 = \theta PQ - Y_{11} - Y_{12} - \theta \overline{K} f(\theta) \tag{41}$$

主理人 2 利潤為：

$$\Pi^2 = zPQ - Y_{21} - Y_{22} - z\overline{K} f(z) \tag{42}$$

將第(41)、(42)式作一階微分：

$$\frac{\partial \Pi^1}{\partial \theta} = PQ - \overline{K} f(\theta) - \theta \overline{K} f'(\theta) = 0 \tag{43}$$

$$\frac{\partial \Pi^2}{\partial z} = PQ - \overline{K} f(z) - z\overline{K} f'(z) = 0 \tag{44}$$

將第(43)、(44)式作二階微分，得到滿足最適化的二階充分條件：

$$\frac{\partial^2 \Pi^1}{\partial \theta^2} = -2\overline{K} f'(\theta) - \theta \overline{K} f''(\theta) \leq 0 \tag{45}$$

$$\frac{\partial^2 \Pi^2}{\partial z^2} = -2\overline{K}f'(z) - z\overline{K}f''(z) \le 0 \tag{46}$$

$$\theta = z = \frac{PQ - \overline{K}r}{\overline{K}} \times \frac{1}{f'} \tag{47}$$

命題四：如果利率為股份的函數時：（1）若 $f' > 0$，$PQ - \overline{K}r > 0$，$-2\overline{K}f'(\theta) \le \theta\overline{K}f''(\theta)$，$\theta$與$z$始可能為內部解；（2）若 $f' < 0$，$PQ < \overline{K}r$ 且 $f'' > 0$，$-2\overline{K}f'(\theta) \le \theta\overline{K}f''(\theta)$，$\theta$與$z$始可能為內部解；（3）若 $f' = 0$，結果與命題三相同。

1. $f' > 0$，此時為嚴重超額需求，需求大於供給且為賣方市場，如果主理人需要擁有資金必須付出較高的利率。$PQ - \overline{K}r > 0$，可推得知$PQ > \overline{K}r$ 且 $f'' < 0$，$-2\overline{K}f'(\theta) \le \theta\overline{K}f''(\theta)$，$\theta$與$z$始可能為內部解而非邊角解，意即 $0 < \theta < 1$。兩位主理人為追求利潤最大化，除了需考慮給予兩位代理人的獎酬之外，還必須考慮資金所付出的利率。因此，當市場為需求大於供給的賣方市場時，主理人又需要資金時，主理人可能會考慮本身的利潤最大化，選擇其他的方法來獲得資金，如購買債券。

2. $f' < 0$，此時為嚴重超額供給，供給大於需求且市場會差別定價，假若主理人需要資金，可以獲得較優惠的利率。$PQ - \overline{K}r < 0$，則可得知$PQ < \overline{K}r$ 且 $f'' > 0$，$-2\overline{K}f'(\theta) \le \theta\overline{K}f''(\theta)$，$\theta$與$z$始可能為內部解。此時，市場為買方市場，主理人為追求利潤最大化，會選擇在這時候擴大資金以增加自身所持有的股份。假若主理人 1 所擁有的資金較主理人 2 較多，主理人 1 所持有的股份也會相對較主理人 2 多，在這樣的情況下，可能會發生大股東侵占小股東權益的情形。

3. $f' = 0$，此結果會與命題三相同，兩位主理人如果是同時作決策，則會形成兩位主理人各持有一半的股份。若兩位主理人非同時做決策時，會形成單一主理人與兩位主理人的現象，或兩位主理人並不持有股份。

命題四與命題三不同的地方於將$1-\theta$設定為z，$z = 1-\theta$。假若主理人 1 與主理人 2 各持有 0.3 的股份，兩位主理人所持有的股份加起來不等於 1，因此，我們可推得而知此種情況下並非是兩位主理人與兩位代理人，而是有兩位主理人或三位主理人以上。

伍、結論與建議

當代企業盛行所有權與經營權分離的經營型態，然而大多數的主理人或許不具備專業知識，亦可能自我時間與利益調配之考量，主理人常將經營權委任給代理人執行，主理人和代理人間便存在代理關係。本研究有鑑於當代企業所有權與經營權分離的現象盛行，擬在所有人與經營人皆非僅一人的情形，即主

理人與代理人皆為多人之下的代理問題進行研究。

主理人和代理人間存在資訊不對稱，及代理人基於自利行為，往往無法與主理人的目標一致，因而產生道德危機問題。當代理人因為各種自我利益因素而使公司偏離利潤極大化的行為時，便會發生代理問題。

傳統代理理論相關文獻，可將代理模型分為三種：（1）一對一（單一主理人與單一代理人）的代理模型；（2）多對一（多重主理人與一位代理人）的代理模型；（3）一對多（一位主理人和多重代理人）的代理模型。有別於過去傳統代理模型研究，本研究欲彌補傳統文獻尚未對多對多的模型深入研究，探討兩位主理人和兩位代理人之間的交互作用，因此，本文建立一個多對多的代理模型，以探討兩位主理人和兩位代理人間相互關係。

本研究主要結論如下。第一，當兩位主理人決定共同合作時，主理人給予代理人的邊際獎酬等於主理人的邊際收入，兩位主理人才能達到聯合利潤最大化。第二，在市場需求彈性大的情況下，主理人給予代理人的獎酬與代理人的產量成正相關。而在市場需求彈性小的情況下，則主理人給予代理人的獎酬與代理人的產量成負相關。當$\varepsilon = 1$，$P+Q{}^{\partial P}\!/_{\partial Q}=0$時，主理人給予代理人獎酬越高，反而會導致主理人的利潤下降。

第三，當主理人持有的股份將資金成本加以考慮進去時：（1）$PQ > Kr$ 時，$(\theta,1-\theta)=1$，有以下兩種結果：（i）假設主理人 1 與 2 同時作決策，兩位主理人所持有的股份會形成兩位主理人各持有一半股份的情況；（ii）假設兩位主理人並非同時做決策，主理人 1 具有先行者優勢，便會形成單一主理人與多位代理人情況。（2）反之，當 $PQ < Kr$ 時，則 $(\theta,1-\theta)=(0,0)$，兩位主理人都沒有持有股份。

最後，如果將利率(r)設定為股份(θ)的函數時：（1）若 $f' > 0$，$PQ-\overline{K}r > 0$，$-2\overline{K}f'(\theta) \le \theta\overline{K}f''(\theta)$，$\theta$與$z$始可能為內部解；（2）若 $f' < 0$，$PQ < \overline{K}r$ 且 $f'' > 0$，$-2\overline{K}f'(\theta) \le \theta\overline{K}f''(\theta)$，$\theta$與$z$始可能為內部解；（3）若 $f' = 0$，此結果會與命題三相同。

如何減緩代理問題是管理會計常研究的議題，本研究的理論可應用在一般企業上，主理人提供最適的契約誘使代理人更努力工作，使主理人與代理人利益目標一致，減緩代理問題。後續研究二對二代理模型可考慮加入齒輪效果，兩位代理人也可能因為競爭獎酬，而發生輪流拿獎酬的情況，產業的類別、代理人的領域也可能影響主理人與代理人間的關係。二對二代理模型也可延伸至m個主理人與n個代理人（$m = n$或$m \ne n$）進行研究分析，這些都是可以作為後續研究的方向。

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出售固定資產決策之決定與影響

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摘要

本文的研究目的是在探討影響企業出售固定資產活動多寡的因素，以及分析出售固定資產活動與公司表現間的關聯性。本文以 1996-2005 年的台灣上市公司為研究對象，探討經理人的盈餘管理動機、企業的融資限制，以及營運效率三種因素對公司出售固定資產活動多寡的影響。實證結果顯示，經理人透過實現處分固定資產利益，來改善公司盈餘數字的盈餘管理操作，是公司進行較多固定資產出售活動的重要原因。另外，公司融資能力受限程度高的公司和營運效率不佳的公司，皆會進行較多的出售固定資產活動。本文亦發現，公司出售固定資產之市場評價效果，會受到公司出售固定資產的原因，以及使用資金的方式影響。

關鍵詞：出售固定資產、盈餘管理、融資能力、營運效率、公司表現

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Determinants of Fixed Asset Sales and Its Impact on Performance

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Abstract

In this study, we investigate the determinants of fixed asset sales and examine the relationship between fixed asset sales and firm performance. Our sample includes all non-financial listed companies during the 1996-2005 periods in Taiwan. The results show that managing reported earnings is an important reason that firms sell more fixed assets. We also find that firms with poorer operating efficiency and facing greater financing constraints sell more fixed assets. Our investigation also shows that there is a significantly relationship between fixed asset sales and firm market value performance, and the relationship is affected by why firms sell fixed assets and how firms use their capital.

Keywords: *Fixed asset sales, Earnings management, Financing constraints, Operating efficiency, Firm performance*

壹、前言

出售固定資產是多數企業在營運的過程中，都需面對的決策。根據本研究的統計，1996 至 2005 年間，每年平均約有近九成[1]的台灣上市公司有進行出售固定資產活動。另一方面，上市公司出售固定資產活動每年亦使大量的資金與資源進行重新配置。在 1996 年，全體上市公司總出售固定資產金額約為 168 億元；時至 2005 年，總出售固定資產金額已達 446 億元。在這十年間，上市公司出售固定資產的活動雖時有消長，但上市公司總出售固定資產金額的年度成長率平均約為 14%。不論就該活動執行的普遍性，或其牽涉資源（和資金）的規模，公司出售固定資產活動都是一個值得深入探討的議題。

雖然出售固定資產活動普遍存在於企業的營運過程中，但企業進行固定資產出售的原因卻不盡相同，且出售固定資產的程度（金額多寡）亦有很大的差異。美化盈餘數字、取得資金挹注，以及改善營運效能等理由都曾見諸報章，被指稱是公司出售固定資產的原因。然而，這些理由是否確實是影響公司出售固定資產多寡的重要因素，以及出售固定資產多寡對公司價值（或表現）所產生的影響為何？這些皆是攸關投資人權益、投資人實際關切的問題。

過去，學者各從不同的角度探討公司進行資產出售的原因。有一部份學者著重於資產出售與盈餘管理的關聯性（例如：Bartov 1993; Poitras, Wilkins and Kwan 2002; Herrmann, Inoue and Thomas 2003）[2]；有學者則從營運效率的角度，審視公司固定資產出售決策（例如：Hite, Owers and Rogers 1987; Maksimovic and Phillips 2001; Warusawitharan 2008）；另外，亦有部分學者專注於固定資產出售與公司融資限制的關係（例如：Lang, Poulsen and Stulz 1995; Pulvino 1998）。然而，就我們所知，鮮少文獻對於影響公司出售固定資產活動多寡之因素進行分析。

國內關於固定資產之研究，多以公司對固定資產「投資」之資本支出決策為出發點，探討資本支出決策與企業價值關係及其影響因素（如林家輝 2005；楊朝旭與黃潔 2004；金成隆、林修葳與邱煒琚 2005；林雨欣 2008；斜志斌 2007）。針對固定資產「出售」決策影響因素之研究很少，且多單獨探討某單一構面的影響因素，例如林淑莉與陳富祥（2003）是探討負債比例對我國企業出售資產行為之影響；部份文獻則主要著重在盈餘管理論點的分

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[1] 本研究以 1996-2005 年的台灣上市公司為研究對象。在排除資料不全的樣本後，共得到 3,981 個樣本，其中有 3,518 個樣本是有進行出售固定資產的公司，佔全部樣本的比例為 88.4%。詳細的各年度比例可參閱表一。

[2] Bartov（1993）、Poitras et al.（2002）及 Herrmann et al.（2003）的研究並非針對固定資產出售，而是合併固定資產與長期投資性資產的出售活動進行分析。

析[3]（管夢欣 1993；林陣蒼 2005；張文瀞與黃惠專 2005）。

另一方面，對於出售固定資產活動對經營績效的影響，文獻主要是從股價對出售資產宣告的反應來進行探討（例如：林炯垚與沈中華 1996；Brown, James and Morradian 1994; Lang et al. 1995）。從宣告日股價的反應，可以瞭解市場（或投資人）對公司出售資產活動的評價；不過，出售資產對公司市場績效表現的影響亦應是另一個值得投資人關注的議題[4]。

在公司主要揭露母子公司合併報表資訊之現況下，母公司與營運相關之長期股權投資已多由投資科目沖銷轉入母公司之資產、負債、營業收入、營業成本，而合併報表上之投資性資產主要為投資性而非營運性之股票及債券。因此，投資性資產出售決策主要涉及公司之盈餘管理與融資兩個構面，與企業的營運效率較未有直接的關聯性[5]。相對的，出售固定資產決策不但可能與公司融資與盈餘管理活動有關，亦會涉及公司的營運層面。故有別於過去部分文獻合併固定資產與投資性資產進行討論，本研究將針對企業出售固定資產活動進行分析，以期能更全面的瞭解公司營運、盈餘管理，與融資三個構面，對出售資產決策之影響。

本研究以 1996-2005 年的台灣上市公司為研究對象，探討影響公司出售固定資產活動多寡的因素。實證結果顯示，盈餘管理、融資限制和改善營運效率三因素皆對公司出售固定資產多寡有顯著的影響力。研究發現，當出售固定資產有利益產生時，經理人會出售較多固定資產，俾以實現出售固定資產利益，來達到改善盈餘數字的目的。另外，我們也發現，融資能力受限程度高的公司會進行較多的出售固定資產活動。此結果支持 Lang et al.（1995）的論點，即對融資能力受限程度高的公司而言，出售資產是一個相對較容易取得資金的籌資管道。實證結果亦顯示，營運表現不佳的公司會從事較多的出售固定資產活動。穩定性分析顯示，以上的實證發現並不受出售固定資產金額的影響。

在出售固定資產與公司市場評價（股價）表現方面，本研究以出售固定資產當年度年底之 Tobin's q 衡量公司市場績效表現，實證結果顯示，平均而言，從事越多出售資產活動，公司市場評價表現越差。此一發現可能與公司出售固定資產後無法有效提升運作效率有關（Lang et al. 1995; Maksimovic and Philips 2001; Datta, Iskandar-Datta and Raman 2003; Shin 2008; Yang 2008）。不過，實證亦發現當公司是基於融資需求和改善營運效率而進行固定資產出售時，市場評

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[3] 林嬋娟和官心怡（1996）雖亦有探討出售資產與盈餘管理間的關係，不過，該篇文章主要是以分析經理人盈餘預測與盈餘操縱間的關聯性為目的。

[4] 本文是以出售固定資產當年度之 Tobin's q 年底值來衡量公司的市場績效。

[5] 出售投資性資產與管理當局盈餘管理活動的關聯性，已獲得相當多實證文獻的支持。

價（股價）表現相對較佳；另外，出售固定資產且亦進行債務償還的公司，亦會有相對較佳的市場評價（股價）表現。過去文獻指出，出售固定資產原因和資金使用用途是影響市場對公司出售資產宣告反應的重要因素（Hite et al. 1987; Lang et al. 1995; Bates 2005）。本研究的實證發現佐以過去學者的論點，可確認出售固定資產原因和資金使用用途，是在探討出售固定資產影響時，不可忽略的重要面向。

本研究以下依下述節次進行：在第二節我們會建立本研究的研究假說，於第三節介紹本研究所使用的樣本及研究方法，並於第四和第五節分敘研究的實證結果和結論。

貳、研究假說

企業經理人可能會透過固定資產出售活動來進行盈餘管理。為了讓報表使用人以為公司是穩定成長的健全公司，公司常會利用各種方法，避免報導損失或盈餘下降的情況。Burgstahler and Dichev（1997）發現盈餘小額減少及有小額損失的公司家數異常的少，而盈餘小額增加及有小額正盈餘的公司家數異常的多；亦即，經理人有避免盈餘下降（earnings decreases）及避免盈餘出現虧損（avoidance of losses）的動機。

處分業外損益所產生的損益會直接影響企業繼續營業部門淨利，而投資者之投資決策通常是依據繼續營業部門淨利，因此管理當局可利用業外損益進行盈餘管理來影響投資人的決策。固定資產是以取得成本入帳，其帳面價值會隨著時間經過與市價產生差異，由於經理人可以決定處分資產的時點，其可透過固定資產出售決策而影響公司之盈餘。過去一些研究文獻之結果顯示，企業經理人確實會透過固定資產出售活動來進行盈餘管理。

Bartov（1993）從平穩盈餘的盈餘管理目的進行分析，發現經理人會藉由出售資產時點的選擇，來實現處分資產損益，藉此達到平穩盈餘波動的目的。Poitras et al.（2002）以新加坡公司為樣本則發現，當不包含處分資產損益前的盈餘呈現衰退的情形時，出售資產損益與盈餘變動數為負向關係，顯示管理者會出售資產以平穩盈餘。當公司盈餘減少時，會有透過出售資產利得來改善公司當期盈餘數字的現象，並藉此平穩盈餘波動。另外，Herrmann et al.（2003）從盈餘預測的角度，探討出售資產與盈餘管理之間的關係，發現當公司當期的營收低於經理人之前的預測時，日本企業會透過出售資產的方式來增加當期盈餘。楊朝旭與吳幸蓁（2003）以營業活動現金流量做為操縱前盈餘的代理變數，其實證結果發現，不論以「零」或「前期報導盈餘」為績效門檻，皆與裁決性應計項目呈顯著為正的關係。張文瀞與黃惠專（2005）針對台灣地區處分投資、

盈餘平穩化與市場評價進行測試，亦證實處分投資損益經常被用來作為盈餘管理的工具。

Cohen, Dey and Lys（2008）發現，美國企業在沙賓法案（Sarbanes-Oxley Act, SOX）通過後，應計基礎之盈餘管理（accrual-based earnings management）顯著減少，採實際交易之實質盈餘管理（real earnings management）顯著增加。Cohen et al.（2008）指出，相較於應計基礎的盈餘管理活動（accrual-based earnings management），透過實際交易進行實質盈餘管理（real earnings management），對企業而言，雖然操作成本高，但因其有實際交易發生（而非僅從帳面操弄盈餘），有較不易被偵測的特性，也因此，當沙賓法案通過、公司內控機制增強時，美國企業會由利用應計基礎操弄會計帳面數字之方式，轉向改採實質交易（例如出售固定資產損益）方式影響損益。

綜合過去文獻的發現，我們推論，經理人之盈餘管理動機可能影響企業進行固定資產之出售決策[6]：當公司有避免盈餘下降及出現虧損的向上盈餘管理動機，且有產生固定資產出售利得之機會時，公司經理人會增加固定資產出售活動，以達到相對應之向上盈餘管理目的。因此，我們提出以下假說 1-1 及假說 1-2：

假說 1-1：在其他條件不變的情況下，有避免“盈餘下降”之向上盈餘管理動機且有機會產生固定資產出售利得的公司，會進行較多之固定資產出售活動。

假說 1-2：在其他條件不變的情況下，有避免“盈餘出現虧損”之向上盈餘管理動機且有機會產生固定資產出售利得的公司，會進行較多之固定資產出售活動。

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[6] 除了利用『處分』固定資產產生損益來影響損益外，企業亦可利用認列固定資產『減損損失』影響損益。但根據以下兩個原因，本研究認為『處分』固定資產損益較適合偵測本研究所欲探討的盈餘管理動機。（1）財務會計準則第三十五號公報「資產減損之會計處理準則」係從 94 年 1 月 1 日開始實施，而本研究之樣本期間為民國 85 年至 94 年。因此本研究長達 10 年之樣本期間中僅有最後一年（民國 94 年），經理人可能以認列固定資產減損損失之方法向下盈餘管理，絕大多數樣本期間經理人仍會考慮利用實現處分資產的損益來盈餘管理。（2）根據財務會計準則第三十五號公報，企業應於資產負債表日評估是否有跡象顯示資產可能發生減損，當有減損跡象存在，即應將資產可回收金額低於帳面價值部分認列為減損損失。續後年度資產價值如有回升，除商譽外，亦可於原認列損失範圍內認列回升利益。換言之，企業雖可利用認列減損損失向『下』管理盈餘，但利用認列回升利益向『上』管理盈餘則會受限於原認列損失之範圍；相對而言，利用處分固定資產損益（尤其是利益）管理盈餘較不受限制。因為本研究主要在討論公司避免盈餘下降或避免出現虧損的盈餘動機，其屬向『上』管理盈餘，透過『處分』固定資產進行相對應的盈餘管理，將相對具有較大的盈餘調整空間。

企業出售固定資產亦有可能是為了取得營運所需的資金。Lang et al.(1995)指出，對於對外融資成本高、舉債不易的公司而言，出售資產是一個相對方便（或甚至是便宜）的取得資金方式。因此，當公司所受到的對外融資限制愈高，透過出售資產活動來獲得資金挹注的需求會增加。

公司規模的大小會影響企業對外的融資能力（Almeida, Campello and Weisbach 2004）。大公司較為市場所熟知且有較多的融資管道，因此對外籌資相對受到的限制較少。另一方面，小公司易因為資訊不對稱及資產規模相對有限的因素，而需承擔較高的舉債成本（Pettit and Singer 1985; Voulgaris, Asteriou and Agiomirgianakis 2004）。因此，本研究推論，相對於大公司，小公司較可能透過出售固定資產的方式來滿足公司的資金需求。假說 2-1 建立如下：

假說 2-1：在其他條件不變的情況下，規模小的公司會進行較多之固定資產出售活動。

公司負債比率亦會影響企業的融資能力。負債比例高的公司通常無法取得便宜的外部資金：一方面，高負債比率會使公司面臨較高的財務風險，因此當公司對外籌措資金時，投資人將要求較高的報酬以作為風險補貼；另一方面，高負債比率將衍生較嚴重的負債代理問題（Jensen and Meckling 1976；Myers 1977），而此代理問題將反映在較高的資金成本上。負債程度較大的公司為了減輕資金成本及避免違反債務契約，有盈餘管理之動機（Bartov 1993）。過去實證研究發現，公司負債比率與公司處分資產之程度呈正相關（黃志仁、廖彩伶與陳于格 2009；Bartov 1993; Herrmann et al. 2003）。Chen and Guo（2005）研究結果顯示，當公司的負債比率較高時，企業會透過資產出售減輕其資金需求。

根據以上文獻，本研究推論：負債比率高的公司因較無法取得便宜的外部資金，其利用出售固定資產來取得資金的需求相對較高，假說 2-2 建立如下：

假說 2-2：在其他條件不變的情況下，舉債比例高的公司會進行較多之固定資產出售活動。

除了公司規模及負債比例外，內部資本市場的大小也會影響企業對外融資的能力及需求。過去有學者指出，擁有較大內部資本市場的企業有較佳的對外融資能力。Doukas and Pantzalis（2003）發現，公司部門數與長期負債比率有顯著的正向關係。另外，Verschueren and Deloof（2006）指出，集團企業因為有集團的信用背書，因此有較佳的對外籌資能力。不過，另一方面，有學者認為，擁有較大內部資本市場的公司由於有較佳的內部資金使用彈性，因此，對

外部資金來源的倚賴程度較低（Matsusaka and Nanda 2002）。總的來說，企業的內部資本市場確實會影響公司對外的融資能力和需求。不論從融資能力或是需求來分析，本研究推論：內部資本市場較小的公司倚賴出售固定資產來取得資金的需求相對較高，假說 2-3 建立如下：

假說 2-3：在其他條件不變之情況下，內部資本市場小的公司會進行較多之固定資產出售活動。

提升生產效率也是企業出售固定資產的重要原因之一。Hite et al.（1987）指出，資產出售可以讓公司將資源重新配置，使資產的運用更有效率。Warusawitharan（2008）則進一步指出，公司會在符合投資效率的前提下進行資產的買賣決策，使公司能以最適規模進行營運；換言之，公司的獲利能力和規模會影響其決定購買或出售資產。因此，當公司營運效率不佳時，為改善營業績效，公司會出售無效率的固定資產以提升營運效率。過去學者的研究顯示，公司出售資產後的營運績效會有顯著提升（林淑莉與陳富祥 2003；Lang et al. 1995; John and Ofek 1995; Hillier, Denis and Shome 2005; Mcolgan and Werema 2009）。

綜合以上敘述，我們預測，營運績效差的公司，較會進行固定資產出售，藉此來改善公司的營運效率。

假說 3：在其他條件不變之情況下，營運效率差的公司會進行較多之固定資產出售活動。

參、研究設計

一、樣本選取與資料來源

本研究以台灣上市公司為研究樣本。資料蒐集期間自 1995-2005 年。由於本研究的變數衡量會使用到前期資料，因此實際的研究期間為 1996-2005 年，共計 10 年。於研究期間內，台灣上市公司共有 6,183 筆觀測點，在排除金融類股及資料不齊全的樣本後，剩下 3,981 筆樣本。我們將樣本資料依其年度和出售固定資產的狀況進行分類，並將整理結果列於表一。

在這 3,981 個樣本裡，有 3,518 個樣本在研究期間有進行固定資產出售，佔全部樣本的 88.4%。而在十年的樣本期間，出售固定資產樣本佔年度樣本比重最低的是 2003 年（85.6%），比重最高的則為 1999 年的 91.6%。這些數字顯示，多數企業在營運的過程中，確實都曾面臨出售固定資產的抉擇。

表一 1996-2005 年出售固定資產之台灣上市公司年度分佈狀況

年度	樣本數	出售固定資產公司之樣本數	出售固定資產公司佔各年度樣本之百分比（%）
1996	241	217	90.0
1997	282	255	90.4
1998	189	163	86.2
1999	321	294	91.6
2000	400	366	91.5
2001	448	405	90.4
2002	484	420	86.8
2003	540	462	85.6
2004	562	495	88.1
2005	514	441	85.8
合計	3,981	3,518	88.4

另外，我們從樣本公司出售固定資產價款的分佈（見表二）可以發現，各公司出售固定資產價款的總金額，差異甚大。約有近三成（28%）的公司年度出售固定資產價款總額不足一百萬元；不過，也有約四成（42.1%）的樣本，出售固定資產的總價款一千萬以上，甚至有 14.9%的樣本出售固定資產的總價大於一億元。

表二 1996-2005 年出售固定資產樣本之價款分佈

出售固定資產金額	樣本數	佔有出售固定資產樣本之百分比（%）
未滿 100 萬元	987	28.0
100 萬元～1000 萬元	1,052	29.9
1000 萬元～5000 萬元	697	19.8
5000 萬元～10,000 萬元	259	7.4
10,000 萬元～20,000 萬元	204	5.8
20,000 萬元以上	319	9.1

另一方面，我們也將出售固定資產樣本根據其是否有出售利益[7]進行分類，結果列在表三。雖然有出售利益的公司在每年樣本所佔的百分比不盡相同，但表三的數據顯示，在出售固定資產的樣本公司裡，約有近一半的出售固定資產樣本有出售固定資產利益；換言之，約有一半的樣本公司在出售固定資

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[7] 本研究是根據公司現金流量表中的固定資產處分損（益）項目來判斷是否有出售利益。當該年度公司固定資產處分有利益時，我們認定存在出售利益。

產時，有損失發生[8]。

表三 1996-2005 年出售固定資產有利益之樣本年度分配

年度	出售固定資產有利益的樣本	佔各年度出售固定資產樣本之百分比（%）
1996	92	42.4
1997	134	52.6
1998	76	46.6
1999	125	42.5
2000	166	45.4
2001	186	45.9
2002	195	46.4
2003	225	48.7
2004	237	47.9
2005	230	52.2
合計	1,666	47.4

從以上數據，我們可以推知，公司在進行出售固定資產決策時，美化盈餘數字並非公司唯一的考量，但在此，我們並不能排除公司藉由出售固定資產來進行盈餘管理的可能性。整體而言，我們可以發現，上市公司出售固定資產活動相當頻繁，且彼此間存在相當程度的差異性。因此，瞭解造成公司出售固定資產活動差異的因素，便是本文的重要研究目的之一。

本研究所使用的公司財務變數資料皆是取自台灣經濟新報社（TEJ）資料庫。另外，本研究沿用 Doukas et al.（2003）的方法，使用公司的部門別資訊來衡量公司內部資本市場的大小。本研究則是透過證基會真像王資料庫取得公司股東會年報，並從個別公司年報中整理出所需的部門別資料。

二、模型設定

為檢驗影響企業出售固定資產決策的因素，本研究設定以下模型來進行分析：

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[8] 本研究係探討台灣上市公司出售固定資產決策之影響因素，公司選擇不出售固定資產亦為決策之一。因此本文研究樣本為所有上市公司。在排除金融類股及資料不齊全的樣本後，剩下 3,981 筆樣本。在 3,981 個總樣本中，有 3,518 個樣本在研究期間有進行固定資產出售，其餘樣本則公司處分固定資產價款（應變數 ASale）為 0。表二與表三係針對有出售固定資產之樣本，分析出售資產樣本之價款分佈及出售資產有利益樣本之利益分佈，故以 3,518 樣本數來計算。表四之後本文之主要研究結果，則皆為 3,981 個總樣本之研究結果。

$$ASale_i = \alpha + \beta_1 (EManage)_i + \beta_2 (Finance)_i + \beta_3 (Efficient)_i + \gamma (ControlVariables)_i + \varepsilon_i$$

其中，因變數 *ASale* 為公司處分固定資產所得的價款。由於本研究旨在討論公司出售固定資產活動之多寡，是否與公司營運、融資及盈餘管理動機有關。因此，相較於過去盈餘管理文獻所使用的損益變數，使用出售固定資產所得的價款作為分析的因變數，更能檢測本文之研究議題及假說，並反映出售固定資產活動對公司的重要性。

為檢驗經理人之向上盈餘管理動機、公司融資限制，和提升營運效能三因素對公司出售固定資產活動的影響，我們在模型中放入 *EManage*、*Finance*，及 *Efficient* 三組變數，分別代表衡量經理人向上之盈餘管理動機、公司融資限制，和營運效率的變數。*Control Variables* 則代表模型中所使用的控制變數，其中亦包含了控制年度和產業效果的虛擬變數。

另外，為了處理可能存在的內生問題（endogeneity problem），除了盈餘管理變數外，其他使用財務數字計算的解釋變數，皆使用『前一期』的數值來衡量。例如，為驗證本研究之假說 2-2：「舉債比例高的公司會進行較多之固定資產出售活動」，本文所使用之負債比例為公司出售固定資產『前一期』之負債比例。

三、變數定義

本研究以公司處分固定資產所得的價款來衡量公司出售固定資產活動，並將該價款除以公司該樣本年度年底的權益市值，以平減公司規模的影響。為檢驗本研究三個假說，在此，分別引進變數來衡量經理人盈餘管理動機、公司的融資能力，以及公司的營運效率。相關的變數衡量分述如下。

Burgstahler and Dichev（1997）及相關實證文獻顯示，經理人有避免盈餘下降的動機，企業之出售資產活動與經理人盈餘管理目的存在關聯性（Bartov 1993; Poitras et al. 2002）。本研究推論當企業盈餘較前一年度下降時，經理人會透過出售固定資產、實現處分資產的利益來減緩盈餘下降的幅度。若當年度不含出售固定資產損益的盈餘（稅前淨利－(＋)固定資產處分利益(損失)）與前一年度稅前淨利相比之盈餘變動小於零（表示公司有避免盈餘下降的動機），且出售固定資產有利益時，我們設 SmoothU 值為 1，否則，值則設為 0。換言之，SmoothU=1 的樣本，是代表經理人有避免盈餘下降動機，且亦有機會透過處分固定資產利得以達到向上盈餘管理目的之公司，本研究預期此類公司會從事較多的出售固定資產活動。

另外，Burgstahler and Dichev（1997）亦指出，經理人亦有避免出現虧損的盈餘管理動機，即經理人可能會利用實現出售固定資產利益，來避免盈餘出現負數。為捕捉上述經理人的盈餘管理行為，我們設定避免虧損（ALM）變數，當當年度不含出售固定資產損益的盈餘（稅前淨利－(＋)固定資產處分利益(損失)）小於零且出售固定資產存在利益時，經理人會有利用出售固定資產來避免虧損的誘因，此時將變數 ALM 的值設為 1，否則，則將值設為 0。ALM=1 的樣本，代表經理人有避免虧損的動機，且亦有機會透過處分固定資產利得來減少或避免虧損出現以達到向上盈餘管理的公司，本研究預期這類公司應相對會從事較多的出售固定資產活動。

我們引用負債比例（DEBT）、公司規模（SIZE）、跨產業數（INDNO）三變數來檢驗公司融資能力與出售固定資產活動的關係。公司規模是以公司資產總額取自然對數來衡量。負債比例是以負債除以總資產帳面價值計算。另外，過去學者研究指出（例如：Khanna and Palepu 2000; Lins and Servaes 2002; Doukas et al. 2003），企業可以透過跨足不同產業，來降低各部門間現金流量的相關性，進而擴張公司內部資本市場的規模。因此，我們以沿用 Doukas et al.（2003）的作法，以公司跨產業數來衡量公司內部資本市場的大小。我們先利用公司每年的股東年報蒐集公司部門別資訊及各部門的營運內容，之後再利用「中華民國行業標準分類」的產業碼來判別各部門所屬的產業類型。最後，我們以產業碼的前兩碼來判斷不同部門是否屬於同一產業，並算出公司的跨產業數。至於，公司的營運績效（ROA），我們則是以資產報酬率來衡量（Warusawitharan 2008），資產報酬率是以稅前息前折舊前之淨利除以平均資產總額計算。

除了上述變數外，我們還在迴歸式中加入公司成長性（GROWTH）和現金持有（CashHold）兩個變數作為控制變數。Herrmann et al.（2003）指出，公司在擴產、成長階段，較不會出售固定資產。在此，我們以營業收入淨額的成長率來衡量公司的成長性。另外，Bates（2005）指出，公司現金持有多寡會影響公司出售資產的可能性。現金持有少的公司流動性較差，財務危機的可能性相對較高，因此需要透過出售資產來舒緩資金需求的可能性較高。我們以現金、約當現金和短期投資之總和佔總資產的比例來衡量公司的現金持有水準。

肆、實證結果與分析

一、敘述統計分析

變數的敘述統計資料列在表四。從虛擬變數 SmoothU 的平均數 0.2 可得知，在 3,981 個樣本裡，有 20%的樣本屬“不含出售固定資產損益的盈餘變動小

於零，且處分資產有利益”的狀況；ALM 的平均數 0.11 則顯示，有 11%的樣本為“不含出售固定資產損益的盈餘小於零，且出售固定資產存在利益”。表五為變數間的相關係數分析。ASale 與 SmoothU、ALM、公司負債比例（DEBT）和跨產業數（INDNO）間存在正向關係，而與公司總資產報酬率（ROA）、營收成長率（Growth），及現金持有（CashHold）間有負向的關係。另外，SmoothU 與 ALM 之間的相關係數為 0.48，顯示盈餘減少的公司通常亦伴隨著虧損的發生。

表四 敘述統計

變數	樣本數	平均數	標準差	四分位數		
				Q1	中位數	Q3
ASale(%)	3,981	1.44	5.95	0.01	0.07	0.54
SmoothU	3,981	0.20	0.40	0	0	0
ALM	3,981	0.11	0.31	0	0	0
SIZE	3,981	15.67	1.12	14.87	15.53	16.25
DEBT(%)	3,981	41.29	15.56	30.41	41	51.22
INDNO	3,981	1.72	1.15	1	1	2
ROA(%)	3,981	7.02	9.00	2.22	6.53	11.78
GROWTH(%)	3,981	14.29	82.10	-5.47	6.95	23.28
CashHold	3,981	0.10	0.11	0.03	0.07	0.14

註：變數說明：ASale 為公司處分固定資產所得的價款。當不含出售固定資產損益的盈餘變動小於零，且出售固定資產有利益時，SmoothU 值設為 1，否則，值則設為 0；當不含出售固定資產損益的盈餘小於零且出售固定資產存在利益時，經理人會有利用出售固定資產來避免虧損的誘因，此時將變數 ALM 的值設為 1，否則，則將值設為 0。SIZE 為公司資產總額取自然對數。DEBT 為負債除以總資產帳面價值。INDNO 為公司的跨產業數。ROA 以稅前息前折舊前之淨利除以平均資產總額計算。GROWTH 為公司營業收入淨額的成長率。CashHold 為現金、約當現金和短期投資之總和佔總資產的比例。

表五 相關係數分析

	ASale(%)	SmoothU	ALM	SIZE	DEBT(%)	INDNO	ROA(%)	GROWTH
SmoothU	0.12***							
ALM	0.23***	0.48***						
SIZE	0.007	0.05***	0.03**					
DEBT(%)	0.18***	-0.008	0.16***	0.16***				
INDNO	0.03*	0.02	0.06***	0.18***	0.07***			
ROA(%)	-0.18***	0.02	-0.25***	0.02	-0.41***	-0.16***		
GROWTH(%)	-0.03**	0.02*	-0.05***	0.04**	0.01	-0.03**	0.16***	
CashHold	-0.10***	-0.04**	-0.15***	-0.09***	-0.37***	-0.17***	0.37***	0.03**

註：1.變數說明：ASale 為公司處分固定資產所得的價款。當不含出售固定資產損益的盈餘變動小於零，且出售固定資產有利益時，SmoothU 值設為 1，否則，值則設為 0；當不含出售固定資產損益的盈餘小於零且出售固定資產存在利益時，經理人會有利用出售固定資產來避免虧損的誘因，此時將變數 ALM 的值設為 1，否則，則將值設為 0。SIZE 為公司資產總額取自然對數。DEBT 為負債除以總資產帳面價值。INDNO 為公司的跨產業數。ROA 以稅前息前折舊前之淨利除以平均資產總額計算。GROWTH 為公司營業收入淨額的成長率。CashHold 為現金、約當現金和短期投資之總和佔總資產的比例。

2.*表示達 10%顯著水準；**表示達 5%顯著水準；***表示達 1%顯著水準。

二、迴歸分析

（一）影響出售固定資產決策之因素

本研究使用迴歸分析，檢驗經理人盈餘管理動機、公司融資限制，及營運效率三因素是否會影響公司出售固定資產活動。迴歸式的被解釋變數為：公司處分固定資產價款除以公司年底的權益市值（ASale）。我們將實證結果列在表六。在迴歸式(1)和(2)，我們使用虛擬變數小公司（SMALL）和低 ROA 公司（LowROA）來捕捉公司規模和營運效率這兩個公司特性。當公司規模小於樣本中位數時（即小於 15.53 時），變數小公司（SMALL）的值設為 1，否則，則值設為 0。當公司的 ROA 屬全樣本 ROA 最低的 25%時（即小於第一個四分位 2.22%時），則虛擬變數低 ROA 公司（LowROA）的值設為 1，否則，則值設為 0。在迴歸式(1)，SmoothU 的迴歸係數顯著為正，表示當經理人有避免盈餘下降的動機，且有機會透過處分資產來達到此目的時，公司會從事較多的出售固定資產活動。此結果支持假說 1-1 之推論，公司出售固定資產活動的多寡與經理人的盈餘管理動機有關，並與 Poitras et al.（2002）和管夢欣（1993）的發現一致。

我們亦使用虛擬變數避免虧損（ALM）來檢視出售固定資產活動與盈餘管理動機間的關連性。在迴歸式(2)，虛擬變數 ALM 的迴歸係數顯著為正，表示當經理人有機會利用出售固定資產來達到避免虧損的目的時，公司會從事較多的出售固定資產活動。因此本研究之實證結果顯示，公司出售固定資產活動的多寡與經理人的盈餘管理動機有關，支持假說 1-2。

至於公司融資限制對於出售固定資產活動的影響，迴歸分析顯示，融資能力受限的公司會從事較多的出售固定資產活動。不論是迴歸式(1)或是迴歸式(2)的設定，我們都可以發現虛擬變數小公司（SMALL）的係數顯著為正，顯示規模小的公司會從事較多的出售固定資產活動，支持假說 2-1。負債比例（DEBT）的迴歸係數也顯著為正，表示負債比例的高的公司亦會從事較多的出售固定資產活動，支持假說 2-2。

不過，我們並沒有發現公司跨產業個數與公司出售固定資產活動間有顯著的關聯性。換言之，若以跨產業個數作為公司內部資本市場的代理變數，則實證結果並未顯示內部資本市場小的公司（即跨產業個數少的公司）會進行相對較多的固定資產出售活動。此結果可能與公司跨產業個數除反映公司內部資本市場大小外，亦代表公司營運集中度有關：公司跨產業個數愈多，表示營運集中度愈低。過去文獻（黃意茵 2006；Steiner 1997; Feng 2003; Chen and Guo 2005）指出，增加營運集中度以改善經營績效為企業出售固定資產的動機之一，即營

運集中度低的公司，進行出售固定資產的機率與金額將相對較高；換言之，根據營運集中度的觀點，跨產業個數少的公司會進行較少的出售固定資產活動。公司跨產業個數在營運集中度與內部資本市場二面向上，對出售固定資產活動所產生的反向影響，可能是造成其在實證上，與出售資產活動沒有顯著關係的原因。

表六　出售固定資產與盈餘管理、融資限制及營運效率之關聯

	（1）	（2）	（3）	（4）
截距項	3.10	3.38	7.09***	6.85***
	（1.27）	（1.36）	（2.72）	（2.61）
SmoothU	1.77***		1.77***	
	（5.16）		（5.19）	
ALM		3.52***		3.48***
		（4.55）		（4.57）
SAMLL^2	0.25**	0.226**		
	（2.07）	（2.11）		
SIZE^2			-0.19**	-0.18**
			（-2.22）	（-2.35）
DEBT^2	0.05***	0.05***	0.05***	0.04***
	（5.80）	（5.67）	（5.32）	（4.99）
INDNO^2	0.01	0.002	0.01	0.006
	（0.18）	（0.04）	（0.20）	（0.09）
LowROA^2	1.31***	0.65**		
	（3.84）	（2.30）		
ROA(%)^2			-0.07***	-0.05***
			（-5.50）	（-3.97）
GROWTH(%)^2	-0.002**	-0.001*	-0.002**	-0.001
	（-2.01）	（-1.68）	（-2.04）	（-1.59）
CashHold^2	-1.58***	-1.32***	-0.85**	-0.81*
	（-3.70）	（-2.91）	（-1.97）	（-1.66）
控制產業效果	有	有	有	有
控制年度效果	有	有	有	有
調整後 R-square	0.07	0.09	0.08	0.09
樣本數	3,981	3,981	3,981	3,981

註：1.變數說明：ASale 為公司處分固定資產所得的價款。當不含出售固定資產損益的盈餘變動小於零，且出售固定資產有利益時，SmoothU 值設為 1，否則，值則設為 0；當不含出售固定資產損益的盈餘小於零且出售固定資產存在利益時，經理人會有利用出售固定資產來避免虧損的誘因，此時將變數 ALM 的值設為 1，否則，則將值設為 0。SIZE 為公司資產總額取自然對數。DEBT 為負債除以總資產帳面價值。INDNO 為公司的跨產業數。ROA 以稅前息前折舊前之淨利除以平均資產總額計算。GROWTH 為公司營業收入淨額的成長率。CashHold 為現金、約當現金和短期投資之總和佔總資產的比例。.SMALL 的值設為 1，當公司規模小於樣本中位數時(即小於 15.53 時)，否則，則值設為 0。LowROA 的值設為 1，當公司的 ROA 屬全樣本 ROA 最低的 25%時（即小於第一個四分位 2.22%時），否則，則值設為 0。

2.皆使用前一期的數值來衡量。

3.括號內為 t 值；*表達 10%顯著水準；**表達 5%顯著水準；***表示達 1%顯著水準。

另外，迴歸式(1)和(2)的分析結果顯示，公司的出售固定資產活動與其營運效率有顯著的關聯性。變數低 ROA 公司（LowROA）的迴歸係數顯著為正，表示營運效率差的公司會從事較多的出售固定資產活動。除此外，我們發現控制變數營收成長率（GROWTH）的迴歸係數顯著為負，表示營收成長率高的公司從事的出售固定資產活動相對較少。此發現與 Herrmann et al.（2003）所指的處於成長階段的公司比較不會出售固定資產的論點一致。另外，控制變數現金持有（CashHold）的迴歸係數亦顯著為負，反映持有現金較多的公司，流動性較佳，因此需透過出售固定資產來舒緩資金需求的可能性較低（Bates, 2005）。

迴歸式(1)和(2)以虛擬變數來衡量公司規模和營運效率，在迴歸式(3)和(4)，我們則改以原始數值（即分別為總資產帳面價值的自然對數值和總資產報酬率值）來取代之前的虛擬變數。實證結果與之前的分析相似：公司出售固定資產活動與各公司特徵間的關係及顯著性皆維持不變。在迴歸式(3)和迴歸式(4)，公司規模數值越大則表示公司越大，此表達與在迴歸式(1)和(2)的設定方向正好相反：即虛擬變數小公司（SMALL）的值大時（即為 1），表示公司規模小。因此，虛擬變數小公司（SMALL）正的迴歸係數和變數公司規模（SIZE）負的迴歸係數，表達的是一致的現象。同樣的說明，亦可適用於解釋虛擬變數低 ROA 公司（LowROA）和變數 ROA 正負符號相反的迴歸係數。

（二）敏感性分析

本研究樣本分析顯示，有超過一半（57.9%）的樣本公司其出售固定資產金額低於一千萬元。由於出售固定資產金額的高低可能反映公司不同的出售動機，因此，我們亦針對出售金額大於一千萬元的樣本，重複進行表六迴歸式所做的分析，並將實證結果列於表七。實證結果與表六的結果相近：不論是盈餘管理變數（SmoothU、ALM）、融資限制變數（SMALL、SIZE、DEBT、INDNO），或是營運效率變數（LowROA、ROA），其迴歸係數符號都與表六相同，且顯著性亦相近。此結果顯示，影響公司出售固定資產的因素並不隨公司出售固定資產金額的大小而有差異。

表七 敏感性分析：固定資產出售金額大於一千萬元的樣本

	（1）	（2）	（3）	（4）
截距項	11.15*	11.58*	32.73***	32.12***
	（1.79）	（1.90）	（4.79）	（4.70）
SmoothU	1.65***		1.59***	
	（3.17）		（3.28）	
ALM		3.64***		3.59***
		（3.26）		（3.35）
SMALL^{2}	2.26***	2.18***		
	（5.24）	（3.12）		
SIZE^{2}			-1.16***	-1.13***
			（-5.590）	（-5.85）
DEBT^{2}	0.12***	0.11***	0.11***	0.11***
	（7.12）	（7.70）	（6.81）	（7.07）
INDNO^{2}	-0.06	-0.02	-0.03	-0.03
	（-0.09）	（-0.11）	（-0.17）	（-0.17）
LowROA ^{2}	2.73***	1.73**		
	（3.51）	（2.47）		
ROA(%)^{2}			-0.15***	-0.12***
			（-3.78）	（-3.19）
GROWTH(%)^{2}	-0.005	-0.006	-0.002	-0.002
	（-1.15）	（-1.16）	（-0.48）	（-0.43）
CashHold^{2}	-2.39***	-1.91***	-0.93	-0.99
	（-3.20）	（-2.68）	（-1.16）	（-1.39）
控制產業效果	有	有	有	有
控制年度效果	有	有	有	有
調整後 R-square	0.16	0.17	0.17	0.19
樣本數	1,480	1,480	1,480	1,480

註：1.變數說明：ASale 為公司處分固定資產所得的價款。當不含出售固定資產損益的盈餘變動小於零，且出售固定資產有利益時，SmoothU 值設為 1，否則，值則設為 0；當不含出售固定資產損益的盈餘小於零且出售固定資產存在利益時，經理人會有利用出售固定資產來避免虧損的誘因，此時將變數 ALM 的值設為 1，否則，則將值設為 0。SIZE 為公司資產總額取自然對數。DEBT 為負債除以總資產帳面價值。INDNO 為公司的跨產業數。ROA 以稅前息前折舊前之淨利除以平均資產總額計算。GROWTH 為公司營業收入淨額的成長率。CashHold 為現金、約當現金和短期投資之總和佔總資產的比例。.SMALL 的值設為 1，當公司規模小於樣本中位數時(即小於 15.53 時)，否則，則值設為 0。LowROA 的值設為 1，當公司的 ROA 屬全樣本 ROA 最低的 25%時（即小於第一個四分位 2.22%時），否則，則值設為 0。

2.皆使用前一期的數值來衡量。

3.括號內為 t 值；*表達 10%顯著水準；**表達 5%顯著水準；***表示達 1%顯著水準。

另外，表六的實證分析顯示，公司出售固定資產活動與負債比例間存在顯著的正向關係。此正向關係可反映高融資限制對公司出售固定資產活動所產生的正向需求。不過，此正向關係亦有可能是在反映“在高負債公司，經理人透過處分資產利益，來避免公司違反債務契約的盈餘管理需求（Bartov 1993）”。為釐清出售固定資產活動與負債比例間正向關係所代表的意義，我們對表六中

的迴歸式(1)和(2)進行變數的調整。我們引進一個新的虛擬變數 SIncome：當公司出售固定資產存在處分利益時，我們將 SIncome 的值設為 1，否則，則值設為 0。我們在迴歸式(1)和(2)中加入負債比例和虛擬變數 SIncome 的交乘項。此交乘項可以用來檢驗出售固定資產存在利益是否會影響公司負債比例與出售固定資產活動間的關係。若該交乘項的迴歸係數不顯著，則表示出售固定資產是否存在利益的這項因素，並不是造成高負債比例公司從事較多出售固定資產活動的原因。換言之，避免違反債務契約的盈餘管理動機並不是造成高負債公司出售較多資產的原因。相對的，若加入該交乘項後，該交乘項的迴歸係數顯著，但負債比例的迴歸係數變得不顯著，則可推知，出售固定資產是否存在利益是造成高負債公司從事較多出售固定資產活動的原因，換言之，高負債公司出售較多資產主要是基於避免違反債務契約的盈餘管理目的，而非為了抒解資金需求。

我們將迴歸分析的結果列在表八。不論是迴歸式(1)或(2)的設定，負債比例（DEBT）的迴歸係數都達 1%的統計顯著水準，且維持為正的符號；另外，負債比例和 SIncome 的交乘項（DEBT×SIncome）迴歸係數也顯著為正。交乘項顯著為正的迴歸係數顯示，避免違反債務契約的盈餘管理動機確實會促使高負債公司從事較多出售固定資產活動。不過，負債比例顯著為正的迴歸係數也反映出，盈餘管理動機並非是造成高負債公司從事較多出售固定資產活動的唯一因素。高負債公司所面對的融資限制，亦應是使公司進行較多出售固定資產活動的重要原因。

在前述的迴歸式中，我們使用公司的資產報酬率來衡量公司的營運效率，並發現低 ROA 的公司會從事較多的出售固定資產活動。為了確認公司營運效率與出售固定資產活動間的關係，在此，我們亦使用總資產週轉率來衡量公司的營運效率，以總資產週轉率取代 ROA，重複之前的迴歸分析結果。總資產週轉率是以營業收入淨額除以平均資產總額來計算。實證結果與之前的發現一致[9]：總資產週轉率低的公司會進行較多的出售固定資產活動。另外，衡量營運效率變數的改變，並不影響其他變數與出售固定資產的關係。

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[9] 在此，並未將詳細的迴歸係數列出。

表八　敏感性分析：出售固定資產與負債比例

	（1）	（2）
截距項	3.46 （1.42）	3.45 （1.38）
SmoothU	0.69^{***} （2.69）	
ALM		2.71^{***} （3.95）
SAMLL^{2}	0.28^{**} （2.36）	0.26^{**} （2.41）
DEBT^{2}	0.04^{***} （6.07）	0.04^{***} （5.54）
DEBT×SIncome	0.03^{***} （4.11）	0.02^{***} （3.98）
INDNO^{2}	0.004 （0.06）	-0.002 （-0.03）
LowROA^{2}	1.22^{***} （3.58）	0.76^{***} （2.62）
GROWTH(%)^{2}	-0.002^{**} （-2.06）	-0.002^{*} （-1.84）
CashHold^{2}	-1.41^{***} （-3.68）	-1.22^{***} （-3.07）
控制產業效果	有	有
控制年度效果	有	有
調整後 R-square	0.08	0.09

註：1.變數說明：ASale 為公司處分固定資產所得的價款。當不含出售固定資產損益的盈餘變動小於零，且出售固定資產有利益時，SmoothU 值設為 1，否則，值則設為 0；當不含出售固定資產損益的盈餘小於零且出售固定資產存在利益時，經理人會有利用出售固定資產來避免虧損的誘因，此時將變數 ALM 的值設為 1，否則，則將值設為 0。當公司出售固定資產存在處分利益時，SIncome 的值設為 1，否則，則值設為 0。.SMALL 的值設為 1，當公司規模小於樣本中位數時（即小於 15.53 時），否則，則值設為 0。LowROA 的值設為 1，當公司的 ROA 屬全樣本 ROA 最低的 25%時（即小於第一個四分位 2.22%時），否則，則值設為 0。SIZE 為公司資產總額取自然對數。DEBT 為負債除以總資產帳面價值。INDNO 為公司的跨產業數。ROA 以稅前息前折舊前之淨利除以平均資產總額計算。GROWTH 為公司營業收入淨額的成長率。CashHold 為現金、約當現金和短期投資之總和佔總資產的比例。

2.皆使用前一期的數值來衡量。

3.括號內為 t 值；*表達 10%顯著水準；**表達 5%顯著水準；***表示達 1%顯著水準。

三、出售固定資產活動與公司市場評價（股價）表現

除了分析影響公司出售固定資產活動的因素，我們亦進一步探討出售固定資產活動對公司表現的影響。過去學者研究指出，市場對於公司出售固定資產宣告的反應，會受出售目的和出售價款的使用方式影響（林炯垚與沈中華 1996；Lang et al. 1995）。因此，我們推測，基於不同原因所進行的出售固定資產活動，對公司的表現可能會產生不同的影響。由於公司的財務績效會受到當

期的出售固定資產活動影響，因此，我們使用市場基礎的績效指標（market-based performance measure）來衡量公司的表現，即以出售固定資產當年度年底之 Tobin’s q 來衡量公司當年度的市場績效表現。

Tobin’s q 係以是以普通股『市場價值』加特別股和負債帳面價值，除以總資產帳面價值（即普通股『帳面價值』加特別股和負債帳面價值）。出售固定資產會「同額」影響公司之資產帳面值及普通股股東權益帳面值。若為有利得（損失）之固定資產出售，則公司之資產帳面值及普通股股東權益帳面值會「同額」增加（減少）。故出售固定資產雖會使公司 Tobin’s q 之分母（資產帳面值與「普通股帳面值」）增加（減少），亦會使 Tobin’s q 之分子（普通股市值）產生變化，且 Tobin’s q 分子（普通股市值）變化之方向及程度與資本市場對公司出售固定資產後續績效預期之改變相關。

綜合言之，出售固定資產會使公司 Tobin’s q（公司『市場價值』表現）之分母與分子產生變化，但變化之相對大小，即 Tobin’s q 之變化程度，會受『資本市場』對公司出售固定資產後續績效預期改變之影響。因此過去文獻亦多以 Tobin’s q 作為與公司處分固定資產相關之公司市場價值變數（如 Warusawitharana 2008; Yang 2008）。

我們使用迴歸分析來檢驗出售固定資產對公司表現的影響。首先，我們在迴歸式中放入出售固定資產變數（ASale），以分析出售固定資產活動對公司 Tobin’s q 的影響；之後，我們會在迴歸式中依序加入出售固定資產變數與盈餘管理、營運效率，和融資限制三類變數的交乘項，來進一步分析不同的出售固定資產目的是否會影響出售固定資產活動與公司表現間的關係。

除上述變數，我們沿用過去文獻的設定（Morck, Shleifer and Vishny 1988; Anderson and Reeb 2003），在迴歸式中加入負債比例（DEBT）、研發費用比率（RD）、廣告費用率（ADV）、公司規模（SIZE）以及產業和年度虛擬變數，來作為控制變數。負債比例是以總負債佔總資產比例計算；研發費用率是以研發費用除以公司營業收入淨額計算；廣告費用率是廣告費除以公司營業收入淨額；公司規模是總資產帳面價值的自然對數值。以上控制變數都是取當期的變數值。

實證結果列在表九。在表九的迴歸式(1)，固定資產出售變數（ASale）的迴歸係數顯著為負，顯示從事固定資產出售活動多的公司，表現顯著較差。過去出售資產相關文獻指出，出售資產對公司表現的影響，決定於公司在出售資產後是否能有效率的運作：其中包含營運管理面的效率（Maksimovic and Philips 2001; Datta et al. 2003; Yang 2008）及資金運用面的效率（Lang et al. 1995; Shin

2008）。若公司出售資產後，無法有效的運用出售資產取得的資金，或無法有效提升營運管理的效率，則將造成出售資產的成本大於利益，進而對公司表現產生負面影響。

表九 出售固定資產與公司表現

	（1）	（2）	（3）	（4）	（5）
截距項	0.49 （1.51）	0.49 （1.51）	0.49 （1.53）	0.49 （1.50）	0.49 （1.47）
ASale	-0.007*** （-7.63）	-0.007*** （-5.22）	-0.008*** （-4.69）	-0.011*** （-4.09）	-0.045*** （-7.79）
ASale × SmoothU[2]		0.0002 （0.10）			
ASale × ALM[2]			0.004 （1.55）		
ASale × LowROA[2]				0.006** （2.49）	
ASale × SMALL[2]					0.004** （2.03）
ASale × DEBT[2]					0.0006*** （8.01）
ASale × INDNO[2]					-0.0004 （-0.50）
DEBT[3]	-0.006*** （-7.13）	-0.006*** （-7.10）	-0.006*** （-7.10）	-0.006*** （-7.21）	-0.007*** （-7.95）
RD[3]	1.03** （2.43）	1.03** （2.43）	1.024** （2.40）	1.018** （2.44）	1.003** （2.38）
ADV[3]	-1.85*** （-2.80）	-1.85*** （-2.81）	-1.86*** （-2.84）	-1.84*** （-2.83）	-1.92*** （-2.86）
SIZE[3]	0.05** （2.53）	0.05** （2.53）	0.046** （2.53）	0.046** （2.56）	0.047*** （2.59）
控制產業效果	有	有	有	有	有
控制年度效果	有	有	有	有	有
調整後 R-square	0.318	0.318	0.318	0.319	0.324
樣本數	3,981	3,981	3,981	3,981	3,981

註：1.變數定義：ASale 為公司處分固定資產所得的價款。INV 是以公司當期購置固定資產和長期性資產的現金流出總金額，除以權益市值；DebtPay 則是以公司當期償還長短期債務（含公司債）的總現金流出金額，除以權益市值；CashDiv 則是代表公司當期股票現金股利支出的總金額，再除以權益市值。DEBT 為負債除以總資產帳面價值。SIZE 為公司資產總額取自然對數。RD 是以研發費用除以公司營業收入淨額計算。ADV 是廣告費除以公司營業收入淨額。LowROA 是使用前一年度的 ROA 來進行變數值的衡量。SAMLL 的值設為 1，當公司規模小於樣本中位數時（即小於 15.53 時），否則，則值設為 0。

2.延續表六的變數設定，皆是取前一期的變數值。

3.皆是取當期的變數值。

4.表內迴歸式的被解釋變數為出售固定資產當年度年底之 Tobin's q。括號內為 t 值。

5.*表示達 10%顯著水準；**表示達 5%顯著水準；***表示達 1%顯著水準。

在迴歸式(2)和(3)，我們加入固定資產出售變數（ASale）與盈餘管理相關變數的交乘項（ASale×SmoothU 與 ASale×ALM）。實證發現，固定資產出售變數（ASale）的係數仍顯著為負，但交乘項的迴歸係數並未達統計顯著水準，顯示資本市場對於公司與避免盈餘下降及避免盈餘出現虧損盈餘管理動機相關之出售固定資產活動，並無顯著增額反應。此一發現可能顯示，資本市場能看穿經理人藉由出售固定資產來進行盈餘操控的行為。過去有不少文獻指出資本市場（投資人）能看穿會計盈餘的操控[10]。當資本市場能看穿財務報表的數字、不受出售固定資產後的盈餘數字影響，而僅就出售固定資產對公司的實質影響來進行評估和反應時，資本市場就應不會對盈餘管理動機相關之出售固定資產活動產生顯著的增額反應。

在迴歸式(4)，我們加入固定資產出售變數（ASale）和低營運績效（低 ROA）公司的交乘項（ASale×LowROA）。實證結果發現，交乘項係數顯著為正[11]，顯示當公司是基於改善營運績效而出售固定資產時，公司的 Tobin’s q 值相對較高；換言之，當公司是為了改善公司營運表現而出售固定資產時，公司的表現會相對較佳。此結果與 Hite et al.（1987）的論點和發現一致。Hite et al.（1987）指出，出售固定資產有助於改善公司資源配置的效率，且實證發現市場對於出售固定資產的宣告有正向的股價反應。

在迴歸式(5)，我們加入出售固定資產和三個衡量融資限制變數（即 SMALL、DEBT，和 INDNO）的交乘項。迴歸式(5)交乘項的迴歸係數多顯著為正，顯示當公司因資金融通需求而進行固定資產出售時，公司的表現會相對較佳。Lang et al.（1995）認為，對於對外融資能力受限程度高的公司而言，出售固定資產是取得相對便宜資金的一個重要管道。在此，我們發現，基於融資需求而出售固定資產的公司，有相對較高的 Tobin’s q 值；此結果反映，出售固定資產對融資受限程度高的公司有相對較大的好處，此好處可能來自於公司出售固定資產後，資產流動性的改善。

除上述分析外，我們亦引入投資支出、償還負債支出，和現金股利支出三個變數，來檢驗公司使用資金方式是否會影響出售固定資產與公司市場股價表現之關係。實證結果列在表十。三種資金使用方式變數之定義分別如下：投資支出（INV）是以公司當期購置固定資產和長期性資產的現金流出總金額，除以權益市值計算；償還負債支出（DebtPay）是以公司當期償還長短期債務（含公司債）的總現金流出金額，除以權益市值計算；現金股利支出（CashDiv）則是代表公司當期股票現金股利支出的總金額，再除以權益市值計算。

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[10] 詳參 Healy（1999）對相關文獻的回顧。

[11] 我們亦以總資產週轉率來衡量公司的營運效率，實證結果相似。

表十　出售固定資產、資金使用目的與公司表現

	（1）	（2）	（3）
截距項	0.49 （1.51）	0.49 （1.53）	0.49 （1.50）
ASale	-0.006^{***} （-7.57）	-0.007^{***} （-7.55）	-0.005^{***} （-6.78）
ASale × INV	-0.001 （-0.57）		
ASale × DebtPay		0.001^{***} （3.94）	
ASale × CashDiv			-0.454^{***} （-10.19）
DEBT^2	-0.006^{***} （-7.10）	-0.006^{***} （-7.13）	-0.006^{***} （-7.26）
RD^2	1.03^{**} （2.44）	1.025^{**} （2.43）	1.026^{**} （2.46）
ADV^2	-1.84^{***} （-2.78）	-1.844 （-2.81）	-1.839^{***} （-2.84）
SIZE^2	0.04^{**} （2.53）	0.04^{**} （2.52）	0.046^{**} （2.54）
控制產業效果	有	有	有
控制年度效果	有	有	有
調整後 R-square	0.318	0.318	0.318
樣本數	3,981	3,981	3,981

註：1.變數定義：ASale 為公司處分固定資產所得的價款。INV 是以公司當期購置固定資產和長期性資產的現金流出總金額，除以權益市值；DebtPay 則是以公司當期償還長短期債務（含公司債）的總現金流出金額，除以權益市值；CashDiv 則是代表公司當期股票現金股利支出的總金額，再除以權益市值。DEBT 為負債除以總資產帳面價值。SIZE 為公司資產總額取自然對數。RD 是以研發費用除以公司營業收入淨額計算。ADV 是廣告費除以公司營業收入淨額。INV、DebtPay 和 CashDiv 三變數是以公司當期資料衡量。

2.皆是取當期的變數值。

3.表內迴歸式的被解釋變數為出售固定資產當年度年底之 Tobin's q。括號內為 t 值。

4.*表示達 10%顯著水準；**表示達 5%顯著水準；***表示達 1%顯著水準。

在表十的三條迴歸式，除出售固定資產變數（ASale）本身外，我們亦依序放入出售固定資產變數（ASale）與三種資金使用方式變數（INV、DebtPay、CashDiv）的交乘項，藉此來檢驗公司使用資金方式的影響[12]。在三條迴歸式中，出售固定資產變數（ASale）的迴歸係數皆顯著為負，顯示當公司從事越多出售固定資產活動時，其市場評價表現越差。至於出售固定資產變數（ASale）和投資支出的交乘項（ASale×INV）係數，迴歸式(1)的結果顯示，此交乘項係數為負，但並未達到統計顯著水準，換言之，並沒有證據顯示公司的投資支出

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[12] 我們亦有將 ASale 與三個捕捉公司使用資金方式的變數交乘項同時放入同一迴歸式中進行分析，實證結果與迴歸式(1)-(3)的結果一致。

會影響出售固定資產活動與公司表現間的關係。

在迴歸式(2)，出售固定資產變數（ASale）和償還負債支出交乘項（ASale×DebtPay）的係數顯著為正，表示公司進行債務償還有助於和緩出售固定資產對公司表現的負向影響。換言之，相對於出售固定資產但沒有償還債務的公司，出售固定資產且亦進行債務償還的公司，會有相對較佳的市場表現。此正向的係數與 Bates（2005）所提的論點一致。Bates（2005）指出，公司使用出售資產所得到的價款來償付債務，具有減少負債代理問題的作用，對公司價值能產生正面的影響。另外，此結果也與 Lang et al.（1995）的發現一致。Lang et al.（1995）實證發現，當公司出售資產是以償還負債為目的時，公司股價對出售資產的宣告有正向的反應。

另一方面，我們則從迴歸式(3)的結果發現，出售固定資產變數（ASale）和現金股利支出交乘項（ASale×CashDiv）的係數顯著為負，顯示發放現金股利會加遽出售固定資產對公司市場評價表現的負向影響。也就是說，相對於出售固定資產但沒有發放現金股利的公司，出售固定資產亦同時發放現金股利的公司，其公司市場評價表現會相對較差。根據 Bates（2005）研究發現，有較佳成長機會的公司會傾向於留用出售資產所得的價款。因此當公司出售固定資產且亦進行現金股利發放時，市場可能解讀公司係因為未來成長機會有限，轉而將出售固定資產價款發還股利給股東而未留用，故資本市場會給予股價較低的評價，導致公司 Tobin’s q 相對較低。

綜合以上實證結果，我們發現出售固定資產活動與公司市場評價表現間有顯著的負向關係，且此關係會受到出售固定資產的原因和公司使用資金的方式影響。過去文獻指出，市場對於基於融資或（和）改善營運效率而進行的出售資產宣告，會有正向的價格反映（Hite et al. 1987; Lang et al. 1995; Bates 2005）。本研究的實證發現則顯示，雖然改善營運效率與資本結構，有助於減緩出售固定資產對公司市場評價表現的負向影響，但平均而言，從事越多出售資產活動，公司市場評價表現越差。出售固定資產活動對企業市場評價表現產生的不利影響，可能與公司出售固定資產後無法有效提升運作效率有關。出售固定資產後所衍生的調整成本，可能是造成運作效率無法提升的因素之一（Yang 2008）。因應固定資產出售，公司在營運生產上，必需要進行相對應的調整（例如生產線的調整、人力配置的調整，以及人員工作內容的調整），並承擔在調整過程中所衍生的成本（例如：在生產線及人力配置調整後的適應期中，生產速度及產品良率可能受到影響；另外，人員亦可能因工作內容的變動，而需要進行額外的訓練）。當公司出售固定資產的規模越大，因應調整的幅度和需要額外負擔的成本勢必越高。因此，出售固定資產所對應的較差公司市場評價表現，反映的可能是，固定資產出售後，營運調整成本對公司績效所產生的負向

影響。

伍、結論

對多數企業而言，出售固定資產是營運過程中必須面對的決策之一。出售固定資產活動，使資源（包含資金）重新在企業內部及企業間進行配置；這樣的資源重新配置，對企業的表現、投資人的權益都可能產生影響。探討企業出售固定資產多寡的原因和影響，有助於我們瞭解出售固定資產活動在企業營運過程中所扮演的角色，以及其對投資人的意義。

本文以1996-2005年間的台灣上市公司為研究對象，分析經理人盈餘管理動機、企業的營運效率，以及企業面對的融資限制對公司出售固定資產活動的影響，並進一步探究出售固定資產活動與公司表現間的關聯性。我們的實證結果顯示，經理人透過實現處分資產利益，來改善公司盈餘數字的盈餘管理操作，是促使公司進行較多出售固定資產的重要因素。我們也發現，小公司和高負債比例的公司會從事較多的出售固定資產活動。此實證結果支持“融資能力受限較多的公司，以資產出售來滿足公司資金需求的程度較高”的論點（Lang et al. 1995）。另外，迴歸結果也顯示，營運效率差的公司會有較多的出售固定資產活動；此發現支持過去學者所提出的改善資源配置論點（Warusawitharan 2008）。

另一方面，本研究也發現，出售固定資產活動與公司表現間存在顯著為負的關係，且此關係受到公司出售固定資產的原因，以及公司使用資金的方式影響。當公司是基於融資和改善營運效率的目的而進行固定資產出售時，出售固定資產對公司市場評價表現的不利影響，會獲得減緩；另外，同時進行負債償付活動，亦可以降低出售固定資產對公司市場評價表現的負面影響。不過，同時進行現金股利發放，則會加遽出售固定資產對公司市場評價表現的不利影響。

整體而言，我們的研究顯示，對於企業而言，出售固定資產活動不僅具有重新配置企業資源（用來改善營運效率）的作用，亦是企業取得資金融通及進行盈餘管理的手段。然而，我們也發現，從事較多出售固定資產活動的企業，市場評價表現相對較差。綜合本研究的發現結果，顯示，對企業來說，出售固定資產雖是一項具有多重作用的企業活動，但是，出售固定資產後續啟動的調整過程和所需擔負的調整成本，亦是企業在考慮出售固定資產時，不容忽視的因素。企業若無法利用出售固定資產來改善公司的資源和資金配置，出售固定資產不但無益於改善公司的實質表現，公司反可能因高額的調整成本而受拖累。因此，投資人在面對公司的出售固定資產宣告時，除了應關注公司出售固

定資產的原因[13]和資金的使用方式外，亦應注意公司因應固定資產出售後的調整計畫是否周全，因為，高額的調整成本可能抵銷出售固定資產所為公司帶來的好處。

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[13] 投資人可根據公司之財務報表，從下述幾個面向，來推論公司出售固定資產的可能原因，進而判斷出售固定資產對公司未來表現的可能影響。例如：（1）檢視現金流量表，從現金流出之活動，例如營運支出增加，償還負債等，來推論公司出售固定資產所得資金的可能流向（原因）。（2）檢視損益表，以當年度不含出售資產損益的盈餘（稅前淨利－(＋)固定資產處分利益(損失)）與前一年度稅前淨利相比之盈餘變動是否小於零，及出售資產是否有利益，推論公司是否有避免盈餘下降（即向上盈餘管理）動機，並進而透過處分資產來達到此目的；以當年度不含出售資產損益的盈餘（稅前淨利－(＋)固定資產處分利益(損失)）是否小於零且出售資產是否存在利益，推論公司是否有避免虧損並透過出售資產來減少或避免虧損。(3）檢視資產負債表及損益表，比較公司前一年度與當年度之負債比例與 ROA，初步推論公司利用出售資產來改善財務結構及營運效率之動機及效果。

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