

LAURIE HUNTER, ELIZABETH WEBSTER AND ANNE WYATT

## Accounting for Expenditure on Intangibles

In search of a unifying measurement feature on which to base a more systematic and potentially comprehensive analysis of intangibles, this paper first analyses the economic and accounting properties of intangibles, and second, empirically evaluates managerial practices for measuring and analysing expenditure on intangibles. We present evidence from a survey of 614 large Australian firms that suggests gaps in the extent with which firms plan, monitor, record, analyse, and report on intangibles. Third, we evaluate the implications of our analysis and survey for accounting practice. Our evidence suggests GAAP has a role to provide guidance that helps firms identify and classify their expenditure on intangibles in ways that elucidate the strategic implications of the different types of intangibles for future output. A secondary step for accountants, after identifying and classifying the expenditure on intangibles, is to apply a capitalization test to distinguish expenses from assets. The current asymmetric treatment of expenditure on purchased versus internally generated intangibles is not supportable on economic grounds. However, economists identify weak property rights as a major cause of uncertainty associated with the outcomes from expenditure on intangibles, suggesting verifiable property rights is a unifying measurement feature on which to base a capitalization test for intangible assets.

**Key words:** Accounting; Economics; Expenditure on intangibles; Rate of return.

In search of a unifying measurement feature on which to base a systematic, and possibly, more comprehensive analysis of expenditure on intangibles this paper: (a) analyses the features of intangibles from economic and accounting perspectives; (b) presents evidence on the extent that firms account separately for expenditure on intangibles in the absence of GAAP guidance; and (c) presents the implications of these analyses for accounting practice.

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ANNE WYATT (a.wyatt@business.uq.edu.au) is a Professor of Financial Accounting in the UQ Business School, University of Queensland; LAURIE HUNTER (Laurence.Hunter@glasgow.ac.uk) is an Emeritus Professor, University of Glasgow Business School; and ELIZABETH WEBSTER (e.webster@unimelb.edu.au) is a Professor of Economics in the Melbourne Institute of Applied Economic and Social Research, The University of Melbourne. All three authors are also researchers affiliated with the Intellectual Property Research Institute of Australia, The University of Melbourne.

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The relevant standard, AASB 138, *Intangible Assets*, notes in paragraph 9 that ‘Entities frequently expend resources, or incur liabilities, on the acquisition, development, maintenance or enhancement of *intangible resources* such as scientific or technical knowledge, design and implementation of new processes or systems, licences, intellectual property, market knowledge and trademarks (including brand names and publishing titles)’.<sup>1</sup> Expenditure on intangibles becomes part of the firm’s ‘capital’ which economists define as ‘produced goods used to increase the production of future goods’ (Heyne, 1991, p. 256). Just like the incentives for spending on tangible produced goods such as buildings and equipment, there are managerial incentives for spending on intangible produced goods, so long as managers believe production can be increased as a result of the expenditure. While tangible produced goods are the nuts and bolts of production, intangible produced goods are one of the vehicles through which firms compete (e.g., through innovation, and strategies relating to activities such as advertising and marketing, accessing new markets, and improving workplace efficiency). Further, the knowledge and/or rights reflected in some intangibles enable the firm to operate the tangible plant and equipment to produce revenues (Webster, 1999).<sup>2</sup>

It is widely believed that expenditure on intangibles is an increasing source of firm value. However, it is not possible to verify this perception because under Generally Accepted Accounting Principles (GAAP) the resources expended on intangibles are captured separately in the accounts in only a limited way.<sup>3</sup> Available evidence on the role of intangibles in generating output comes from noisy or incomplete measures including: the gap between the market value of equity and the book value of equity, R&D, incomplete GAAP measures of intangible assets, and surveys undertaken for the national accounts. There is evidence to suggest some firms consider intangibles are important, and are attempting to measure aspects of their intangibles for managerial decision-making purposes (see Hunter *et al.*, 2005; Ittner, 2008). However, the evidence suggests these efforts are neither widespread nor effective in linking the expenditures on intangibles to outcomes. The problem of concern to some researchers and practitioners (e.g., Lev, 2001) is that the limited, separate analysis of expenditure on intangibles leaves an information gap that may cause harms such as sub-optimal decision making by managers and market inefficiencies.<sup>4</sup>

<sup>1</sup> AASB 138, *Intangible Assets*, paragraph 9, further notes that ‘Common examples of items encompassed by these broad headings are computer software, patents, copyrights, motion picture films, customer lists, mortgage servicing rights, fishing licences, import quotas, franchises, customer or supplier relationships, customer loyalty, market share and marketing rights’.

<sup>2</sup> For example, knowledge that is embodied in employees is needed for production to take place, and formal rights such as licenses, patents, and trademarks provide short-term monopoly rights over technology, brands, and customer bases, thereby providing opportunities to develop and/or maintain markets.

<sup>3</sup> The literature suggests the GAAP regulations influence the firms’ internal accounting practices. See Hopper *et al.* (1992), Joseph *et al.* (1996), Drury and Tayles (1997) and Hemmer and Labro (2008).

<sup>4</sup> Several published reviews of the intangibles literature draw conclusions consistent with inefficiencies from limited reporting on intangible investment. See Canibano *et al.* (2000), Ashton (2005), Ittner (2008) and Wyatt (2008). For an alternative viewpoint, see Skinner (2008). Concerns about the

We begin our paper with an analysis of the properties of intangibles by reference to the economics literature and compare these properties to the features of intangibles under GAAP. A core issue confronting any scheme for recording information on intangibles is the relevant measurement feature on which to base such a scheme. We find economists define any expenditure on intangibles as an investment provided the expenditure is undertaken with the expectation of long-term benefits and is not immediately embodied in physical matter. In contrast, the feature dominating the current GAAP approach to intangibles is the *mode of acquisition*. The relevant accounting standard, AASB 138, *Intangible Assets* (largely equivalent to the international accounting standard IAS 38, *Intangible Assets*), ‘deems’ the expenditure from external exchange transactions will meet intangible asset recognition criteria. This deeming provision contrasts sharply with the rules for expenditure on internally generated intangibles, which are defined narrowly as ‘research or development’ and subject to an extensive set of additional recognition rules. *Mode of acquisition* is not a fundamental economic feature of intangible investment and lacks rigour as a systematic basis of accounting. It leads to asymmetric accounting for intangibles that are similar in type and differ only in their mode of acquisition. We therefore should not expect to find systematic measurement of intangibles, given the absence of a unifying measurement feature.

We next examine the question of the extent to which firms take steps to identify, record, and analyse the expenditure on intangibles in the absence of GAAP guidance. We present evidence from a survey of 614 senior accountants from large Australian listed companies, unlisted companies and not-for-profits (collectively referred to as ‘firms’). The survey evidence suggests there are widespread limitations in the firms’ planning, recording, and analysis of expenditure on intangibles. While 614 of the 704 total survey respondents indicate they perceive intangibles relate to activities that are important for generating revenues, the survey evidence suggests that systematic measurement efforts are not widespread. The survey evidence suggests there is widespread use of ad hoc rule of thumb methods for managerial decisions relating to the budgeting for intangibles. Our survey evidence is consistent with prior studies (see the review by Ittner, 2008) that suggest some firms do attempt to develop measures relating to intangibles, but on average the efforts are limited and may be ineffective in linking the expenditures on intangibles to outcomes.

Finally, we evaluate the implications of our analysis and evidence for accounting practices relating to intangibles going forward. GAAP regulations generally only disclose the separate expenditure on intangibles that relate to an exchange transac-

accounting for intangibles have a long history: for example, Dickerson commented in an AICPA session in 1941: ‘I should like to direct your attention to . . . items usually found on balance-sheet, the definition and treatment of which are often vague, confusing, misleading, and wholly lacking in uniformity. I refer to intangible assets . . . I am impressed by our more or less vague and incoherent attempts at definitions and by our lack of uniformity in the suggested classification of these items in the accounts and statements’ (Dickerson, 1941: in Zeff, 1982, p. 121). Even earlier, Paton (1938, pp. 27–8) commented: ‘Throughout the structure of accounting, I submit, there is far too much emphasis upon the criterion of tangibility in reaching a conclusion on how business costs shall be recorded and reported . . . Anyone operating a business nowadays is operating a very speculative undertaking, and the profit and loss statement of that business should not be prepared as if it were an abstract technical situation, entirely independent of the economic setting in which the concern has its being.’

tion (from acquisitions and purchases of intangibles). This GAAP focus on ‘mode of acquisition’ does not provide a unifying measurement basis for expenditure on intangibles. The lack of GAAP guidance puts the onus back on to the firms. GAAP has a role to provide guidance that helps firms identify and classify their expenditure on intangibles in ways that elucidate the strategic implications of different types of intangibles for the firm’s output. That is, as a unifying measurement feature, a GAAP classification system for different types of expenditure on intangibles would take a strategic and not a traditional functional approach on product versus operating costs. To learn about the strategic implications, firms need tools to measure the intangible inputs (expenditure) and then link them to final output (revenues) using quantitative analysis that provides rate of return statistics. These statistics can then inform managerial decisions about the optimal type/amount of expenditure on intangibles in future periods.

A secondary step for accountants (after identifying and classifying expenditure on intangibles) is to apply a capitalization test to distinguish expenses from intangible assets. This step is not necessary to undertake the above classification and computation of rates of return. However, there are practitioners and researchers concerned that firms do report information about their intangible assets in the financial statements. The current asymmetric treatment of expenditure on purchased versus internally generated intangibles is not supportable on economic grounds. However, economists point out a major cause of uncertainty associated with the outcomes from expenditure on intangibles is weak property rights (Jensen and Meckling, 1979; Webster, 1999). Property rights comprise at least three components not all of which need be held together for the rights to be effective (Alchian, 1984, p. 34) (elaborated further later), and at a minimum in this setting we would look for verifiable evidence that the ‘*right to determine the use of the asset*’ is held by the firm. This type of right provides a verification of the existence of expected future benefits as well as verifying that realization is possible. ‘Verifiable property rights’ is therefore a unifying measurement feature, fundamental to the existence and revenue generating ability of the intangible, which could form the basis for systematic accounting for intangible assets. This feature has the added benefit for shareholders, of incentivizing managers to invest in ways that provide the firm with defensible rights over intangibles, for, as argued by Schumpeter (1934), short-term monopoly rights are the first bastion of the firm’s competitive advantage.

## HOW DO INTANGIBLES CONTRIBUTE TO THE GENERATION OF FUTURE REVENUES?

Economists can easily argue deductively for the importance of expenditure on intangibles as a source of ‘produced goods’ capital for use in production, where ‘capital’ is defined as ‘produced goods used to increase the production of future goods’ (Heyne, 1991, p. 256). Starting with the early economic history, the late nineteenth-century philosophers and political economists recognized that ‘intellectual’ capital is a prerequisite for all production processes—for example, even fishing

with bare hands requires skill and prior knowledge to succeed.<sup>5</sup> We therefore have the fundamental axiom that, aside from physical God-given resources, there are only two factors of production: our intellect (or knowledge) and our raw physical labour. Therefore, the higher our level of knowledge or intellectual capital, the more production can be created from a given number of labour hours and a fixed amount of physical resources.

Building on this axiomatic theme, research on the role of intangibles in production suggests the expenditure is motivated by two goals<sup>6</sup>: (a) to build internal competencies that enable the firm to take advantage of emerging opportunities and meet profitability goals (Cohen and Levinthal, 1989); and (b) to differentiate the firm to make the firm's resources and routines hard for rival firms to imitate (Webster, 1999). Abernathy and Clark (1985) suggest that building competitive advantage and sustainable profits involves a bundle of business activities: for example, strategic planning, design, feasibility, production, marketing, distribution, customer service, organization structure and routines. Accordingly, expenditure on intangibles is not confined to R&D. R&D is emphasized in the literature because this is the only expenditure data available in a long time series (see Griliches, 1994). Indeed, Hansen and Serin (1997) show the traditional R&D analyses are not useful in lower technology industries because the intangibles reside in marketing and production.

A number of studies investigate the nature of intangibles used in production. To illustrate, Klemperer (1995) examines consumer-switching costs as a source of 'intangible' capital. Megna and Mueller (1991) examine whether advertising costs are a source of intangible capital for distilled beverage and cosmetic industries. Trajtenberg (1990) studies patents as a form of intangible capital for the optical scanners industry. Klock and Megna (2000) provide evidence that suggests advertising, R&D, radio spectrum licenses and measures of the firm's customer base are all sources of intangible capital, explaining a statistically significant portion of the variation in Tobin's  $q$  for firms in telecommunications.<sup>7</sup> Amir and Lev (1996) study the implications of not accounting for R&D as assets for firms in telecommunications, and report significant distortions in the balance sheet and income statement information. Webster (2000) computes estimates of firm-level intangible assets as the difference between the companies' market value of equity and their reported tangible assets. This measure is commonly used in the absence of alternatives, but is obviously not precise because the market value of equity theoretically measures the

<sup>5</sup> Marshall (1890). Menger also points out that without knowledge it is not even possible to distinguish between nutritious and poisonous berries (Loasby, 1991). There is a financial component because human endeavour takes place in exchange economies. Heyne (1991, p. 256) points out, 'as long as people believe that they can increase their production by acquiring present command of resources and creating capital from them, they will be willing to pay a premium to obtain resources now rather than wait until they have "earned" them'.

<sup>6</sup> For comprehensive review papers of economic, management, strategic and accounting issues relating to intangible investment see the following: Canibano *et al.* (2000), Lev (2001), Commission of the European Communities (2003), Ashton (2005), Ittner (2008) and Wyatt (2008).

<sup>7</sup> Tobin's  $q$  is the market valuation of the firm's financial claims divided by the replacement cost of the assets.

discounted present value of expected future cash flows including liquidation cash, while the accounting numbers are a mix of historical cost and some fair value measures. Webster's estimates for Australian companies from 1960 to 1998 suggest intangible assets as a proportion of total assets have been growing by about 1.2% each year. Webster (1999) augments her capital markets based evidence using Australian Bureau of Statistics data on education and employment and reports that growth in intangibles is partly attributable to changes in the workforce from less skilled labour to more skilled labour.

Empirical studies employing survey data from statistical bureaus and organizations such as the OECD also suggest expenditure on intangibles is growing over time as a component of total investment (e.g., Marion, 1987; Deiacco *et al.*, 1990; Eliasson, 1990; Hall, 1999; and McGrattan and Prescott, 2001). In the U.S. setting, Nakamura (2001) uses national accounts data to try to estimate all the firms' expenditures on intangibles across the U.S. economy. He estimates US\$1 trillion per annum is invested in intangible assets, much of which is invisible at the firm level because it is accounted for as cost of goods sold or sales general and administration expenses and not as expenditure on intangibles. Using the R&D expenditure recorded under U.S. GAAP, Nakamura estimates that US\$250 billion of the US\$1 trillion estimate of total expenditure on intangibles is recorded by the firms as R&D, leaving a US\$750 billion gap of intangibles unaccounted for (as intangibles) at the firm level.

To summarize so far, theoretical arguments easily establish the importance of expenditure on intangibles as a source of production assets and future benefits. However, firm level expenditures data on intangibles are not available to validate the theory. Despite this gap, researchers have used the incomplete data available to study the importance of intangibles to firms and the economy. There are now hundreds of studies focusing on economic, management, and/or accounting issues relating to intangibles that suggest intangibles are important in production but largely go unmeasured at the firm level (as comprehensively reviewed in Wyatt, 2008, and other works). We now examine why this is so by reference to economics and accounting features of intangibles.

## CURRENT TREATMENT OF EXPENDITURE ON INTANGIBLES

Economics distinguishes current expenditure from capital expenditure. This distinction also underlies the GAAP classification of expenditure as either current expenses or assets. According to Fisher (1930), investment expenditure comprises all outlays made in the expectation of long-term benefits. The capital created by the investment expenditure releases its productive services over a long time horizon. As early as Smith (1776), economists recognized that capital could take either tangible or intangible forms.

While the basic function of intangible capital is the same as tangible capital, intangibles differ in the extent of their attached property rights, and several distinguishing characteristics flow from this feature as follows below (for a detailed

exposition see Webster, 1999).<sup>8</sup> Property rights are defined by economists as ‘the rules of the game’, including ‘the rights to control the way in which particular resources will be used and to assign the resulting costs and benefits’ (Heyne, 1991, p. 266). Heyne points out property rights is a broad factor that affects decision making in a fundamental way: ‘Accepted rules of the society—customs and moral principles as well as laws—affect people’s behaviour by defining their property rights’ (p. 267).

*Variability and uncertainty in production* The production process employing intangibles is generally more variable and uncertain compared to other areas of production.<sup>9</sup> Output from mechanized production processes gives rise to more reliable (and standardized) outcomes compared to the outputs from intangibles. This is the case because expenditure on intangibles often relates to the intellectual efforts of employees from whom output tends not to be standardized (Dosi, 1988).

*Heterogeneity and specificity* Intangible activities are often designed to be firm specific, novel or heterogeneous. The reason for this heterogeneity is that the investments are motivated by strategic objectives to differentiate the firm from rivals (Alchian, 1984; Dosi, 1988). This heterogeneity property of intangibles creates an extra tier of uncertainty because it implies an investment process that is not performed repeatedly in a standardized way.

*Appropriability* There is often a close nexus of intangible investment with people which poses appropriability issues for the firm by influencing the probability that the firm can realize the benefits from its investment (Webster, 1999). ‘Appropriability’ is defined as ‘those properties of technological knowledge and technical artefacts, of markets, and of the legal environment that permit innovations and protect them, to varying degrees, as rent-yielding assets against competitors’ imitation’ (Dosi, 1988, p. 126). It is illegal to own employees, irrespective of any type of contracting arrangement, and even with a contract (such as those struck for football players in the premier league) the firm’s ‘investment in human capital’ can still leave. Intangibles

<sup>8</sup> To obtain control rights (a sub-set of property rights), firms can use a range of formal and information appropriation mechanisms including: *registrable rights* such as patents, trademarks, industrial designs, plant breeder rights, and business, company and domain names; *automatic rights* under legislation and/or common law such as copyright and circuit layout rights, trade secrets; and *contracts* such as confidentiality agreements ([http://www.ipaustralia.gov.au/strategies/X\\_strat.htm](http://www.ipaustralia.gov.au/strategies/X_strat.htm)). Andersen and Howells (1998) suggest copyright provides little protection. Types of rights employed varies across industries (Mansfield, 1986; Levin *et al.*, 1987): for example, patents are used for preventing copying primarily in chemicals and pharmaceuticals. Cohen *et al.* (2000) provide survey evidence that firms try to obtain control rights using patents, secrecy, lead-time advantages, and complementary use of marketing and manufacturing capabilities. Secrecy is heavily used to protect product innovations. Cohen *et al.* find motives for patenting extend far beyond the prevention of copying and include prevention of rivals from patenting related inventions (patent blocking), use of patents to force rivals into negotiations, and prevention of lawsuits.

<sup>9</sup> At least in part, expenditure on intangibles relates to technological innovation, defined as search and discovery activities to find new ways to make and do things (Dosi, 1988; Metcalfe, 1997). These activities are inherently uncertain because of the ad hoc search element (Metcalfe, 1997), ill-structured problems (Dosi, 1988), and a lag of unknown length until output is available for sale to customers (Nelson and Winter, 1982).

no longer embodied in people, and now attached to rights such as patents, trademarks, and licenses, may also be prone to expropriation through ‘close inventing around’ activities by rivals, strategies adopted by rivals such as patent blocking, and through regulatory and political actions.

These properties of intangibles (variability and uncertainty in production, heterogeneity and specificity, and appropriability/expropriation) may lead to some level of uncertainty for managers over their firm’s ability to realize expected benefits from their intangibles. This uncertainty presents problems for GAAP because accounting regulations are concerned with the reliability as well as the relevance of financial information.

Underlying accounting regulation of expenditure on intangibles are some departures of accounting away from economic concepts. One such departure relates to the economists’ definition of intangible investment as *any* expenditure not immediately embodied in physical matter that is undertaken with the expectation of long-term benefits. Expenditure expected to achieve long-term benefits that does not lead to this outcome might be a bad investment, but the expenditure is still an investment to the economist—whether the expenditure relates to a tangible or intangible makes no difference. In contrast, accountants under GAAP use a two-stage process to distinguish expenses from assets that involves, first, evaluating whether an expenditure meets the definition of an intangible asset, and second, evaluating whether an asset so defined is certain enough in relation to the receipt of expected future benefits to be recognizable as an intangible asset. The difference between the two is that economics allocates expenditure to either ‘investment’ or ‘current expenses’ based on the economic purpose to which the decision maker allocated the expenditure, while GAAP allocates expenditure to either ‘assets’ or ‘product costs’ or ‘operating expenses’ based on accounting rules.

The accounting rules for intangibles are largely contained in AASB 138, *Intangible Assets*. This accounting standard does not aim to comprehensively identify and measure expenditure on intangibles. Instead, the intent of the standard appears to be to allow recording of only those intangible assets bearing a price from an exchange transaction. To this end, the accounting standard differentiates the accounting methods for expenditure on intangibles, based on *mode of acquisition*. Further, the accounting standard takes the view that all expenditure on intangibles not relating to external purchases or acquisitions is R&D. This narrow R&D focus is outmoded, as outlined earlier. Other items specifically excluded from recognition as an intangible asset include brands, mastheads, publishing titles, customer lists and ‘items similar in substance’ (AASB 138, para. 63). However, *these same items* are recognizable as intangible assets if they are purchased; and indeed, paragraph 119 sets out examples of ‘separate classes’ of intangible assets as follows: brand names; mastheads and publishing titles; computer software; licenses and franchises; copyrights; patents and other industrial property, rights service and operating rights; recipes, formulae, models, designs and prototypes; and intangible assets under development. Overall, AASB 138 encompasses three basic themes:

1. Expenditure on *purchased intangibles* (separately acquired or as part of an acquisition) that meet the definition of an intangible asset are deemed to be recognizable as intangible assets;
2. All other expenditure on intangibles come under the *internally generated intangible asset* provisions and are classifiable only as either *research* or *development*; and
3. Of the research and development expenditure, only the development expenditure that meets the intangible asset definition and recognition rules plus the six tests in AASB 138, paragraph 57, are recognizable as intangible assets.

Because the six tests in paragraph 57 are stringent, few intangible assets would be recognized if the accountant adheres to the intent of the standard.

*Stage 1: Definition* Looking specifically at the Stage 1 definition step, the accountant first evaluates whether expenditure meets the definition for an intangible asset. As illustrated in Table 1, the three attributes of the intangible asset definition include:

Identifiability: (a) the asset is separable, being capable of being separated or divided from the entity and sold, transferred, licensed, rented or exchanged, either individually or together with a related contract, asset or liability; or (b) the asset arises from contractual or other legal rights, regardless of whether those rights are transferable or separable from the entity or from other rights and obligations (AASB 138, paras 11–12);

Control: an entity controls an asset if the entity has the power to obtain the future economic benefits flowing from the underlying resource and to restrict the access of others to those benefits (AASB 138, paras 13–16); and

Future economic benefits: benefits flowing from an intangible asset that may include revenue from the sale of products or services, cost savings or other benefits resulting from the use of the asset by the entity (AASB 138, para. 17).

Stage 1 definition seems to imply the need for property rights of some kind over the intangible to meet the definition of an asset. In particular, in relation to identifiability, ‘separable’ intangibles assets are usually embodied in a physical or intangible asset and/or bundled with a right or contract: for example, licence, ownership of a ‘brand name product’ production rights such as Porche, human capital that comes with an acquired business, or technology embodied in a physical asset. Further, ‘power to control’ implies a ‘right to determine use’. However, the definition does not explicitly state that a right of some type is required to meet the asset definition, and hence there is some ambiguity in the intention of the definition.

*Stage 2: Recognition* Once Stage 1 is satisfied, the accountant moves on to Stage 2 to evaluate whether the expenditure meets the *intangible asset recognition* criteria:

AASB 138, paragraph 21, states that an intangible asset shall be recognized if, and only, if:

- (a) It is probable [presumably more than 50% probable] that the expected future economic benefits that are attributable to the asset will flow to the entity; and
- (b) The cost of the asset can be reliably measured.

‘Cost’ will be historical cost if the intangible asset is internally generated or purchased separately, and fair value if part of a business combination.

TABLE 1  
DEFINITION AND RECOGNITION OF INTANGIBLE ASSETS UNDER AASB 138, INTANGIBLE ASSETS

Stage 1: Definition	(A) Identifiability	(B) Control	(C) Future economic benefits
<p>‘An asset is identifiable if it either: (a) is separable, i.e. is capable of being separated or divided from the entity and sold, transferred, licensed, rented or exchanged, either individually or together with a related contract, identifiable asset or liability, regardless of whether the entity intends to do so; or (b) arises from contractual or other legal rights, regardless of whether those rights are transferable or separable from the entity or from other rights and obligations.’ (AASB 138, para. 12)</p>	<p>‘An entity controls an asset if the entity has the power to obtain the future economic benefits flowing from the underlying resource and to restrict the access of others to those benefits. The capacity of an entity to control the future economic benefits from an intangible asset would normally stem from legal rights that are enforceable in a court of law. In the absence of legal rights, it is more difficult to demonstrate control. However, legal enforceability of a right is not a necessary condition for control because an entity may be able to control the future economic benefits in some other way.’ (AASB 138, para. 13)</p> <p>‘Market and technical knowledge may give rise to future economic benefits. An entity controls those benefits if, for example, the knowledge is protected by legal rights such as copyrights, a restraint of trade agreement (where permitted) or by a legal duty on employees to maintain confidentiality.’ (AASB 138, para. 14)</p> <p>‘An entity may have a team of skilled staff and may be able to identify incremental staff skills leading to future economic benefits from training. The entity may also expect that the staff will continue to make their skills available to the entity. However, an entity usually has insufficient control over the expected future economic benefits arising from a team of skilled staff and from training for these items to meet the definition of an intangible asset. For a similar reason, specific management or technical talent is unlikely to meet the definition of an intangible asset, unless it is protected by legal rights to use it and to obtain the future economic benefits expected from it, and it also meets the other parts of the definition.’ (AASB 138, para. 15)</p>	<p>‘An entity may have a portfolio of customers or a market share and expect that, because of its efforts in building customer relationships and loyalty, the customers will continue to trade with the entity. However, in the absence of legal rights to protect, or other ways to control, the relationships with customers or the loyalty of the customers to the entity, the entity usually has insufficient control over the expected economic benefits from customer relationships and loyalty for such items (e.g. portfolio of customers, market shares, customer relationships and customer loyalty) to meet the definition of intangible assets. In the absence of legal rights to protect customer relationships, exchange transactions for the same or similar noncontractual customer relationships (other than as part of a business combination) provide evidence that the entity is nonetheless able to control the expected future economic benefits flowing from the customer relationships. Because such exchange transactions also provide evidence that the customer relationships are separable, those customer relationships meet the definition of an intangible asset.’ (AASB 138, para. 16)</p>	<p>‘The future economic benefits flowing from an intangible asset may include revenue from the sale of products or services, cost savings, or other benefits resulting from the use of the asset by the entity. For example, the use of intellectual property in a production process may reduce future production costs rather than increase future revenues.’ (AASB 138, para. 17)</p>

TABLE 1  
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<p>Stage 2: Recognition and measurement</p>	<p>'The recognition of an item as an intangible asset requires an entity to demonstrate that the item meets: (a) the definition of an intangible asset (see paragraphs 8-17); and (b) the recognition criteria (see paragraphs 21-25). This requirement applies to costs incurred initially to acquire or internally generate an intangible asset and those incurred subsequently to add to, replace part of, or service it.' (AASB 138, para. 18)</p>	<p>'An intangible asset shall be recognised if, and only if: (a) it is probable that the expected future economic benefits that are attributable to the asset will flow to the entity; and (b) the cost of the asset can be measured reliably.' (AASB 138, para. 21)</p> <p>'An entity shall assess the probability of expected future economic benefits using reasonable and supportable assumptions that represent management's best estimate of the set of economic conditions that will exist over the useful life of the asset.' (AASB 138, para. 22)</p> <p>'An entity uses judgement to assess the degree of certainty attached to the flow of future economic benefits that are attributable to the use of the asset on the basis of the evidence available at the time of initial recognition, giving greater weight to external evidence.' (AASB 138, para. 23)</p> <p>'An intangible asset shall be measured initially at cost.' (AASB 138, para. 24)</p>
<p>Stage 3: Disclosure (key provisions)</p>	<p><b>General</b> <b>AASB 138 Paragraph 118:</b> Requires disclosure of 'each class of intangible assets, distinguishing between internally generated intangible assets and other intangible assets'.</p> <p><b>AASB 138 Paragraph 119:</b> A class of intangible assets is a grouping of assets of a similar nature and use in an entity's operations. Examples of separate classes may include: (a) brand names; (b) mastheads and publishing titles; (c) computer software; (d) licences and franchises; (e) copyrights, patents and other industrial property rights, service and operating rights; (f) recipes, formulae, models, designs and prototypes; and (g) intangible assets under development. The classes mentioned above are disaggregated (aggregated) into smaller (larger) classes if this results in more relevant information for the users of the financial statements.</p>	<p><b>AASB 138 Paragraph 126:</b> An entity shall disclose the aggregate amount of research and development expenditure recognised as an expense during the period.</p> <p><b>AASB 138 Paragraph 127:</b> Research and development expenditure comprises all expenditure that is directly attributable to research or development activities (see paragraphs 66 and 67 for guidance on the type of expenditure to be included for the purpose of the disclosure requirement in paragraph 126).</p> <p><b>Other Information</b> <b>AASB 138 Paragraph 128:</b> An entity is encouraged, but not required, to disclose the following information: (a) a description of any fully amortised intangible asset that is still in use; and (b) a brief description of significant intangible assets controlled by the entity but not recognised as assets because they did not meet the recognition criteria in this Standard.</p>

Despite the unequivocal statement in paragraph 21 (that intangible assets ‘shall be recognised if, and only if . . .’) other paragraphs in AASB 138 override this recognition rule. In particular, for expenditure relating to *purchased intangibles* (separately acquired and intangibles from an acquisition setting), the accounting process is *complete at Stage 1*, because expenditure on purchased intangibles are ‘deemed’ to meet the Stage 2 recognition criteria for intangible assets.

The deeming occurs in either of two ways. One deeming occurs by virtue of the existence of a price: ‘the price an entity pays to acquire separately an intangible asset will reflect expectations about the probability that the expected benefits embodied in the asset will flow to the entity’ (AASB 138, para. 25). The other deeming occurs by virtue of the existence of a cost: ‘if an intangible asset is acquired in a business combination, the cost of that intangible asset is its fair value at the acquisition date. The fair value of an intangible asset will reflect expectations about the probability that the expected future economic benefits embodied in the asset will flow to the entity’ (AASB 138, para. 33).

Accordingly, what we observe under AASB 138 is an asymmetric accounting for expenditure on *purchased* intangibles compared to expenditure on *non-purchased* intangibles. The standard allows capitalization of purchased intangible assets and proscribes capitalization of expenditure on non-purchased intangibles. The accounting standard claims that ‘the price . . . will reflect expectations’ and ‘the fair value . . . will reflect expectations’. The regulator’s approach might satisfy regulatory concerns relating to managerial discretion in applying standards for intangibles by removing that discretion. However, this type of rule making is neither economics-based nor evidence-based, focused as it is on ‘mode of acquisition’.

Finally, Table 1 summarizes the key disclosure provisions from AASB 138. Once again, these provisions make it clear the goal underlying the accounting standard is not a comprehensive reporting of intangibles. In particular, there are only three broad ways the expenditure on intangibles is disclosed separately: purchased and business combination intangible assets, development intangible assets and R&D expenses. All other expenditure on intangibles is included in costs of sales or operating expenses.

A key implication of the accounting standard approach compared to the *economic* properties of intangibles (variability and uncertainty in production, heterogeneity, appropriability and appropriation) discussed above is that expenditure on intangibles will often fall outside the AASB 138 standards. In particular, the tendency for some expenditure on intangibles to generate intangible assets that are embodied in people renders attribute (a), the identifiability criterion, unlikely. The characteristics of variability and uncertainty in production and low appropriability/high expropriation uncertainties affect attribute (b), the capacity to control the asset, and attribute (c), the probability of future benefits. While attribute (c) (future benefits) is a prerequisite under any definition of an asset, many intangibles will not meet the accompanying market-based ‘cost or price’ requirement that sits alongside the ‘future benefits’ requirement in (c) because the intangibles are not purchased. Further, some intangible assets have weak or limited property rights (e.g., copyright and recipes) and/or costly to defend property rights which can put them outside the (b) control and (c) future benefits attributes.

This discussion brings us to two core issues with GAAP as it stands: (a) whether accounting standards can form the basis for systematic separation and analysis of the expenditures on different types of intangibles; and (b) the basis for the capitalization test for intangible assets. While the second issue is more controversial and potentially involves a range of costs and benefits for the firms and some stakeholders (e.g., capitalization can induce errors in analysts' earnings forecasts: Aboody and Lev, 1998), there are few obvious downside costs to developing and implementing a standardized classification for *expenditure* on intangibles. That is, even if the expenditure that economists regard as intangible investments is treated as expenses under GAAP, there is still the option of separately accounting for different types of *expenditure* on intangibles according to a standardized classification.

One possible downside is disclosure costs, which are often envisaged by the firm as a loss of future earnings if a disclosure reveals private, sensitive information to rival firms (Verrecchia, 1983; Myers and Majluf, 1984). The basic disclosure principle is that managers disclose all their privately held information (proprietary or not) in equilibrium because when some firms disclose and some do not, the non-disclosers are viewed as having some bad news to hide, with adverse consequences for firm valuation by investors. However, in practice, managers do not disclose all, and we observe a partial disclosure equilibrium.

In studying managerial disclosure incentives, private information held by managers is divided into proprietary and non-proprietary types. Proprietary information is information whose disclosure potentially influences the firm's future profits, while non-proprietary information influences stock price but not the future earnings distribution. Graham *et al.* (2005) provide survey evidence that suggests 60% of the CEOs (for their sample of large listed U.S. companies) consider proprietary costs are the most significant cost of publicly disclosing information. Some researchers argue that managers may have incentives not to disclose even non-proprietary information (of the type that influences price but not the future earnings) for reasons such as: the disclosure induces uncertainty because it is not verifiable, investors are uncertain about the private information held by managers and the non-proprietary disclosure increases this uncertainty, or information is costly for investors to process (e.g., Verrecchia, 1983; 1990; Dye, 1985). However, analytical studies suggest the relation between disclosure and proprietary information costs is complex and ambiguous. That is, managerial disclosure incentives are related to competition and the firm's agency costs, among other things, and the nature of the association depends on the type of competition: for example, substitute versus niche product market competition, conditions driven by the life cycle stage of the industry and firm, and whether firms compete on price or volume (Darrough and Stoughton, 1990; Darrough, 1993; Verrecchia, 2001). Overall, these literatures suggest there is likely to be reluctance by managers to disclose information on intangible investment if the disclosure has negative stock price or future earnings implications.

Countering this possibility, prior research in the Australian setting suggests analysts prefer to follow firms that have intangible investments *and* disclose information on the balance sheet about these underlying investments (Matolcsy and Wyatt, 2006). Not disclosing in many cases may not be an option if the firm holds price sensitive

information: for example, legislated continuous disclosure regulations in the Australian setting require listed companies to disclose price sensitive information in a timely way. Circumstances where a firm's proprietary costs relating to intangible investments are high can also be addressed in other ways. For example, Tang (2008) reports evidence that privately held firms with potentially higher proprietary costs are more likely to choose private placements instead of public offerings to avoid the commitment to disclosure after going public. Overall, the managerial disincentives to disclose publicly for competitive reasons are a factor to be considered in formulating any enhanced schemes for reporting on intangibles. A balanced approach would also take into account the stewardship role played by managers in safeguarding the firm's resources, and the imperative to provide an objective accounting for the deployment of those resources to promote market efficiency.

### SURVEY OF CHIEF ACCOUNTANTS

The previous section outlined the logic of current GAAP juxtaposed against the economic properties of intangible investments to suggest that as GAAP is currently intended to be implemented, it would be difficult for GAAP to operate as a system for reporting systematically on intangibles. In order to assess what effect this is having on actual firm behaviour, we conducted a survey during 2007 that covered a variety of organizations including listed companies, unlisted companies and not-for-profit organizations.<sup>10</sup> We refer to this collective set as 'firms'. The population of firms was derived from the IBISWorld database, which provides financial data for Australia's largest 2000 companies and not-for-profit organizations. We selected the largest 1,445 firms from IBISWorld in April 2007 as our initial sample.<sup>11</sup>

<sup>10</sup> The decision to include these three groups was determined by information regarding the general nature of the problem of identifying and measuring intangibles. We obtained this information from a series of industry seminars we conducted in Sydney, Brisbane and Melbourne prior to commencing this project. The purpose of the industry seminars was to obtain some inductive insights on the intangibles issue from accountants and managers. The seminars were widely advertised by the Intellectual Property Research Institute of Australia, University of Melbourne, to industry in each city in the print media. We made presentations on economic concepts and accounting practices relating to intangibles. The most striking insight from these industry seminars was the wide interest in how to account for intangible investment across different types of organizations and sectors. Representatives of smaller unlisted companies and public sector organizations indicated anecdotally that they grappled (usually unsuccessfully) with identifying and measuring intangible investment inputs and outputs.

<sup>11</sup> In terms of external reporting, these three types of organizations all come within the GAAP regulations. One difference is that GAAP imposes some specific requirements for the public sector to provide information about the governments' impact on the macroeconomy. See AASB 1, *First Time Adoption of Australian Accounting Standards* (2009, p. 5): 'Accounting Standards, including Interpretations, to be applied by: (a) entities required by the *Corporations Act 2001* to prepare financial reports; (b) governments in preparing financial statements for the whole of government and the General Government Sector (GGS); and (c) entities in the private or public for-profit or not-for-profit sectors that are reporting entities or that prepare general purpose financial statements'. AASB 1049, *Whole of Government and General Government Sector Financial Reporting* (2009, p. 9) requires: 'Whole of government financial statements and GGS [general government statistics] financial statements prepared in accordance with this Standard provide users with: (a) information about the stewardship by each government and accountability for the resources entrusted to it; (b) information about the financial position, performance and cash flows of each government and its sectors; and (c) information that facilitates assessments of the macroeconomic impact of each government and its sectors'.

Our survey approach follows the practices reported in Sudman and Bradburn (1983). We first trialled the survey instrument for a sample of ten firms and later excluded these ten firms from the final survey. Our pilot survey deliberately framed issues in different ways in order to test the relation between the firms' beliefs and practice. From the pilot survey and earlier seminars (see footnote 10) we found the chief accountants, on average, do not think about the firm's expenditure in terms of the accounting constructs, intangibles or intangible investment; rather, they think in concrete terms of expenditure allocated to the activities, products and processes that the firm expects will generate value (as also noted by Johanson *et al.*, 2001). Hence, in accordance with the findings from the pilot survey, and to maximize the validity of the responses, the survey commenced with questions to orientate the subjects by asking the chief accountants to describe their policy and perspective on 'intangibles'. Once the context for the survey questions was established, the questions in the survey instrument went on to refer directly to 'intangible value drivers' to conform to the chief accountants' beliefs and practice. To maximize our response rate, our survey consisted of telephone interviews with senior accounting managers at these firms.<sup>12</sup> To minimize non-response biases, we contacted non-responding firms up to three times.

As Table 2 Panel A reveals, our initial sample of 1,445 firms included 23.5% listed companies, 65.7% unlisted companies, and 10.8% not-for-profit organizations. For the initial sample of 1,445 firms in 2007, the average number of employees was 2,522 and the average total revenue was A\$1,017 million.

Of the initial 1,445 firms approached, 704 firms responded (48.7%). Of the responding group of 704 firms, 90 respondents indicated that managers of their firm did not explicitly consider expenditure on intangibles in business decision-making processes. No further questions were put to these 90 firms.

Of the remaining firms approached, 114 (7.9% of the total) refused to be interviewed and 627 (38.0%) were not able to be contacted because we were either unable to reach the CFO or senior accountant or because the firm was unreachable by telephone or no longer in business. Response rates by the type of firm were 43% for listed companies, 49% for unlisted companies and 62% for not-for-profit organizations. For the 'response', 'refuse', and 'unreachable' groups, average revenue in 2007 was A\$1,007 million, A\$740 million and A\$1,084 million, respectively. We tested for response rate bias across these three groups and found an industry bias (agriculture, forestry and fishing, cultural and recreational services were more likely to refuse than were firms from other industries). Other than the total assets, there was no statistically significant difference among the three different types of firms for the remaining financial characteristics comprising revenue, intangible assets, profits and number of employees. Appendix A presents this additional analysis in more detail.

<sup>12</sup> Three factors motivated the choice of telephone interviews over other survey methods, including maximization of the response rate by initiating direct contact with respondents, use of direct administration of the survey to facilitate clarification of concepts to minimize the probability that respondents take cues from the survey design and provide responses that are biased in ways they feel are important to the researcher, and finally to provide the ability to undertake cross-check on response bias through a clinical debriefing using open-ended questions throughout the survey.

ACCOUNTING FOR EXPENDITURE ON INTANGIBLES

TABLE 2  
SUMMARY STATISTICS

<b>Panel A: Response rate information</b>					
Response type	Freq. #	Percent %	Listed company (response %)	Unlisted company (response %)	Public sector/ not-for-profit (response %)
Firms that responded	704	48.7	146 (43%)	461 (49%)	97 (62%)
Policy on intangibles	614		129	391	94
No policy on intangibles	90		17	70	3
Firms that refused to participate	114	7.9	22 (7%)	83 (9%)	9 (6%)
Refused to be surveyed	103		14	81	8
Emailed survey but no reply	11		8	2	1
Firms that could not be contacted or whose CEO could not be contacted	627	43.4	171 (50%)	406 (43%)	50 (32%)
CFO unreachable	446		150	248	48
Acquired, closed etc.	181		21	158	2
Total approached	1,445	100.0	339 (23.5%)	950 (65.7%)	156 (10.8%)

<b>Panel B: Respondent characteristics</b>		
	Freq. #	Percent %
Respondent's position		
CEO	5	0.8
CFO	112	18.1
Finance manager	330	53.2
Senior accountant	131	21.1
Financial reporting manager	3	0.5
General manager	3	0.5
Investment strategy		
Persistent acquirer of other companies and businesses	117	19.3
Growing from internal operations	480	79.1
Brand company	302	49.8
Technology company	65	10.7
Science company	20	3.3
Industrial classification		
Manufacturer	148	24.4
Retailer, distributor or wholesaler	220	36.2
Financial, insurance, investment company	67	11.0
Energy, resource, agriculture, livestock sectors, waste	52	8.6
Transport, air, sea, freight, construction, engineering sectors	35	5.8
Foreign operation, import, export business	9	1.5
Media, advertising, real estate, tourism, leisure, legal, education	25	4.1

*Note:* The Appendix includes the details of the survey instrument. 'Policy/No policy on intangibles' is the chief accountants' response to the question whether the managers in their firm explicitly consider expenditure on intangible value drivers in managerial decision making.

Table 2 Panel B provides summary statistics on the office held by respondents, the firm's investment strategy and industry. The offices held by the majority of the respondents are CFO, finance managers and senior accountants. A very large percentage, 79.1%, nominate their strategy as growing from internal operations, meaning the firm is growing by investing in growing tangible and intangible operations rather than growing by mergers and acquisitions. A third of the firms describe themselves as retailer, distributor or wholesaler, and a quarter as manufacturing. The not-for-profit organizations have the highest 'yes' response to the question of whether or not their firm has a policy on intangibles (in the sense of explicitly considering expenditure on intangibles when making business decisions) at 60%, compared to a 41% 'yes' response for unlisted companies and a 38% 'yes' response for the listed companies.<sup>13</sup>

### IMPLICATIONS FOR MANAGERS, OTHER STAKEHOLDERS AND POLICY MAKERS

At least three main parties currently rely upon accurate accounting information and are potentially affected by the current accounting treatment of expenditure on intangibles: managers, other stakeholders and public-policy makers.

#### *Managers*

Managers make decisions about expenditure on intangibles, whether they explicitly recognize this or not. Decision areas for intangibles cover the spectrum of business decisions from organizational structure, attraction and maintenance of the workforce, communication and information technology infrastructure, invention and innovation of products and processes, to customer attraction and retention. We know little about the basis of these managerial decisions because the decision-making process is internal and not directly observable. The little we do know suggests that managers experience difficulties measuring intangibles inputs and output in ways that enable the firm to link the amount and types of intangibles expenditure to outcomes (Ittner, 2008). We speculate that the reasons why this is so could be the firms do not know the value to the firm of investing in intangibles and/or do not specifically know *what* drives increases in the stock of intangible assets.<sup>14</sup> In this section, we now present survey evidence on whether firms consider expenditure on intangible value drivers, and if so, how the firms treat this expenditure, and how their firm makes decisions about future expenditure.

To begin, we asked the senior accountant whether their firm has a policy on intangibles in relation to the firm's strategic decisions, and Table 2 shows that 614 of

<sup>13</sup> An issue arising for future research is the extent that differences in managerial incentives across not-for-profit, listed and unlisted companies influence the propensity of managers to consider intangibles in decision-making. Differences in incentives can arise from factors such as differences in regulation, funding sources, compensation contracts, scale and scope, business objectives, and markets.

<sup>14</sup> We are indebted to an anonymous referee for pointing out these possibilities.

ACCOUNTING FOR EXPENDITURE ON INTANGIBLES

TABLE 3

TYPE OF INTANGIBLES EXPENDITURE COLLECTED BY TYPE OF FIRM  
(OPEN-ENDED AND UNPROMPTED QUESTION)

<b>Panel A: Does your firm separate expenditures on different types of intangibles?</b>				
	Yes	No	Total	
	243 (39.5%)	371 (60.4%)	614	
<b>Panel B: Type of intangible expenditure (unprompted question)</b>				
	Listed companies	Unlisted companies	Not-for-profit organizations	All firms
	Yes %	Yes %	Yes %	Yes %
Information system infrastructure (e.g., software, IT)	10.9	6.7	14.9	8.8
Production and technology (e.g., patents, designs, R&D, industry specific rights)	37.5	14.6	14.9	19.4
Human resources (e.g., training and remuneration items)	10.2	1.8	5.3	4.1
Organization and administration (e.g., legal contracts such as licenses, business costs)	3.1	0.8	3.2	1.6
Procurement, distribution, customer linkages (e.g., trademarks, brands, marketing)	24.2	9.5	8.5	12.4
Not stated (no details given)				8.1

Note:  $n = 614$  firms with a policy on intangibles from a total of 704 firms responding to the survey.

the 704 respondents do have policies relating to intangibles. Subsequently, we asked an *open-ended and unprompted* question—whether the firm separates expenditure on different types of intangibles, and if so, the types of expenditure involved. As reported in Table 3 Panel A, we found that of the 614 firms indicating that their firm has a policy for intangibles—meaning their firm explicitly considers intangibles in their business decision-making processes—39.5% indicated they separate out expenditure data on some type of intangible.<sup>15</sup> This is not a high percentage of firms considering the pervasiveness of some types of expenditure on intangibles such as advertising and marketing and information technology. However, the operation of GAAP as outlined above suggests we would expect to observe this outcome.

A large diversity of activities and expenditure were nominated by the firms, in response to our unprompted question about the types of intangibles for which expenditure is separately collected. These activities and expenditure are detailed for

<sup>15</sup> This finding is analogous to findings in the real options literature, that real options are integral to long-term performance, but most firms do not incorporate real options information into the evaluation process for long-term investment (Graham and Harvey, 2001; Ryan and Ryan, 2002).

illustrative purposes in footnote 16.<sup>16</sup> To assist in the interpretation of these responses, given the question was open-ended and unprompted, we employed common classifications from the intangible capital literature to summarize the responses (see Hunter *et al.*, 2005). We classified responses from the ‘39.5%’ group (of intangibles data collectors) into five classifications: *Information system infrastructure* including expenditure on software and IT; *Production and technology* including expenditure relating to patents, designs, R&D, and industry specific rights (e.g., mining tenements); *Human resources* including training and remuneration expenditure items; *Organization and administration* including legal contracts (e.g., licenses) and business-related expenditure; and *Procurement, distribution, customer linkages* including trademarks, brands and marketing expenditure.

As shown in the last column of Table 3 Panel B, the most common, separately collected type of expenditure on intangibles, at 19.4%, was Production and technology and this predominantly related to R&D expenditure. The second most common expenditure on intangibles separated out from other expenditure was Procurement, distribution, customer linkages at 12.4%, which relates to items such as trademarks, brands and marketing found to be intangible value drivers in prior studies (e.g., Jensen and Webster, 2009). One observation emerging from these responses—apart from the low rate of separating out expenditure on different types of intangibles—is that most of the intangibles nominated by the firms as receiving individual attention are those that are potentially recognizable under AASB 138, *Intangible Assets*, relating to R&D, patents and trademarks. This observation is consistent with GAAP largely determining accounting practice for intangibles, as suggested by prior studies in more general contexts (see Hopper *et al.*, 1992; Joseph *et al.*, 1996; Drury and Tayles, 1997).

Disaggregation of the above responses by firm type (listed company, unlisted company and not-for-profit organization) suggests the listed companies are more likely than the other firm types to separate out expenditure on different types of intangibles, while unlisted companies are the least likely to undertake this task. We conjecture this finding reflects capital market based pressures for disclosure.

To provide insights on the diversity of the expenditure and value drivers included in R&D, we asked the senior accountants what types of expenditure are included in their R&D. Table 4 Panel A shows 35.4% of the firms responding to this question have an R&D spend. Table 4 Panel B shows the most frequently cited expenditure

<sup>16</sup> Detailed activities and expenditure cited by the firms in the open-ended question include: speculative work, internal expenditure, purchased intangibles, project expenditure, fixed assets, goodwill, purchased software, internally generated software, IT, R&D contracts, property interests, product and process development, research, feasibility studies, technology, science, exploration and evaluation costs, mining tenement, royalties, intellectual property, patent, trademark, design, copyright, legal costs, licence agreements, leases, other contracts, trade name, brand, advertising and marketing, franchises, customer list, employee costs, human resources, maintenance, training, social investment, reputation investments, consultant fees, salaries, water entitlements, airspace, music copyright, film right, management right, naming right, water rights, easement rights, lobby of government expenditure, due diligence costs, market share, sales volume, staff performance, supply chain, carbon footprint, performance-rights, loans, community support, staff costs, organizational culture.

ACCOUNTING FOR EXPENDITURE ON INTANGIBLES

TABLE 4

WHAT TYPES OF EXPENDITURE ARE INCLUDED IN YOUR FIRM'S R&D EXPENDITURES?

<b>Panel A</b>		
	Firms responding to this question	Percentage
Companies with no or very limited R&D spend	372	63.4
Accountant unsure whether the company has an R&D spend	7	1.2
Companies indicating they have an R&D spend	208	35.4
	587	100

<b>Panel B: Type of expenditure included in the company's R&amp;D</b>		
	Number of firms	Percentage
Solve technical problems; discovery in science and technology; design and development; product and process	91	43.8
Pre-production, pilots, trials	43	20.7
Computer, software development and implementation, IT man hours	31	14.9
Data	4	1.9
Intellectual property (IP) costs	4	1.9
Plant and equipment, construction, depreciation	39	18.8
Materials	47	22.6
Internal labour costs, salaries, wages	178	85.6
Overheads	14	6.7
External consultant, contractor, or researcher	55	26.4
Procurement system	2	1.0
Staff training and development expenditure	8	3.8
Brand development and market research	9	4.3
Travel	42	20.2
R&D is done overseas by parent	20	9.6
R&D to obtain tax concession	7	3.4

Note:  $n = 587$  responding firms of the 614 firms with a policy on intangibles from a total of 704 firms responding to the survey.

included in R&D are labour costs, discovery and problem solving R&D, external consultants, materials and plant, pre-production and computing, and travel. A range of potential value drivers are reflected in the expenditure in Table 4 Panel B, for example, human resources, information systems, production and technology and customer linkages.<sup>17</sup>

<sup>17</sup> This diversity of activities would go some way to explaining why the empirical evidence suggests the R&D expenditure *unaccompanied* by contextual information for evaluating success rates are often not value relevant (see Wyatt, 2008).

TABLE 5

WHAT ARE YOUR FIRM'S VALUE DRIVING CATEGORIES OF EXPENDITURE ON INTANGIBLES?

Value driver categories of expenditure on intangibles (prompted question)	Which of these are value driving categories of expenditure on intangibles for your firm?			
	Yes #	Yes %	No %	Unsure %
Training	492	80.1	17.9	2.0
R&D	200	32.6	66.9	0.5
Customers, member, donor acquisition	385	62.7	34.9	2.4
Brands	401	65.3	33.6	1.1
IT infrastructure	503	81.9	16.8	1.3
Procurement and distribution	468	76.2	21.7	2.1
Organization structure	260	42.3	54.9	2.8
Science innovation	110	17.9	79.8	2.3
Technical innovation	312	50.8	47.4	1.8
Executive compensation	390	63.5	32.4	4.1
Remuneration of skilled workers	515	83.9	14.3	1.8
Other	7	1.1	97.1	1.8

Note:  $n = 614$  firms with a policy on intangibles from a total of 704 firms responding to the survey.

To enable a comparison of practice and perspectives from the intangibles literature, the interviewer then read out a list of expenditure types, derived from the economics and strategy literatures, and asked respondents whether these expenditure types constituted their firm's intangible value drivers. The responses reported in Table 5 suggest the most commonly cited categories are the Remuneration of skilled workers, IT infrastructure, and Training, which can be interpreted as reflecting the centrality of human capital and information technology to economic activity.<sup>18</sup> The least-cited categories are Science innovation and R&D.

We combine the survey responses in Tables 4 and 5 to examine the extent that value-driving categories of expenditures relate to the separation of expenditures. Table 6 suggests that, while firms indicate they make expenditure on different types of intangibles, on average the firms tend not to report on these expenditures separately from day-to-day expenses. Table 6 gives the percentage of firms collecting each type of expenditure on intangibles (according to the categories down the left-hand side column) across the table, and the firms' responses to the question of

<sup>18</sup> See Wyatt and Frick (2010) for a review of human capital literature, Baily and Lawrence (2001) on economic change due to technology, Hobijn and Jovanovic (2001) on the interaction of information technology with capital stock and share prices, and Dudley (1999) on the role of communication technology advances in economic cycles.

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TABLE 6

MATCH BETWEEN THE PERCENTAGE OF FIRMS SEPARATING EXPENDITURE ON INTANGIBLES AND THE CATEGORIES OF ACTIVITY THAT ARE NOMINATED BY THE FIRMS AS VALUE DRIVING EXPENDITURE CATEGORIES FOR INTANGIBLES

Value driving expenditure categories for intangibles (prompts provided)	Categories of intangibles for which expenditures are separately collected by the firm (unprompted question)				
	Information system infrastructure	Production and technology	Human resources	Organization and administration	Procurement, distribution, customer linkages
	%	%	%	%	%
Training	9.2	20.6	<b>4.5</b>	2.0	13.4
R&D	14.5	<b>44.0</b>	6.5	3.0	17.0
Customer acquisition	7.8	19.7	3.9	1.0	<b>15.1</b>
Brands	8.7	22.9	5.0	1.5	<b>17.0</b>
IT infrastructure	<b>9.6</b>	19.1	3.8	1.8	12.7
Procurement and distribution	8.3	19.7	3.4	1.3	<b>11.5</b>
Organization structure	10.4	24.2	7.3	<b>3.5</b>	13.5
Science innovation	14.5	<b>47.3</b>	9.1	2.7	13.6
Technical innovation	12.5	<b>30.1</b>	6.1	2.2	13.1
Executive compensation	10.0	23.1	<b>4.4</b>	1.8	14.9
Remuneration of skilled workers	8.9	19.6	<b>3.5</b>	1.7	12.2
Other	0.0	0.0	14.3	0.0	14.3
Average across all	8.8	19.4	4.1	1.6	12.4

Note:  $n = 614$  firms with a policy on intangibles from a total of 704 firms responding to the survey.

whether these left-hand-side categories relate to activities that are expected to create value for the firm. We have bolded the cells in Table 6 where there is evidence of a match between activities the firms nominate as driving value and the types of activities for which expenditure on intangibles are separated out from other expenditure.

The highest percentage of firms separating out expenditure in their nominated value driving areas is 47.3%, while many of the percentages are below 10%. The highest percentages are in Production and technology. The least active areas are in Organization and administration and Human resources with less than 5% of the firms that nominate these activities as important value drivers also taking the step of separating out expenditure on intangibles in the area.

The finding in Table 3 Panel A that 39.5% of the firms with a policy for intangibles (where a ‘policy’ suggests the firms consider intangibles are in some way important to the business) also go the next step to separate out expenditure on intangibles from other expenditure raises two questions. The first question is how the firms decide what to spend on intangibles; and, second, how the firms decide the types of intan-

TABLE 7

PERCENTAGE OF FIRMS NOMINATING THE METHODS  
FOR EVALUATING PAY-OFFS FROM EXPENDITURE ON INTANGIBLES  
(OPEN-ENDED AND UNPROMPTED QUESTION)

Method used to evaluate whether intangibles are paying off	Responses	
	Cited #	Cited %
None	434	70.7
Financial accounting metrics	57	9.3
Ad hoc methods	76	12.4
Returns to intangible items/expenditure	38	6.2
R&D metrics only	7	1.1
Not stated	2	0.3

*Note:*  $n = 614$  firms with a policy on intangibles from a total of 704 firms responding to the survey.

gibles to which the firm will allocate resources. A desirable system would, among other things, separate expenditure on intangibles in ways that allow managers to compute past rates of return from different types of intangibles expenditure to use as a basis for decision making. To provide insights on the two questions, we asked the accountants an open-ended question, namely, what if any performance metrics does their firm use to evaluate whether expenditure on intangibles is paying off? There were no prompts to the questions and we coded the responses according to five groups: none (meaning no performance metrics used); conventional summary financial metrics (such as return on assets or return on equity) to infer pay-offs to intangibles; ad hoc methods (some type of cost-benefit analysis undertaken on an irregular basis or assessment of expenditure on only the externally acquired intangibles); regular assessment of the performance of intangibles using rate of return computations; and financial R&D *only* metrics. Table 7, which presents these results, reveals that 70.7% of firms are in the ‘none’ group with no methods used to evaluate whether intangibles were paying off. A further 9.3% use conventional summary financial metrics such as return on assets. Only 6.2% of firms indicated that some expenditure on intangibles is separated out from other expenditure, in a form suitable for quantitatively evaluating the returns from the expenditure on different types of intangibles.

To obtain further insights on the two questions posed above relating to the spend on intangibles and what types of intangibles are targeted, we also asked the accountants how their firm budgets for the expenditure on intangible value drivers, using a list of prompts. Multiple responses were accepted.

The results presented in Table 8 suggest two-thirds of the companies decide this year’s intangibles budget based on last year’s level of expenditure, adjusted for any changes in available funds for the current year. Nearly half of the companies use the

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TABLE 8

HOW DOES YOUR FIRM DECIDE ON BUDGETS FOR VALUE DRIVING EXPENDITURE ON INTANGIBLES? (MULTIPLE RESPONSES ACCEPTED)

Budget method (prompts provided)	Responses	
	Yes	Yes
	#	%
Fairly constant percentage of available funds	98	16.0
Last years' spending with adjustment for available funds	466	75.9
Based on estimated rates of return to past expenditure on these value drivers	155	25.2
Negotiation and bargaining by senior managers with the CEO	331	53.9
Other method	89	14.5

Note:  $n = 614$  firms with a policy on intangibles from a total of 704 firms responding to the survey.

method of Negotiation and bargaining by senior managers with the CEO. We find only one in five firms use direct quantitative metrics such as the estimated rate of return to past expenditure on intangibles.

Industry organizations sometimes set industry best practice standards, which might influence data collection and analysis practices. For example, the Australian mining industry and its professional organizations developed the widely adopted Code for Reporting of Mineral Resources and Ore Reserves (JORC Code) as the standard for professional reporting.<sup>19</sup> To provide insights on the influence of industry standards on measurement and disclosure practices, we asked the accountants whether there are generally accepted definitions of value driving activities and expenditure in their industries. The results for this question, presented in Table 9, suggest three areas where there is some standardization: Procurement, distribution and customer linkages (54.9%); Training and staff development (53.4%); and Information infrastructure (46.4%). The evidence suggests little standardization exists for reporting practices relating to other value driving activities set out in Table 9.

The lack of well-accepted definitions for intangible value drivers may reflect the vast array of *non-GAAP* efforts to measure expenditure on intangibles. These *non-GAAP* efforts use a common terminology generally including human capital, intellectual capital, organizational capital and customer capital. Studies of internal practices on the measurement of expenditures on intangibles suggest that a standardized and consistent classification system has not emerged from the internal efforts of firms, and the systems in use are not successful in linking the firms' investments to performance outcomes (see Ittner, 2008). Devising consistent and coherent classification systems is a large undertaking that is probably beyond the

<sup>19</sup> The JORC Code was first published in 1989 by the extractive industry bodies, and has been made mandatory since 1989 and 1992 by virtue of the Listing Rules of the Australian and New Zealand Stock Exchanges respectively (<http://www.jorc.org/>).

TABLE 9

ARE THERE STANDARD DEFINITIONS FOR VALUE DRIVERS IN YOUR INDUSTRY?  
(MULTIPLE RESPONSES ACCEPTED)

Key value drivers (prompted)	Responses	
	Yes #	Yes %
Training and staff development	328	53.4
R&D	138	22.5
Organizational restructuring	104	16.9
Managerial reform	84	13.7
Information infrastructure	285	46.4
Procurement, distribution, customer linkages	337	54.9

Note:  $n = 614$  firms with a policy on intangibles from a total of 704 firms responding to the survey.

incentive systems, and sometimes scope, of many firms. It is to combat these deterrents that we argue GAAP guidance could be a cost-effective tool to obtain consistency of definition, classification and measurement.

#### *Other Internal and External Stakeholders*

Disclosure of more detailed information is likely to be of interest to other stakeholders such as investors, analysts and employees. A considerable body of literature finds the information on intangibles reported in the GAAP financial statements tends to be sparse in dollar amount and separate line items and is often difficult for investors to evaluate (Wyatt, 2008). However, there is disagreement about whether or not this omission from GAAP financial statements is a problem.

Skinner (2008) argues that, from a financing perspective, the case for more reporting of intangible assets is weak because we observe capital markets financing firms with intangibles in the absence of full disclosure. Other researchers present evidence that information asymmetry around intangibles is a potential source of information risk that disadvantages some firms (e.g., younger firms) by generating higher systematic risk (Clarkson and Thompson, 1990).<sup>20</sup> Other evidence suggests the consequences of not identifying and measuring intangible investment may include insider trading (e.g., Aboody and Lev, 2000); mispricing of intangibles-intensive firms (e.g., Chambers *et al.*, 2002); and misspecification of equity valuation models (e.g., Kohlbeck and Warfield, 2007; Sougiannis and Yaekura, 2001).

Skinner (2008) suggests a viable channel, if there was to be more disclosure on intangibles, is through voluntary disclosure, for which he suggests the accounting regulators could provide guidance on the forms of the disclosures. This raises the question: why not make other financial data, such as profits and expenditure on plant

<sup>20</sup> Easley and O'Hara (2004) suggest that firm-specific information risk is a non-diversifiable risk factor.

and equipment, voluntary as well? One reason is that by making the reporting of fundamental items (such as profits) voluntary, managers are able to avoid timely reporting of data that do not reflect favourably upon the firm. Omitting information in an unobservable way, at strategic intervals relevant to the firm's purposes, can present a misleading picture of the health of the firm. A large body of earnings management literature suggests some firms have incentives to engage in the latter behaviour (e.g., Dechow *et al.*, 1995; Graham *et al.*, 2005). Taken together, there is a potential role for GAAP to overcome problems arising from non-standard reporting and interpretability problems for external stakeholders.

### *Public-Policy Makers*

Corporate financial accounting data form the basis of the market sector of the national accounts; that is, micro-level firm data are summed to obtain the macro-economic data. These data are used extensively by economists and business analysts to forecast and analyse economic and market trends. While existing GAAP provides a long and comprehensive time-series of data on the level and types of expenditure on plant and equipment, for reasons discussed above GAAP does not adopt the same approach for expenditure on intangibles.

Absent systematic accounting for intangibles under GAAP at the firm level, governments around the world have commissioned dedicated surveys of expenditure on intangibles such as surveys of innovation and training. However, these surveys are often ad hoc, do not form part of a time series, are expensive, and often use approximate Likert-scale responses rather than expenditure in dollars.<sup>21</sup> Furthermore, unless special arrangements are in place, it is not possible to make international and cross-country comparisons.<sup>22</sup> By contrast, macroeconomic and microeconomic studies of expenditure on plant and equipment are prolific and undertaken directly using time series data reported by firms. The impact on macro-economic statistics of omitting expenditure on intangibles at the microeconomic level is unknown.

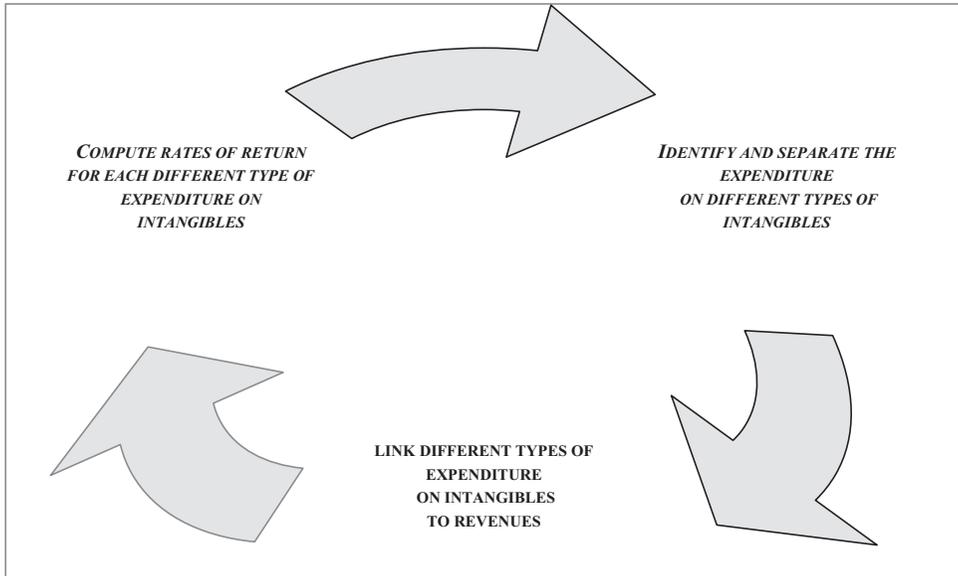
In summary, our survey evidence suggests that managers consider the identity of their value drivers, but many firms indicate that they do not separate out the expenditure on these intangibles from other types of expenditure. Hence, our evidence is inconsistent with the view that managers preside over systematic and separate collation of data on the financial inputs to their firms' intangibles. The survey evidence raises questions about how much expenditure on intangibles is undertaken by the average firm as a proportion of total investment. Is the level of expenditure on intangibles enough to sustain growth or is it sub-optimally large or small? Is the allocation of expenditure on intangibles across the firms' value drivers optimal or sub-optimal? Our survey evidence along with the other literature sur-

<sup>21</sup> Likert scale measures the degree to which people agree or disagree with a statement, usually on a 3-, 5-, or 7-point scale. The measurement device is named after a U.S. psychologist, Rensis Likert (1903–81).

<sup>22</sup> Such as the Community Innovation Survey in Europe: see <http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home>.

FIGURE 1

LINKING EXPENDITURE ON DIFFERENT TYPES OF INTANGIBLES TO REVENUES



veyed in Ittner (2008) suggests the firms on average are not able to answer these questions in a rigorous way that relies on quantitative analysis of how the intangible inputs link to outputs. Further, because of the limited external reporting of the expenditure on intangibles under GAAP, external stakeholders cannot hope to be able to evaluate these questions objectively using accounting data.

IDENTIFYING AND CLASSIFYING THE EXPENDITURE ON INTANGIBLES

Much of the literature on the measurement of expenditure on intangibles is concerned with the valuation of intangible assets (e.g., how to value brands) or arguing for the capitalization of intangible assets under GAAP.<sup>23</sup> In contrast to these foci, and as depicted in Figure 1, our purpose is to consider how to identify expenditure on intangibles and classify this expenditure in ways that enable the evaluation of the strategic implications of the components for the firms’ future outcomes. How the expenditure on intangibles leads to assets for use in production (such as brands) is

<sup>23</sup> Examples of valuation studies include Barth *et al.* (1998), Sougiannis (1994), Serrano (2005), and Greenhalgh and Rogers (2006). Examples of studies on the capitalization accounting choice for intangibles include Lev and Sougiannis (1996), Aboody and Lev (1998), Barth and Clinch (1998), Muller (1999), Healy *et al.* (2002) and Wyatt (2005).

not the primary concern in this paper. Rather, we want to be able to measure the input expenditure to intangibles and then link the expenditure to *final output* using quantitative analyses to derive rate of return statistics. In a feedback loop, these statistics can then be part of managerial decisions about the amount and type of expenditure on intangibles in current and future periods.

Using these data and statistics, questions can be answered such as, what is the firm's total investment and what proportion is intangible investment? What are the strategic sub-classes of the intangible investment? How do these sub-classes of intangible investment fit into the firms' revenue generation processes? What are the lines of causation between sub-classes of intangible inputs and outputs, and how robust are these relations? Do investments in sub-classes of intangibles operate independently to generate outcomes? Alternatively, do the sub-classes interact to generate synergistic outcomes? Without details about the quantity and nature of expenditure on intangibles, there are few objective ways of estimating rates of return on the expenditure, or evaluating the uncertainty of expected future benefits from the expenditure for making further business decisions.

In terms of the status quo, our evidence reveals that of the managers who identify intangibles as value drivers, 39.5% separate some of their expenditure on intangibles from other types of expenditure. Given the evidence outlined earlier that GAAP impacts accounting practices within the firms, we argue there is a cost-effective role for GAAP to develop a schema for identifying and separating out the expenditure on intangibles to assist firms with this task.

The first hurdle is to identify a standard classification for identifying the sub-classes of expenditure on intangibles. A classification schema for sub-classes of expenditure on intangibles will assist the firms to identify and separate the expenditure on intangibles from other expenditure. The traditional functional classifications anchor on (a) the cost of sales, and (b) sales general and administration expenses (operating costs). The unifying feature of the traditional functional classification is whether the expenditure represents a product cost that belongs in cost of sales, or is otherwise classified as an operating cost. A classification system for different types of expenditure on intangibles does not take the traditional functional approach. Instead, we need a classification approach that has a strategic focus.

In the absence of a unifying approach under GAAP for systematically accounting for expenditure on intangibles, researchers across various disciplines including economics, management sciences and accounting have attempted a strategically orientated classification for intangibles.<sup>24</sup> For example, the statistical bureau of the European Commission identified ten classes of technology-orientated expenditure on intangibles (Eurostat, 1997). A small number of Swedish and Danish firms have experimented with 'intellectual capital' accounts comprising categories such as financial capital, market capital, intellectual capital, human capital, structural capital,

<sup>24</sup> Canibano *et al.* (1999) provide a review of suggested classifications for intangibles. See also the discussion in Rumelt *et al.* (1994, pp. 9–53) for an example in the strategic management literature and Hall (1993) in the science and technology area. See Young (1998) from the Organisation for Economic Co-operation and Development (OECD). For an example from the Australian public sector research, see Phillips (1997).

customer capital, organization capital, innovation capital, or process capital (see Mouritsen, 1997). The Organisation for the Economic Co-operation and Development (OECD) develops measures and collects survey data on intangible inputs and outputs, pursuant to frameworks in the Frascati Manual for R&D surveys, the Oslo Manual for technological innovation surveys, and the Canberra Manual for human resource related surveys. Young (1998) developed a five-class scheme for the OECD. For illustrative purposes only, Young's scheme is presented in Table 10, including examples of the types of expenditure arising under each of the five classifications.

The most relevant system for identifying and classifying expenditure on intangibles is not known; and cannot be known in any scientific sense until detailed firm-level data on the expenditure on intangibles become available to enable testing of the links between the different types of expenditure on intangibles and the firms' revenues.<sup>25</sup> As illustrated above, many classifications have been suggested that could serve as a starting point. Refining a classification system would be an ongoing project, just as any other GAAP regulation is refined or amended over time, as more data arrive from the implementation and operation of the scheme.

In formulating a classification for the expenditure on intangibles, theoretical justification is needed to support the classification scheme.<sup>26</sup> Economics, management and other disciplines have examined how and why some types of intangibles are associated with the generation of benefits for firms (as discussed earlier). How and why different types of intangibles are associated with output is a work in process and as data become available the theoretical relations can be tested and refined.

<sup>25</sup> Labour expenditure is particularly important given the nexus of intangibles with employees. Specifically, labour expenditure must be classified as either expenditure on intangible investments or operating expenses. The wages and salaries of workers whose time is primarily spent on activities associated with revenues beyond 12 months would be classified as investment expenditure. These activities include creating new products and processes or re-designing them, training other workers or developing their own skills, developing new methods for marketing and distributing products. The wages and salaries of workers primarily involved in the direct production of goods and services, or other activities associated with revenues expected within 12 months, would be classified as operating expenses.

<sup>26</sup> For examples of seminal literature that supports the five areas selected by Young (1998), see the following. Knight (1921, p. 268) maintains that it is because information is both imperfect and asymmetric that the primary task of the firm is to process imperfect information in order to reach a decision. Communication and information technology has developed exponentially consistent with Knight and other literature following on his work. In relation to organization of the firm's production and sales, the level of transaction costs and successfulness of strategic decisions about innovative activities is the domain of managers responsible for forecasting future technology and demand conditions, designing strategies for what and how to invest, and directing employees implementing the strategic decisions (Coase, 1937, p. 27). In relation to production and technology, Grenadier and Weiss (1997) model the firm's optimal investment policy as a sequence of embedded options in view of the assumption that current investment decisions have implications for the future options open to the firm. Hence, the investment problem is inherently strategic in nature but the existence of information asymmetries inevitably leads to some mistakes in decision-making under uncertainty (Alchian, 1950). This problem is a function of the internal organization (Knight, 1921, pp. 268–95) including systems to monitor productivity and compensation (Alchian and Demsetz, 1972). Since the 1960s, 'human capital' has been used to encapsulate the 'people' equivalent of physical capital. It embraces the personnel who work in an organization, together with implicit attributes of education, knowledge, skills and competencies, and learning capabilities. See Syverson (2010) on human capital issues.

ACCOUNTING FOR EXPENDITURE ON INTANGIBLES

TABLE 10

YOUNG (1998) CLASSIFICATION FOR EXPENDITURE ON INTANGIBLES  
(AUGMENTED WITH EXAMPLES)

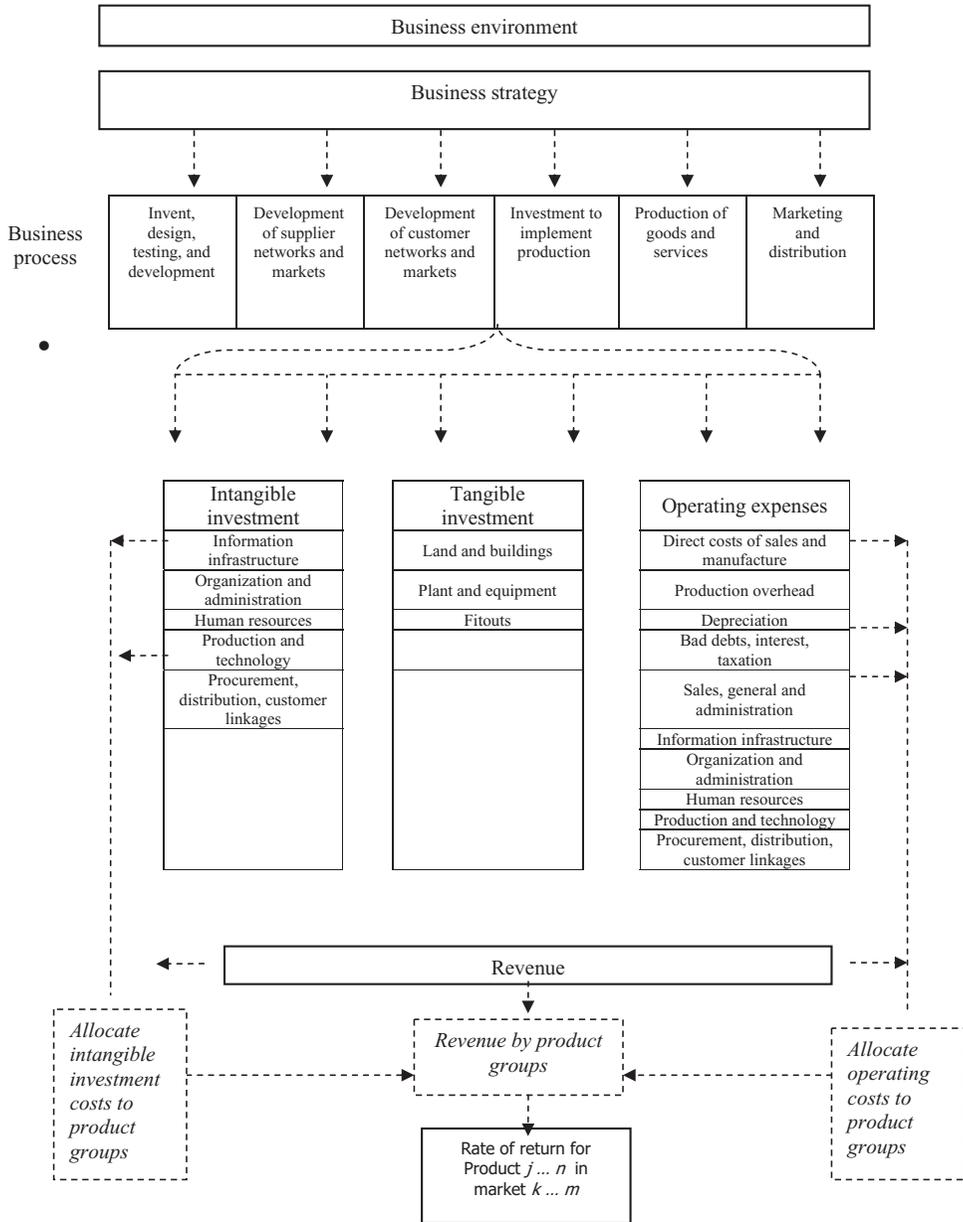
Classification	Examples of expenditures on intangibles
Information system infrastructure	<i>Expenditure on</i> Wages of staff involved in information systems planning and development Commercial enterprise systems Software, databases Other computer services Licenses
Production and technology	<i>Expenditure on</i> Product and process R&D Process design, engineering and development Technology adoption Quality control systems Proprietary technology, patents, designs, licenses
Human resources	<i>Expenditure on</i> Pay of HR managers Re-design of remuneration and incentive systems Staff development and longer-term training Staff goal planning and evaluation Information and knowledge database development Programs for health and motivation of workforce (e.g., labour relations, health care, fitness)
Organization and administration	<i>Expenditure on</i> Wages of staff involved in organizational design and management techniques Corporate governance structures Networks and strategic alliances Administration structure and systems Finance systems, accounting systems
Procurement, distribution, customer linkages	<i>Expenditure on</i> Distribution and market research systems Advertising, trademarks, brands Customer lists, subscribers' list, potential customer list Product and quality certification

*Note:* This classification is adapted from Young (1998).

Figure 2 provides a stylized view of relations in the business environment. The arrows in Figure 2 suggest causal linkages derived from the economics and strategy literatures (see footnote 26). The classifications of the expenditure on intangibles can be used to compute rates of return on the total and sub-classes of expenditure. This

FIGURE 2

BUSINESS ENVIRONMENT AND THE FIRMS' EXPENDITURE ON INTANGIBLES, TANGIBLES, AND OTHER OPERATING EXPENSES



computation involves allocating expenditure proportionately from each intangible investment class to each product line. The expenditure on intangibles enters the computation separately to enable the rate of return from the different types of expenditure to be evaluated by the firm. See Appendix B for a brief overview of the equations that can be used to compute rates of return. Managers may use computed rates of returns for decision making. For example, in a feedback loop moving up the diagram in Figure 2, the managers can use the rates-of-return to relate the firm's classes of intangible investment and product line performance to the structure of the business including: the fit with economic environment conditions, business processes and strategy choices.

A secondary step for accountants after identifying and classifying the expenditure on intangibles is to apply a capitalization test to expense the expenditure already used, and to carry forward the expenditure yet to be used up, as intangible assets. This is the most difficult step. This step is not necessary to undertake the above classification and measurement of rates of return. However, a capitalization test that relies on a unifying measurement feature of intangible assets is important as the basis for a systematic and standardized approach to reporting on intangible *assets*. The current asymmetric treatment of expenditure on purchased versus internally generated intangibles is not supportable on economic grounds. Verifiable property rights are one unifying measurement feature that could lead to a more systematic and possibly comprehensive accounting for intangible investment. As discussed earlier, economists point out that a major cause of uncertainty associated with the outcomes from expenditure on intangibles is weak property rights (Webster, 1999). Jensen and Meckling (1979) specifically recognize the fundamental dependence of output from the production function on the structure of property and contracting rights.

A minimum right relevant to production is the right to determine the use of an asset. Property rights comprise at least three components not all of which need be held together for the rights to be effective (Alchian, 1984, p. 34): (a) determination of use, (b) bearing of the market value, and (c) exchangeability of rights to (a) and (b). These three components need not all be held by the firm for the firm to control the asset. For example, it is common for rights to be sold or delegated separately from the marketable value of the resource. Leases provide an example of the latter because they separate the 'use of an asset' from the bearing of market value and exchangeability. A minimum property right to 'determine use' (which could also extend to (b) and/or (c)), is found in registered, licensed and contractual rights and in different forms.<sup>27</sup> Verifiable property rights of this type over intangible assets are

<sup>27</sup> For example, *Ownership rights* including patents for inventions and improved technology, trademarks for brands, industrial designs, and plant breeder' rights; *Trade secrets*, confidentiality agreements to protect proprietary knowledge, and rapid production and development of products in a short time-span; *Unregistered rights* including copyright for works of art, literature, music, broadcasts, and computer programs, and circuit layout rights for integrated circuits; *Legal protection* under the law of contract including licensing of rights which can be exclusive or non-exclusive and gives the licensee the right to use the intangible asset which could be a lease, copyright, patent, trademark or design; and *Legal protection* under consumer protection law for fair-trading and trade practices, which protect both the firm and consumer from unfair practices.

often not available prior to maturation of the investment. Accordingly, the means to obtain control over the intangible assets is therefore not always available, or enforceable, at a reasonable cost.

The GAAP accounting rules attempt to maximize the reliability of the financial reporting; and the existence of verifiable property rights appeals to the ‘reliability’ focus of GAAP because intangibles with verifiable property rights are more certain as to their existence and the realizability of expected future benefits. Making verifiable property rights the capitalization test would have the added advantage of strategically focusing the firms on working to obtain property rights over their important intangibles.<sup>28</sup> A lack of attention to property rights is often raised as a cause of some firms’ lack of competitiveness.<sup>29</sup> In fact, Schumpeter (1934) argued that short-term monopoly rights are the first bastion of the firm’s competitive advantage.

## DISCUSSION AND CONCLUSIONS

Our evidence and that discussed in this paper from elsewhere suggests many firms do not separate out expenditure on intangibles in a format that would enable the estimation of rates of return from the expenditure. While this seems surprising in the era of sophisticated management information systems, the systems are only as good as the knowledge informing them. Our evidence and that cited from elsewhere in the paper suggests we have a lot to learn about the strategic sub-classes of intangible investment, how these sub-classes of intangible investment fit into the firms’ revenue generation processes, and the lines of causation between sub-classes of intangible inputs and outputs. We do not know if sub-classes of intangibles operate independently to generate outcomes, or whether and how the sub-classes interact to generate synergistic outcomes.

Our analysis of the economic properties and accounting features of intangibles, along with the survey evidence, suggests the first-order issue for moving forward is to learn how to identify and classify the different types of expenditure on intangibles, using a scheme with a strategic focus rather than a product cost/operating cost focus. While the ‘capitalization decision’ for expenditure on intangibles is an important

<sup>28</sup> For example, Holmström (1998, p. 3) theorizes that the ‘firm gains power over human capital through ownership and control of assets. Ownership confers contracting rights that allow the firm to decide who should be offered the opportunity to work with particular assets and on what terms. The firm uses its rights to set “internal rules of the game” and to design incentives in a manner that internalizes some of the contractual externalities that are present in markets due to asymmetric information.’

<sup>29</sup> As alluded to earlier, firms employ a variety of strategies to attempt to gain control of their intangible assets including registrable rights such as patents, trademarks, industrial designs, plant breeder rights, and business, company and domain names; and automatic, non-registrable rights under legislation and/or common law such as copyright and circuit layout rights, and commercial strategies such as trade secrets and confidentiality agreements (see <http://www.ipaustralia.gov.au>). Cohen *et al.* (2000) provide evidence that firms protect profits using a range of mechanisms including patents, secrecy, lead-time advantages, and complementary use of marketing and manufacturing capabilities. Trade secrets are defensible in a court and are heavily used to protect product innovations.

part of the process of reporting externally on intangibles, it is a second-order factor. Capitalization decisions rely on the accountants' understanding of whether the probability of realizing the expected future benefits from investment is greater than 50%. To make this probability assessment, we need an understanding of the classifications of expenditure on intangibles most likely to generate future benefits. More specifically, we need an understanding of how the different classifications relate to the firm's final output. One piece of information that can be used to illuminate this relation is rates of return to the different classifications of expenditure on intangibles from the past periods.

Our survey evidence suggests that many firms tend not to separately collect information on intangibles in systematic ways. Therefore, the evidence from our survey, and from other studies such as those reviewed by Ittner (2008), suggests this type of information is available in only a limited way for managerial decision making in many firms, despite the fact that firms obviously do account for all monetary inflows and outflows. Our survey evidence also suggests that management tends to use rules of thumb and not rigorous quantitative analysis for their decisions relating to the firm's amount and types of expenditure on intangibles. If intangible investment is important for generating future revenues, then managerial decisions about spending on intangibles are likely to be sub-optimal.

As discussed earlier in this paper, prior studies suggest the GAAP standards are influential in the chart of accounts adopted by firms and the accounting practices adopted. Accounting practices developed initially, focusing on the stewardship role of professional managers in safeguarding the firms' assets and reliability of the accounting information, given managers tended to own less than 100% of the firm. Physical plant and equipment has been a major focus of GAAP from early times because physical assets such as printing presses and steam trains were the key assets arising from early technological innovation (Dudley, 1999). By contrast, technological innovation has moved *from* early mechanization, steam engines and railways, electrical and heavy engineering, and Fordist mass production, *on to* information, communication technology and biotechnology including the genome, space, satellites and environmental technologies (Dodgson and Marceau, 2000). Growth of these major technology areas and the transitions from one major technology paradigm to another are accompanied by substantial business change (Freeman and Perez, 1988).<sup>30</sup> Despite the perception of a greater emphasis on the intangible elements of the business, accounting systems continue to provide only minimal information about the amount and types of expenditure on intangibles.

By making it possible to compute rates of return, managers will be able to methodically evaluate investment, and compare realized returns to original expectations, in order to determine *why* an investment under- or out-performs expecta-

<sup>30</sup> Business changes include: efficiency gains from information technology advances; communication advances that have increased the rate of knowledge spillovers and diffusion from technological and science advances; changing asset structures and new service industries; key success factor switched to ability to attract human talent; a shortage of human resources in specific areas that occurs because the rate of knowledge growth overshadows the resources channelled to education; and an increasing intensity of competition and investment uncertainty as technology advances increase knowledge flow rates and globalize some markets.

tions. Systematic treatment of expenditure on intangibles that also involves external reporting would serve governance and efficiency functions by improving the transparency of the firms' management of contributed resources.

REFERENCES

- Abernathy, W. J., and K. B. Clarke, 'Innovation: Mapping the Winds of Creative Destruction', *Research Policy*, Vol. 14, No. 1, 1985.
- Aboody, D., and B. Lev, 'The Value Relevance of Intangibles: The Case of Software Capitalization', *Journal of Accounting Research*, Vol. 36, Supplement, 1998.
- , 'Information Asymmetry, R&D and Insider Gains', *Journal of Finance*, Vol. 55, No. 6, 2000.
- Alchian, A., 'Uncertainty, Evolution and Economic Theory', *Journal of Political Economy*, Vol. 58, No. 3, 1950.
- , 'Specificity, Specialization, and Coalitions', *Journal of Institutional and Theoretical Economics*, Vol. 140, No. 1, 1984.
- Alchian, A., and H. Demsetz, 'Production, Information Costs and Economic Organization', *American Economic Review*, Vol. 62, No. 5, 1972.
- Amir, E., and B. Lev, 'Value-Relevance of Nonfinancial Information: The Wireless Communications Industry', *Journal of Accounting and Economics*, Vol. 22, Nos 1–3, 1996.
- Andersen, B., and J. Howells, *Innovation Dynamics in Services: Intellectual Property Rights as Indicators and Shaping Systems in Innovation*, CRIC Working Paper, University of Manchester, 1988.
- Ashton, R. H., 'Intellectual Capital and Value Creation: A Review', *Journal of Accounting Literature*, Vol. 24, No. 1, 2005.
- Australian Accounting Standards Board, AASB 1, *First Time Adoption of Australian Accounting Standards*, Commonwealth of Australia, 2009.
- , AASB 1049, *Whole of Government and General Government Sector Financial Reporting*, Commonwealth of Australia, 2009.
- , AASB 138, *Intangible Assets*, Commonwealth of Australia, 2009.
- Baily, M. N., and R. Z. Lawrence, 'Do We Have a New E-conomy?', *American Economic Review*, Vol. 91, No. 2, 2001.
- Barth, M. E., M. B. Clement, G. Foster and R. Kasznik, 'Brand Values and Capital Market Valuation', *Review of Accounting Studies*, Vol. 3, Nos 1–2, 1998.
- Barth, M. E., and G. Clinch, 'Revalued Financial, Tangible, and Intangible Assets: Association with Share Prices and Non-Market-Based Value Estimates', *Journal of Accounting Research*, Vol. 36, Supplement, 1998.
- Canibano, L., M. Covarsi and P. Sanchez, *The Value Relevance and Managerial Implications of Intangibles: A Literature Review*, paper presented at the International Symposium Measuring and Reporting Intellectual Capital: Experiences, Issues and Prospects, Amsterdam, 1999.
- Canibano, L., M. Garcia-Ayuso and P. Sanchez, 'Accounting for Intangibles: A Literature Review', *Journal of Accounting Literature*, Vol. 19, No. 1, 2000.
- Chambers, D., R. Jennings and R. Thompson, *Excess Returns to R&D-Intensive Firms*, Working Paper, University of Illinois, 2002.
- Clarkson, P. M., and R. Thompson, 'Empirical Estimates of Beta When Investors Face Estimation Risk', *The Journal of Finance*, Vol. 45, No. 2, 1990.
- Coase, R., 'The Nature of the Firm', *Economica*, Vol. 4, No. 16, 1937.
- Cohen, W., and D. A. Levinthal, 'Innovation and Learning: The Two Faces of R&D—Implications for the Analysis of R&D Investment', *The Economic Journal*, Vol. 99, No. 397, 1989.
- Cohen, W. M., R. R. Nelson and J. P. Walsh, *Protecting Their Intellectual Assets: Appropriability Conditions and Why U.S. Manufacturing Firms Patent (Or Not)*, NBER Working Paper 7552, 2000.
- Commission of the European Communities, *Study on the Measurement of Intangible Assets and Associated Reporting Practices*, Enterprise Directorate General, 2003.

## ACCOUNTING FOR EXPENDITURE ON INTANGIBLES

- Darrough, M. N., 'Disclosure Policy and Competition: Cournot vs. Bertrand', *The Accounting Review*, Vol. 68, No. 3, 1993.
- Darrough, M. N., and N. Stoughton, 'Financial Disclosure Policy in an Entry Game', *Journal of Accounting and Economics*, Vol. 12, Nos 1–3, 1990.
- Dechow, P., R. G. Sloan and A. P. Sweeney, 'Detecting Earnings Management', *The Accounting Review*, Vol. 70, No. 3, 1995.
- Deiaco, E., E. Hörnell and G. Vickery (eds), *Technology and Investment: Crucial Issues for the 1990s*, Pinter, 1990.
- Dickerson, R. W., [1941], in S. A. Zeff (ed.), *Accounting Principles Through the Years: The Views of Professional and Academic Leaders, 1938–1954*, Garland Publishing, Inc., 1982.
- Dodgson, M., and J. Marceau, *Approaches to Understanding the Nature of Innovation*, Asia Management Centre, Australian National University and University of Western Sydney, National Innovation Summit Reference Papers, [http://www.isr.gov.au/industry/summit/Framework/body\\_background\\_reading.html](http://www.isr.gov.au/industry/summit/Framework/body_background_reading.html), 2000.
- Dosi, G., 'Sources, Procedures and Microeconomic Effects of Innovation', *Journal of Economic Literature*, Vol. 26, No. 3, 1988.
- Drury, C., and M. Tayles, 'Evidence on the Financial Accounting Mentality Debate: A Research Note', *British Accounting Review*, Vol. 29, No. 3, 1997.
- Dudley, L., 'Communications and Economic Growth', *European Economic Review*, Vol. 43, No. 3, 1999.
- Dye, R. A., 'Disclosure of Nonproprietary Information', *Journal of Accounting Research*, Vol. 23, No. 1, 1985.
- Easley, D., and M. O'Hara, 'Information and the Cost of Capital', *Journal of Finance*, Vol. 59, No. 4, 2004.
- Eliasson, G., 'The Firm as a Competent Team', *Journal of Economic Behaviour and Organization*, Vol. 13, No. 3, 1990.
- Eurostat, *Second European Report on S&T Indicators*, European Commission, 1997.
- Fisher I., *The Theory of Interest*, Macmillan, 1930.
- Freeman, C., and C. Perez, 'Structural Crises of Adjustment, Business Cycles, and Investment Behaviour', in G. Dosi, C. Freeman, R. Nelson, G. Silverberg and L. Soete (eds), *Technical Change and Economic Theory*, Pinter, 1988.
- Graham, J., and C. Harvey, 'The Theory and Practice of Corporate Finance: Evidence From the Field', *Journal of Financial Economics*, Vol. 60, Nos 2–3, 2001.
- Graham, J., C. Harvey and S. Rajgopal, 'The Economic Implications of Corporate Financial Reporting', *Journal of Accounting and Economics*, Vol. 40, Nos 1–3, 2005.
- Greenhalgh, C., and M. Rogers, 'The Value of Innovation: The Interaction of Competition, R&D and IP', *Research Policy*, Vol. 35, No. 4, 2006.
- Grenadier, S. R., and A. M. Weiss, 'Investment in Technological Innovations: An Option Pricing Approach', *Journal of Financial Economics*, Vol. 44, No. 3, 1997.
- Griliches, Z., *Productivity, R&D, and the Data Constraint*, Presidential Address delivered at the One-Hundred and Sixth Meeting of the American Economic Association, *American Economic Review*, Vol. 84, No. 1, 1994.
- Hall, B. H., 'Industrial Research During the 1980s: Did the Rate of Return Fall?', *Brookings Papers on Economic Activity*, Vol. 2, 1993.
- , *The Stock Market and Capital Accumulation*, NBER Working Paper 7180, National Bureau of Economic Research, 1999.
- Hansen, P. A., and G. Serin, 'Will Low Technology Products Disappear? The Hidden Innovation Processes in Low Technology Industries', *Technological Forecasting and Social Change*, Vol. 55, No. 2, 1997.
- Healy, P. M., S. C. Myers and C. Howe, 'R&D Accounting and the Tradeoff Between Relevance and Objectivity', *Journal of Accounting Research*, Vol. 40, No. 3, 2002.
- Hemmer, T., and E. Labro, 'On the Optimal Relation Between the Properties of Managerial and Financial Reporting Systems', *Journal of Accounting Research*, Vol. 46, No. 5, 2008.
- Heyne, D., *The Economic Way of Thinking*, Macmillan, 1991.

- Hobijn, B., and B. Jovanovic, 'The Information-Technology Revolution and the Stock Market: Evidence', *American Economic Review*, Vol. 91, No. 5, 2001.
- Holmström, B. R., *The Firm as a Subeconomy*, SSRN Working paper 162270, 1998.
- Hopper, T., L. Kirkham, R. W. Scapens and S. Turley, 'Does Financial Accounting Dominate Management Accounting? A Research Note', *Management Accounting Research*, Vol. 3, No. 4, 1992.
- Hunter, L. C., E. Webster and A. Wyatt, 'Techniques for Measuring Intangible Capital: A Review of Current Practice', *Australian Accounting Review*, Vol. 15, No. 2, 2005.
- Ittner, C. D., 'Does Measuring Intangibles for Management Purposes Improve Performance? A Review of the Evidence', *Accounting and Business Research*, Vol. 38, No. 3, 2008.
- Jensen, M. C., and W. H. Meckling, 'Rights and Production Functions: An Application to Labor Managed Firms and Codetermination', *Journal of Business*, Vol. 52, No. 4, 1979.
- Jensen, P., and E. Webster, 'Knowledge Management: Does Capture Impede Creation?', *Industrial and Corporate Change*, Vol. 18, No. 4, 2009.
- Johanson, U., M. MaËrtensson and M. Skoog, 'Measuring to Understand Intangible Performance Drivers', *European Accounting Review*, Vol. 10, No. 3, 2001.
- Joseph, N., S. Turley, J. Burns, L. Lewis, R. Scapens and A. Southworth, 'External Financial Reporting and Management Information: A Survey of UK Management Accountants', *Management Accounting Research*, Vol. 7, No. 1, 1996.
- Klemperer, P., 'Competition When Consumers Have Switching Costs: An Overview With Applications to Industrial Organization, Macroeconomics, and International Trade', *Review of Economic Studies*, Vol. 62, No. 4, 1995.
- Klock, M., and P. Megna, 'Measuring and Valuing Intangible Capital in the Wireless Communications Industry', *Quarterly Review of Economics and Finance*, Vol. 40, No. 4, 2000.
- Knight, F., *Risk, Uncertainty, and Profit*, University of Chicago Press, 1921.
- Kohlbeck, M., and T. D. Warfield, 'Unrecorded Intangible Assets: Abnormal Earnings and Valuation', *Accounting Horizons*, Vol. 21, No. 1, 2007.
- Lev, B., *Intangibles: Management, Measurement and Reporting*, Brookings Institute Press, 2001.
- Lev, B., and T. Sougiannis, 'The Capitalization, Amortization and Value Relevance of R&D', *Journal of Accounting and Economics*, Vol. 21, No. 1, 1996.
- Levin, R., A. Klevorick, R. R. Nelson and S. G. Winter, 'Appropriating the Returns from Industrial R&D', *Brookings Papers on Economic Activity*, No. 3, 1987.
- Loasby, B. J., *Equilibrium and Evolution*, Manchester University Press, 1991.
- Mansfield, E., 'Patents and Innovation: An Empirical Study', *Management Science*, Vol. 32, No. 2, 1986.
- Marion, A., 'Problématique Financière de L'investissement Immatériel', *Analyse Financière*, 1<sup>er</sup> trimestre, 1987.
- Marshall, A. [1890], *Principles of Economics*, 8th ed., Macmillian, 1920.
- Matolesy, Z., and A. Wyatt, 'Financial Analysts and Intangible Assets', *Accounting and Finance*, Vol. 46, No. 3, 2006.
- McGrattan, E. R., and E. C. Prescott, *Is the Stock Market Overvalued?* NBER Working Paper 8077, National Bureau of Economic Research, 2001.
- Megna, P., and D. Mueller, 'Profit Rates and Intangible Capital', *Review of Economics and Statistics*, Vol. 73, No. 4, 1991.
- Metcalf, J. S., *Evolutionary Concepts in Relation to Evolutionary Economics*, Department of Economics Discussion Paper, University of Queensland, No. 226, 1997.
- Mouritsen, J., 'Marginalizing the Customer: Customer Orientation, Quality and Accounting Performance', *Scandinavian Journal of Management*, Vol. 13, No. 1, 1997.
- Muller, K., 'An Examination of the Voluntary Recognition of Acquired Brand Names in the United Kingdom', *Journal of Accounting and Economics*, Vol. 26, Nos 1-3, 1999.
- Myers, S., and S. Majluf, 'Corporate Financing and Investment Decisions When Firms Have Information Investors Do Not Have', *Journal of Financial Economics*, Vol. 13, No. 2, 1984.

## ACCOUNTING FOR EXPENDITURE ON INTANGIBLES

- Nakamura, L., *What is the U.S. Gross Investment in Intangibles? (At Least) One Trillion Dollars a Year!* Working Paper, Reserve Bank of Philadelphia, 2001.
- Nelson, R. R., and S. G. Winter, *An Evolutionary Theory of Economic Change*, Harvard University Press, 1982.
- Paton, W. A., *Essentials of Accounting*, Macmillan, 1938.
- Phillips, R., *Innovation and Firm Performance in Australian Manufacturing*, Industry Commission Staff Research Paper, Australian Government Publishing Service, September 1997.
- Rumelt, R. P., D. E. Schendel and D. J. Teece (eds), *Fundamental Issues in Strategy: A Research Agenda*. Harvard Business School Press, 1994.
- Ryan, P., and G. Ryan, 'Capital Budgeting Practices of the Fortune 1000: How Have Things Changed?', *Journal of Business and Management*, Vol. 8, No. 4, 2002.
- Schumpeter, J., *The Theory of Economic Development*, Harvard University Press, 1934 (first published in German, 1912).
- Serrano, C. J., *The Market for Intellectual Property: Evidence From the Transfer of Patents*, Working Paper, University of Toronto, 2005.
- Skinner, D. J., 'Accounting for Intangibles—a Critical Review of Policy Recommendations', *Accounting and Business Research*, Vol. 38, No. 3, 2008.
- Smith, A. [1776], *An Inquiry Into the Nature and Causes of the Wealth of Nations*, 2 vols, Everyman's Library, Dent & Sons, 1904.
- Sougiannis, T., 'The Accounting Based Valuation of Corporate R&D', *The Accounting Review*, Vol. 69, No. 1, 1994.
- Sougiannis, T., and T. Yaekura, 'The Accuracy and Bias of Equity Values Inferred From Analysts' Earnings Forecasts', *Journal of Accounting, Auditing and Finance*, Vol. 16, No. 4, 2001.
- Sudman, S., and N. M. Bradburn, *Asking Questions: A Practical Guide to Questionnaire Design*, Jossey-Bass Publishers, 1983.
- Syverson, C., *What Determines Productivity?* NBER Working Paper 15712, National Bureau of Economic Research, 2010.
- Tang, W., *Proprietary Costs and Privately Held Firms' Financing Choice Between Public Offerings and Private Placements*, Working Paper, McDonough School of Business, Georgetown University, 2008.
- Trajtenberg, M., 'A Penny for Your Quotes: Patent Citation and the Value of Innovations', *Rand Journal of Economics*, Vol. 21, No. 1, 1990.
- Verrecchia, R. E., 'Discretionary Disclosure', *Journal of Accounting and Economics*, Vol. 5, No. 3, 1983.
- , 'Endogenous Proprietary Costs Through Firm Interdependence', *Journal of Accounting and Economics*, Vol. 12, Nos 1–3, 1990.
- , 'Essays on Disclosure', *Journal of Accounting and Economics*, Vol. 32, Nos 1–3, 2001.
- Webster, E., *The Economics of Intangible Investment*, Edward Elgar Publishing Limited, 1999.
- , 'The Growth of Intangible Enterprise Investment in Australia', *Information Economics and Policy*, Vol. 12, No. 1, 2000.
- Wyatt, A., 'Accounting Recognition of Intangible Assets: Theory and Evidence on Economic Determinants', *The Accounting Review*, Vol. 80, No. 3, 2005.
- , 'What Financial and Non-Financial Information on Intangibles Is Value Relevant? A Review of the Evidence', *Accounting and Business Research*, Vol. 38, No. 3, 2008.
- Wyatt, A., and H. Frick, 'Accounting for Investments in Human Capital: A Review', *Australian Accounting Review*, Vol. 54, No. 20, 2010.
- Young, A., *Measuring Intangible Investment: Towards an Interim Statistical Framework: Selecting the Core Components of Intangible Investment*, OECD Discussion Paper, 1998.
- Zeff, S. A. (ed.), *Accounting Principles Through the Years: The Views of Professional and Academic Leaders, 1938–1954*, Garland Publishing, Inc., 1982.

APPENDIX A  
 SURVEY DESCRIPTIVE STATISTICS

The sample of firms for the survey of senior accountants was drawn from the IBIS-World database of the largest firms in Australia, which includes public and private companies and not-for-profit organizations such as government enterprises, government departments, local councils, hospitals and schools. Most respondents, however, were companies (over 89%) and 23.5% of the sample were listed companies.

Tables A1 and A2 present a comparison of the demographic characteristics of firms that responded, refused or were unable to be contacted in the 2007 survey of senior accountants. The chi-squared test indicates that the distribution of these three groups was not statistically independent by industry ( $t$ -statistic 62.118; Prob. = 0.001) and Table A1 reveals that agriculture, forestry and fishing, and cultural and recreational services were more likely to refuse to be interviewed than other firms. By contrast, all firms from the accommodation, cafes and restaurants, government administration, and defence and education industries agreed to be interviewed.

TABLE A1  
 SURVEY RESPONSE BY INDUSTRY ( $n = 1,209$ )

Industry (1-digit)	Responded	Refused	Unable to be contacted	Total
	%	%	%	%
Agriculture, forestry and fishing	44.4	11.1	44.4	100
Mining	51.6	3.2	45.2	100
Manufacturing	51.0	9.1	39.9	100
Electricity, gas and water supply	53.9	7.7	38.5	100
Construction	51.3	7.9	40.8	100
Wholesale trade	51.6	9.0	39.3	100
Retail trade	66.0	8.3	25.8	100
Accommodation, cafes and restaurants	50.0	0.0	50.0	100
Transport and storage	43.1	7.8	49.0	100
Communication services	11.1	0.0	88.9	100
Finance and insurance	46.7	5.7	47.5	100
Property and business services	34.3	4.6	61.1	100
Government administration and defence	81.3	0.0	18.8	100
Education	63.6	0.0	36.4	100
Health and community services	64.7	2.9	32.4	100
Cultural and recreational services	50.0	12.5	37.5	100
Personal and other services	57.1	4.8	38.1	100
Total	51.3	7.3	41.4	100

Notes: Sample size = 1,209, Pearson  $\chi^2 = 62.118$ ; Prob. = 0.001. An industry classification was not available for 198 firms.

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TABLE A2

ASSOCIATION BETWEEN THE TYPE OF SURVEY RESPONSE AND THE FIRM'S ECONOMIC CHARACTERISTICS FOR 2006 (IN NOMINAL PRICES)

Survey response	Sales revenue ('000)	Total revenue ('000)	Net profits before tax ('000)	Total assets ('000)	Intangible assets ('000)	Employees
Responded	872,758	1,007,970	152,990	5,540,840*	73,264	2,209
Refused	705,243	740,339	116,744	1,481,719*	132,454	2,292
Out-of-scope	954,167	1,084,595	191,441	3,845,798	152,363	2,987
Total	891,706	1,017,814	166,038	4,593,252	109,580	2,522
<i>N</i>	806	809	614	645	552	611

Notes: Symbol \* means are statistically significant at the 5% level. Financial data were not available for all 1,407 firms, *n* = sample size for each variable.

TABLE A3

WHETHER THERE IS A RELATIONSHIP BETWEEN COLLECTING EXPENDITURE ON INTANGIBLES AND THE FIRM'S ECONOMIC CHARACTERISTICS

Intangible expenditure type	Firm characteristic from IBISWorld						
	Industry	Sales revenue	Total revenue	Net profit before tax	Intangible assets reported under GAAP	Total assets	Employees
Information system infrastructure	***	***	***			**	***
Production and technology	***	***	***	**			***
Human resources		***	***	**		**	
Organization and administration	***	***	***	***	**		***
Procurement, distribution, customer linkages	**	***	***	***		***	*

Notes: Asterisks indicate that we cannot accept the hypothesis that the responses to the two questions are independent. These questions are the type of intangible expenditure collected (rows) and firm characteristic (column). \*, \*\*, \*\*\* significant at the 10%, 5% and 1% levels, respectively. For details of the classification system see Table 10.

Table A2 reports the mean level of revenues, profits, assets and employment for the three groups as of year 2006 (just prior to our survey). A *t*-test was performed to test for whether the means were statistically different across the groups. Although a casual look at this table suggests considerable differences in the means, their large standard deviations mean that there was only a statistically significant difference for the 'responded' and 'refused' means for the total assets.

Table A3 indicates the characteristics that have a statistically significant association with firms that collect intangibles expenditure. It shows that all collections of

intangible data are associated to the industry of the firm. The pattern varies and depends on the type of intangible data. Almost all the data collections are related to the size of the firm—the larger the firm the more likely it is to collate intangible data. The main exception is the level of intangible assets reported under GAAP. For this factor, the only (positive) association is for firms collecting organization and administration expenditure data.

## APPENDIX B

### ILLUSTRATION OF THE NON-LINEAR RATE OF RETURN METHOD

Equation (1) calculates the present value of the net revenue (comprising revenue minus operating expenses) from each product line (*PVR*) for the period of interest (the example below is for the last 30 months). Equation (1) compounds each monthly revenue over the measurement horizon at the risk-free rate:

$$PVR = R_0(1+r)^n + R_1(1+r)^{n-1} + \dots + R_{n-1}(1+r) + R_n = R^* \quad (1)$$

where  $t$  is time and  $t = 0$  to  $n$ ,  $R_t$  is net revenue for each period, and  $r$  is the risk-free rate.

Equation (2) compounds the monthly expenditure on intangibles using a separate equation (2) for each class of expenditure, denoted Type ( $h$ ) and Type ( $l$ ):

$$PVI_h = I_{h0} + I_{h1}(1+r)^1 + \dots + I_{hn-1}(1+r)^{n-1} + I_{hn} = I^* \quad (2)$$

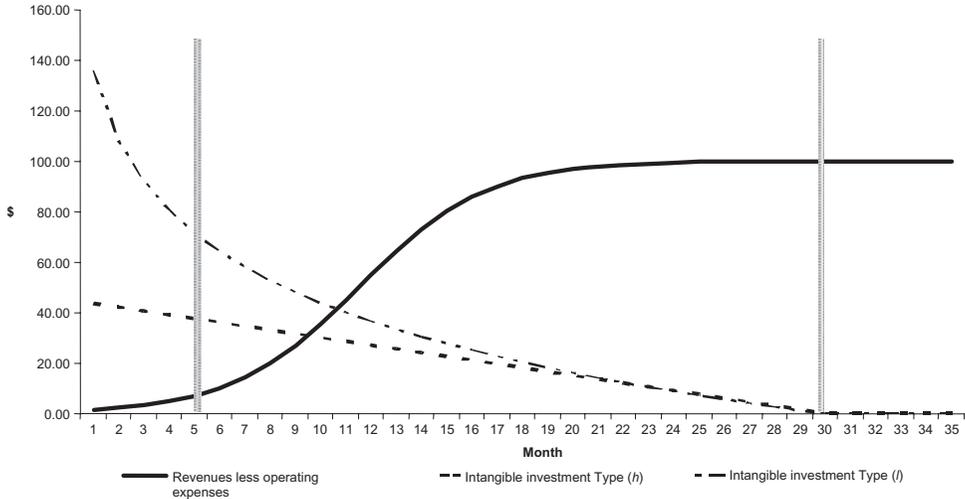
where  $I_{hn}$  is the intangible investment expenditure of Type ( $h$ ) in each time from the beginning to the end of the returns interval. The equation for the present value of intangible investment Type ( $l$ ) is the same specification as equation (2). The returns on the intangible investments, Types ( $h$ ) and ( $l$ ), are computed using equation (3).

$$\sum_{t=0}^n I_h^* (1+\gamma)^t + \sum_{t=0}^n I_l^* (1+\lambda)^t = \sum R^*, \quad (3)$$

where the symbol, \*, indicates the computed amounts from equation (2). Equation (3) is solved using a commonly employed technique in economics comprising non-linear estimator and maximum likelihood, to give the parameters  $\gamma$  and  $\lambda$ , which are, respectively, the rate of return for intangible investments Type ( $h$ ) and Type ( $l$ ). There is no limit to the number of intangible investment types that can be included in the computation. The capacity to handle many types of investment types is an attractive feature of the above estimation approach. Figure B1 provides an example of the output from equations (1)–(3) comprising rates of return from two types of intangible investment allocated to a single product. In this example, there is a monthly revenue stream from product  $R_t$ , and two sets of monthly expenditure on intangible investment for this product, Type ( $h$ ) and Type ( $l$ ) ( $I(h)$  and  $I(l)$  respectively).

FIGURE B1

RATES OF RETURN TO TWO TYPES OF INTANGIBLE INVESTMENTS FOR 30 MONTH PERIOD FOR ONE PRODUCT



Month	$\gamma$	$\lambda$
5	-0.41	-0.99
30	0.09	0.04

Figure B1 shows the returns at  $n = \text{month } 5$  and  $n = \text{month } 30$  for the two types of intangible investment, Type ( $h$ ) and the Type ( $l$ ). From month 0 to month 5, both the Type ( $h$ ) and the Type ( $l$ ) intangible investment amounts are greater than the net revenues. Accordingly, the returns to Type ( $h$ ) and the Type ( $l$ ),  $\gamma$  and  $\lambda$ , are both negative at month 5. However, Figure B1 shows the returns for both types of intangible investment are positive by month 30. That is, by month 30, the present value of the revenues over months 0 to 30 ( $PVR$ ) exceeds the sum of the present values of the intangible investment, ( $PVI(h)$  and  $PVI(l)$ ).