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# FRAMEWORK FOR MEASUREMENT AND REPORTING ON INTANGIBLE ASSETS

Anne Wyatt

and

Margaret A Abernethy\*

Department of Accounting and Business Information Systems, Faculty of Economics  
and Commerce,  
The University of Melbourne, Melbourne, Australia 3010

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Intellectual Property  
Research Institute of Australia  
(IPRIA)  
Law School Building  
The University of Melbourne  
Victoria 3010 Australia  
*Telephone (03) 8344 1127*  
*Fax (03) 9348 2353*  
*Email [j.molloy@unimelb.edu.au](mailto:j.molloy@unimelb.edu.au)*  
*WWW Address <http://www.ipria.org>*



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Margaret A Abernethy Tel: + 61-3-8344-5305; Fax + 61-3-9349-2397.  
E-mail address: [m.abernethy@unimelb.edu.au](mailto:m.abernethy@unimelb.edu.au)

Anne Wyatt Tel: + 61-3-8344-7659; Fax + 61-3-9349-2397.  
E-mail address: [wyatt@unimelb.edu.au](mailto:wyatt@unimelb.edu.au)

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## **1. Introduction**

Accounting academics, regulators and other major stakeholders are grappling with the trade-off between the relevance of external financial reports and maintaining the reliability and verifiability of the information provided. Pressure to expand reporting of intangible assets threatens the reliability and verifiability principles that underpin most accounting reporting frameworks, given the contingent nature of some intangible assets. Regulators are faced with a conundrum. They want to promote public interest and investor confidence by ensuring that financial reports are based on verifiable data. On the other hand, they want to encourage financial reporting that is informative to stakeholders and promotes efficient resource allocation. To date regulators have maintained a conservative approach to the measurement and reporting of intangible assets

More specifically, regulators have traditionally prescribed asymmetric asset recognition rules for acquired and internally generated intangible assets. Acquired intangible assets can usually be recognized because there is a verifiable measure from the exchange transaction. In contrast, internally generated intangible assets are typically kept off the balance sheet. This is due to the lack of a verifiable measure from an exchange transaction—even though there is not necessarily a lack of control over the asset or expected future benefits. This asymmetric approach to regulating reporting of intangible assets leads to conservative reporting of intangible assets.

The concern over the relevance of conservative reporting practices has generated a considerable amount of research investigating intangible asset related issues. The concern is that intangible expenditures comprise a large and growing proportion of total investment and operating expenditures but that this is not reflected in financial accounting rules and external financial reporting practices. An additional concern is the impact of financial accounting regulation on the design of information systems designed to support internal management decision-making. Macroeconomic and microeconomic evidence provides support for the premise that the level of,

and proportionate expenditure on, intangible expenditures have been growing.<sup>1</sup> Furthermore, both the accounting and economics literature demonstrates the important information role of intangibles at the enterprise level. For example, a large number of studies show intangible expenditures and assets are relevant to firm valuation, including research and development costs (see Lev 1999), patents,<sup>2</sup> brands and trademarks,<sup>3</sup> customer satisfaction,<sup>4</sup> and human resources<sup>5</sup> (see Lev, 2001 for a more comprehensive review). However from an external financial reporting perspective, the evidence suggests that conservative accounting, which understates assets, reduces the quality of the financial statements and accounting earnings.<sup>6</sup> This has flow-on effects for firm valuation. For example, there is evidence that a lack of publicly reported information about intangible assets provides opportunities for insider trading (Aboody and Lev 2000), leads to mis-pricing of intangibles intensive firms (see Lev 2001; Chambers, Jennings, and Thompson 2002), and mis-specification of commonly used valuation models (Kohlbeck and Warfield 2002; Sougiannis and Yaekura 2001). From an internal perspective, existing studies show that the current regulatory framework impacts on the firm's internal data collection and information systems. Firms have traditionally designed their internal reporting systems to support the preparation of external financial reports (Scapens et al 1996; Croes 1999). These systems are then used to develop the budgeting system, performance measurement, and

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<sup>1</sup> Investment in the seven largest OECD countries grew by 3.6 per cent per annum during the decade ending 1984 (Deiaco, Hörnell, and Vickery 1990). Marion (1987) reports that in France, investments in intangible assets accounted for 21.2 per cent of total investment in 1974 increasing to 32.2 per cent in 1983. A similar increase has been reported in Sweden (Eliasson 1990), and in the Australasia region with the ratio of intangible capital to total capital in Australia growing by 1.25 per cent per annum over the 50 year period to 1998 (Webster 1999). Webster reports that the ratio of intangible investment to total production also grew at an annual increase of 2.5 per cent for a 25-year period ending in 1996. Nakamura (2001) measured gross US investment in intangible assets. In 2000, he estimates that enterprises were investing as much in intangible capital as they were in tangible capital (around \$1 trillion) (also see McGrattan and Prescott 2001). (Note that, because the accounting practices and rules vary substantially across countries, it is difficult to compare these statistics.)

<sup>2</sup> See Griliches, Hall, and Pakes (1991), Trajtenberg (1991), Austin (1993), Shane (1993), Hall, Jaffe and Trajtenberg (2000), and Jaffe, Fogarty and Banks (1998).

<sup>3</sup> See Seethamraju (2000), and Barth, Clement, Foster and Kasznik (1998).

<sup>4</sup> See Banker, Potter and Srinivasan (1998), Anderson, Fornell and Lehmann (1994), Foster and Gupta (1997), and Ittner and Larcker (1998).

<sup>5</sup> See Hansson (1997), Huselid (1999), and Hand (1998).

<sup>6</sup> Penman and Zhang (2002) show the quality of the reported information is reduced by the building up and liquidation of hidden reserves from understated assets. There are also permanent differences induced in operating

compensation system. Top management has traditionally relied on the information provided by these systems for strategic, managerial and operational decisions. However, it comes too late, is too aggregated, and often irrelevant for managing in today's environment. The evidence indicates this external focus directly influences and limits the usefulness of these systems in supporting managerial decision-making (Otley 1999; Bouwens and Abernethy 2000; Ittner and Larcker 2002).

The question is how to incorporate more financial information about intangibles into the external financial reporting, and the internal systems, without further reducing the usefulness of the data due to measurement error. This paper addresses this question by developing a coherent framework for the classification, recognition and reporting of intangible assets that is based on sound economic principles. The framework addresses some inconsistencies between elements of existing asset definition and recognition principles and the observed role of intangible investment in production. Proposals in this paper are motivated by the goal for greater transparency and comparability of reporting on the firms' intangible expenses and assets. They provide a more complete measure of the assets actually employed, and revenues and expenses generated, and hence, greater management accountability. The proposed changes do not alter the prevailing accounting model—but serve to sharpen the focus on the economic properties of intangible assets as the key criteria for identification and recognition. We argue such a framework is essential for investors and other stakeholders to disentangle economic signals from other intangible asset reporting incentives. It also provides the basis for improving the quality of the information provided to management for assessing the value created through investment in intangible assets.

The paper is structured as follows. Section 2 provides an overview of the principles associated with current regulatory principles, the approach currently taken to the reporting of intangible

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and investing cashflows (White, Sondhi and Fried 1998), and book values and earnings (Beaver and Ryan 1997) that do not reverse out over time.

assets and an illustration of the financial effect. Section 3 develops a conceptual framework for the identification, measurement and management of intangible assets. Section 4 provides some concluding comments and directions for further research.

## **2.0 Reporting of Intangible Assets within Existing Regulatory Frameworks**

Section 2.0 overviews the key attributes and differences among the existing regulatory frameworks. It focuses particularly on the international accounting standard, IAS 38 Intangible Assets, and the US Financial Accounting Standards Board pronouncements as the most recent and influential regulation in the “intangibles” domain. As background to the discussion, we note that reporting of intangible assets has remained on the work agendas of the accounting standard setting bodies around the world since the late 1990s. This is due to the vigour of the international accounting harmonization debate since the late 1990’s and a commitment to pursue harmonization by the European Union and many OECD nations.<sup>7</sup> In this climate in the late 1990s, accounting standard setters awaited the new international accounting standard, IAS 38 Intangible Assets, which was issued in September 1998. This standard is now, and was during the development phase, controversial due to the lack of consensus on the importance of, and methods of accounting for, intangible assets. As elaborated below, IAS 38 is particularly controversial in that it excludes most internally generated intangible assets from the balance sheet.<sup>8</sup> The United States Financial Accounting Standards Board’s (FASB’S) standards, SFAS. No. 141 Business Combinations and SFAS. No. 142 Goodwill and Other Intangible Assets (issued in 2001), also exclude internally generated intangible assets.<sup>9</sup>

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<sup>7</sup> There was a restructure of the International Accounting Standards Committee to facilitate this harmonization, to form the International Accounting Standards Board (IASB) in a structure similar to that of the Financial Accounting Standards Board.

<sup>8</sup> The final IAS 38 standard strongly adheres to the traditional principle that an asset cannot be recognized on the balance sheet if there is no documented cost to record from a verifiable transaction with an external party.

<sup>9</sup> The European Union and Australia have committed to adopt the IASB’s accounting standards in 2005. Also see the FASB’s proposal to examine reporting on internally generated intangible assets (FASB 2001).

## **2.1 General Principles**

Accounting regulators define an asset as: a resource that is “controlled” by the entity as a result of a past transaction that is expected to yield “future benefits” with reasonable probability.<sup>10</sup>

The definition of an intangible asset further requires that the item in question does not have physical substance. IAS 38 goes further to require that an intangible asset must be “identifiable” so that it is “distinguishable from goodwill” (para 10.). IAS 38 does not define “identifiable”.<sup>11</sup>

If the identifiability, control and future benefits criteria are not met, the expenditure is recognized as an expense, or as part of purchased goodwill if it involves a business combination (para. 9). Outside R&D expense, there is generally no requirement for separate “intangible expense” line items in the income statement under either IAS 38 or the various national accounting regulations. Intangible expenditures that is not recognizable as assets will therefore not be transparent in the income statement. It will be aggregated into cost of goods sold and/or sales, general and administration expenses. Investors will have to look to non-financial information elsewhere to evaluate the quantum and return on the company’s resources allocated to activities of an intangible nature.

Furthermore, even if items meet the asset definition criteria they will not appear on the balance sheet if they do not meet the asset recognition criteria. Similar recognition criteria internationally focus on two factors: the uncertainty associated with future benefits and a reliable “cost” to record the asset from a verifiable transaction. IAS 38 states that an “intangible asset should be recognised if, and only if: (a) it is probable that the future economic benefits that are attributable to the asset will flow to the enterprise; and (b) the cost of the asset can be measured reliably (para. 19). “Cost” is defined as the amount of cash or cash equivalents paid

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<sup>10</sup> For example, the Australian Statement of Accounting Concepts 4 (SAC 4) Definition and Recognition of the Elements of Financial Statements, states that ‘assets’ are future economic benefits controlled by the entity as a result of past transactions or other past events. This definition excludes financial assets (for example, equities or bonds).

<sup>11</sup> Guidance in paragraphs 10-12 suggests practitioners consider the separability of the asset for rent, sale, exchange or distribution; and also whether the practitioner can identify the future benefits that will flow from the intangible asset.

or the fair value of the other consideration given (for example, shares) to acquire an asset (para. 7), and “fair value” is a price from an arm’s length transaction. Most jurisdictions adopt similar recognition criteria. The Australian Statement of Accounting Concept 4 (SAC 4) is one exception. It widens the measurement options with the requirement that the asset possesses a cost “or other value” that can be measured reliably.

Further analysis reveals that these accounting frameworks rely heavily on particular elements of the asset definition and recognition principles. Specifically, intangible assets are typically identified only by reference to transactions between the firm and an external party. This ensures a verifiable measure is available to record the asset, thus, satisfying the ‘reliability’ component of the asset recognition criteria (that is, (b) above). The weighting given to reliable measurement is reinforced by a ‘relevance versus reliability’ principle. This is an over-riding principle that requires the relevance of a reported asset to external users of accounting information is balanced against the reliability of the reported number.

In this paper, we argue that the external ‘transaction’ focus for asset definition is inconsistent with the role of intangible investment in the firm’s production function. We also argue that the principles in the definition and recognition principles for determining when value exists are imprecise and not operational. Specifically, most jurisdictions do not provide criteria to operationalize the ‘control’ principle in the asset definition.<sup>12</sup> Also, most jurisdictions make asset recognition conditional on the existence of a verifiable ‘past cost’. However, historic cost will not always lead to a ‘balance’ of relevance and reliability. Specifically, some ‘relevant’ items do not have a clearly identifiable historic cost, for example, patents developed over a long period. Further, for those items that do, the number can be irrelevant for evaluating the importance of the item to the firm’s future prospects. For example, the cost of a broadcasting

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<sup>12</sup> For example, the IAS 38 guidance involves a discussion of the idea that an enterprise controls an asset if it has the power to obtain future economic benefits and can restrict the access of others to those benefits (para. 13). It states that this would normally stem from legal rights but these are not a necessary condition for control (para. 13.).

license or movie title is often minimal compared to the relative importance of the license compared to the firm's other assets. This limitation of historic cost measurement has been recognized in other contexts such as financial instruments and asset revaluations but not in the intangibles context. In summary, 'past cost' is problematic to the extent that it reflects a past transaction but conveys little information about the existence and realizability of future benefits—two non-controversial properties of an asset.

## **2.2 Specific Regulation of Intangible Assets**

Specific accounting regulations tend to focus on four broad classifications of intangibles:

*Acquired intangible assets:* This includes acquired identifiable intangible assets (IIA) such as acquired patents and trademarks, brands, and purchased goodwill that is acquired in business combinations.

*Research and Development (R&D):* This includes expenditures associated with R&D activities performed within the firm. Expenditures for exploration, evaluation and development costs in mining and other resource-based firms are usually accounted for separately to R&D because of the specific risk profile of these expenditures.

*Internally generated intangible assets (IGI):* This includes identifiable intangible assets produced by the firm, and internal goodwill that is not easily attributable as to its source of value. Identifiable intangible assets and internal goodwill relate to such things as the firm's information systems, its administrative structures and processes, market and technology knowledge, trade secrets, customer and supplier networks.

*Intellectual property:* These are a sub-set of acquired and internally generated intangible asset classifications that have legal or contractual rights (i.e. patents, trademarks, designs, licenses, copyrights, firm rights, mastheads)

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However, without attached "rights" it is difficult to understand how a company could exercise control (see Hart 1995).

The regulations relating to each type of intangible asset are discussed in turn.

### **2.2.1 Acquired Intangible Assets**

Acquired intangible assets have received significant attention as part of the International Accounting Standards Board's (IASB) deliberations for the IAS 38 Intangible Assets standard issued in 1998, and the Financial Accounting Standard Board's (FASB's) business combinations project completed in 2001. Under IAS 38, "acquired intangibles" are separately purchased or purchased as part of a business combination, by a government grant, or by exchange of assets (paras. 23-35.). According to IAS 38, these items will meet the asset recognition criteria if a price exists from an exchange transaction, or for business combination related items if fair value can be estimated using valuation techniques and prices from current transactions in the relevant industry.

The FASB formalized the requirement to identify and recognize certain acquired intangible assets in promulgating Statement No. 141 Business Combinations and Statement No. 142 Goodwill and Other Intangible Assets (effective for fiscal years beginning after December 15, 2001). SFAS No. 141 requires separate recognition of intangible assets from purchased goodwill if (a) the intangible asset has contractual or legal rights, or (b) the assets are capable of being separated or divided from the acquired entity and sold, transferred, licensed, rented or exchanged, either individually or in combination with a related contract, asset or liability (regardless of intent to do so) (para. 39). Appendix A provides further guidance to apply the "separability" criterion. Paragraph A11 states that "An acquired intangible asset meets the separability criterion if there is evidence of exchange transactions for that type of asset or an asset of a similar type (even if those exchange transactions are infrequent and regardless of whether the acquiring entity is involved in them)". Examples that are provided by the standard include customer and subscriber lists, and title plant assets. SFAS No. 141 also replaces the choice of either pooling or purchase method of accounting for business combinations with a

requirement for firms to use the purchase method.<sup>13</sup> It softens the “loss of pooling” blow for dissenting stakeholders by replacing the requirement to amortise goodwill with a goodwill impairment test. This means goodwill charges will only be taken to income if the company has a positive impairment test. The IASB business combinations project is taking a similar approach to SFAS No. 141. SFAS No. 142 specifies the initial and post-acquisition treatment of intangible assets acquired individually or with a group of other assets (but not those acquired in a business combination). It also specifies the post-recognition treatment of goodwill and other intangible assets.<sup>14</sup>

The Australian AASB 1015 Acquisitions of Assets has required separate recognition of identifiable assets acquired in business combinations since the standard was first issued in 1988. The term, identifiable assets, is defined in AASB 1013 Accounting for Goodwill to mean those assets which are capable of being both individually identified and specifically recognised (para. 13.1). At the time of writing no Australian standard specifically regulates acquired or internally generated identifiable intangible assets.

In summary, because a “cost” exists from a transaction with an external party, the accounting measurement and recognition issues associated with acquired intangible assets are less controversial than those attending internally generated intangible assets. Realistically however, this is illusory because obtaining fair values for acquired intangibles involves the very same forecasting uncertainties as internally generated intangible assets. The only real difference is the presumption that the fair value was an “arm’s length” measure.

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<sup>13</sup> Under the purchase method for business combinations, the net assets of the acquired company are accounted for on a fair value (revalued) basis and purchased goodwill is recognized as an asset. Under the alternative “pooling” method, the net assets of the acquired company are accounted for at the “old” amounts reported on the balance sheet at acquisition date and no purchased goodwill arises. Pooling typically overstates profit and understates net assets and depreciation charges.

## 2.2.2 R&D and Internally Generated Intangible Assets

Expenditure on R&D and internally generated intangible assets are generally not recognized as assets because future benefits are uncertain and/or an identifiable ‘cost’ from an external party transaction does not exist. However, there are some exceptions to this principle. These differences are summarized in Figure 1. It is possible to recognize the ‘development’ component of R&D and some internally generated intangible assets under the GAAP rules of some European countries, Australia and New Zealand. This appears to have come about due to a long-term trend away from historic cost measurement in these jurisdictions. In the case of Australia and New Zealand there is also no specific regulation of identifiable intangible assets at the time of writing. Hence recognition of these items is a voluntary choice. Some European countries relax the ‘reliable’ measurement requirement and allow for the recognition of internal intangible assets. However a faster, five-year amortisation rate is required. This is a significantly shorter period than most other countries.

The United States FASB and Security Exchange Commission (SEC) have maintained a strict immediate expense policy for most internal expenditures of an intangible nature including R&D. Since 1985, one exception to the immediate expense policy is software development costs. These can be capitalized according to a ‘technical feasibility’ test under SFAS No. 86 Accounting for the Costs of Computer Software to be Sold, Leased, or Otherwise Marketed. The US standards, SFAS No. 141 and 142 and the R&D standard, prohibit the recognition of internal intangible assets.

IAS 38 Intangible Assets prohibits the recognition of internally generated “goodwill” assets. This standard also takes the view that it is often difficult to determine the amount and timing of future benefits and a reliable cost for “internally generated intangible assets” (presumably referring to separately identifiable intangibles) (para. 39.). Due to this perceived difficulty, IAS

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<sup>14</sup> Purchased goodwill, and intangible assets with indefinite useful lives are tested annually for impairment. Intangible assets with finite useful lives continue to be amortized over their useful lives.

38 includes additional measurement and recognition criteria for internally generated intangible assets over and above those set out in the standard for acquired intangible assets.

Specifically, IAS 38 requires the firm to classify “the generation of the asset” as either a “research phase” or a “development phase” (para. 40.) with only development phase expenditures being recognizable (paras. 42 and 45).<sup>15</sup> This approach is problematic to the extent the development process expenditures occurred over a long period or are not directly identifiable to the intangible asset. For example, broadcast licenses granted by government to enterprise and patents for pharmaceutical companies. Development costs are capitalized only if firms can show they intend to complete the intangible development asset; intend to either use it or sell it; demonstrate how the asset will generate future economic benefits; possess the technical and financial resources needed to complete development; and be able to measure the cost (IAS 38.45).<sup>16</sup> After initial recognition, either cost or a revalued (fair value) carrying amount is permissible. However, since revaluations must refer to an active market they will be rare. Surprisingly, and without reference to supporting principles, IAS 38 specifically proscribes recognition of internally generated intangible assets comprising brands, mastheads, publishing titles, customer lists, and ‘items similar in substance’ (paras. 51 and 52).

### **2.2.3 Intellectual Property**

Regulatory frameworks typically treat intellectual property in the same way as they treat acquired intangible assets and internally generated assets. While these assets have contract and legal rights the accounting standards do not make this distinction.

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<sup>15</sup> According to paragraph 40, these latter classification “have a broader meaning for the purpose of this standard” than the definitions of “research” and “development” set out in paragraph 7.

<sup>16</sup> The ‘cost’ of an internally generated intangible asset is all expenditure directly attributable from the date the item first meets the recognition criteria.

**Figure 1 Accounting for Internally Generated Intangible Assets and R&D Assets**

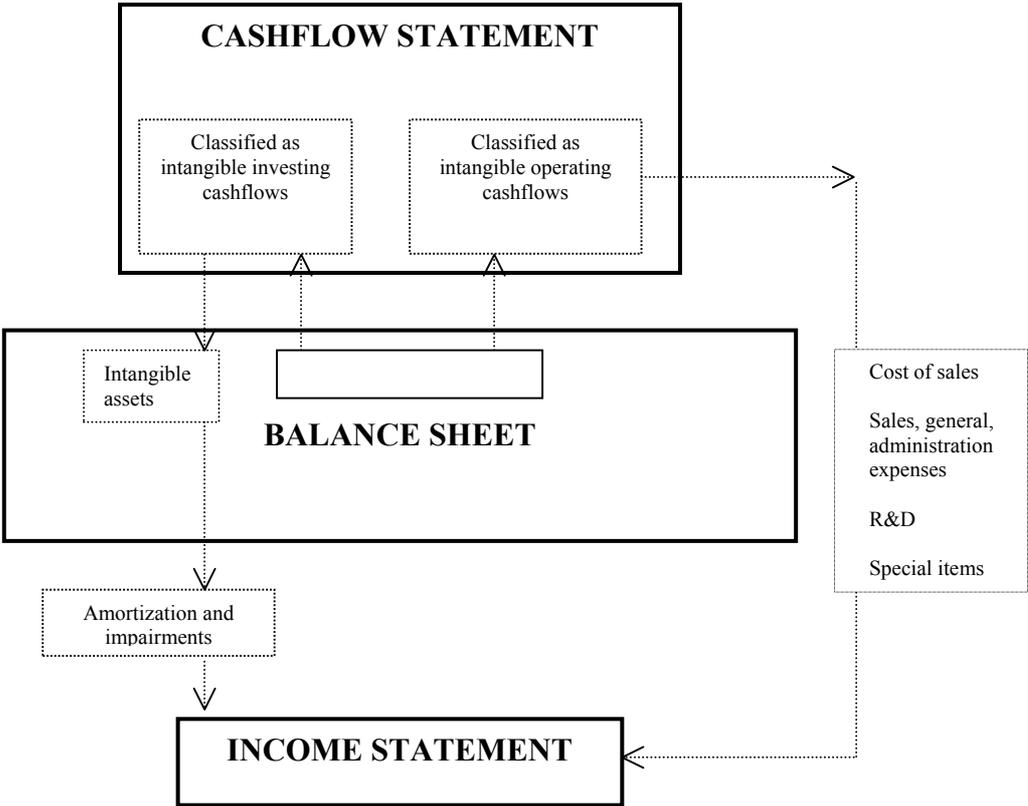
	No or very limited recognition	Recognition with short amortization period	Voluntary choice or discretion under an accounting standard to recognize
<b>R&amp;D assets</b>	Canada China Denmark Germany IASB Israel Malaysia Norway Saudi Arabia South Africa United Kingdom United States	European Union Directives Greece Italy Japan Netherlands Sweden	Australia Belgium Brazil Czech Republic Finland France India Luxembourg New Zealand Spain
<b>Internally generated intangible assets</b>	Canada China Denmark Germany IASB India Israel Japan Norway Spain United Kingdom United States	Netherlands Saudi Arabia	Australia Belgium Brazil Bulgaria Czech Republic Finland France Italy Luxembourg Malaysia New Zealand European Union Directives

**2.3 Financial Statement Effects of Current Reporting Requirement for Intangible Expenditures**

Figure 2 illustrates the financial statement effects of current accounting practices for intangible expenditures—that understate assets and overstate cost of goods sold and/or sales, general and administration expenses. Contributed or retained funds (cash from the balance sheet) allocated to intangible expenditures, will be classified as either investing or operating cashflows (in the cashflow statement). This classification designates the subsequent accounting treatment. Intangible expenditures classified as investing items are treated as stocks. They are recognized as intangible assets on the balance sheet. Intangible expenditures classified as operating items are treated as flows. They are recognized as expenses in the income statement aggregated into cost of sales or sales, general and administration expenses. Only R&D and intangible assets written off as special items appear as disaggregated line items in the income statement.

Because the financial statements articulate, misclassification of investing cashflows and operating cashflows has a threefold effect. In the cashflow statement, the level and relative magnitude of operating and investing cashflows is permanently misstated. In the balance sheet, the level of intangible assets, and relative magnitude to other assets, is misstated. In the income statement, expenses relative to revenue earned, and hence the level of earnings, is misstated. Financial statements of companies with intangible expenditures growing at a faster rate than changes in earnings are more distorted (Lev, Sarath and Sougiannis 1999). More generally the distortionary impact of these effects is magnified by the fact that the effects are not observable and are frequently material.

**Figure 2 Impact of Current Regulations on Financial Reporting**



**3.0 A consistent framework for comparable classification, recognition and reporting of intangibles**

One way to move forward in developing an enhanced accounting framework is to first rethink the firm’s production function in terms of the role of intangible assets. As elaborated below,

this facilitates a definition of intangible assets that captures all of the intangible inputs to the production function. A second issue is to sharpen the criterion for recognition of the intangible assets. In this Section we focus on the availability of property rights as an indicator of ‘control’ and the realizability of future benefits. Finally, we propose a classification schema or taxonomy of intangibles external reporting. This expands the transparency and comparability of external reporting by providing a schema for separate line item reporting of intangible expenses and assets.

### **3.1 Intangible assets and the firm’s production function**

This section conceptualizes intangible expenditures as an integral part of a firm’s production function and categorizes them in terms of their fundamental economic characteristic. In general terms, resources allocated to intangible investment are one of the inputs to the firms’ production function. The production function has been defined as

$$y = f(x; t) \tag{1}$$

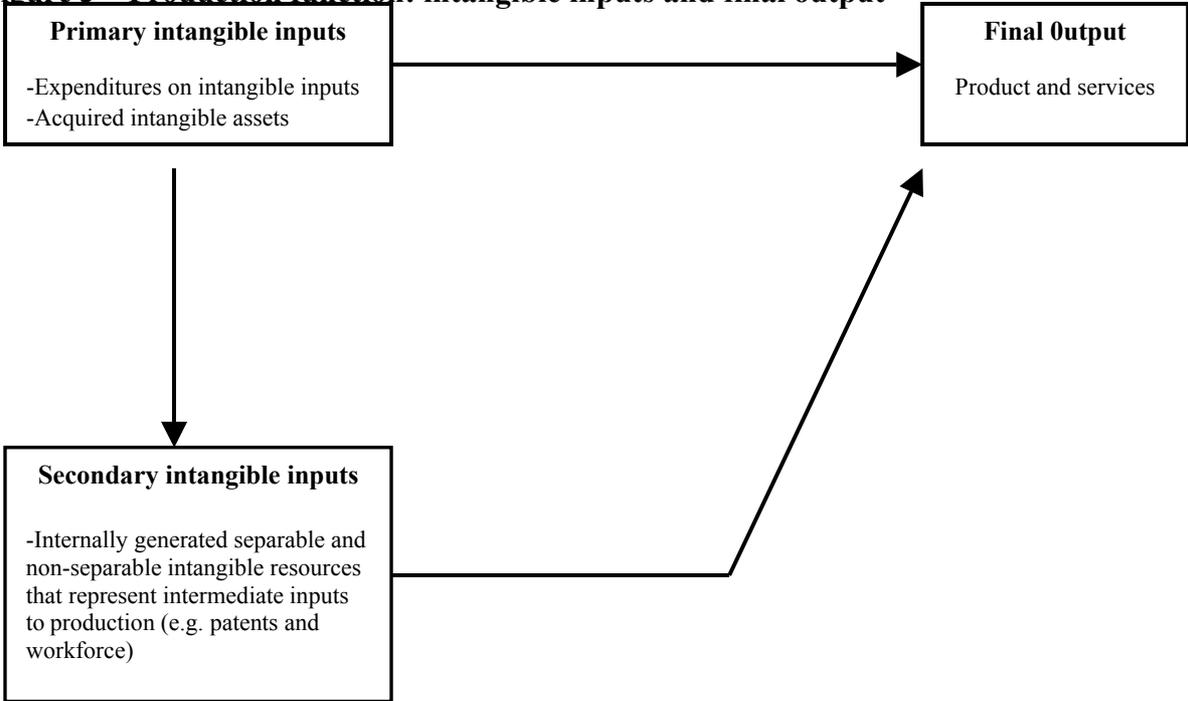
where  $y$  is output (products and services),  $x$  is a vector of inputs, and  $t$  is a vector describing exogenous technology states (e.g., Jorgenson, 1989). The  $x$  vector includes all forms of input expenditure (variable inputs such as labour and materials as well as capital expenditure). Intangible inputs are a critical component of the  $x$  vector in most firms. These inputs can be classified as either primary or secondary (intermediate) inputs.

Primary intangible inputs represent expenditure on activities such as advertising, training, and R&D, as well as the investment cost of acquired intangible assets. Secondary intangible inputs represent internally generated intangible assets such as patents, brands and trademarks that have been produced by the firm in-house. Secondary inputs can be considered intermediate output that has been generated by the firm as a result of expenditure of primary inputs. The relation between final output and the two types of intangible inputs is illustrated in Figure 3. Acknowledging the existence of, and distinguishing between, these two categories of intangible

inputs is important. The reason is that both categories are elements of the stock of assets operated by the firm to generate revenues.

Figure 3 highlights the fact that firms acquire intangible assets in different ways—for example, expenditures to produce intangible assets internally, purchased from external parties, and business combinations (see Von Hippel 1988). It points out the unique nature of each firm’s production function and asset coalition (Alchian 1984; Ball 1989). It does not, however, suggest that the mode of acquisition (i.e., acquired or internally generated) is the attribute of intangible assets that dictates value.

**Figure 3 Production function: intangible inputs and final output**



Nevertheless, primary and secondary intangible inputs are treated as such under existing accounting regulations. Intangible assets generated by the firm as secondary inputs are usually not recognized.<sup>17</sup> This is due to the transaction and historic cost based asset definition principle that results in a narrow focus on the reporting of primary inputs to production. Typically only intangible expenditures and acquired intangible assets are recognized in the income statement

<sup>17</sup> An exception is extractive industry exploration, evaluation and developmental activities.

and balance sheet, respectively, albeit not as separate line items. Except for a few specific categories such as software development costs and R&D, expenditures are reported in an aggregated form in cost of goods sold and sales, general, and administration expenses. Moreover, acquired intangible assets representing primary inputs are often aggregated into purchased goodwill.

### **3.2 Property rights recognition criteria**

We draw on the notion of property rights to determine whether intangible expenditure (primary and secondary inputs) illustrated in Figure 3 is classifiable as assets or expenditure items. Property rights relate to the control the owner has over the asset. This is consistent with the way in which accounting regulators define an asset. That is, an asset is an item that is expected to yield future benefits in part by virtue of the fact that the item is controlled by the entity.

Property rights have been decomposed to three types of rights. These include the “(a) determination of use, (b) bearing of the market value, and (c) exchangeability of rights to (a) and (b)...[where] all components need not be held in common [since] it is possible to sell or delegate the rights to decide uses separately from the...marketable value” (Alchian 1984, 34). An example of the separability of these rights is leases. These contracts separate out the “use of an asset” from the bearing of market value for most types of leases until the completion of the lease contract. The lessee contracts for the right “to decide use” while the lessor retains the market value until the lease completes or as otherwise agreed under the lease contract. Obtaining property rights over intangible assets (of either or both of (a) and (b)) can be challenging because the future value represented by the asset can often reside in individuals (Webster 1999) or exist in an unembodied, non-exchangeable form (Geroski 1995).<sup>18</sup> It is thus costly and sometimes not possible to obtain enforceable legal or contract rights (see Hart 1995). Accordingly, firms can encounter significant problems controlling access to their investment

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<sup>18</sup> Geroski (1995, 92) notes ‘...knowledge remains in circulation no matter how many people consume it, [which] undermines any attempt to create an artificial scarcity’.

and appropriating the benefits (Geroski 1995, 90-91). For example, it is estimated that about one third of the business sector's R&D effort is lost by firms to the wider economy (Griliches 1995). Weak control rights have the following economic and accounting implications: (1) difficulty in estimating the timing and magnitude of future economic benefits; (2) difficulty in observing and monitoring the relation between the deployment of intangible assets and final output (this can also be the case even with control rights); and (3) inability to obtain credible measures because traded prices may not exist (or may be illiquid).

The above conditions, however, do not exist for all intangible assets. Rather, the extent and enforceability of control rights will depend in general on the degree of property rights attached (Geroski 1995). We can, therefore, define the primary and secondary inputs described in Figure 3 in economic terms according to the extent and enforceability of attached property rights. From Figure 3, the primary inputs such as expenditure on R&D, training and advertising generally have few control rights and therefore do not meet this 'property rights' asset definition criteria. Other primary inputs such as expenditures on acquisitions of licenses, patents, trademarks, and masthead intangible assets are more likely to have enforceable property rights by virtue of a contract or registered legal right.

Figure 3 separates secondary inputs into 'separable and non-separable resources' that represent inputs to production. Some of these internally generated, intangible resources will have legal or contract rights attached, such as patents with a registered monopoly right, and licenses regulated by the law of contract. If these property rights do not exist, or are weak, then uncertainty over the quantum and realizability of future benefits precludes the recognition of an asset. We may also be able to estimate the strength of property or control rights based on the proximity of the expenditure to commercial outcomes. Specifically, the closer to commercial production the greater the property rights associated with intangible assets. As this proximity increases, the knowledge, capability or right representing the intangible asset is more likely to be embodied in

a contractible and exchangeable form (Geroski 1995). For example, firms increase contractibility by taking out a patent, trademark or design. Alternatively, firms can license developed but unpatented technology to other firms that need the technology but lack the technical expertise or cash to develop the technology in-house. Contractibility will also increase when goods and services embody the knowledge, capability or right representing the intangible asset. We can, thus, think of intangible assets along a property rights continuum and use this as the basis for asset definition and recognition in a financial reporting framework. Current accounting regulation does not make this distinction.<sup>19</sup> The conceptual framework developed in Section 4.0 uses property rights as the basis for differentiating both intangible expenses from intangible assets, and intangible assets with weak versus strong control rights.

### **3.3 Classification of intangibles**

To ensure a systematic reporting of intangible assets and comparability across firms, we argue there is a need for a taxonomy to provide guidance for identifying and classifying intangible expenses and assets. Our taxonomy integrates Porter's (1985) notion of a value chain and Young's (1998) system for classifying intangible assets. Porter (1985) was the first to conceptualize the firm as a set of inter-related business processes—what he refers to as the firm's value chain. The 'value chain' concept has relevance for the measurement and reporting of intangible assets as it focuses attention on the business processes performed within a firm. This enables the relation between a firm's intangible assets and the core processes generating value to be identified. Porter (1985, 36) first defined the value chain as the collection of strategically relevant activities a firm performs 'to design, produce, market, deliver and support its product'. He separates activities into primary activities and support activities. Primary activities are the core activities associated with designing, producing, marketing and delivery of

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<sup>19</sup> Although SFAS 141 uses contract and legal rights as the basis of recognition, this only applies to acquired intangible assets. It also is diluted by the alternative recognition criteria if assets are capable of being separated or divided from the acquired entity and sold, transferred, licensed, rented or exchanged, either individually or in combination with a related contract, asset or liability

a product or service. They involve ‘the physical creation of the product and its sale and transfer to the buyer as well as after-sales assistance’ (Porter 1985, 38). Support activities provide the intangible infrastructure critical to the co-ordination and performance of the primary activities.

We interpret the primary activities as comprising the physical architecture of the value chain. This includes the land and buildings, furniture and fittings, plant and equipment, transportation equipment, any distribution network machinery, computing hardware, and libraries. This sharpens the emphasis on the ‘physical’ nature of primary activities. We adapt Porter’s conception of ‘support activities’ to sharpen the emphasis on the intangible nature of the support activities. We do this by overlaying Young’s (1998) classification system on the value chain model. Young’s categories of intangible assets form the basis for five support activities: information and infrastructure, organization and administration, human resources, production and technology, and procurement and distribution. Prior research supports the use of Young’s classification. Theoretical and empirical evidence indicates that these activities represent the key costs and drivers of the firm’s competitive advantage.<sup>20</sup>

Porter stresses the importance of using the value chain as a means of identifying those activities that create the basis for differentiation. Reporting costs according to the value chain allows managers to drill down and identify the activities that are key drivers of costs and benefits. A focus on activities, rather than on functional line item expenditure, enables management to identify and manage those activities that drive performance.<sup>21</sup> This, in turn, creates a database for assessing the financial returns associated with this expenditure.

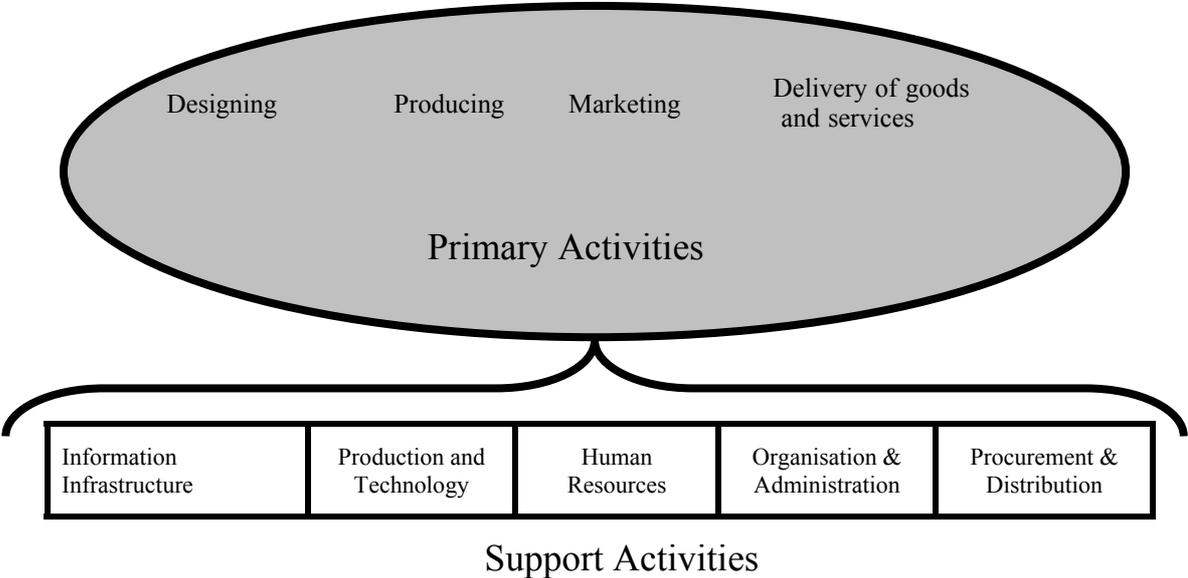
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<sup>20</sup> For example see, Dosi (1988), Malerba (1992), Arthur (1994), Audretsch (1995), Machin and Van Reenen (1998), Webster (1999), Lev (2001), and Agarwal and Gort (1999).

<sup>21</sup> The rationale for the implementation of activity based costing system is similar. Traditional costing systems focus on functional expenditure while ABC systems group together expenditure based on core activities (e.g. ‘set-ups’ are an activity associated with manufacturing). It has become an important cost management tool as it makes it possible to assess what activities are ‘value adding’ and those that do not add value and should be eliminated. Traditional costing systems do not enable this form of assessment.

The taxonomy illustrated in Figure 4 is comprehensive but still parsimonious. It is also sufficiently generic to meet the requirements of most industries.<sup>22</sup> The use of this taxonomy provides a means of breaking out intangible expenditures more transparently. Aggregating expenditure into a small number of categories can form the basis for reporting of intangible expenditures and intangible assets. Yet it is still not detailed enough to competitively disadvantage the firm.

**Figure 4 Porter’s (1985) value chain integrated with Young’s (1998) taxonomy of intangible assets**



**3.4 The reporting framework**

This section integrates the three principles developed in this paper to form the basis for our reporting framework. The framework is illustrated in Table 1. The first principle is to require firms to record intangible assets arising from both primary and secondary input phases of production. We propose the use of a mandatory classification framework based on Young’s (1998) taxonomy. The second principle relates to measurement. We propose historic cost

<sup>22</sup> Young (1998) also includes a separate category for ‘industry specific’ intangible asset expenditure. This category is not necessary in our model as the firm or industry will identify its own value chain. For example, the mining industry will have different activities in its primary value chain compared to the biotechnology industry.

measurement for primary intangible expenditures, the exchange amount for acquired intangible assets, and a fair valuation for secondary (internally generated) intangible assets. The move to fair value is consistent with its use for other items such as financial instruments. We argue that a ‘past cost’ measure is inconsistent with the processes by which intangible assets are generated internally (within the firm). More specifically, firms develop internally produced intangible assets over time. The internally produced intangible asset will usually not be attributable to one transaction (or even to a regular series of transactions). Past costs giving rise to the asset may therefore not be identifiable (e.g., costs to develop a brand). Even if they are identifiable, past costs are unlikely to be informative about the significance of the asset as a source of future benefits relative to other assets operated by the firm. Establishing “fair value” methods is not without its problems. Valuation methods acceptable for different types of intangible assets will need to be established for transparency and comparability.<sup>23</sup> It is important to note that the “fair value” measure can only be interpreted in the context of the role of financial reporting which is to provide information not valuations (see Beaver 1998); and also the relevant firm-specific and wider economic conditions. These fair value measures evaluated outside their context cannot reasonably serve as grounds to litigate against the company should business conditions become unfavourable. Investors can simply exclude uncertain measures from net assets. Furthermore, a recent study suggests that capital market efficiency is enhanced by disclosure of valuation relevant information—even if that information is “highly uncertain” (Barth, Clinch and Shibano 2003).

The third principle proposes the use of a property rights test to establish whether intangible expenditure is an expense or an asset. Assessing the available property rights associated with an asset is an explicit indicator of control and the realizability of expected benefits. The existence

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23 Many accounting and consulting firms are providing valuation services for intangible assets and services such as royalty databases to build intangible asset markets. For example, see <http://www.royaltystat.com/> the URL for RoyaltyStat® which has a subscription database of royalty rates and license agreements compiled from the U.S. Securities and Exchange Commission (SEC) Edgar Archive. RoyaltyStat can be used to find comparable royalty

of legally enforceable control rights must be verifiable against documented legal or unavoidable contractual rights. Examples of items that could fall into the intangible asset category due to the existence of legal or contractual rights includes patents, trademarks, license agreements for the use of patented or unpatented technology, and media and publishing masthead licenses. Acquired and internally generated brands could also meet the asset recognition test if supported by evidence. Examples of such evidence include licenses and contracts relating to product lines, franchises, royalties, customer databases, and marketing or distribution alliances. Examples of items that usually would not meet the property rights based, control test and, hence, would not be recognized as an asset include R&D, activities associated with reverse engineering and feasibility testing, employee training, customer acquisition costs, and marketing and advertising expenditures. For these latter items, we propose information will be available in the form of the magnitude of the expenditures classified according to the five support activity categories (set out in Figure 4). Examples of items falling into the classification categories are set out in Table 1.

The three principles associated with our conceptual framework are summarized in Table 1.

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rates or valuing (or licensing) intangible assets. Also see Ernst & Young (1995) and the material referenced at <http://www.valuationresources.com/Publications/Intangible> PubDesc/Intangible.htm.

**Table 1: The Reporting Framework for Intangible Assets**

Classification	Definition and Measurement			Recognition	
	Primary input intangible expenditures		Secondary input intangible assets	Intangible asset (Contract or legal rights)	Intangible expense (No/weak control rights)
	Acquired cost \$	Internal cost \$	Valuation \$		
<b>Information System Infrastructure</b>					
Information systems planning and development, Commercial enterprise systems, Software, Databases, Other Computer Services, Registered patents, trademarks, designs, Licenses					
<b>Production and Technology</b>					
Product & process R&D, Product design, engineering and development, Process design, engineering and development, Technology adoption, Quality control systems, Proprietary technology, patents, trademarks, designs, Licenses					
<b>Human Resources</b>					
Recruitment and selection, Incentive systems, Staff development and training, Staff goal planning and evaluation, Information and knowledge database development, programs for health and motivation of workforce (eg: labour relations, health care, fitness)					
<b>Organisation &amp; Administration</b>					
Organizational design and management technique, Corporate governance structures, Networks and strategic alliances, Administration structure and systems, Finance systems, Accounting systems.					
<b>Procurement and External Distribution</b>					
Distribution and market research systems, Advertising, Trademarks, Brands, Customer list, subscribers' list, potential customer list, Product certification, quality certificates.					
<b>Total Information Infrastructure</b>					
<b>Total Production and Technology</b>					
<b>Total Human Resources</b>					
<b>Total Organisation &amp; Administration</b>					
<b>Total Procurement and distribution</b>					
<b>Total</b>					

### 3.5 Implementation issues

The financial reporting implications of implementing the framework for intangible assets are summarized in Figure 5. The first implication is that the framework accounts for both the

primary and secondary input phases of production. The accounting method for primary inputs is straightforward. As summarized in Figure 5, the asset class is debited at cost for acquired intangible assets or expenditures incurred, and either cash or a liability account is credited. Recognition of an intangible asset from a primary input occurs if and only if (1) future benefits are expected; and (2) legal or unavoidable contract rights are attached. The firm will also account for impairment and depreciation associated with capitalized intangible assets from the primary input phase. If no, or weak, legal or contract rights are associated with the primary input intangible (either acquired or an expenditure) then an expense class is debited and either cash or a liability is credited. The accounting method for the secondary intangible inputs brings us to the second proposed change, which is to employ a valuation to measure the asset to be recognized.

For secondary input intangible assets we propose either one of two methods to record the valuation obtained for the asset. The first method recognizes the intangible asset and a “special item” of revenue at the time of recognition of the intangible asset. An asset class is debited with fair value and a revenue account is credited. Recognition of the secondary input intangible asset occurs if and only if (1) future benefits are expected; and (2) legal or unavoidable contract rights are attached. The advantage of this method is that it accurately reflects the economics of the underlying event, which is the internal generation of an asset from the firm’s support infrastructure, and it maintains the clean surplus articulation between the income statement and balance sheet. But recognition of “unrealised revenue” is controversial. Traditionally only realized revenues have been recognized in the income statement. However, in other contexts the shift to the decision usefulness objective of public reporting (see Beaver 1998) has led to recognition of a range of unrealized revenues in income. Examples include gains due to changes in the fair value of financial instruments and foreign currency transactions. The rationale for this “special item” of revenue method is that the benefit flowing to the firm from internally generating the intermediate asset is earned when the asset has identifiable and enforceable

property rights. At this time, the firm has produced a completed asset that does not need to be traded to have value. Its value is characterized in the same way as any other of the firm's long-term fixed assets as 'unconsumed' resources. Hence the asset is recognized in the balance sheet, and the revenue is recognized in the income statement given the embodied future benefits arose from the firm's own efforts, on completion. By recognizing the asset, the benefits generated from using the asset to produce goods and services can be matched against the cost of generating those benefits.

The second method recognizes the intangible asset and a credit increment to an "internally generated intangible asset reserve" equity account. Its advantage is that it accurately reflects the economics of the underlying event, the internal generation of an asset from the firm's support infrastructure, but without a direct income statement effect. The increment to the equity reserve account would become part of comprehensive income to facilitate the clean surplus articulation between the income statement and balance sheet. Recognition of the secondary input intangible asset occurs if and only if (1) future benefits are expected; and (2) legal or unavoidable contract rights are attached. Using an equity reserve, avoids the controversy of recognizing "unrealised revenue". However, this approach is less preferred to the extent that it is inconsistent with the shift in other contexts to the recognition of a range of unrealized revenues in income—where this shift is motivated by the desire to more accurately report the economic effects of the firm's activities.

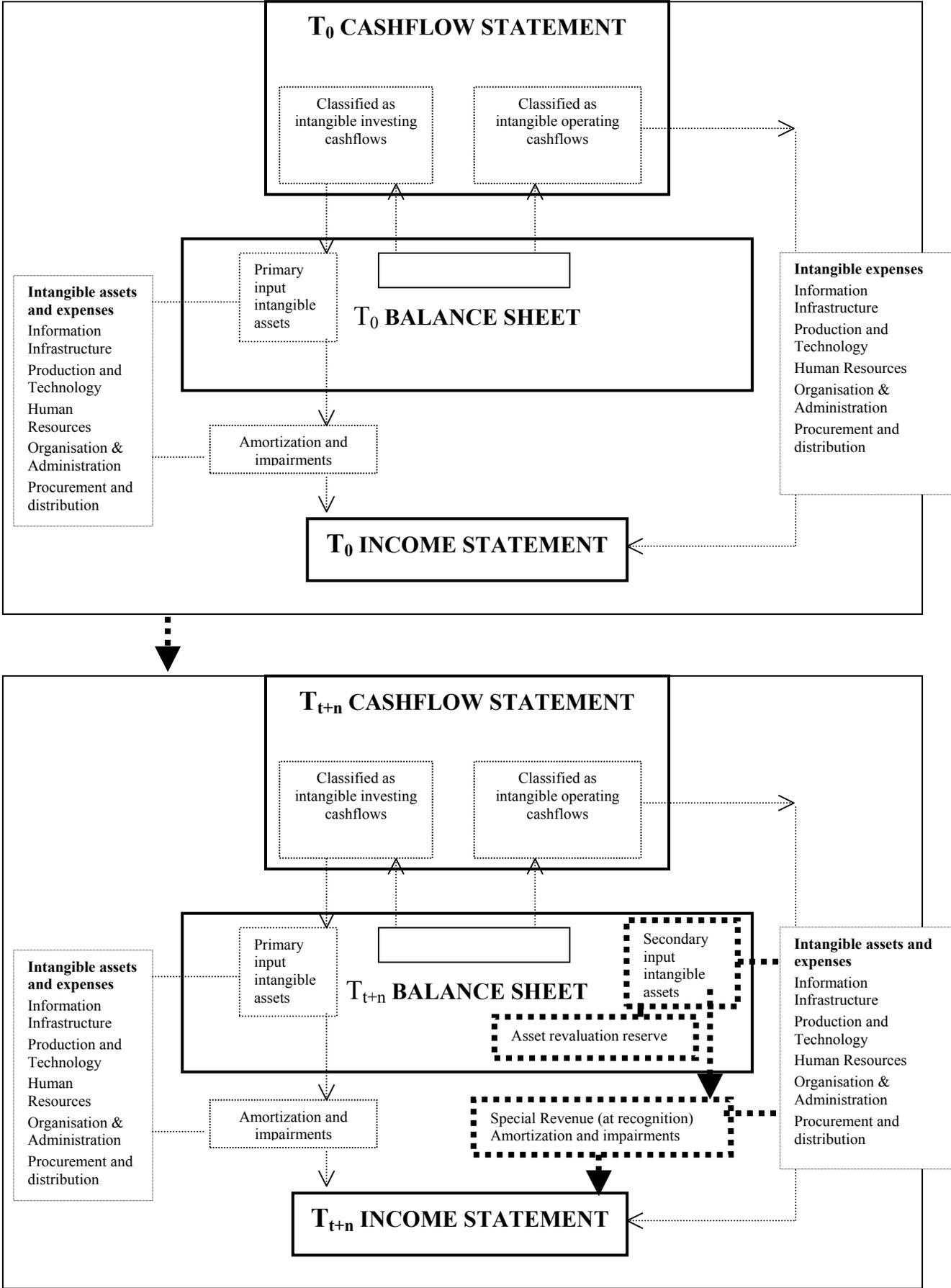
Another alternative approach, to reinstate past, relevant primary costs, is not recommended. This is due to the fact that primary intangible inputs will already be accounted for (in past financial statements) as period expenses or assets using the classification schema. We argue that the information conveyed to investors by obtaining and recording an asset valuation for secondary input intangible assets is expected to be more timely and relevant compared to the

information conveyed by reinstating ‘old’ period costs—costs that have already been counted as primary inputs.

The multi-period diagram in Figure 5 summarizes how the two recommended accounting methods, along with the other principles associated with our framework, will increase the relevance of periodic financial reporting on intangible expenses and assets. It illustrates how revenues, expenses and assets will be recognized and reflected in the balance sheet and income statement.

This accounting for both the primary and secondary input intangible assets eliminates the asymmetric treatment of acquired and internally produced intermediate assets. It also reduces distortions to the balance sheet and earnings. Specifically, distortions to the measure of total assets employed to generate earnings will be reduced, distortions to book value of equity will be reduced particularly for growing firms (Lev, Sarath and Sougiannis 1999), and distortions to the quantum of periodic earnings will be reduced. Distortions to commonly used performance measures, return on assets and return on equity, will also be reduced. These innovations also have corporate governance implications. Specifically, impairment of intangible assets is one early warning sign of financial distress because intangible assets are the first to decline in value for poor performing and distressed firms. Access to a measure of the proportion of total assets comprising intangible assets will permit investors to evaluate the impact of wider and firm specific declining economic conditions on firm value.

**Figure 5 Multiperiod Impact of Proposed Financial Reporting Principles**



## **4.0 Discussion and Summary**

All investments (whether tangible or intangible) are undertaken by a firm to generate future economic benefits. However, accounting regulators around the world have a history of mandating differing treatments for physical and intangible assets in the financial reports of the firm. Conservative treatment of non-physical assets is a rational response to measurement and verifiability problems. That is, accounting rules and principles attempt to provide financial reporting information that reflects the measurement and verifiability problems associated with intangible assets. However, the stated goal of the framework is to produce relevant and reliable information for resource allocation decisions (i.e., not just reliable information). The research literature demonstrates that current regulations could do more to achieve this goal.

The production function representation of the firm outlined in the paper features three phases - primary inputs, secondary inputs internally generated by the firm, and final output. We argue that the financial reporting framework conceptually entertains only the first and last phases of the production function. This arises from the emphasis of the asset definition criteria on the existence of a transaction with an external party. We also propose the use of property rights-based rule for deciding when to recognize intangible assets. This proposal is based on the perceived need for a operational measure of ‘control’. The paper proposes a classification system to facilitate comparable reporting of both intangible expense and asset line items across firms. Our proposed enhancements do not alter the prevailing accounting model—except to take the focus of financial reporting away from the transaction basis and pure historic cost basis to a focus on economic properties of intangible assets as the key criteria for recognition. We argue this will go some way to satisfy both the ‘stewardship’ and ‘valuation’ sources of demand for public financial reporting. Not only does this information provide a more complete measure of the utilization of assets by management, it is also prospective in nature. Hence, it potentially has an important role in equity valuation. This is an empirical issue that can be tested once implemented.

Gathering the full quantum of intangibles expenses and assets, classified according to a standard, mandatory framework, is expected to have the added benefit of improving management information systems. One of the externalities associated with financial reporting requirements is the impact on the design of internal management information systems (e.g., Croes, 1999). Firms currently do not have sufficiently sophisticated information system to capture data associated with intangible expenditures.<sup>24</sup> This has adverse implications for effective management of intangible assets and evaluation of returns from these investments. The proposed enhancements will impose the requirement on firms to implement more sophisticated systems capable of identifying, measuring and managing their investment in intangible assets.

In sum, the purpose of developing a “new” reporting framework is to address the information gap that we argue arises in part from the “transaction” and imprecise “control” elements of existing asset definition and recognition principles. The mandatory classification system proposed enables a more transparent and comparable reporting of intangible expenditure and yet is sufficiently generic to meet the needs of most industries. We argue it has the capacity to improve corporate governance by providing more information for investors to evaluate past, current and future performance; it will better meet information demand for contracting and monitoring purposes; and help discharge the accountability of management for their actions in deploying resources.

The enhancements proposed in this paper require extensive empirical testing. Each of the basic principles associated with the framework need to be carefully assessed within firms and across industries. Research opportunities exist to assess the applicability of the classification taxonomy for intangibles, evidential issues in relation to the existence of legal or property rights and when

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<sup>24</sup> For example, EUROSTAT, OECD, Statistics Netherlands, Statistics Canada, the US National Science Foundation, and the Australian Bureau of Statistics.

these are more likely to reflect value, opportunities to develop valuation methods for measuring internally generated assets and to test the efficacy of the framework for firm valuation.

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