

## **Accounting Choice, Firm Life-Cycle And The Value-Relevance Of Intangible Assets**

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The introduction of the Australian Equivalents to International Financial Reporting Standards (AIFRS) in 2005 means that the previously wide discretion afforded to managers in accounting for intangible assets under the Australian Generally Accepted Accounting Principles (GAAP) has been largely restricted. A review of the literature provides evidence on the effects of accounting choice for intangible assets on the value-relevance of such assets. Previous studies also document an association between accounting choice, firm life-cycle and value-relevance of key financial information, including intangible assets. Therefore, this study seeks to investigate the relationships between firm life-cycle, accounting choice for intangible assets and the value-relevance of intangible assets. It also aims to examine the effects of the AIFRS introduction on the value-relevance of accounting choice relating to intangible assets across firm life-cycle stages. This study predicts that in the pre-AIFRS period, there is an association between firm life-cycle stages and accounting choice for intangible assets, which will consequently affect the value-relevance of such assets. This association extends to post-AIFRS period, causing lower value-relevance of intangible assets for firms in certain life-cycle stages.

**Keywords:** *Value-relevance, Intangible assets, Firm life-cycle stages*  
**Field of research:** *Accounting*

### **Introduction**

Studies on value relevance of financial reporting are motivated by the fact that publicly listed firms use financial statements as one of the major media of communication with their equity shareholders and public at large. The Statement of Accounting Concepts SAC 2: *Objective of General Purpose Financial Reporting* (Australian Accounting Research Foundation, 1990), for example, highlights the role of financial reporting as a means of communicating relevant and reliable information about a reporting entity to users. It has been suggested that given the significance and importance of intangible assets and the constraints placed on their recognition, current financial reporting systems might significantly understate the economic value of intangible assets, hence reducing their value-relevance (Lev, 2001; Wyatt, 2005). A review of extant literature shows that accounting method choice for intangible assets has an effect on the value-relevance of these assets (Barth & Clinch, 1998; Lev & Sougiannis, 1996; Oswald, 2008). Previous studies also suggest that there is an association between firm life-cycle stages and managers' choice of accounting method (Skinner, 1993) and value-relevance of key financial information including that of

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the intangible assets (Hand, 2005). Further, in Australia, the adoption of AIFRS in 2005 also means that the previously wide discretion afforded to managers in accounting for intangible assets under the Australian GAAP has been restricted. The effect of such changes in accounting practices on the value-relevance of intangible assets is yet to be thoroughly examined.

Thus, one of the objectives of this study is to investigate the relationships between firm life-cycle, accounting choice for intangible assets and the value-relevance of intangible assets. In addition, this study also aims to examine the effects of AIFRS introduction on the value-relevance of capitalised intangible assets across firm life-cycle stages. It is important for firms to consider these effects and the most effective means of communicating their financial reports prepared under AIFRS, since the accounting policies in relation to intangible assets are significantly different from pre-existing GAAP.

### **1. BACKGROUND TO INTANGIBLE ASSETS**

The source of value, wealth and growth of today's economy is driven primarily by the creation and manipulation of intangible assets (Goldfinger, 1997; Lev, 2001). The proportion of tangible assets to intangible assets has changed dramatically over the past 50 years. Surveys conducted by various organisations highlight the growth of intangible assets. For example, *The Global Intangible Study 2006* (GIST™) by Brand Finance shows that 62 percent of value of the largest 25 stock markets in the world is represented by intangible assets while *Market Capitalization of the S&P 500* by Millward Brown Optimor reports that the value of intangibles of the S&P 500 has trebled over the last 30 years (Institute of Practitioners in Advertising, 2006).

Contributing to this growth is the fact that today's economy is fundamentally different from the economy of 1950s and before (Upton, 2001). The revolutionary changes particularly in globalisation, information technology and technological and financial innovation spawned what is known as the new economy in the mid 1990s (Meritum, 2001). As a result of this change in business environment, companies now have to rely more and more on continuous innovation for survival and growth (Lev, 2001). Innovation, in turn, is primarily achieved by investment in intangible assets, resulting in the increasing importance and significance of these assets in the production functions of businesses.

#### **1.1 Problems with the Recognition of Intangible Assets**

Existing accounting frameworks such as that of the Australian Accounting Standards Board (AASB) only allow intangible investments to be recorded in the accounting system as assets if the items meet both the asset definition and recognition criteria (AASB 138, para. 18). The asset definition criteria for intangible assets comprise three primary attributes – identifiability, control and future economic benefits (AASB 138, para. 10). Meanwhile the asset recognition

criteria for intangible assets comprise two attributes; (a) it is probable that the expected future economic benefits that are attributable to the assets will flow to the entity and (b) the cost of the asset can be measured reliably (AASB 138, para. 21). However, many intangible assets tend to have different economic characteristics to those assets defined and recognised under the current financial accounting framework. Hence, they often fail to be included in the balance sheet. The three distinguishing economic characteristics of intangible assets, namely, inherent uncertainty, partial excludability and non-separability, render these assets in many cases outside the definition and recognition criteria.

### *1.1.1 Inherent uncertainty*

Although expected future economic benefits are emphasised both in the definition of an asset and in its recognition criteria, intangible assets are often described as having highly uncertain and ambiguous future benefits (Hunter et al., 2005; Lev, 2001; Skinner, 2008). The substantially high level of risk associated with intangible assets is closely related to the link between these assets and the nature of innovation activities (Wyatt, 2001). Innovation activities, in turn, involve the solution of problems and normally, the problems are “ill-structured” (Dosi, 1988), which means that available information does not automatically generate a solution to the problem. This is because what is searched for is basically unknown before the search, discovery and creation activities take place. Therefore it is most likely that there will be significant time lags between the expenditures and efforts undertaken by the firm to begin the innovation activity and the time of the arrival of a commercially viable innovation.

### *1.1.2 Partial excludability*

Unlike tangible and financial assets, intangible assets are often characterised by partial excludability or fuzzy property rights. This refers to the inability of owners of these assets to exclude fully non-owners from enjoying some of the benefits of the investment (Wyatt, 2001; Skinner, 2008), a phenomenon known as spillovers (Arrow, 1962; Jaffe, 1986; Takalo, 1998). For instance, a firm's investments in developing skilled and experienced employees do not necessarily preclude others from the benefits of those investments. The investment benefits will eventually flow through to other non-owners such as other firms and society at large when the employees leave the firm either to work with other firms or to start their own. As a result, the firm cannot be certain of effectively appropriating the investment benefits because property rights remain with the individual employee.

### *1.1.3 Non-separability*

Upton (2001) states that although few would argue that information about intangible assets is not relevant, many would question whether these items are measurable. Those that argue against the recognition of intangible assets, particularly the internally generated ones, emphasise that the problems are: first,

cost is not a reliable measure of the underlying value of the assets; and second, measures other than cost including fair value lack sufficient reliability (Upton, 2001). The main reason for these problems relates to the tendency of intangible assets to be non-separable. The non-separability of intangible assets means that these assets are not capable of being separated and divided from the firm without any loss of value (Lev, 2001; Hunter et al., 2005; Skinner, 2008). This is essentially because the creation of intangible assets involves ideas that build on other ideas to generate complementarities and synergies (Basu & Waymire, 2008), many of which have different owners and are not owned by any given firm. For example, the value of a brand may depend on the patent to a particular technology, aggressive advertising efforts and other reputation enhancing activities. These complementarities and synergies mean that the value of a specific intangible asset is intrinsically connected to the residual value of the firm within which it will be employed. This embodiment of intangible assets in the value of the firm renders the definition criterion of identifiability to be unlikely. Another accounting implication is that, without being able to identify the costs or values attributable to each of these intangible assets, it is not possible to reliably measure them as independent assets at either their cost or fair value (Kabir, 2008; Skinner, 2008; Upton, 2001), which is one of the important recognition criteria.

Thus, from the standpoint of current financial accounting frameworks, the mismatch between economic characteristics of intangible assets and accounting principles results in the under-recognition of these assets in the balance sheet. The difficulties in measuring and reporting these assets are reflected in the decision of most accounting frameworks to expense most intangible assets immediately as operating expenses in the income statements.

### **1.2 Implications for the Informativeness of Financial Statements**

The impact of intangible asset recognition, or the lack thereof, on the value of information provided by firms is becoming an increasingly important issue, particularly with the new economy firms such as Google, Microsoft and Samsung playing increasingly vital roles in the world's economy, today. Further, more traditional firms are relying on intangible assets to generate value (Skinner, 2008). It is frequently argued that new economy firms depend more heavily on intangible assets, particularly human capital or other knowledge-based assets in their value-creation process, than on tangible and financial assets (Clikeman, 2002; Mouritsen, 2003). However, most current accounting standards (for example, FASB Statement No. 142 *Goodwill and Other Intangible Assets*) require most intangible assets to be expensed as incurred. This means that a significant proportion of internally generated intangible assets is not recognised in the balance sheet.

There are arguments that failure to recognise these assets in the financial statements will lead to information deficiencies because managers, investors and

polycymakers are not receiving some of the most relevant information about the firm (Canibano et al., 2000; Lev, 2001; Wyatt, 2001). In addition, there are also concerns that due to the restrictions placed over the recognition of the assets, existing financial frameworks do not capture and may not be able to capture the value drivers that dominate modern firms (Bontis, 2001; Steenkamp, 2007; Upton, 2001). As emphasised by Hunter et al. (2005), the purpose of all commercial activity is to add value to inputs or resources used up in the course of business. The success of a firm in this value-creation process reflects its competitive advantage and its ability to survive and outperform rival firms. Therefore, value drivers in this case refer to factors that enhance the value of a product or service as perceived by consumers that consequently create or drive firms' revenue, wealth, growth and success (Daum, 2001; Ittner, 2008; Steenkamp, 2007). Intangible assets such as human capital, brands, reputation, organisational capabilities and information technology are significant value drivers in today's economy, hence, it has been suggested that the accounting profession should adequately account for these drivers (Guthrie, 2001; Meritum, 2001; Reed, 2001).

Thus, so far, the emphasis of intangible assets recognition appears to be on reliability, which could be detrimental to another important financial characteristic, that is, relevance. This discussion reveals the two-sided arguments for the recognition of intangible assets. To date, this particular issue remains highly debated and unresolved, indicating the importance of further research in this area.

### **1.3 Accounting for Intangible Assets in Australia**

#### *1.3.1 The pre-AIFRS period*

In a move towards international harmonisation of accounting standards, the AASB formally pronounced the adoption of the AIFRS by Australian firms effective from 1 January 2005. Prior to 2005 there was no single standard governing the accounting treatment for intangible assets in Australia, but rather there were several standards related to the treatment of intangible assets. In the absence of a specific standard guiding the accounting for intangible assets, firms had a wide discretion to recognise intangible assets, both acquired and internally generated, at cost or value and employ different accounting practices after initial recognition (Goodwin and Ahmed, 2006). Furthermore, during this period Australian firms had the option to revalue non-current assets upwards to fair value. Wyatt (2002) argues that revaluation is the accounting method used to bring internally generated intangible assets on to the balance sheet.

This is in major contrast with the accounting practices allowed under the U.S. GAAP that have adopted a rather restricted approach in the recognition of identifiable intangible assets. Concerns about the availability and abuses of reliable measures in relation to revalued assets and capitalisation of intangible

assets are among major reasons for the U.S. GAAP to proscribe these practices generally (Wyatt, 2002). The Financial Accounting Standards Board (FASB) and The U.S. Securities Exchange Commission (SEC) in fact have maintained a strict immediate expense policy for most internal expenditures of an intangible nature including research and development (R&D) costs. For example, according to SFAS 2 *Accounting for Research and Development Costs*, all R&D costs should be immediately written off at the time they are incurred. Since 1985, one exception to the immediate expense policy is software development costs, which can be capitalised according to a 'technical feasibility' test under SFAS 86 *Accounting for the Costs of Computer Software to be Sold, Leased, or Otherwise Marketed*. In June 2001, a new standard on intangible assets, SFAS 142 *Goodwill and Other Intangible Assets* was issued that also prohibits the recognition of internally generated identifiable intangible assets including internally generated goodwill.

### 1.3.2 The post-AIFRS period

The AASB 138 *Intangible Assets* which is equivalent to IAS 138 *Intangible Assets* was issued on 15 July 2004 and applies to annual reporting periods beginning on or after 1 January 2005. This standard mirrors the requirements in IAS 38 in relation to the recognition and measurement of purchased goodwill, identifiable intangible assets and internally generated goodwill and intangible assets. The adoption of AASB 138 has fundamentally changed Australian accounting practices with regards to intangible assets as it is more restrictive with respect to asset recognition and measurement (Chalmers et al., 2008; Ritter and Wells, 2006). Among major changes imposed by this new standards are:

1. accounting for goodwill shifted from an amortisation regime to an impairment regime;
2. capitalisation of research expenditure is prohibited and must be expensed as incurred;
3. certain internally generated intangible assets can no longer be capitalised and must be derecognised;
4. revaluations of identifiable intangible assets are permitted only if an active and liquid market exists; and
5. impairment testing is required for intangible assets at least annually.

With the implementation of these requirements, the practice of recognizing identifiable intangible assets by Australian firms would be greatly diminished (Ritter and Wells, 2006). Therefore, Australia provides an interesting regulatory setting in which to investigate the relative merits of alternative methods of accounting for intangible assets. This is because in the pre-AIFRS period, managers were provided with a rather wide discretion in accounting for intangible assets. However, such accounting choices are now prohibited or restricted in the post-AIFRS period which could affect the value-relevance of information provided in firms' financial statements. Hence, the pre- and post-AIFRS period comparison

will enable the impact of changes in accounting practices on the value-relevance of intangible assets to be examined.

## 2. LITERATURE REVIEW

### 2.1 Accounting Choice and the Value-Relevance of Intangible Assets

In general, the value-relevance of financial information relates to the ability of financial statements to summarise information that affects firm value (Collins et al., 1997; Francis and Schipper, 1999; Hung, 2001). Specifically, an accounting measure is considered value-relevant if it is significantly associated with equity market values such as share prices and returns (Barth et al., 2001; Ohlson, 1995). Previous studies conducted under accounting jurisdictions other than Australia provide inconsistent findings concerning the impacts of accounting choice for intangible assets on the value-relevance of intangible asset information (Han and Manry, 2004; Lev and Sougiannis, 1996; Oswald, 2008). These studies were conducted under various GAAP that either restrict or allow managerial discretion in accounting for intangible assets. While certain GAAP such as the U.S. requires most intangible assets, for example, R&D, to be expensed immediately and fully, others such as the U.K. permit the capitalisation of intangible assets if they meet certain conditions.

Studies in the U.S. are particularly interested to address the FASB's concerns over the reliability, objectivity and relevance of intangible asset capitalisation (Aboody and Lev, 1998; Healy et al., 2002; Lev and Sougiannis, 1996). Lev and Sougiannis (1996), for example, investigate the value-relevance of R&D costs capitalisation by examining the association between stock prices and returns and R&D capitalisation estimates. The tests provide evidence of significant positive associations between R&D capitalisation estimates and stock prices and returns, suggesting that the capitalisation of R&D costs provides value-relevant information to investors. However, the findings from studies under the U.S. GAAP in this area should be cautiously interpreted. This is because R&D capitalisation estimates based on hypothetical capitalisation and amortisation rules are used instead of actual figures due to the FASB's requirement to expense fully R&D costs. The only exception under the U.S. GAAP to the full expensing rule of R&D costs comes under SFAS 86 which provides the discretion to either capitalise or expense software development costs. Using a sample of 163 firms between the period of 1987 to 1995, Aboody and Lev (1998) find capitalised software development costs to be value-relevant. Specifically, information on capitalised software development costs is found to be positively significantly associated with stock prices, returns and subsequent earnings. Similar to other U.S. studies, it is important to exercise caution in making generalisation of these findings because the capitalised software amount used in the tests represents only the post-feasibility portion of the R&D development costs.

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Unlike the U.S., French firms can choose between the expensing and capitalisation of R&D costs, subject to certain conditions. In a study conducted under the French GAAP, Cazavan-Jeny and Jeanjean (2006) provided contrary evidence in which capitalised R&D costs are found to be significantly and negatively associated with stock prices and returns. They also found that the capitalisation method is preferred by the least successful, smallest, riskiest and most highly-leveraged firms, suggesting that R&D capitalisation is used opportunistically by managers. Studies by Han and Manry (2004) and Oswald (2008), on the other hand, indicate that both the expensing and capitalisation accounting methods for intangible assets or more specifically R&D costs are value-relevant. These studies were conducted in Korea and the U.K., respectively, which also allow firms to choose between the accounting methods.

Most Australian studies in relation to value-relevance of intangible assets to date have been conducted in the pre-AIFRS period. The overall results consistently suggest that most intangible assets capitalised under Australian GAAP are value-relevant (Abrahams and Sidhu, 1998; Ahmed and Falk, 2006; Barth and Clinch, 1998; Godfrey and Koh, 2001; Ritter and Wells, 2006; Wyatt, 2005). Barth and Clinch (1998), for example, investigated the relevance and reliability of asset revaluations across different asset classes; tangible, financial and intangible assets. Australian GAAP at the time of the study permitted upwards revaluation of all non-current assets at fair value as well as revaluation based on independent appraisers' or directors' value estimates, which may differ in reliability. There are concerns particularly by the FASB over such accounting treatment because asset revaluation is argued to bring internally generated intangible assets on to the balance sheet without legal impediments (Wyatt, 2002). The overall findings of the study provide support that managerial discretion in reporting intangible assets improves the relevance of information to investors without compromising its reliability. Revalued intangible assets based on both directors' and independent appraisers' valuations are also significantly positively associated with share price. Interestingly, there is also little evidence to indicate that these valuations are viewed differently by investors. This suggests that directors' private information enhances value estimates despite the potential to use the discretion for self-interest purposes, thus contradicting the generally held view that such estimates were unreliable.

In response to the introduction of AIFRS, Ahmed and Falk (2006) state that the relevance of Australian firms' financial statements will not be enhanced by replacing the more flexible Australian intangible assets accounting practice with an IAS-based standard. Moreover, Ritter and Wells (2006) argued that despite the previously less restrictive accounting practices, there is no empirical evidence of widespread opportunistic management behaviour. Both Ahmed and Falk (2006) and Ritter and Wells (2006) also found evidence that discretionary accounting choice for intangible assets is value-relevant and conveys credible signals about firms' future performance.

### 2.2 Firm Value, Intangible Assets and Firm Life-Cycle

The value of a firm can be represented by its present value of assets-in-place as a result of past investments and the present value of future profitable investments or growth opportunities (Myers, 1977). This distinction between assets-in-place and growth opportunities corresponds quite well to the distinction between tangible assets conventionally recognised on the balance sheet and off-balance sheet intangible assets (Godfrey and Koh, 2001; Skinner, 2008). Myers (1977) also argues that at any point in time the firm is a collection of its tangible and intangible assets.

The value of assets-in-place relative to the value of growth opportunities changes as a firm develops through its life-cycle (Black, 1998; Hand, 2005). For example, when a firm is first set up, its value consists almost exclusively of ideas the founders or owners have for profitable future investments, that is, its growth opportunities, rather than its assets-in-place (Myers, 1977). However, as the firm matures, its growth opportunities are financed and converted into assets (and liabilities) and the fraction of value attributable to its assets-in-place increases relative to that of its growth opportunities. In short, at different stages of its life-cycle, a firm has a different value as represented by the value of its assets-in-place (tangible assets) and growth opportunities (intangible assets).

Similar to an individual product that moves through different identifiable phases in its life, a life-cycle theory of a firm describes the firm in terms of its life-cycle stages (Gort and Klepper, 1982; Mueller, 1972). Firm life-cycle stages can be defined as distinct and identifiable phases that arise from changes in internal factors (e.g., strategy choice, financial resources and managerial ability) and/or external factors (e.g., competitive environment and macro-economic factors), due to strategic activities undertaken by the firm (Dickinson, 2007). Under firm life-cycle theory, firms basically progress through life-cycle stages such as start-up, growth, maturity, and decline.

In the start-up stage, there are few assets-in-place and a large portion of a start-up firm's value consists of the value of its ideas, intellectual property and growth opportunities (Hand, 2005). Thus, attempts to innovate will predominate during this stage in which firms are expected to undertake strategies that involve substantial innovations in product lines, risk taking and surpassing competitors (Miller and Friesen, 1983). In the growth stage, the fraction of firm value attributable to assets-in-place is higher than in the start-up stage although growth opportunities are still a large component of the overall firm value (Black, 1998; Hand, 2005). Consequently, growth firms also place more emphasis on strategies that can sustain organisational competencies such as through incremental innovation in product lines or broadening the product or market scope into closely related areas (Miller and Friesen, 1983).

Contrary to the growth stage, assets-in-place dominate firm value during the mature stage of its life-cycle and its growth opportunities decrease substantially (Black, 1998; Jenkins et al., 2004) which means that investments are now less rewarding. In terms of strategy, this will shift from major or incremental innovation to capitalising on efficiencies. As the market has become saturated, strategies such as imitation, lobbying and advertising become substitutes for innovation and support greater efficiency (Miller and Friesen, 1983). In the decline phase, the value of assets-in-place is still, to a large extent, the value of future cash flows generated from the operation of these assets while growth opportunities are likely to be limited (Black, 1998). Firms at this stage have a low level of innovation and resort to strategies such as price-cutting, consolidation of product markets and liquidation of subsidiaries (Miller and Friesen, 1983).

### **2.3 Firm Life-Cycle, Accounting Choice and Value-Relevance**

A review of the financial accounting literature suggests that firm life-cycle is an important determinant of many corporate decisions including accounting choice (Skinner, 1993; Dhaliwal et al., 1999), dividend policy, compensation contracts and capital structure and financing decisions (Gaver and Gaver, 1993; Smith and Watts, 1992). In addition, firm life-cycle is found to affect the value-relevance of key accounting information (Anthony and Ramesh, 1992; Black, 1998). Although there is no specific literature on the effect of firm life-cycle on accounting choice, there are, nevertheless, studies that examine the direct and indirect links between the relative mix of assets-in-place and growth opportunities that underpin the firm life-cycle concept and accounting choice. For example, Skinner (1993) argues that firms' composition of assets-in-place affects accounting choice indirectly through its effect on firm contracts or, more specifically, firm's use of debt covenants and bonus plans. First, he argues that firms with relatively more assets-in-place will be more highly levered than firms whose value is composed principally of growth opportunities and thus are more likely to have accounting-based debt covenants. Since debt covenants are written to reduce the conflict of interest between firms' shareholders and bondholders (Smith and Warner, 1979), bondholders of firms with higher financial leverage require a higher degree of protection. Prior studies indicate that highly levered firms are associated with the use of income-increasing accounting choice to loosen debt covenants constraints: thus, Skinner (1993) hypothesises that firms with more assets-in-place are more likely to choose income-increasing accounting policies through debt covenants. Secondly, he also argues that firms with more assets-in-place are more likely to employ earnings-based bonus plans. The contractual terms of these bonus plans, in turn, provide managers with incentives to make income-increasing accounting choices. Thus, he predicts that firms with more assets-in-place are more likely to choose income-increasing accounting choices.

Consistent with the hypotheses, firms with high financial leverage and accounting-based bonus plans are found to be more likely to select income-increasing accounting choice. The findings also indicate that firms with relatively

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more assets-in-place are more likely to employ accounting-based debt covenants in their public debt contracts and bonus plans that tie bonuses directly to accounting earnings. As a result, Skinner (1993) suggests that firms with more assets-in-place have greater incentives, given the nature of the firms' contracts, to select income-increasing accounting choice.

Meanwhile, Dhaliwal et al. (1999) provided a framework that supports a direct link between the composition of assets-in-place and growth opportunities and accounting choice based on managerial incentives to reduce the variance of accounting earnings. They examined accounting choice in terms of management's decisions to capitalise or expense significant costs in two different settings: first, accounting for exploration and development (E&D) costs by firms in the oil and gas industry; and, second, accounting for R&D costs by firms across industries prior to 1974, which was the period prior to the adoption of SFAS 2 that requires the direct expensing method for R&D costs. Specifically, they hypothesised that high-growth firms (firms with fewer assets-in-place and greater growth opportunities) have more variable earnings, which creates greater incentives to reduce earnings variability compared to their low-growth counterparts. Consequently, these firms are more likely to capitalise their E&D and R&D costs since this accounting method generally results in a lower variance of reported earnings than the expensing method. The findings provide support for the hypothesis and show that high-growth firms are more likely than low-growth firms to select the capitalisation method of accounting for E&D and R&D costs. It appears that the underlying assumption of both Skinner (1993) and Dhaliwal et al. (1999) is that accounting choice is being used opportunistically by managers to manipulate earnings.

Beginning with Anthony and Ramesh (1992), a line of empirical financial accounting research has focused on better understanding the effect of firm life-cycle stages on the value-relevance of key financial information such as sales, earnings, profitability, cash flows and capital expenditures (Black, 1998; Hand, 2005; Jenkins et al., 2004; Martinez, 2003) as well as on intangible assets (Chin et al., 2005).

Anthony and Ramesh (1992) examine the effect of firm life-cycle on the value relevance of two main accounting performance measures; sales growth and capital expenditure using the market-based approach of stock market response. They posit that growth and capital expenditure strategies undertaken by a firm are a function of its life-cycle stage. The basis of their argument is that the cost-effectiveness of the acquisition of market share and capital capacity is highest in the early stage of firm life-cycle. Thus, they predict that unexpected positive sales growth and capital expenditure are most (least) valued by the capital market during the growth (decline or stagnant) stage of the firm life-cycle. The findings show a nearly monotonic decline both in the magnitude and statistical significance of the response coefficients of unexpected sales growth and capital expenditure from the growth to the decline stages. This suggests that stock

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market reaction to performance measures, that is, the value-relevance of sales growth and capital expenditure, is a function of firm life-cycle stage.

Most subsequent studies under the U.S. GAAP that consider the role of firm life-cycle also employ a similar methodology to that of Anthony and Ramesh (1992). These studies provide evidence on the increase of both incremental and relative value-relevance of earnings and cash flow information when the sample firm is partitioned on the basis of life-cycle stages (see, for example, Black, 1998; Jenkins et al., 2004). However, studies conducted in different GAAP show inconsistent findings in relation to the effect of firm life-cycle stages on the value-relevance of financial information (Kousenidis, 2005; Martinez, 2003).

Finally, in contrast to prior studies that examine mostly earnings and cash flows, Chin et al. (2005) focus directly on intangible assets by examining whether the association between trademarks and accounting performance is a function of firm life-cycle stages. The underlying assumption is that firms can create permanent cost and/or revenue or demand advantages over competitors if they acquire trademarks in the early stage of the life-cycle. On the other hand, investment in trademarks is less rewarding in the later part of the life-cycle (mature and decline stages). They find that trademarks can increase firm performance even in emerging markets with weak legal protection of intellectual property. Consistent with the hypothesis, the evidence suggests that trademarks have a higher effect on firm performance for firms in the growth stage than firms in the mature and decline stages of the life-cycle. The results also indicate a monotonic decline in the estimated trademark value from the early to the later firm life-cycle stages.

### **3. PROPOSED MODELS AND HYPOTHESES**

#### **3.1 The Pre-AIFRS Period**

The Australian empirical evidence available to date suggests that managers' accounting choices to capitalise intangible assets are likely to be value-relevant (Barth and Clinch, 1998; Abrahams and Sidhu, 1998; Godfrey and Koh, 2001; Ahmed and Falk, 2006). Given that managers in Australia have had more discretion with respect to the reporting of intangible assets in the pre-AIFRS period, therefore, it is assumed that managers will use this discretion to reflect appropriately the value of intangible assets and thus will be valued as such by the investors. Hence, it is hypothesised, in the alternative form, that:

H1: During the pre-AIFRS period, firms that choose to capitalise intangible assets will have higher value-relevance of intangible assets than firms that choose to expense.

As discussed earlier, underpinning the concept of firm value are the two components of assets-in-place and growth opportunities. The proportion of assets-in-place relative to growth opportunities changes as a firm moves through

its life-cycle. Studies have shown that accounting policy choice is likely to vary across firms as a function of the relative combination of assets-in-place and growth opportunities (Skinner, 1993; Dhaliwal et al., 1999). This suggests that firm life-cycle provides a potential explanation for the variation in firms' accounting policy choice. Prior studies have also shown that both accounting choice and firm life-cycle can affect the value-relevance of financial information, including intangible assets (Anthony and Ramesh, 1992; Black, 1998; Han and Manry, 2004; Chin et al., 2005, Oswald, 2008). Thus, it is argued in this study that there is a relationship among firm life-cycle, accounting choice for intangible assets and the value-relevance of such assets. Specifically, given managerial discretion in accounting for intangible assets in the pre-AIFRS period, firm life-cycle is predicted to influence the effects of such accounting choice on the value-relevance of intangible assets.

The first assumption is that the capitalisation method of accounting is chosen to signal managements' private information to investors, hence, reducing the problems of information asymmetry. This is particularly important for firms in the early stage of their life-cycle, that is, growth firms, because they are subject to greater information asymmetry (Core, 2001). Since growth firms have more of their value in future growth opportunities, the insider information possessed by management should concern mainly these growth opportunities, as represented by intangible assets. As a consequence, managers of growth firms will have more incentives to signal the firms' economic performance such as the probability of success of their intangibles investments to the investors by selecting to capitalise intangible assets. This will consequently result in higher value-relevance of the information concerning intangible assets for this type of firm. Therefore, the next hypothesis, as expressed in the alternative form is that:

H2a: During the pre-AIFRS period, growth firms that choose to capitalise intangible assets will have higher value-relevance than growth firms that choose to expense.

Secondly, mature firms are likely to have more valuable assets-in-place but limited investment opportunities. Therefore, factors associated with intangible assets may be less value-relevant to the investors. Further, the inside information possessed by management of these firms should concern mainly the existing assets-in-place. Nonetheless, unlike growth firms, mature firms have greater capability to forecast intangible investment outcomes, thus making them more certain. Additionally, mature firms usually have a well-established reputation, have reached feasibility on several projects (Landry and Callimaci, 2003) and can rely on historical data better to forecast future benefits (Lester et al., 2003). These characteristics suggest that mature firms are more likely to choose accounting methods for intangible assets that can reveal their quality, thus allowing investors to assess the value of such assets. Thus, firms in this life-cycle stage may choose to capitalise their intangible assets to signal the value of their

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intangible investments. As capitalised intangible assets are found to be more value-relevant, this leads to the following hypothesis:

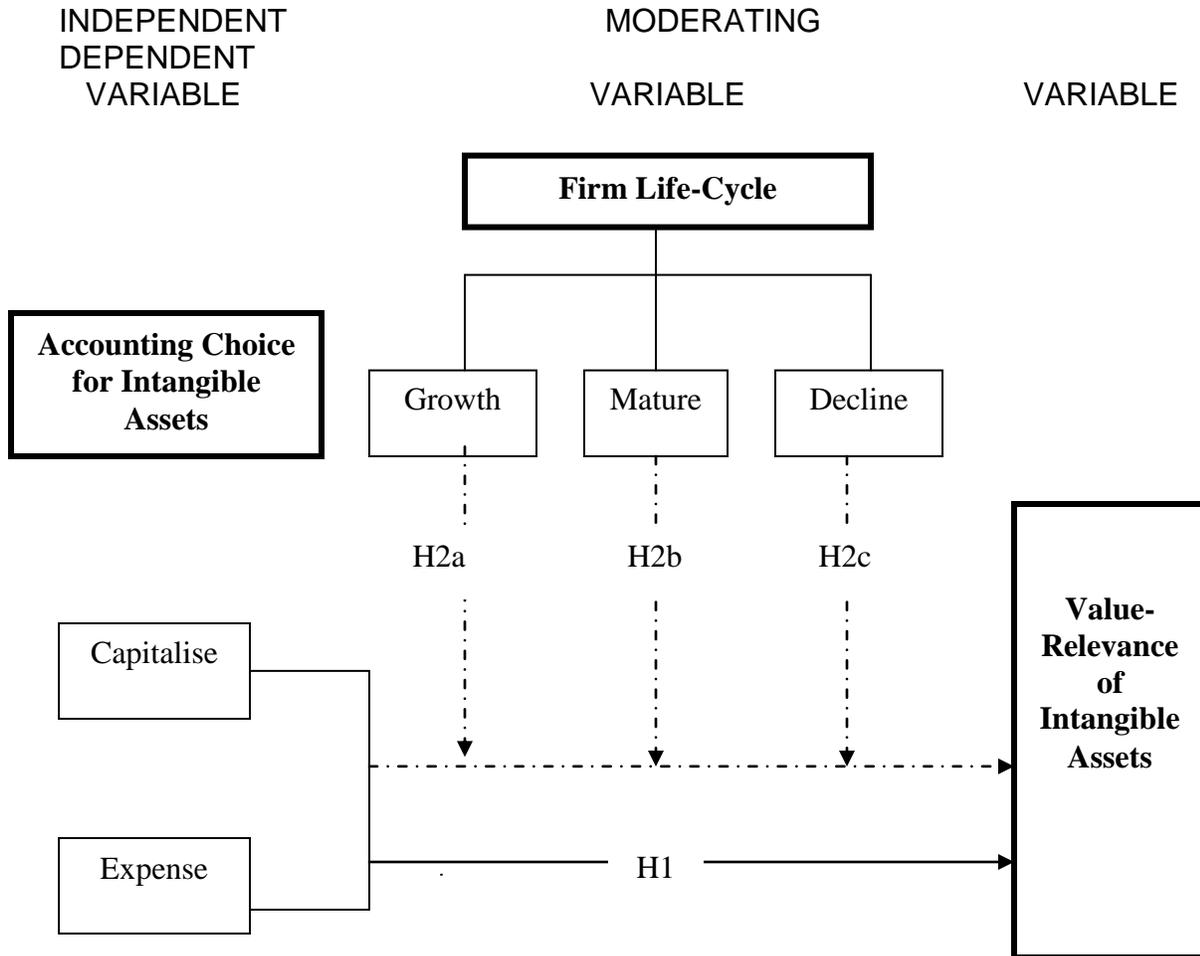
H2b: During the pre-AIFRS period, mature firms that choose to capitalise intangible assets will have higher value-relevance than mature firms that choose to expense.

Finally, it is predicted that firms in the decline stage of the life-cycle have more incentives to expense their intangible assets. This is mainly because, first, decline firms are characterised by very limited future growth opportunities and managers' decisions to capitalise intangible assets will not possibly enhance the value of their signal. Second, it is difficult for these firms to mimic other high quality firms by capitalising their intangible assets. Due to limited investment opportunities, the high level of uncertainty associated with future intangible investment outcomes is likely to result in managerial inability to formulate the appropriate accounting estimates for intangible assets. Thus, decline firms have more tendencies to choose to expense their intangible assets, which consequently affects the value-relevance of intangible assets. Thus, it is hypothesised, in the alternative form, that:

H2c: During the pre-AIFRS period, decline firms that choose to expense intangible assets will have higher value-relevance than decline firms that choose to capitalise.

Figure 1 presents the conceptual framework to test the relationships between firm life-cycle stages, accounting choice for intangible assets and the value-relevance of intangible assets in Australia in the pre-AIFRS period.

**Figure 1: A Conceptual Model Illustrating the Relationships between Accounting Choice, Firm Life-Cycle and Value-Relevance of Intangible Assets in the Pre-AIFRS Period**



### 3.2 Comparison of the Pre- and Post-AIFRS Period

With the adoption of AIFRS in 2005, it is predicted that there will be a change in the value-relevance of intangible assets. The effect of adopting AIFRS in relation to intangible assets depends primarily on firms' accounting policies in the pre-AIFRS period. The inability to capitalise research expenditure associated with the research phase of an internally-generated intangible assets, the derecognition of specific internally-generated intangible assets and the inability to revalue identifiable intangible assets for which there is no active and liquid market could reduce the relevance of the intangible assets in the balance sheets of firms previously engaging in such accounting practices (Chalmers and Godfrey, 2006). This is because accounting practices in the post-AIFRS period have the potential to reduce information flows to the market because managers are unable to signal information that is useful for firm value information (Matolcsy and Wyatt, 2006;

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Wyatt, 2005). Thus, the assumption in this study is that firms that previously chose to capitalise their intangible assets will have higher value-relevance of intangible assets in the pre-AIFRS period compared to the period after the adoption of AIFRS. The hypothesis, expressed in the alternative form is:

H3: Firms that choose to capitalise intangible assets will have higher value-relevance of intangible assets during the pre-AIFRS than the post-AIFRS period.

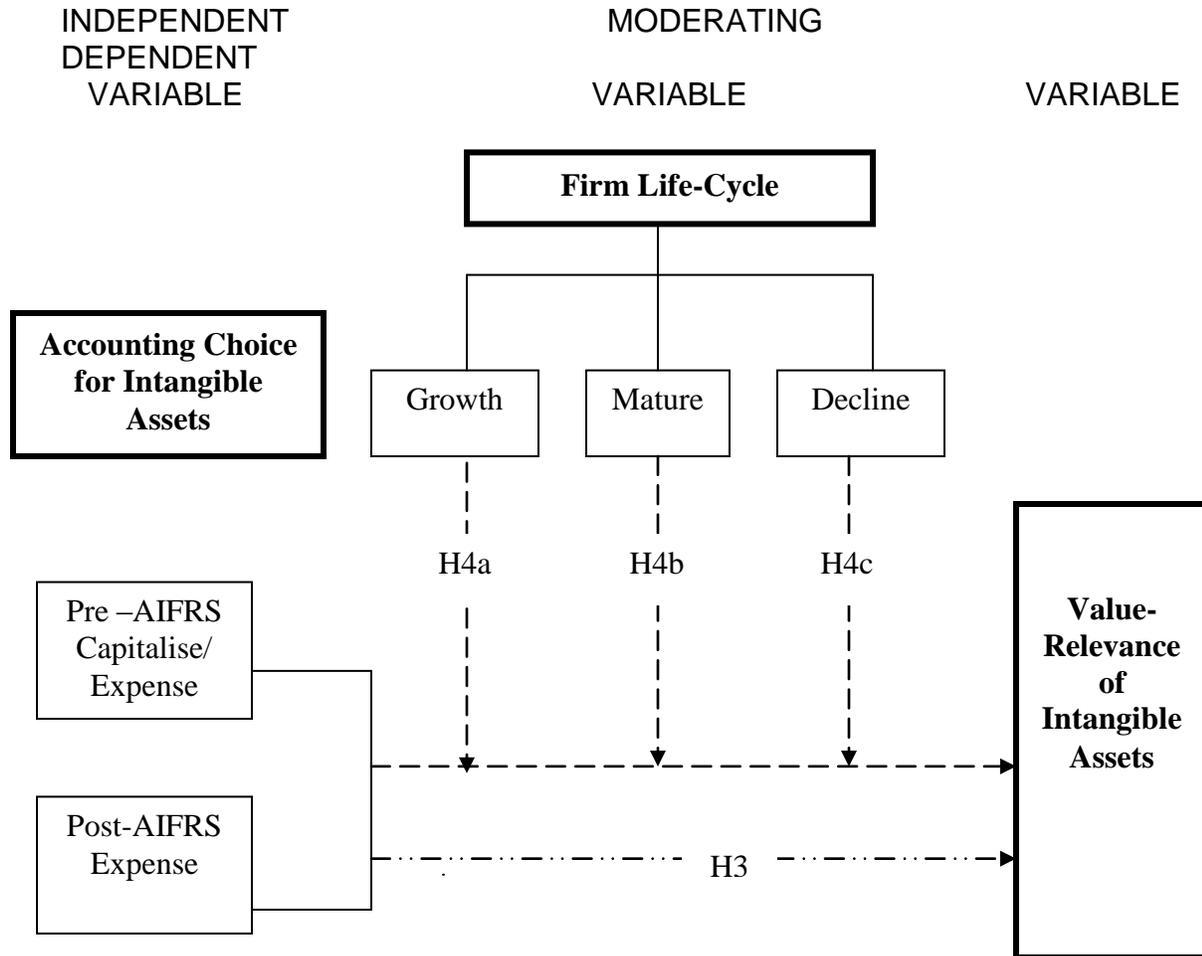
This assumption also holds for firms across their life-cycle stages. Therefore, growth and mature firms that choose to capitalise in the pre-AIFRS period are more likely to have higher value-relevance in that period compared to the post-AIFRS period. Decline firms, on the other hand, are expected to choose similar accounting treatment for intangible assets in both periods, hence, there will be no significant impact on the relevance of intangible assets information for these firms. Figure 2 illustrates the relationships, while the hypotheses, in the alternative form, are:

H4a: Growth firms that choose to capitalise intangible assets will have higher value-relevance of intangible assets during the pre-AIFRS than the post-AIFRS period.

H4b: Mature firms that choose to capitalise intangible assets will have higher value-relevance of intangible assets during the pre-AIFRS than the post-AIFRS period.

H4c: Decline firms that choose to expense intangible assets will have similar value-relevance of intangible assets in the pre-AIFRS and the post-AIFRS period.

**Figure 2: A Conceptual Model Illustrating the Relationships between Accounting Choice, Firm Life-Cycle and Value-Relevance of Intangible Assets in the Pre- and Post-AIFRS period**



## 4. RESEARCH DESIGN

### 4.1 Sample and Data

The sample for this study will include all firms listed on the Australian Stock Exchange (ASX) between 2000 and 2009 in which all the annual reports and relevant financial information such as share price and earnings are available. This study period will be used as it covers both the pre- and post-AIFRS periods. Consistent with other Australian studies, firms in the resources, banking, finance, investment, insurance and property trust industries will be excluded from the sample because of the significant differences in the structure of financial statements of these firms (Wyatt, 2005; Ritter and Wells, 2006).

Australian firms adopted AIFRS for their first full reporting periods ending on or after 1 January 2005. Therefore, sample firms will be first divided into the pre-AIFRS (2000-2004) and post-AIFRS (2005-2009) periods. Sample firms in the pre-AIFRS period will then be further categorised according to their accounting method choice for intangible assets. These firms will be classified as capitalisers if they recognise intangible assets (excluding goodwill) in the balance sheet and as expensers if intangible assets are immediately expensed in the income statement. Meanwhile, for the post-AIFRS period, only firms that used to recognise their intangible assets or former capitalisers will be included in the sample. This is done to examine the effects of AIFRS adoption on the value-relevance of intangible assets information for firms that used to have the discretion in accounting for such assets. In addition, these firms will also be divided into different firm life-cycle stages (growth, mature and decline) separately in each of the pre- and post-AIFRS period. This classification will be done based on their financial characteristics including that of the intangible assets.

### **4.2 Analysis Method**

This study will utilise the valuation model that was initially introduced by Ohlson (1995) to investigate the existence of value-relevance for intangible assets in Australia. Specifically, the accounting variables of interest in this study in this study, the intangible assets information, will be regressed on the share price of the firm. Share price in this model is used as a summary measure of information that is available to investors. The regression is utilised to determine the extent to which different categories of financial information, particularly intangible assets, are associated with share price. A significant coefficient on the intangible assets variable will suggest that intangible assets recognition provides value-relevant information for investors.

In the pre-AIFRS period, the value-relevance tests will be conducted for sample firms that are categorised according to their accounting choice (capitalisers and expensers) and firm life-cycle stages (growth, mature and decline). Further, the model will also be used to investigate the incremental explanatory power of the pre- and post-AIFRS measures for intangible assets information. If the adoption of AIFRS offers incremental information beyond that conveyed by the pre-AIFRS period, or vice versa, this will be reflected in the coefficients on intangible assets in the two periods.

## **5. SUMMARY AND CONCLUSION**

The main purpose of this study is to investigate the relationships between firm life-cycle stages, accounting choice for intangible assets and the value-relevance of these assets. This study will be conducted in both the pre- and post-AIFRS periods in order to account for the effects changes in accounting choice for intangible assets might have on the value-relevance of such assets. It will also

consider the influence of firm life-cycle stages on the relationship between accounting choice and value-relevance to provide insights into the effects these changes might have on different classes of firms. The conceptual frameworks illustrating the proposed relationships between these variables are presented in Figures 1 and 2. The next steps to completing this study include model refinements, data collection and data analysis.

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