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The Role of Accounting in High-Technology Investments

Abstract

We present new qualitative empirical evidence from a series of interviews with representatives of venture capital support organisations, which discusses the role of accounting in high-technology investments. Our discussion is framed around three propositions on: whether or not the stewardship role of accounting still holds; the usefulness, or otherwise, of accounting information in the valuation of high-technology investments; and assessing the value of intangible assets in the investment decision. We find that accounting no longer plays such a strong stewardship role, certainly for the venture capital investor. Further, its role in enabling investors to make decisions on how, when and how much to invest is limited. We propose that standard setters take this on board in revising reporting requirements.

1. Introduction

This article explores the issues surrounding the usefulness of financial accounting to a specific type of investor; the venture capitalist. However, not only does it consider the venture capital investor as an interested party, but it focuses more specifically on those who make investments in high-technology areas; those areas in which technology is seen to be ‘cutting edge’, or the most advanced technology available. This might be in life sciences technology, such as biotechnology; or it could equally address innovations in engineering or drug development. In addressing this issue, the paper raises a number of questions relating to the format of existing financial statements: do existing financial statements and international or domestic GAAP require the provision of detailed enough evidence for this particular type of user; can potential investors make sense of the figure for intangible assets produced in the

balance sheet of a high-technology company; can we obtain independently a measure that reflects the true value of a potential investment, for example, through the extent of patenting; and do investors really use financial statements, or do they prefer their own methods of evaluation?

Essentially, what we aim to do here is to present a qualitative inquiry (cf. Thomas & James, 2006), whereby we use inductive reasoning (cf. Arthur, 1994) to analyse new empirical evidence, in order to bring into focus more clearly the issues at stake. Much of the way in which venture capitalists work is not published, and is only accessed by fieldwork methods, in this case by face-to-face meetings with representatives of umbrella organisations in the venture capital and business angel field. Therefore, we provide invaluable insight into the mindset of the venture capital investor, through our new empirical evidence.

Our research makes a number of assumptions which require some exploration and explanation. First, we consider whether there is a stewardship role at play in the investor-investee relationship, in the sense that investors require their investments to be managed and accounted for effectively by the directors of the companies in which they invest (cf. Gjesdal, 1981). As such, our work provides corroboration of earlier research (cf. Hand, 2005) on the stewardship role of accounting (cf. Heinle and Hofmann, 2011). It does so by providing empirical evidence to address this issue, insofar as it concerns the venture capitalist, as a specific stakeholder in the organisation. Next, we assume that financial accounting has a useful role to play, from the standpoint of an investor, in valuing a prospective investment (cf. Raghunandan et al, 2012). Again, we provide confirmatory evidence of Hand's (2005) and Wilkins et al's (1997) earlier literature on the increasing utility of financial statements as the firm ages. Finally, the nature of the investment may determine the extent to which financial accounts can be, or are, of any use to backers. In our particular area of interest, that of high-technology investment in new businesses, the issues of valuing intangible assets and

the potential for information asymmetry become an important consideration (cf. Lambert, 2001). Our evidence on investment behaviour in Europe provides empirical support for Cassar's (2009) findings for the US of a positive relationship between patterns of financial reporting and the extent of external funding.

We find that the venture capital market in the UK and Europe is buoyant and active, but is becoming more cautious. Consequently, investors in high-tech companies conduct their own very detailed due diligence on any proposed investment. While projections of financial statements are important in negotiating this type of involvement, the stewardship role of accounting is found to be of relatively little consequence. While one might suggest that improved accounting procedures could facilitate the investor's role, our respondents, who believe that the investors themselves make the best assessment of the business by their own means, did not support this. Accounting information is used, to the extent that it is available, but is not the sole element of a successful investment. Even when a figure exists in the balance sheet for intangible assets, this does not give the investor all of the information that is required to make the decision to invest.

Where debate exists in the practical world of accounting, about improvements to accounting standards, the standard setters need to determine whether or not these 'improvements' are a necessary amendment. For example, would a proposed 'intellectual capital statement', with additional narrative, be helpful to an investor? Alternatively, would it simply provide too much information to a rival company, while at the same time imposing additional costs on the preparer? Might the introduction of such a report *decrease* rather than *increase* the probability of investment, for this very reason? Furthermore, elaboration on the detail behind the 'intangible assets' figure in the financial statements is unpopular on the same basis. Our findings suggest that there is little support from investors for making changes to financial statements. The IASB Framework may well suggest that financial statements

should be useful to investors, and should provide value relevant information; however, if the investor sees no reason to make them any more detailed, then there is little point in unilaterally expending energy on making changes to this end. Instead, we suggest that the IASB increase their efforts to get the investors involved in standard setting, if the changes they propose are to be of any use to them at all. In order to examine these issues further, we now make appeal below to the relevant writings of others in our key fields.

2. Prior research

2.1 A stewardship role

In an interesting commentary on the significance of stewardship to financial reporting, O'Connell (2007) laments the decreasing emphasis placed on this historically important objective. The paper arises from a proposal that the converged Conceptual Framework, of the IASB and FASB, would no longer identify stewardship as a separate objective of financial reporting. Instead, it preferred an emphasis on the provision of information that was more decision-useful, although by its nature this would include the assessment of management's stewardship. From the standpoint of an investor, one would wish to ensure that one's investment was being managed effectively, with the goals of the investor and entrepreneur aligned (cf. Arthurs & Busenitz, 2003) and that management should be accountable to investors (cf. Gjesdal, 1981). In addition, the information provided by management should enable sensible decisions about investment opportunities. Therefore, the two roles played by financial reporting would appear to be equally important.

To understand better the difficulties faced by investors in unquoted companies, we refer to the legal obligations imposed on small companies, regarding the preparation of financial statements. In accordance with the Companies Act (2006) small companies are only obliged to file a balance sheet with Companies House. The qualifying conditions for small

companies specified in article 382(3) of the Companies Act (2006) require companies to meet two of the following criteria: (1) a turnover of not more than £6.5 million; (2) a balance sheet total of not more than £3.26 million; and (3) not more than fifty employees.¹ In the UK, a small company can choose to provide abbreviated accounts, which do not include a copy of the directors' report or the profit and loss account, and can include an abbreviated balance sheet. Alternatively, they may present their accounts according to the Financial Reporting Standard for Smaller Entities (FRSSE) (cf. ASB, 2008), a simplified version of the more comprehensive Financial Reporting Standards. On an international scale, there is the option to choose the IFRS for SMEs (IASB, 2009); available to any company that does not have public accountability.

In relation to this requirement, Kitching et al (2011) attempted to identify users' perspectives on the filing of abbreviated accounts. In a series of interviews, some of the users of financial statements argued that removing this exemption and requiring companies to file full accounts would be more beneficial. On the other hand, the preparers of financial statements had concerns about confidentiality issues relating to the filing of full accounts. Some users not only questioned the usefulness of abbreviated accounts, but also expressed concerns that not even the full accounts would be useful in today's world. What all of this implies is that there is a difficulty in valuing the small or early-stage business, by reference purely to its financial accounts (cf. Ekanem, 2005), and that investors must be finding some way of their own of evaluating the companies in which they choose to invest. Indeed, Heinle and Hofmann (2011) argue that reduced emphasis on the stewardship role and subsequent lesser reliance by investors on 'hard' financial information has led to a greater demand for more so-called 'soft' information, which might include estimates of future performance. This leads us to our first proposition, to be examined in the light of empirical evidence from investors:

P₁. The stewardship role played by accounting is of limited importance in a venture capital setting.

2.2 *The valuation role of accounting information*

The objective of financial statements, as defined in the IASB Conceptual Framework for Financial Reporting (2010) is 'to provide financial information about the reporting entity that is useful to existing and potential investors, lenders and other creditors in making decisions about providing resources to the entity'. Berry et al (1993) and Deakins & Hussain (1994) debate the merits of financial information provided by small firms to bankers. Our concern is on whether the information contained in the financial statements is useful for investors; or, more specifically, for our purposes, the venture capital investor?

The AICPA published a report on improving business reporting, taking the customer as its focus (the *Jenkins Report, 1994*). The committee charged with preparing this report used surveys of users' needs, including those of investors, to address concerns that these stakeholders had about the relevance and usefulness of all aspects of business reporting, with a recognition that financial statements *per se* remained important. Amongst its findings was the feeling that financial reporting did not provide enough, or good enough, financial information to meet its users' needs. Particularly relevant to our own work is the recommendation that financial statements should include disclosures surrounding intangibles, for example, a description and duration of important patents (cf. Beattie et al, 2004; Raghunandan et al, 2012).

Various pronouncements relating to valuation have been made by official accounting standard setters. For example, the Financial Accounting Standards Board's statement of Financial Accounting Standard No.157 *Fair Value Measurements*, defines fair value as 'the price that would be received to sell an asset ... in an orderly transaction between market

participants at the measurement date' (FASB, 2006, p.8). In relation, specifically, to intangible assets, it recommends a valuation method which depends upon NPV calculations of expected future income flows to be generated from that asset. The IASB issued IFRS13 *Fair Value Measurement* (2011), with a similar definition of fair value. A useful summary of literature in this area is provided by Chea (2011), who tracks the development of (primarily) US developments in the area, and highlights the difficulties in determining a fair value based, for example, on market prices. A further examination of IFRS adoption in Australia is undertaken by Chalmers et al (2011), who find a link between accounting information and market value (cf. also Gil-alana et al, 2011).

Few studies appear to shed evidence on the use of financial statements by high-technology investors specifically. Hand (2005) explains that despite the fact that technological companies have different characteristics, financial statements are still value relevant to hi-tech investors because US GAAP, similar to IFRS, is deemed to be useful (FASB, 2010 para OB2; IASB, 2011 para OB2) for all investors, regardless of the environment in which the firm operates. The IASB Framework states that financial information affects the decisions of investors if it has a predictive or confirmatory value, or both (IASB, 2011 para QC7). Pope (2010, p.90) points out that 'financial ... accounting ... information has a role to play in the valuation process' of an organisation.

Hand's (2005) evidence shows that the financial statements of young firms are not as relevant as those of public companies, on which much research has already been conducted (e.g. Dahmash et al, 2009; Oliveira et al, 2010; Alwathainani, 2009). Non-financial information such as patent scope, and the age of the firm, appear to be more value relevant in the case of the firms in which venture capital has been invested. Hand's (2005) research shows how, in the case of listed firms, non-financial information is highly irrelevant. Another conclusion which can be drawn from the same study is that the relevance of financial

information increases as the firm matures. On the other hand, the non-financial information becomes less relevant as the firm progresses. Hence, according to Hand (2005), non-financial information acts merely as a substitute for financial information, when the latter is not available. The results of Hand's (2005) study show that, during the first round of financing, the financial statements are value irrelevant, in line with classical finance theory, which states that the value of a company is equivalent to the present value of growth opportunities, where firms have no assets in place other than human capital. Hand's quantitative analysis is now relatively stale-dated in this fast-moving industry of biotechnology, as the data relate to the period 1992-2000 and therefore pre-date the current global financial crisis. Further, it suffers from an element of sample selection bias, by looking only at firms that have reached the stage of listing for IPO, and in focussing on the US alone. The usefulness of financial reports to investors, as they stand, therefore, remains questionable and is worthy of further more qualitative exploration, in particular for the UK and Europe.

Armstrong et al (2006) follow up the study by Hand (2005) in analysing the usefulness of financial statements for venture capitalists across diverse industries. They find that financial statements are important when it comes to the pricing of equities of early-stage companies. Further, the cost items in the income statement are an important aspect to the venture capitalist, because the cost of sales, selling, general and administrative expenses and research and development costs of early-stage companies are viewed as investments which lead to increases in future revenues. A relationship between the market value of the firm, and two balance sheet figures (cash, and non cash variables), as well as between the market value and the non financial variables (firm age, number of financing rounds, and number of patents) is identified.

It is possible that the profit & loss account, or income statement (and not the statement of financial position, or balance sheet) is used in the valuation of companies (Basu

& Waymire, 2008; Elwin, 2008; Skinner, 2008; Wrigley, 2008). This is shown, for example, in the study by Roberts & Barley (2004), where none of the venture capitalists interviewed mentioned that they make use of the balance sheet. Instead, they were more concerned about profit margins and the accuracy of the financial statements, rather than any specific figure in the balance sheet. The argument that the income statement is what matters for valuation purposes has been used by academics against amendment to the intangible assets balance sheet recognition rules.² As Basu & Waymire (2008) explain this idea is not something new; Graham & Meredith (1937) had already argued that balance sheet valuations of intangible assets should not be taken into consideration. Their argument was that what matters are the earnings that are generated because of the intangibles, but not the value of the intangibles themselves. Though dated, their argument remains valid, and is worthy of further empirical investigation.

If the financial statements are not entirely useful for the venture capitalist what other aspects might they consider prior to investment. Wilkins et al (1997) suggest that, initially, what matters is the founders' knowledge and experience; however, as the firm matures, financial information becomes more important. Rather than placing an emphasis on financial statements, there is an emphasis on the human capital aspect. Besides this, venture capitalists also consider the type of industry, the amount of investment needed, the technology that the company possesses, business plans and also direct or indirect social ties (Shane & Cable, 2002). It is important to point out Knockaert et al (2010) outlined that European venture capitalists are not heterogeneous in their investments. Whilst some venture capitalists are concerned about strong financial prospects, others would tend to focus on a strong proprietary regime prior to investing, or on the human capital aspect. It is not uncommon for only one of these three aspects outlined to be taken into consideration.

Shane & Cable (2002) argue that any estimates made in the business plans provided by the entrepreneurs do not affect the investor's decisions. Similarly, Reid & Smith (2005) find that investors are sceptical about the usefulness of published financial statements and prefer to make their own assessments. In practice, this can be seen, for example, in the case of intangible assets. A guide published for business angel investors outlines a series of questions which will potentially lead the investor to assess indirectly how valuable is the intellectual property e.g. the geographical scope, and any pending litigation (British Business Angels Association, 2009). The results of the study by Reid & Smith (2005) were therefore in line with earlier studies carried out in the United States and Canada by Pricewaterhousecoopers in the late 1990s, which found that only seven per cent of investors in high tech companies perceived financial statements to be useful (Eccles et al., 2001). It is also in line with an earlier study by Sweeting (1991), who found out that the financial statements provided with the business plans were considered to be of secondary importance. Could it be, therefore, that, as Jones and Dugdale (1994) suggested, there is still a discrepancy between investment appraisal undertaken by academics, as compared to practitioners; and where does the useful information lie, from an investor's standpoint?

Reid & Smith (2005) argue that, for investors, their own due diligence appears to be sufficient in evaluating potential investments. They also point out that investors are unenthusiastic about increasing the legal disclosure requirements in order to include more information in the financial statements. Investors believe that the decision on whether to invest in a particular company should be based on the due diligence process and not on the published accounting information. In a subsequent study, Reid & Smith (2008) identify mixed views on the relevance of the financial statements. Whereas some investors argue that financial statements are useless for their purposes, some entrepreneurs point out that financial statements are very useful, not only for themselves, but also for their investors. Some explain

that the most useful figures are the earnings before interest and tax shown in the income statement and future projected income growth (although one would question the R&D figures included in the income statement). This is also in line with the earlier study by Sweeting (1991), which found that financial figures are not completely ignored, but that it is more a matter of verifying whether the figures provided are credible. We accept that financial accounts contain material that investors could use as a basis for investment. Thus, we state our second proposition as follows:

- P₂. Financial accounting provides valuation information that is useful to existing and potential venture capital investors.

2.3 *The problem with intangible assets*

The present recognition requirements of intangible assets are aimed at ensuring the reliability of the financial statements. However, as Barron, et al. (2002) outline, that reliability is being obtained at a loss of the predictive value attributable to financial statements. Furthermore, it is important to note that both the conceptual framework of the IASB and FASB indicate that the financial statements might not be sufficient for investors, and that other sources of information might need to be used (FASB, 2010 para OB6; IASB, 2011 para OB6). Rather than showing the actual value of the company, the financial statements are only meant to assist in the estimation of such (FASB, 2010 para OB7; IASB, 2011 para OB7). In this respect, in a publication on the reporting of information on intellectual capital, CIMA (2003, p. 26) states that 'financial statements should only be seen as a part of a jigsaw of how companies assess and communicate value'. For example, The European Commission (2006), in the RICARDIS Report, argues that so-called 'intellectual capital statements' could also be useful for venture capitalists, in assessing and understanding further profitable opportunities. One further problem is that new companies often do not publish full financial accounts, so it

remains questionable how willing they might be to publish additional information. Specifically what the nature of this information might be is something that existing research fails, yet, to identify.

It has been argued that intangible assets have played a more important role in recent years (Cañibano et al., 2000; García-Ayuso, 2003; Low, 2000; Wilkins et al., 1997). In view of this increased emphasis on intangible assets, Seetharaman et al (2002) contend that financial statements fail to reflect accurately the current situation with regards to intangible assets, and that as a result of the inadequate recognition and disclosure of intellectual capital, financial statements are less relevant for the investor. Moreover, while Dahmash et al (2009) find that the information produced on intangible assets tends to be ‘value relevant’, it is found to be ‘biased’.

We could argue that, by incorporating figures related to intangibles in the balance sheet, we are increasing the amount of useless information for investors. This would happen, for example, if forecasts were done solely on the basis of the balance sheet, implying the use of outdated information, given that the balance sheet shows the position of the company as at year end (Elwin, 2008). Pope (2010, p.100) supports the view that we must consider the reporting incentives of firms, and that we must further recognise ‘the potential role of financial reporting in reducing asymmetries between investors and firms’.

Expanding upon the idea that financial reporting of a certain nature might be of value to investors, a particular type of intangible asset, which lends itself nicely to investigation by researchers, given the wealth of information that is readily accessible through various databases, is the patent. It serves as an indication that the organisation believes it has an invention worthy of protection, and therefore can act as a ‘signal’ to potential investors that there is something of value within the firm (cf. Engel & Keilback, 2007; Hsu & Ziedonis, 2007; Baum & Silverman, 2004). There are other intangible assets too (e.g. licenses,

trademarks, copyrights, human capital) which, equally, may not be explicitly identified and valued on the face of the financial statements, but which in themselves create additional value from an investor's standpoint (c.f. Oliveira et al, 2010; Basu & Waymire, 2008).

Given the uncertainty associated with young technological companies, we might expect a greater demand for accounting information. Cassar (2009) identifies a positive relationship between the frequency of preparation of financial statements and external funding. However, when looking at separate financial statements, he does not find any relationship between the frequency of preparation of the balance sheet and external funding. The frequency of preparation of a cash flow statement appears to be the only historical financial statement which is positively related to the amount of intangible assets held. On the other hand, Cassar (2009) shows a significant relationship between intangible investments and forecasts, suggesting that prospective financial information is more relevant for early-stage high-tech companies, given the significant amount of intangible assets which they would typically have. Whilst this is a useful quantitative analysis of US-based entrepreneurs, the rather idiosyncratic measures of patents, intangibles, venture capital funding and financial reporting obtained from the secondary-source database do not necessarily lend themselves to a comparative analysis, from our point of view. Given the legal requirements, it might be the case that the income statement of a particular firm is not published; and therefore there appears to be no publicly available source where this financial information can be obtained. Therefore, it appears that investors have to rely on information provided by the entrepreneur himself, in the due diligence stage. Our third and final proposition is therefore:

- P₃. The venture capital investor's ability to value intangible assets is a determinant of their decision how and when to invest in high-technology companies.

3. Method and Methodology

3.1 *The venture capital setting*

We take our definition for ‘venture capital investment’, as investment in high risk early-stage companies, ‘in return for equity (i.e. shares), with the aim of generating substantial capital gains by selling those shares at a later date through some form of exit event’ (Pearce & Barnes, 2006, p.6). Whilst, in the USA, the term venture capital usually refers only to investment in businesses which are in their early stages, in the UK, sometimes the term ‘venture capital’ is synonymous with ‘private equity’ (c.f. British Venture Capital Association, 2010). In this respect, the British Venture Capital Association (BVCA), clarifies that, in the UK, ‘private equity’ refers to ‘medium to long term finance provided in return for an equity stake in potentially high growth unquoted companies’, irrespective of the company’s development stage (British Venture Capital Association, 2010, p. 6). This difference was highlighted by Reid (1998) who indicated that venture capitalists in the UK have typically tended to invest equity in the later stages of the development capital cycle.

In terms of the definition of venture capital, Mason & Harrison (2004) argue that there are two sources of venture capital in the United Kingdom. The first is business angels, who are usually entrepreneurs willing to invest their own wealth, either on their own or with other high net worth entrepreneurs; the latter are referred to as ‘angel syndicates’. The second source is venture capital firms, who create venture capital funds. Financial institutions and other investors invest in such funds. In the UK, these funds tend to invest in later stages of the investment cycle (Mason & Harrison, 2004).

3.2 *A measure of intangible assets*

There are various measures of patenting activity that are available to researchers, in trying to identify causal linkages between R&D activity and outside investment. For example, we might consider the simple act of applying for a patent as one indicator; another might be the grant of a patent in a particular regime, or geographical location. Further indicators might include a simple patent ‘count’ of the number of patents held, or the size of patent ‘families’, which are effectively a measure of geographical scope, showing how widespread is the protection offered for a particular invention (cf. Hand, 2005; Schertler, 2007; Conti et al, 2011; Munari & Toschi, 2008). Whether or not investors use patents and/or other intangible assets as a ‘signal’ or indicator of investment value is something that can only be addressed by empirical investigation.

Where patenting is seen as an indicator of value in an organisation, we might expect it to affect the level of investment that an investor is willing to make. Linkages between patenting and the size of investments made have been explored in the literature (e.g. Cockburn & MacGarvie, 2009; Mann & Sager, 2007; Baum & Silverman, 2004), though the majority of this makes use of secondary source data and, as such, provides little explanatory confirmation of the results. In addition, what happens to patents after the initial investment is made has been examined by a number of researchers (cf. Kortum & Lerner, 2000; Ueda & Hirukawa, 2008; Bertoni et al, 2010; Dushnitzky & Lenox, 2005). In some cases, venture capital investment is seen to increase after an initial financing round of venture capital, but again, there is little explanation as to the underlying reasons why this might occur.

3.3 *Methodology*

This study is qualitative and exploratory in nature, in that it relies upon data gathered from unstructured fieldwork interviews with key communicators in the field (cf. Morgan and Smircich, 1980). As such, the intention is to provide rich and detailed description, as

advocated by the likes of Chua (1986), Ryan, Scapens & Theobald (2002) and Parker (2008). The fieldwork took place by means of a series of unstructured interviews (cf. Qu and Fumay, 2011) with representatives from early stage investor associations, representing investors in the United Kingdom and Europe. The meetings took roughly one hour, with participants taken from the British Venture Capital Association (BVCA), the European Venture Capital Association (EVCA), LINC Scotland, and the British Business Angels Association (BBAA). They included senior executives with extensive experience of the industry, for example: the Chairman of LINC Scotland, the Business Angel support organisation, who has been chairman and chief executive of a variety of organisations; the chairman of the BBAA, a qualified chartered accountant, with experience as a finance director and chief executive of a number of privately owned SME companies; and the Head of Research at the BVCA.

Seven interviews were conducted between August and December 2011 and, for reasons of confidentiality, the information gathered remains deliberately anonymous and non-attributed. The intention was not to achieve data 'saturation' (cf. Guest, Bunce & Johnson, 2006), but rather to generate propositions that might later be translated into more readily testable hypotheses. The views obtained are therefore held to give a flavour of current 'investor sentiment' (Barberis et al, 1998). Unstructured face-to-face interviews were suitable for this work, given its exploratory nature (cf. Blumberg, Cooper & Schindler, 2008), and because they allowed for more detailed discussion of new ideas which might arise during the interview itself (Scapens, 2004).

An introductory letter was sent out by post and by e-mail, with subsequent reminders also sent by e-mail, outlining the nature of the project and setting out the proposed agenda for interview (cf. Table 1). The interviews were either held at the offices of the organisation in question or at a suitable alternative location suggested by the participant. With permission, the interviews were digitally recorded, an approach that some have criticised, on the basis

that the transcription of recorded data leads to massive amounts of redundant information which needs to be transcribed (Reid, 1998). Forgoing the need for an audio record is possible when there are both interviewer and rapporteur available; one to ask the questions, and one to note the answers. However, as only one person was to conduct each interview, in this case, it was deemed preferable to have a taped recording of the meeting. Brief notes were also taken, in order to maintain focus (cf. Ghauri & Grønhaug, 2005) during the course of the interviews.

[Table 1 near here]

The research agenda shown in Table 1 was developed after careful appraisal of the relevant literature. It was proposed as a ‘soft’ agenda, with room for negotiation and modification to make it suitable for the particular respondent being interviewed. The three major sections had ‘prompts’ within them, to allow for further probing on particular issues. The discussion opened with a general overview (Section A), in order for the interviewer to learn the current state of the investment market for high-technology companies, from the respondent’s point of view. It enquired into the venture capital scene in the UK and/or Europe, in particular, depending on the respondent’s background (cf. BVCA, 2010; Reid, 1998; Mason & Harrison, 2004). It then expanded into a discussion of the early stage investment market (cf. Pearce & Burns, 2006) and investment in high-technology firms, specifically (cf. Hand, 2005).

Section B was designed to discuss the format of existing financial statements, and their utility to the potential investor, when it comes to evaluating a possible investment opportunity. It looked first at the usefulness and relevance of financial statements, as they currently exist, in order to determine whether they fulfil their remit of providing information that is decision-relevant (cf. IASB, 2010; Kitching et al, 2001; Ekanem, 2005; Pope, 2010;

Eccles et al, 2001). It then further probed on disclosures of intangible assets, specifically (cf. Dahmash et al, 2009; Cañibano et al, 2000; García-Ayuso, 2003; Low, 2000; Wilkins et al, 1997; Seetharaman et al, 2002). Respondents were asked, where appropriate, to suggest any further possible improvements to current financial reporting requirements (cf. Georgiou, 2010), and to comment on the possibility of introducing new financial reporting measures, along the lines suggested, for example, by the European Commission's *RICARDIS* report (cf. European Commission, 2006; Mouritsen et al, 2001). Finally, in this section, they were asked to identify any other data that was used to determine the value of a new investment (cf. Hand, 2005; Armstrong et al, 2006; Wilkins et al, 1997).

The final section, Section C, was designed to explore further a particular type intangible asset, chosen to represent the intellectual property in an organisation, viz. patents, in order to get a sense of whether or not they were an important criterion to the investor in making his or her investment decision. We asked first whether the existence of a patent, or patent application, might be seen as a signal to an investor of a company worth backing (cf. Engel & Keilback, 2007; Hsu & Ziedonis, 2007; Baum & Silverman, 2004). The respondent was invited to suggest alternative intangible assets that might also be assessed in this way (e.g. Oliveira et al, 2010; Basu & Waymire, 2008). Different measures of patenting activity, such as patent count, patent families, and so on, were discussed next (cf. Hand, 2005; Schertler, 2007; Conti et al, 2011; Munari & Toschi, 2008). We hoped thereby to discover whether patenting would affect the size of the investment, and so opened this up for debate (Cockburn & MacGarvie, 2009; Mann & Sager, 2007; Baum & Silverman, 2004). Towards the end of the interview, we asked respondents what was likely to happen, as regards patenting, once the initial investment had been made (cf. Kortum & Lerner, 2000; Ueda & Hirukawa, 2008; Bertoni et al, 2010; Dushnitzky & Lenox, 2005), and gave respondents an opportunity to add anything further that they might deem appropriate.

4. Findings

4.1. General overview

Each interview opened with a general discussion about the current state of venture capital and a recognition that the market had become more cautious of late, with early stage companies needing to seek business angel funding, while the venture capital investments were being directed towards latter stage, more established companies. Some of the comments from our respondents illustrated the way the market had changed, as shown below:

“In early stage companies ... it’s all business angels. The venture capitalists have withdrawn from early stage ... you do not see them very much until the companies have become much more mature.”

“It is declining because around the year 2000 we had a bubble, at a time when venture capital in Europe was too young to have had spectacular success, so around the year 2000 huge amounts of money were put into venture capital and a lot of that money was wasted.”

“The amount of money that goes into the seed and early stage of the start of the business by the VC community in the United Kingdom is about £200 million, whereas the amount given by business angels is about four times as much.”

Respondents were asked to comment on sectoral differences and, in particular, on whether they thought there was now any bias against investments in the high-technology sector. The general conclusion was that high-technology was still popular amongst investors, and that the UK government, in particular, was taking steps to make this a more attractive proposition for investors:

“VCs still like high tech. It still has a lot of advantages, particularly in terms of low start up costs.”

“There is no bias against the high-tech sector – the lack of start-up costs is one of the appealing things, particularly in an uncertain economic environment, where the option value of waiting in large expensive investments is very high.”

“We are still undersupplied in the United Kingdom with seed and start-up capital, but this is an area that policymakers are looking at, particularly in the angel market with enhanced tax breaks ... They want to see the money targeted to technology start-up businesses.”

Our feedback from this section of the interviews suggests that, while the investment market is still active, there is perhaps a need for more at the early-stage, where seed corn and development capital are needed to push for growth and expansion. In this regard, the UK Government has begun to take steps to encourage such investment through new policy initiatives. It is encouraging to note that respondents found the high-technology sector to be buoyant and still attractive to investors, even though such investments were ‘difficult’ to undertake, with the main attraction appearing to be that the fixed capital requirements in the sector are low.

4.2. Stewardship in accounting

We now assess whether our propositions, developed above, have any grounding in fact, by using feedback from our fieldwork to illustrate the practice of investors. First, we examine

the proposition that the stewardship role of accounting is falling out of favour. In order to address this issue, we draw on evidence about the use and usefulness (or otherwise) of existing financial statements, when the investor came to making an investment decision.

How important, we wondered, were such documents to the investor?

“It matters, but it’s not a very important piece of paper. All you are doing is establishing that the company has got all its liabilities and assets correctly stated but these companies are not yet making profit, probably don’t have sales. We look at the balance sheet, but it does not really have much bearing on the value of the investment.”

“For any company, the historical financial statements are an important resource and audited financial statements even more, because there is sense of value created by the independent nature of the audit.”

The impression gained from the above responses is that, if financial statements exist, then they are considered; it is better to be fully informed than not, though projected future statements are more useful than past historic statements: “historic financial statements are not a very major component of due diligence”, “when you’re investing, you’re investing in future value, not past value. If the patent is worth anything, it will generate sales in the future. The value of the past is almost irrelevant, it’s about the future”, or “the historical financial figures are not terribly important. We are much more interested in the forecast, the future financial figures.” But often they were considered to be simply a ‘starting-point’, from which the investor could then explore further the underlying assumptions behind the figures included in the statements: “financial statements are useful and are an important part of any investment

decision, particularly when talking about intangibles (although) there is always an issue about the degree of uncertainty around some of the assumptions and some of the valuations within those financial statements.” However, if it were up to the particular investor to seek such information independently, for example from Companies House³ then the costs of doing so might outweigh the benefit that might be gained from the additional information, which may, in any case, be redundant:

“Usually, if we receive the statements, and they seem to be adherent, we might not confirm them from Companies House. Quite often ... the information at Companies House may be out of date.”

“In general, whatever information we want we get ... so if we’re provided with accounts which leave questions then we ask questions. So the fact they don’t file the full accounts with Companies House is irrelevant.”

“Financial statements are a useful backdrop and useful starting point but a typical venture investment will involve several meetings between the VC and the entrepreneur or the company management ... I don’t think having more explicit disclosures will stop that process of further investigations.”

Although they are not perfect, investors believe that there is nothing intrinsically wrong with financial accounts: “clearly financial statements are always not the whole truth and sometimes they’re not even very close to the truth ... but I don’t think anyone believes there is an easy fix to this”. To require more detailed disclosure would only add to the burden

(in terms of complexity and/or cost) already placed on young high-tech firms: “accounting standards are getting more complicated, and on a personal basis you would argue on simplification rather than increasing the complexity.” So financial statements are regarded as a starting point that the investor might use to then pursue his or her own line of due diligence. The narrative surrounding various financial reports, including the business plan, executive summary and any disclosures about future expectations are all considered more worthy of attention at the early stage and prior to investment.

There is a huge amount of due diligence undertaken by investors, to supplement the information that they have been given by investee companies. What is important tends to vary according to the nature of the investment or the sector in which they are investing. Very often, the personal qualities of the team or management are important, as is their experience in bringing a project to market. The existence of contracts for sales, or identifiable future revenue streams, might be a deciding factor too. At the end of the day, it seemed that each potential investment was appraised on its own merits, with financial statements only providing part of the picture.

Our respondents seem to indicate that financial reports are a necessary source of information about a new high-technology investment, and that they are used as an indicator; but the existence of intangible assets, such as intellectual property, or patents, in the statements serves merely as a foundation for further investigation to determine the underlying assumptions behind any valuations. Although financial reports cannot provide the whole story to investors, there did not seem to be any call for changes to required reporting standards or for additional reports on intellectual property, specifically. Doing so would only complicate what were seen to be already complex requirements, as regards financial reporting. In terms of what this tells us about our proposition, to a venture capital investor, financial accounts appear to provide complementary information that will support, but not

determine, decision-making. Further, they do not appear to see statutory financial reporting as either a prerequisite or a condition of investment. While one investor agreed that a set of audited accounts would provide a measure of comfort for external users, he was in the minority, and the consensus seems to support our first Proposition 1, that accounting no longer plays such an important stewardship role for this type of investor.

4.3. On valuation and intangibles

Our second proposition, and probably the one of most interest to our particular study, is on whether accounting has a valuation role to play, from the standpoint of a venture capital investor in a high technology company. Related to this is our third proposition, that investors who are able to estimate the value of intangible assets will use this to help determine the level and nature of their investment. As the two are intrinsically linked, we will treat them together. In trying to elicit whether or not accounting standards are sufficiently explicit to allow valuations to be made, we find the following:

“It’s important, where possible, that patents arrive, and that the product has been patented. At that stage (prior to investment) the patent has not always been granted. You still (take a) risk, even though it is applied for, because they might not get it, or it will be modified in some way.”

“The disclosures on intangibles in the balance sheet are important, particularly in terms of questioning. Patenting in particular, ‘what stage are you in?’, and ‘when do you expect patents to be granted?’ is important.”

“The last place I would look to find out about the intellectual property would be the historic financial statements. I would ask if there are patents or other intellectual

protection in the company - copyright, trademarks. I would ask for evidence of them.
... You do your own due diligence on the company's IP."

Therefore, it appears that the reference to a patent in the financial statements is only the beginning of the story, as it is difficult for investors to accept that you can make a sensible measure of intellectual property: "the only prudent value to put on IP in an early stage company is zero. There are so many risks associated with early stage investing that all of these things have to be right before the IP has any value." What seems to matter more is that, where relevant, the potential investee discloses the nature of the patent (or other intellectual property); the stage it is at, the underlying assumptions made in arriving at a valuation, the potential sales (e.g. firm orders made), and so on.

Given the impression, from above, that financial accounts are inadequate, when investors are trying to gain a holistic view of a prospective investment in a high-technology firm, we might expect them to suggest improvements or amendments to financial accounts, to make their lives easier. Their thoughts are outlined below.

"It's up to the individual investor to obtain as much background information as possible on the state of intellectual property. That's a very complex area and it might require third party experts to validate."

"I think it (an intellectual property report) would just a waste of money by the entrepreneur."

The results from this section are equivocal; some think that a supplementary intellectual property report might be a good idea: "I think that will be useful. It's another

ingredient in the investment decision”, or “I think that would be quite useful. Very often it’s useful for more mature companies.” Others remain unconvinced, and believe it will only be a waste of money. What else, we wondered, therefore, would investors like when trying to value a possible investment. For example, would they prefer to have more information on a patent, in addition to the financial information already available?

“As investors, we would demand to see all the patent documentation.”

“Sometimes the reason you invest in a company is that you can see that they have contracts in place, and some revenue stream, clear, capable products already developed which people love.”

“The nature of the product, supply channels, the market, price points, the margins, the opportunity, and ... whether the team are capable of delivering.”

While patents are an indicator that the company is undertaking research and development, there may also be situations where firms have not yet applied for, or do not yet have, patents: “you look ... for: first mover advantage; first to market a piece of software; potentially, that the software has taken so long to develop, and so many man-hours; that anybody coming in behind would find it too heavy to invest in if there’s a product already in the market.” However, there are other intangible assets which might also be relevant but which, in a similar way to patents, are difficult to value: “it will be a combination of different things ... the financial statements ... the profile and experience of the entrepreneur ... the overall size of the market and the share of the market ... competitors.” If the company does

not yet have patents, or has alternative intangible assets, how, we wondered, would that affect the decision of the investor about an investment.

“The value you put on the company (without a patent) would be lower, because you acknowledge that there is no protection at that stage that you’re investing.”

“If you already have the intellectual property in place, clearly the potential to make a return on that is greater than if you haven’t. Once you have the intellectual property in place, you reduce the uncertainty associated with someone else coming in.”

“Patents are only one part of the company’s intellectual property – if we’re looking at drug development, medical technology ... then, yes, they are very important.”

It seems that the existence of patents is helpful to the investor: “the perfect situation is that the patent has been granted and it’s effective – then you’re in a stronger position. Often, you’re left guessing whether it will be granted”, but that they would want to know more about who the inventor is, and what stage the patent is at, before placing any value on it: “clearly, having a patent is better than not having a patent. If you have two identical investments, one with and one without a patent, I would read the patent, and I would evaluate the value of the patent and then I would decide what this patent told me.” Therefore, again, it is only a part of the picture, and requires a judgement call, on the part of the investor, about whether it confers any value. If patents are not important for a particular investment opportunity, there may be other intangible assets which are. We therefore asked respondents to talk about the types of intangible assets that they would look for, and how (if at all) they would place a value on such an asset.

“The fundamental one which is hard to put a price on is the idea.”

“Definitely, know-how, and team track record. Generally the things like the strategy and quality of the team are considered?”

We find, above, that one recurring theme is the backing of the individual, or the team surrounding an entrepreneur and his ‘idea’. These are clearly intangible assets, which are very hard to value at an early stage, but which an investor needs to evaluate in order to determine whether he or she can expect the business to succeed. Because of the existence of information asymmetry between the investor and investee, each party to the contract of investment may place a different value on a patent within an organisation. We therefore asked our respondents whether they actually tried to evaluate patents, and how they might deal with valuation difficulties. One gave the following response.

“The investor will try to say that it’s not worth it a lot, but the founder will be trying to say that’s worth a lot. There’s a bit of cross chat on negotiation about how much that’s worth, but to be honest a founder that doesn’t have some kind of patent protection is not that attractive as a founder who does have. To put those aspects on the balance sheet is very difficult. Actually it might cause more argument, because how do you value a patent? It’s judgemental value.”

We asked, further, whether they might take into consideration specific items in the patent document, such as, for example, patent citations and/or patent family size:

“The family size begins to indicate something because somebody who owns a single patent in one country is a fool, but maybe a small fool. A company that has 30 patent

families being rolled out in multiple countries has somewhere found millions of pounds to invest in patents.”

“You try and identify the strength of the blocking of the competitor, and what the competitor advantage your target investee company has.”

In valuing patents, therefore, the investors looked at a number of different items. For example, citations are considered, and family size (representing scope of protection) is also important: “we dig deeply ... it’s a very important part of diligence, because anybody can apply for a patent; it depends on how strong it is. If there are challenges cited and they appear to make sense, they devalue the patent.” Further, the age of the patent and the actual inventor are additional considerations that were mentioned by our respondents: “the most important aspect is having applied for a patent ... the next important aspect (is) geographical coverage. Past experience is relevant, if someone has been in the patenting process before. That can be useful.” We wondered next whether patents would make a difference, not only to whether an investment was made or not, but also to the actual size of the investment:

“It might do – a difference in the value of the investment, not the size of the investment.”

“No. Certainly not a significant one. If the business needs £100,000 then the business needs £100,000.”

“No – not even in terms of equity. (There is) no cause or correlation between the two.”

The feedback above suggests that investors do not have a ‘rule of thumb’ or explicit formula that can determine the value of an investment. This might be in nominal terms, or as a percentage of the equity stake that the investor wants to take: “you might pay a little bit more for a company which has patents but that is not always the case.” Instead, the existence of patents seem to suggest that there is something of value in an organisation, and that it is worthy of having money spent on it, through patenting; and how that investment is then valued is down to additional research by the venture capitalist. Given the expense of patenting, and the nature of high-technology organisations, after the initial investment, we wondered, would our respondents expect to see an increase in patenting. There were varying thoughts on this as a proposal, with no firm conclusion either way.

“Yes. You are always looking for patent protection, if you can get it.”

“It depends on the deal ... I’m not sure that the number of instances you have a new idea within the same business, is particularly high.”

“If the company needed to raise the money to complete the process of the patenting, then a fair amount of the weighting of money going into the company will be allocated in the direction.”

As regards patenting and other intangible assets, from the investor’s standpoint, it seems that the financial accounts offer little in terms of valuation information. The existence of intangible assets on the balance sheet is something that the investor would want to explore further, through their own due diligence and, while patents can be seen as a signal of value,

judgement is required to estimate what that value might be. In terms of our propositions, therefore, we find that, although accounting provides a basis on which to ground a valuation, it does not answer the whole story. As such, there is only weak support for Proposition 2.

Patents were not the only intangible discussed during our meetings. Respondents also raised the issue of backing ‘the idea’ or ‘the individual’, and their knowledge, know-how, strategy, product quality and track record, amongst other things. Where patents were used as a measure of value, patent citations, geographical coverage by patent families and the individual inventor were all also considered important considerations. Nevertheless, even when all of these were taken into account, there was no deterministic way of valuing an investment, according to patents or intangibles. Therefore there must be some other factors at play when investors are valuing intangible assets. We therefore find support for our final Proposition 3, that the investor’s own ability and skills in valuing intangibles is what enables them to assess the value of the investment they wish to make.

5. Conclusion

There remains a relatively healthy market for investment in the UK and Europe, with venture capitalists being still extremely active, but more cautious, as exhibited by their shift away from the very early-stage investments towards later-stage ‘safer’ investments, where the technology and people have been ‘proved’. For companies looking for early-stage financing, the consensus seems to be that business angels, either individually or in syndicate form, are the way forward. Investments in high-technology are still popular, primarily because of their low initial capital requirements, but again, caution is being shown by venture capitalists, who favour tried-and-tested technology investments over unproven not-yet-to-market products.

Although it is claimed that the historic balance sheet is of limited use, investors might still demand a balance sheet, but only to check whether an investee company has any loans or

other liabilities. Furthermore, for investors the purpose of the balance sheet is simply to establish that the company in which the investment is being made has correctly stated its assets or liabilities. This said, the balance sheet itself has no particular bearing on the actual investment made by the investor. In addition, these firms might not have any auditors, in which case the reliability of the financial statements is questionable, which supports our Proposition 1 on the decreasing stewardship role of accounting. We find confirmatory qualitative evidence, for the UK and Europe, of the earlier quantitative work of Hand (2005) for the US market, which suggests that the critical instruments in an investment decision are more likely to be the forward forecasts of the profit & loss account and balance sheet. Nonetheless, at some later stage of the investment financial statements might become relevant. It is also clear that decisions are not solely based on the financial statements and that there are instances where the financial statements are not used in the decision process.

Our respondents agree that there is no need to improve existing financial statements, partly because they are unimportant to the investment decision, but also because they are already thought to be complex enough, and indeed a simplification of the financial statements is desirable. Although the financial statements can be a useful starting point for the venture capital investor, it appears that he is unlikely to be concerned about increasing the disclosure of the financial statements because “having more explicit disclosures will not stop that process of further investigations”.

The views of respondents are in line with Hand’s (2005) and Wilkins, et al. (1997) analysis that financial statements are not relevant, but as the firm matures financial statements are more likely to become relevant. This can be explained partially by referring to a publication which shows that more than half of the companies in which business angels have invested still do not have any revenues (Wiltbank, 2009). As one of our respondents explained, the investor is “investing in future value and not past value”. This is a reflection

of the fact that the balance sheet shows a representation of the company's affairs at a fixed point in time (Elwin, 2008). For the very early stage investor, what matters most initially is the entrepreneurial ability (Wilkins et al., 1997) and possibly any proprietary rights. Our early-stage investor representatives are in agreement with Sweeting (1991) in claiming that early stage financial statements are used primarily to ensure the credibility of the entrepreneur. This may also be the reason behind Cassar's (2009) finding of a positive relationship between the frequency of financial statement preparation and external funding; that is, by providing more regular (rather than necessarily more informative) financial reports, they are trying to 'put on a good show' to appeal to potential investors. Thus, Proposition 2 on the valuation role of accounting finds weak support for later-stage investments, but little to no support in the early stages. This is of some concern; if a key stakeholder such as a venture capital investor finds little to no use for existing financial accounting statements, then accounting standard setters need to take note when revising financial reporting standards.

Whether the figure for intangible assets in the financial statement is used depends on investor preferences. However, the intangibles which are more useful to the early stage investor are those relating to human capital, such as the experience of the entrepreneur, and the drive and passion he has. In view of the difficulties in measuring these, in line with accounting standards, human capital related intangibles are not found in the balance sheet. Disclosures on intangible assets that are not found in the balance sheet are thought to be "particularly important". Even though a figure may not appear to be useful, given the estimates involved in calculating it, it may be an indication that further questions need to be asked about it at the due diligence stage. On the other hand, some are more sceptical about such figures, arguing that "the last place one would look at to find out about intellectual property would be the financial statements". Such information is probably much more

relevant to later stage investments but not those at the early stage; valuations are very difficult in the early stage, particularly as no products might have been sold.

Despite the fact that the IASB Framework states that the financial statements are meant to be useful for investors, our early stage investor representatives argued that their use is somewhat limited, and there is no substitute for additional documents obtained at the due diligence stage, and meetings held with entrepreneurs. It is unlikely that the investor becomes aware of the intangible assets whilst analysing the financial statements. In view of their importance, the investor is made aware of the intangibles during various meetings with the entrepreneur. This analysis goes contrary to Wyatt's (2008) argument that the figure representing intangibles in the balance sheet serves as a signal for the investor to obtain more information on the intangibles from other sources of data.

The perception that financial statements do not need to be made more useful appears to be in line with a previous study by Hirschey et al (2001) who conclude that, as long as information is obtainable from other sources, there is no need to modify the financial statements. For example, patent information can be found online in patent databases such as that of the European Patent Office. All this leads to questions as to whether there is any need to incorporate information of a qualitative nature on patents in the financial statements. Having stated this, the fact that investors resort to other sources of information rather than financial statements could be a result of financial statements historically not containing enough information particularly on aspects such as intangible assets.

The IASB is actively seeking investors' feedback on which topics to place on its agenda e.g. Georgiou (2010, p.103) discusses what he calls 'the dearth of research into users' participation in, and influence on, the process of setting accounting standards'. Amongst other aspects, this includes the recognition of some internally developed intangible assets. Whilst questioning the relevance of historic financial statements, investor associations appear

to have no interest in providing similar feedback to the standard setters. This raises some concerns, given the potential benefits that investors might gain from participation in such discussions.

Probing more specifically on the existence of patents and/or patenting activity, we observe that it can be seen as a ‘signal’ to the investor that there is value in the organisation (cf. Engel & Keilback, 2007; Hsu & Ziedonis, 2007; Baum & Silverman, 2004). However, this is not without its own problems, and still requires further investigation, in order to determine the nature of the activity undertaken. This investigation would examine additional measures of intangible assets that do not necessarily appear in a company’s financial statements, such as ‘the idea’ or ‘the individual’, for example (cf. Oliveria et al, 2010; Basu & Waymire, 2008). Thus, we find support for Proposition 3, that the individual investor relies primarily on his own due diligence to assess potential investments. Again, this suggests that accounting standards are not performing one of the key roles expected of them – that of providing value relevant information.

We conclude that the value of financial statements to venture capital or business angel investors varies, according to the time at which the investment is made. The stewardship role of accounting is found to be relatively unimportant and, even for valuation purposes, it is of limited use. Can financial accounts be made more useful for these stakeholders, or should the IASB focus on the other users of the financial statements? Should intangible assets be valued and shown in the financial statements? Is there a link between the value of intangibles, such as patents, in the financial statements and the investment made? In order to analyse the above in more detail, we propose a future research agenda that will question a larger sample of venture capital investors themselves, to discuss, in more depth, and in a quantitative way, if and how financial statements are, or can be made to be, useful.

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Notes

¹ Similarly, under European law the definition of small is that a company should have no more than 50 employees *and either turnover or* a balance sheet total \leq € 10m.

² Though note that Oliveira et al (2010) find a significant association between companies' stock price and reported intangible assets.

³ UK repository for registered company accounts.

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Table 1: Agenda for Discussion**A. General overview**

- UK venture capital
- Early stage investment market
- Investment in high technology firms

B. Existing financial statements

- Usefulness and relevance of existing financial statements
- Usefulness and relevance of existing intangible asset disclosure
- Further possible improvements
- New financial reports
- Use of other data

C. Patenting and early stage investments

- Patenting as a signal
- Other intangible assets
- Patent measures
- Patenting and the size of the investment
- Patents after the initial investment