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### The governance of intangibles: Rethinking financial reporting and the Board of directors

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# The governance of intangibles: Rethinking financial reporting and the Board of directors

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**Abstract:** When capital markets are assumed to be (informationally) efficient and the firm a mere collection of marketable resources, corporate governance and accounting are expected to be primarily concerned with making corporate insiders sensitive to external pressure: financial reporting and the board should replicate the market in the context of the firm. In particular, no firm-specific information is required to perform an effective control: independence of board members is the best quality to assure the monitoring of corporate insiders. However, whenever intangibles become significant, firm-specific information becomes as important as market prices to gauge the past and future performance of the business firm. Specific knowledge of the firm is then required to both disclose high-quality information and monitor corporate executives. This argues for the role of improved historical-cost accounting systems coupled with non-independent, proficient board members.

**Résumé :** Cet article s’intéresse aux conditions permettant aux administrateurs des sociétés cotées d’effectuer un contrôle efficace de la direction. Lorsque les marchés financiers sont supposés efficaces (au sens informationnel) et que la firme est considérée comme une collection de ressources séparables, la gouvernance d’entreprise et la comptabilité financière ont pour fonction principale de sensibiliser aux signaux-prix la direction : il s’agit de s’assurer que les actifs ont bien été évalués à leur valeur de marché (*marked to market*) et que la rémunération des dirigeants dépend de la valeur boursière de la firme. Aucune connaissance spécifique sur l’entreprise n’est nécessaire pour réaliser cette forme de contrôle : les administrateurs doivent avant tout être indépendants. En revanche, lorsque les ressources intangibles gagnent en importance, des informations non marchandes deviennent aussi importantes que les signaux-prix pour évaluer la performance présente et future de l’entreprise. Les administrateurs en charge du contrôle doivent alors disposer de connaissances spécifiques, notamment pour assurer la publication d’une information financière de qualité. Cet article souligne *in fine* les avantages d’une comptabilité fondée sur le modèle à coûts historiques couplée à des administrateurs entretenant des relations de long terme avec l’entreprise, lorsque les intangibles sont un moteur de croissance.

**JEL Classification:** G30, M41, D80

# **The governance of intangibles: Rethinking financial reporting and the Board of directors**

## **0. Introduction**

Together with academic literature, professional and popular presses argue that received systems of accounting and reporting are at odds with the “new” economy driven by intangibles. Those systems, they usually beg, were conceived for an economy based on the production, trade and consumption of physical goods and no longer fit a changing economy that involves extensive activity in services, experience, technologies and ideas. At the same time, however, they recognize the puzzling problem of providing reliable and relevant information about the intangible dimension of such an economy. This economy is framed by special skills, trail-blazing innovations and technologies, changing organizational structures and capabilities, brand identities, mailing lists and databases, and the networks of social, professional and business relationships that make it possible (Blair and Wallman, 2001; OCDE, 2006).

In addition, there is disagreement among prominent accounting standards-setting bodies worldwide about how to account for intangibles (Stolowy and Jeny-Cazavan, 2001). Regarding R&D expenditures, for example, American Accounting Standards (FAS) and International Financial Reporting Standards (IFRS)<sup>1</sup> adopt a market basis and require that research be expensed, and development costs should be capitalized as assets only if they meet restrictive criteria of marketability. In particular, the application of IFRS has forced some countries, including France, to restrict the number of intangibles recognized as assets on corporate balance sheets (Biondi 2004). On the contrary, the Japanese accounting regulatory body adopts a different basis and permits capitalization as assets of expenditures for research, development and a number of internally generated intangibles (i.e. not bought through a market transaction) in some instances.<sup>2</sup>

Parallel to these debates, the role and composition of the board of directors for listed companies has become a major concern for corporate governance reforms. The board is usually charged with ultimate ratification power over major business events and control of the business firm. This controlling function entails the disclosure of financial information through financial reporting, and monitoring of the corporate executives (i.e., the ultimate power to

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<sup>1</sup> References are made here to the American standard n° FAS 142, and to the international standard n° IAS 38. On international accounting convergence, see Biondi and Suzuki (2007).

<sup>2</sup> Especially expenditures for the adoption of new technology or a new management organization, resource development, or development of a new market can be recognized as deferred assets. Expenditures for software development may be capitalised in some cases.

dismiss the CEO). Shareholder activists (e.g. public pension funds) as well as advocates of shareholder primacy have been clamoring for “independence” as the central requisite for directors, and this claim has been increasingly adopted as a voluntary or compulsory rule by several regulations and codes. However, empirical evidence is rather disappointing, suggesting that independence has a negligible or negative effect on firm performance (Dalton, Daily, Ellstrand and Johnson, 1998; Bhagat and Black, 1999).

In sum, confronted with business models driven by intangibles, the current state of corporate governance and reporting is accused of being laden with an out-of-date accounting system, whilst the impact of board independence on its controlling function remains unaddressed in the new economic context. Our article aims at disentangling the informational structure of financial decision-making and business control to respond to this puzzling situation. The economic analysis of the special economy of the business firm stresses the presence of complementarities and other intangible drivers of performance that the usual analysis – centered on capital markets – neglects. These features point to the role played by non-market information based on specific knowledge of the firm. In addition, they lead to a reconsideration of the role and composition of the board of directors from a cognitive viewpoint.

The driving idea of this article is that both financial reporting and the board of directors require upgrading to account for intangibles, and their joint upgrade will make them complementary in coping with the intangibles-driven socio-economy. In particular, we argue that so-called historical cost accounting systems present some advantages in coping with intangibles, whilst the role and composition of the board should be analyzed in line with the need for discovering and disclosing specific knowledge of the business model of the firm driven by intangibles.

The rest of the paper is organised as follows. The first section describes the informational structure of the financial markets and the firm that investors are confronted with. The main point is that the set of information at their disposal is jointly constituted of market-driven and firm-specific information that is not merely derived from market prices. We show that this joint information set is mirrored by existing accounting frameworks that may have a market-basis or an entity-specific basis, according to IASB and others. The second section provides theoretical developments and empirical evidence concerning the role that intangibles play in the economy of firms. In particular, these advances stress the material impact of intangibles that involve complementarities and that lack available market prices or clear-cut property rights. Accordingly, the governance of intangibles requires the disclosure of entity-specific information and the presence of directors proficient in these entity-specifics who are thereby

accountable for providing that information. The last two sections deal with this upgrade, the first from the accounting viewpoint, the latter from the point of view of board role and composition.

## 1. Accounting, investors and the informational structure of market dynamics

This section disentangles the informational structure of financial decision-making and the special role that accounting information plays in it. Beyond the general picture of the joint role pertaining to financial accounting and the board of directors, further implications and recommendations depend crucially on the assumptions made concerning the functioning of the financial market and on the firm as a productive entity.

### 1.1. Financial investors and the available information set

Financial market functioning is usually analyzed in terms of its efficiency. This pertains to the ability of the market, i.e. the coordination of optimal choices made by rational investors, to allow the reduction of a complex set of available information and expectations into a single public figure. More precisely, the Efficient Capital Markets Hypothesis (ECMH) states that the price of an asset fully incorporates all available information on the ability of this asset to generate net revenue through time (Fama, 1972; Stout, 2003). As applied to the business firm, the ECMH implies that the stock price of a firm ( $P$ ) is equal to its ‘fundamental value’, defined as the discounted value of expected net future cash flows to its residual claimers (usually, shareholders):

$$P = \sum_{t=1}^{\infty} \frac{R_t^e}{(1+i)^t} \quad (1)$$

where  $R_t^e$  is the expected net cash flow delivered by the firm to its residual claimers at time  $t$ , and  $i$  the usual discount rate.

The determination of fundamental value depends on further hypothesis regarding the kind of assets the firm holds and the nature of the production process. In the simplest case, the capital stock of the firm is only composed of tangible, separable assets. Then, the fundamental value of the firm is assumed to be equal to the sum, properly discounted, of the net products of these assets (Bond and Cummins, 2000; Hall, 2001):

$$P = \sum_{t=1}^{\infty} \frac{r_{1,t}^e}{(1+i)^t} + \sum_{t=1}^{\infty} \frac{r_{2,t}^e}{(1+i)^t} + \dots + \sum_{t=1}^{\infty} \frac{r_{n,t}^e}{(1+i)^t} = \sum_{j=1}^n \sum_{t=1}^{\infty} \frac{r_{j,t}^e}{(1+i)^t} \quad (2)$$

where  $r_{j,t}^e$  is the expected net product of asset  $a_j$  for time  $t$ ,  $j = (1, \dots, n)$ . In this way, the firm is a collection of  $n$  assets, and the fundamental value of the firm corresponds to the aggregation of the fundamental values of its assets.

If an efficient market for each asset  $a_j$  exists, then the fundamental value of asset  $a_j$  is equal to its market value or price ( $p_j$ ), and equation (2) becomes:

$$P = \sum_{t=1}^{\infty} \frac{r_{1,t}^e}{(1+i)^t} + \sum_{t=1}^{\infty} \frac{r_{2,t}^e}{(1+i)^t} + \dots + \sum_{t=1}^{\infty} \frac{r_{n,t}^e}{(1+i)^t} = \sum_{j=1}^n p_j \quad (3)$$

Under this whole of hypotheses concerning the functioning of markets and the firm, the (fundamental) value of a firm ( $P$ ) can be deduced from the market value ( $p_j$ ) of all its tangible assets ( $a_j$ ). This *list of prices* constitutes the whole set of information required by financial market investors to properly assess the business firm.

This approach provides a first understanding of the fundamental information set that is supposed to be available to and is crucial in investors' decision-making. However, some assets may not have any market price (problems occur at the level of equation 3), or the individual contribution of each asset may not be clearly identified (problems occur at the level of equation 2). In these cases, firm-specific information appears to be required, information which relates to the *inside* congeries of the ongoing firm. Some special knowledge of the "firm inside" becomes fundamental to assess a firm's strategy and performance. Summing up, the whole set of information  $X$  available to investors results from and is composed of two main subsets of information:

$$X = (p_j ; X_k), j = 1, \dots, n \text{ and } k = 1, \dots, m \quad (4)$$

where  $p_j$  is the subset of market-driven information, and  $X_k$  is the subset of non-market, entity-specific information. In turn, the latter is by definition based on a set of conventions, or institutional frames, that are distinct from the market and concerned instead with the special "inside workings" of the ongoing firm.

This analysis of the informational structure of market dynamics raises two different concerns. The first concern addresses the efficiency of stock market pricing. Given the set of information available to financial investors, some may question the ability of the market to provide efficient pricing, in the sense of the ECMH. If investors are bounded-rational, resulting prices may not efficiently exploit that information set. A long-standing debate exists on the matter, reinvigorated by recent advances in behavioral economics and finance (Orl an, 1999; Shiller, 2000; Stout, 2005). The second concern, and the one we shall insist on, addresses the intrinsic quality of the "set of information", and in turn, the nature of

information available to actual and potential investors. Even if markets are (informationally) efficient, the available information set may not be sufficiently relevant and reliable to be used by investors for properly based decision-making. In this case, investors will surely make the most efficient use of the information set that is available, but the latter might be too narrow to provide a proper basis for assessing the ability of the firm to deliver revenue over the long run.

## **1.2. Market basis *versus* entity-specific basis for accounting**

In the most general case, investors rely upon a set of available information that is partly endogenously generated by market dynamics (market-driven), and partly generated by other sources of information that are specific to the firm and its special economic environment. Accordingly, accounting information can hardly consist of a mere exercise that reports the firm's collection of assets in line with external market prices. Such an exercise would neglect the existence of useful entity-specific information which market-based information cannot provide. Instead, accounting information appears to be the main device to produce (and eventually disclose) what we have called non-market, entity-specific information. Accounting then constitutes one of the cognitive prerequisites that enable market participants to effectively play the stock exchange over time. Accounting cannot rely solely on the market to generate its own informational disclosures, but shall be understood as an autonomous source of information that, in turn, contributes to leveling the market playing field by providing common knowledge (Sunder 2001). To be clear, the information vector available to investors arises either exogenously (from the market) through accounting disclosure, or endogenously through trades and price signals. In addition to information contained in market prices, accounting information based on entity-specific expectations and data - established according to institutional frames distinct from the market and concerned with the special "inside" of the firm - may play an important role in facilitating stock price formation through time (Biondi 2003).

The crucial distinction between the two subsets composing the information vector is therefore mirrored by accounting, which shows two main measurement "bases": "fair value" and "historical cost" (Anthony, 2004, p.25; IASB, 2005; Littleton 1953; Terrill 1955)<sup>3</sup>. The first basis adopts a market reference ("market basis"), while the latter focuses on the business environment specific to the firm ("entity-specific basis"). A discussion paper by the international accounting standards-setting body, IASB (2005), draws upon these two

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<sup>3</sup> Paton (1946) and Littleton (1953) made different choices on the matter. Paton argued that "*cost (...) is important as a measure of the value of what is acquired*" (p. 193b), while Littleton spoke about "*an unending clash of the idea of value and the idea of cost*" (p. 10b). cf. also Paton (1980) – commented by Ijiri (1980) – on his preference for (fair) value basis.

alternative bases of financial accounting. Accounting for an asset on a market basis implies measuring that asset at its exchange price under competitive market conditions, reflecting the market's expectations as to the amounts, timing and uncertainty of future cash flows discounted at market rates of return for commensurate risk. This basis is associated with fair value accounting systems and the related "stock method" for accounting measurement. In contrast, accounting for an asset on an entity-specific basis refers to expectations and data from the reporting entity, which may differ significantly from those implicit in a market price. According to the IASB (2005, 8), any measure of an asset that differs from its market value must be based, explicitly or implicitly, on entity-specific expectations and data. This basis is associated with historical cost accounting systems and the related "flow method".

The distinction between bases of asset measurement basically points out two kinds of information: one kind refers to the market subset of the information vector (market basis), while the other refers to information that cannot, for various reasons, be delivered through market pricing (entity-specific basis).

The market basis refers to market quotations and requires applying the "stock method" based on discounted values of marketable resources. Drawing upon equation 3 above, this accounting basis appreciates the market price or, absent it, a marking-to-model of it, as the resultant of the whole set of future flows imputable to the asset  $j$ :

$$p_j = \sum_{t=1}^{\infty} \frac{r_{j,t}^{+e} - r_{j,t}^{-e}}{(1+i)^t} \quad (5)$$

Where  $r_{j,t}^{+e}$  is the inflow at time  $t$ ,  $r_{j,t}^{-e}$  is the outflow at time  $t$ , both flows being imputable to the resource  $j$  having a market price  $p_j$ , with  $i$  the discount rate of reference.

The market basis for accounting and the related "stock method" (equation 5) require a highly demanding cognitive background, involving subjective references to (virtual) future cash flows and unreliable discount rates that are scarcely enforceable or auditable. On the contrary, the entity-specific basis and the related cost accounting avoid these references, since they do not account for stock *values*. They have recourse to the "flow method" that recognizes actual *costs* coupled with conventions on the useful continuity of the underlying resource (or activity) within the enduring economy of the whole firm. Assets are then accounted for through their costs, i.e., the flow of monetary expenditures that have been disbursed to deal with them. This implies a drastic reduction in the required cognitive background (Anthony 1960, Simon 1978), since references are usually made only to the series of past and actual outflows  $r_h$  related to that resource (or activity), with  $h \subset (1, \dots, t)$ . The accounting recognition is done under stabilizing accounting conventions established at the entity, industry or

economy levels. Contrary to the stock method, no legal or material support (making the resource -or the activity- marketable) is required for this cost capitalization as an asset. Only the existence of imputable outflows and conventional conditions apply. Table A summarizes the main differences in methods of accounting and reporting stemming from the two bases.

**Table A – Main methods of accounting related to market and entity-specific bases**

	<b>Market Basis</b>	<b>Entity-Specific Basis</b>
<b>Recognition criterion</b>	Legal or material support making the underlying resource marketable	Continued (expected) utility of the underlying resource on subsequent periods
<b>Accounting criterion</b>	Efficient market prices based on discounting future cash flows generated by the resource separately	Historical invested costs based on capitalizing imputable expenditures for development and maintenance of the resource
<b>Key requirements</b>	Identification of the support, future cash flows and rates of discount	Identification of imputable expenditures and conventions of capitalization (and eventual depreciation or impairment)
<b>Accounting method</b>	Stock method	Flow method

For external financial reporting purposes, IASB (2005, p.9) establishes a clear hierarchy between the two bases of accounting. It gives priority to the market basis, for “*competitive market forces serve to resolve diverse entity-specific expectations to a single price for an asset or liability that impartially reflects all publicly available information on the measurement date,*” making explicit reference to the “efficient market pricing” framework (IASB, 2005, p.43 ff.). This theoretical position may be criticized for its reliance upon the efficiency of (financial) markets (Whittington, 2008). Furthermore, this position presumes the existence of an active market for the asset (or liability) or, failing the existence of an observable market, the ability to reliably estimate what the market price would be if a market did exist. In this way, this position also paves the way to abandoning the market information subset and focuses on the non-market, entity-specific subset, whenever accounting lacks a proper market basis. Absent an efficient market for intangibles or appropriate models to simulate its existence, the entity-specific basis may provide relevant accounting information to investors and other external users of financial statements in knowing the intentions, expectations, assumptions, and results of the management of an entity as certified by the board of directors.

The regulatory treatment of so-called “intangible” assets offers a conspicuous example of the consequences of the two accounting bases. For instance, the international accounting standard for intangible assets (IAS38, §39) retains a market basis that links informational reliability to market-based estimates of value. Therefore, this accounting standard trusts reliability to ever changing market quotations, denying the asset recognition and measurement of a number of expenditures for resources that lack in proper market basis<sup>4</sup>, even though “*entity’s costing systems can often measure reliably the cost of generating an intangible asset internally, such as salary and other expenditure incurred*” (IAS 38, §62).<sup>5</sup> By contrast, the entity-specific basis of accounting – including a pure historical cost accounting system - may capitalize and amortize those expenditures (including deferred charges) as depreciable assets, as previous accounting systems and regulations, including the French ones, have done, under specific conventions at the entity, industry, or economy levels.

## **2. Intangibles and the special economics of the firm**

Intangibles have been the object of growing interest among scholars for the last two decades. Macroeconomists increasingly recognise that growth relies as much on the contribution of intangible resources as on that of tangible ones. In microeconomics, it is now widely recognized that successful business models primarily involve investments in intangible, knowledge-based, resources (Foray, 2004). The various definitions of intangibles that have been proposed share at least one common point. They insist that intangibles are non-physical (they lack any material support), non-financial (they do not provide any legally-enclosed revenue) and provide relevant future benefits (Kim, 2007). Generally speaking, the following expenditures are considered to nurture the development and maintenance of such intangibles:

1. spending on information and communication technologies (hardware, telecommunication infrastructure and software);
2. spending on Research and Development (R&D, scientific and non scientific) and patents;
3. spending on development and maintenance of brands and trademarks (e.g. advertising);
4. spending on workforce training in firm-specific capabilities and improvements in labor organization (total quality management, job rotation, just-in-time, team working, and so on).

At the *macro* level, measurements on US data lead to the conclusion that, at the end of the 1990s and the beginning of the 2000s, private investment in intangibles roughly equaled

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<sup>4</sup> Such as research activities aimed at obtaining new knowledge; search for, evaluation and final selection of, applications of research findings or other knowledge; search for alternatives for materials, devices, products, processes, systems or services; and the formulation, design, evaluation and final selection of possible alternatives for new or improved materials, devices, products, processes, systems or services (IAS 38, §56).

<sup>5</sup> Other examples are provided by IAS38 – Intangible Assets, §6, ver. 1998 and IAS38 – Intangible Assets, §63-64.

investment in tangibles, representing around 10% of domestic output (Nakamura, 2003; Corrado, Hulten and Sichel, 2006). Corrado *et al* (2006) also estimate that investments aimed at enhancing human resources (training, labor organization including strategic planning) accounted for one third of that total investment.

Furthermore, economic analysis of growth seeks to allocate the growth rate of labor productivity to the weighted rates of productivity of inputs (tangibles and intangibles) plus a residual called “multifactor productivity” (that is usually understood as a measure of technological progress). Corrado *et al* (2006, table 5) find that, for the period 1995-2003, intangibles accounted for 27% of the annual growth, a percentage equal to tangibles for the same period. Once again, the contribution of training and organizational structure and innovation are decisive (around one third of this 27%). In addition, intangibles may contribute to technological progress (that is the growth of multifactor productivity), strengthening the thesis of a ‘new economy’ where growth is primarily driven by intangibles, especially knowledge-intensive ones (Oliner and Sichel, 2000; Jorgenson and Stiroh, 2000).

At the *micro* level, countless studies have examined the role played by R&D (Griliches, 1994), new technologies (Black and Lynch, 2001) or innovative organizational practices (Black and Lynch, 2001; Caroli and Van Reenen, 2001) on firm performance. By and large, these studies point out the positive impact of the expenditures for intangible resources that contribute to building up specific “competencies” that allow firms to develop and maintain both core capabilities and competitive advantages over main competitors. Once again, the evidence strongly suggests that intangible resources are a crucial component of long-term business sustainability.

The theory of the firm complements the micro-analysis of intangibles by delivering some insights on an intangible-intensive business model as distinct from a more traditional one based on tangibles. In particular, complementarities are shown to be pervasive in a business model driven by intangibles (Antonelli, 2001; OECD, 2006).

Complementarities occur when the combination of two different inputs (or resources) yields greater output than the separate use of these inputs. When input prices are held constant, this combination symmetrically reduces total costs. In a seminal article, Alchian and Demsetz (1972) stressed the importance of such complementarities in the joint efforts of workers. In a situation of ‘team production’, overall output ( $y$ ) is greater than the sum of individual contributions ( $e_i$ , with  $i=1, \dots, n$ ). Formally, the production function is then non-separable (super-additive):

$$y = y(e_1; \dots; e_n), \text{ with } \frac{\partial^2 y}{\partial e_i \partial e_j} > 0, j \neq i \quad (6)$$

Team production is likely to arise within a business model that is knowledge-intensive (Antonelli, 2001). The reason is that knowledge typically is an indivisible resource, yet it is fragmented and dispersed over a vast array of agents, contexts and applications. Complementarities between agents then arise from the efficiently organized combination of those fragments of knowledge. Then, the joint production of two or more (knowledge-intensive) outputs within the same firm may decrease total cost, as compared to a situation with either strictly separated production processes, or two or more distinct organizations.

Complementarities include but are not restricted to the joint efforts of workers. They may also be generated by other types of intangible resources. Empirical studies stress the joint contribution provided by intangibles that relate to workforce training, R&D and organizational innovation. In particular, regarding Information and Communication Technologies (ICT) and new work practices, Breshnahan, Brynjolfsson and Hitt (2002) observe that ICT have a stronger impact on productivity in firms that adopt decentralized labor organization at the same time. Moreover, regarding training and new work practices, different studies provide evidence of a correlation between training efforts and labor reorganization, suggesting that their joint combination does improve performance (see Lynch and Black, 1998, for the USA and Zamora, 2006, for France). Last but not least, regarding training and R&D, further studies provide evidence that firms in key growth industries (high tech, life sciences, business services) tend to have a high ratio of R&D spending on sales, and firms that make the greatest investments in education and training of their workforce have above average productivity and financial performance (Blair and Wallman 2001, 11-12; Lev 1999, 21-35; Bassi, Ludwig, McMurrer and Van Buren, 2000).

In sum, the special economy of the business firm involves specific intangible resources that relate to idiosyncratic productive processes specific to each firm. These intangible resources often lack any material or legal support: they are ‘immaterial’ (except for some software), and they are not clearly enforced by clear-cut property rights. In addition, the related productive processes, because of complementarities, scarcely fit the peculiar characteristics that are necessary to identify and assess them on a market basis. As Ijiri (1967, 58 ff.) claimed early on, they do not fit the peculiar framework assumed by equations 2 and 3 regarding separability and marketability of individual contributions of each resource to the overall economics of the firm. On the contrary, the special economics of the firm generates a productive economic core driven by intangibles that has significant implications for the construction of the information set that is expected to inform investors’ decision-making on the matter.

This analysis particularly applies to intangibles related to knowledge and workers. As it is widely recognised, knowledge is a non-rivalry resource whose use by one person does not diminish alternative use by another. Moreover, in virtually all jurisdictions workers cannot be an object of property, and a workers' exit is usually subject to strong legal protection. Finally, and most of the time, knowledge-related intangibles involve strong complementarities, as recognized by the trail blazing work of Alchian and Demsetz (1972). In this context, the value of individual contribution is impossible to deduce from the observation of the joint output, resulting from the *ex post* performance of the overall activity. Because the joint production process is non-separable and super-additive, the marginal productivity of one input depends on other inputs (see equation 6). Therefore, every production process involving complementarities between resources raises specific problems of separability and measurement. Following Alchian and Demsetz, the monitoring of individual contributions requires direct inside observation of individual behaviours. This observation obviously implies a particular position "inside" the business firm as a going concern and a productive entity. Accordingly, they suggest having a supervisor within the firm, i.e., a member of the team who could monitor individual contributions from the inside. In their model, this monitoring is made easier for an agent who is proficient in labour organisation and the specific production processes of the firm. On this basis, we speculate that insiders who are near to the special economic processes of the firm are in the best position to discover, develop and maintain specific knowledge about the very origin of the firm's financial performance and position.

In sum, the special economics of firms result in their being driven by intangible resources that lack in material and legal supports, combined with the pervasive existence of complementarity effects. The usual governance system based on ownership and markets appears to be at odds with this special economy that is driven by intangibles and has blurred ownership and market values, if any. In particular, the efficient market hypothesis coupled with clear-cut property rights does not fit the features of this kind of business model. The rest of the paper aims to explore what special governing devices are required to cope with such entity-specific economic and business environments. The third section will treat the accounting system, while the fourth section will address the role and composition of the board of directors.

### **3. Accounting for intangibles**

This section will treat three different approaches to accounting for and reporting on intangibles. The first approach is accounting on a market basis. Because of the tremendous

impact of intangibles which lack in market pricing, this method raises serious concerns and may involve investment decision-making based on an incomplete set of information. Whenever non-market, entity-specific information is fundamental, stock price formation would result noisy; accounting for entity-specifics through market quotations would then involve dubious feedbacks and biased signals. In contrast, the relevance of intangibles paves the way to appreciating other accounting methods having an entity-specific basis. These methods improve on the subset of information concerned with the special “inside” of the firm and appear then to be best suited, in principle, to cope with the special economy of the firm driven by intangibles. These methods include marked-to-models based on entity-specific information that is intrinsically subjective, and improvements on historical cost accounting systems.

### **3.1. Problems with the market basis**

Financial accounting and reporting provides a formal representation that summarizes the firm’s activity -complex and unfolding by definition- into a frame of disclosed figures and narrative statements. This representation draws upon a set of special techniques conceived to cope with resources, transactions, operations and events related to the ongoing business activity, and regulated by professional and legal standards. Among others, the joint application of these techniques and standards establishes whether certain bundles of expenditures may be recognized and accounted for as an (intangible) asset, on the hypothesis that the acquired resource has continued utility in subsequent periods, instead of being paid off (technically, matched against current revenues) in the period during which it was expensed, on the hypothesis that it is only a current cost of doing business without future implications.

According to OECD (2006, p.7): *“traditional accounting has necessarily remained focused on tangible assets. Traditionally, the only intangible assets recognized in financial statements have been intellectual property, such as patents and trademarks where a market value has been established by a transaction, and acquired items such as goodwill. Although accounting standards can probably be developed further to take into account a wider range of intangibles, clear limits are set by the difficulty of establishing monetary values (valuation) that are at the same time consistent across firms, verifiable and that cannot be easily manipulated. As a result, a significant portion of corporate assets go under-reported in the financial accounts. The relative lack of accounting recognition of intangibles coupled with their growing importance in the value creation process means that the financial statements have lost some of their value for shareholders. If other information does not fill the void, there could be misallocation of resources in capital markets.”*

The market basis of accounting is increasingly advocated to respond to such concerns with accounting and reporting for intangibles. The “transparency” of the firm is then the mantra. Accordingly, the reference to market prices is considered to be the best solution to acknowledged difficulties of recognition and measurement. This implies that financial accounting and reporting should look for market prices as references to recognize intangibles in financial statements and disclosures. The reverse unfortunately also happens to be true: whenever intangibles lack appropriate market quotations, they may not be recognized and accounted for.

In particular, this line of reasoning is applied when accounting for intangibles is distinct between internally generated and externally purchased intangibles. When intangibles (or the whole firm) are acquired in a market transaction, the transaction price is appreciated as evidence of value and is then utilized to account for intangibles assets (or goodwill). Here, the value of intangibles (or the firm) is assumed to be “revealed” by the market bid. This market basis underpins the puzzling idea that the market pricing of intangibles (or the firm) may properly value them, whereas the underlying resources are neither recognizable nor accountable for through the accounting system (on market basis) that is supposed to provide high quality information about them to market participants. On the contrary, internally generated intangibles are often dismissed. Notwithstanding their tremendous impact on economic growth, productivity, and firm performance, they lack trading on markets of reference or clear-cut property rights. In particular, no identifiable support exists in their case, that is, a support that (i) is separable or arising from contractual or other legal rights controlled by the entity, and (ii) can be measured reliably at its current value on the market of reference.

The cases of expenditures for workforce training, R&D, and organizational innovation provide good examples of the problems of market basis of accounting for intangibles. Following a market basis, current expenditures for workforce training may not be capitalized as an asset, because the firm does not own employees and cannot trade on them. Few would appreciate the reintroduction of slavery as an appropriate response to this shortcoming of the market approach. As a consequence, the durable impact of continued training on firm performance is not recognized as an asset by the accounting representation, and only current revenues will pay it off (that is, training expenditures will be matched immediately against them)<sup>6</sup>. The same problem arises with expenditures on research activities, which usually do

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<sup>6</sup> Note that if pricing is based on a cost-plus or mark-up principle, that is the application of a margin on average cost, then only (current) customers should ultimately pay for intangibles whenever they are treated as current expenditures. Theoretically speaking, this point refers to the non-neutrality of the accounting structure of production in the special economics of the business firm (Biondi 2005).

not succeed any market test. Even though investments in research have tremendous implications for business and societal performance and sustainability, they are paid off only by current revenues (and customers). As a consequence, the cost of research for a new product relies entirely on ongoing sales of old products to current customers, and may not be recovered by future customers who will benefit from that product innovation in due course. Following the market-based accounting viewpoint, investing in research is treated as a “sunk cost” of the current period (Nakamura 2003, p.3), and not as an intangible asset critical to the continued sustainability of the firm.

If recognizing training and research as intangible assets is difficult under the market basis of accounting, organizational innovation may pose even greater challenges, for it primarily concerns changes in frame and shape of business activity, and is not directly connected to monetary inflows. Its connection may then result indirectly from interdependencies and contingencies generated by the special economics of the whole firm, it being highly contextual and dependent on complementarities.

### **3.2. Intangibles and the entity-specific basis of accounting**

However, relying on available market prices (or imputable monetary inflows) is not the only way to account for intangibles. While the market basis assumes efficient market conditions, the entity-specific basis faces the somewhat unknown (and unaddressed) congeries of the legal and economic system of every ongoing firm involving flows and immobilizations that require an accounting system to deal with them. Absent available market prices, some might suggest using marking-to models for estimating shadow prices at market conditions. This approach insists on looking for the *values* of intangibles. Market prices, or some surrogates of them, are then supposed to be the best evidence of these values. However, the special economics of the business firm driven by intangibles actually is a special economic environment (laden with complementarities and asymmetries) that markets hardly enter into. This environment involves entity-specific conditions and, absent specific information on the latter, market pricing appears to lack the proper basis of evaluation. Therefore, accounting for intangibles on a market basis provides problematic results and may have paradoxical implications.

By contrast, the entity-specific basis of accounting refers to either cost measurement (including historical cost), or marking-to models that depend significantly on entity-specific expectations and data. The market is by definition unable to validate these latter assumptions, which provide subjective results and depend on *inside* conditions fraught with complementarities and asymmetries of control, information and access. Here, the cutting edge

is the notion of “inside.” This insider-related information may require special governance setting to be disclosed and audited in a reliable and consistent way. Anyway, the ultimate problem with reliability remains open with regards to entity-specific estimates based on models or techniques. Therefore, improvements on historical cost accounting systems may be promising, for historical *costs* have the main cognitive advantage of being fixed – usually, at least – by actual transactions that can be tracked through time and are easier to audit.

In particular, suggested improvements on a cost basis (that is a special kind of entity-specific basis) conflict with the centrality of *capital stock value* that is allegedly assumed by the market basis. Accounting for intangibles on a market basis means discounting today future monetary inflows imputable separately to each intangible asset. But intangibles often come into existence only in the ongoing process of the whole firm that is expected to recover them. In the special economic environment generated by the firm, even though one intangible resource related to some support being marketable separately (for example, a patent), its sale would imply losing both all complementary and interdependent utilities embedded in its relations with other entity elements, and the overall contingent advantage which collectively renews the firm performance over time. For this reason, the market basis seems theoretically unable to justify capitalization of every resource, whether marketable or not, as an asset.

Contrary to the capital stock value approach (implied by the market basis), cost accounting does not conflate discounted future inflows, which are actually expected revenues, with current monetary exits that are actual costs. Accordingly, the firm’s overall capacity to generate incomes does not imply seeking some alleged capital stock value that is supposed to be at the origin of those incomes. Instead, assets are recognized as invested costs having continued (expected) utility in the future. Together with various resources involved in the special economics of the firm, assets collectively generate the overall performance that is accounted for by financial statements. In this way, cost accounting may better cope with the multiple *qualities* of resources combined into the special economy of the firm, instead of reducing them to homogeneous measures of capital stock value. Indeed, the accounting representation is not limited to financial figures (quantitative information), but will also include classifications and narrative explanations (qualitative information).

### **3.3. The cases for cost accounting: workforce training, R&D expenditure, and organizational innovation**

It is thus that cost accounting for intangibles may fit workforce training and R&D expenditures into an accounting representation that discloses entity-specific information significant to investors and external users, whilst complying with the main purposes of

auditing and enforceability of public information disclosure. Accounting for these intangible resources *at cost* means taking into account as assets some bundles of actual monetary outflows imputable to their development and maintenance. These outflows will be capitalized at the time of their expenditure, and will be paid off (technically, matched against) by future revenues through depreciation and amortization, according to the resource contribution to the overall entity performance during the resource's (expected) useful life. According to leading accountant Ijiri (1975, p.140, with adjustments), “[*the capitalization and amortization of research and development costs, intangible drilling costs and deferred charges, as well as of hiring, training and relocation costs related to human resources*] is a method which accepts historical cost as the valuation principle [...] and advocates a better matching of costs and benefits [...]. Currently, these costs are expensed in the period in which they accrue, but the proposed change is to capitalize them and amortize them over the expected service life of the [related resources].” Even though the firm does not own and trade on its workforce, the firm as an ongoing entity involves systemic properties that are stable enough to establish accounting conventions on capitalization of expenditures for workforce-related intangibles. These conventions will achieve purposes of auditing and comparability when established by regulatory bodies at industry or economy levels, or by the firm itself, over time. The same line of reasoning applies to expenditures for R&D projects as well as internally generated intangibles such as brands, advertising or databases.

Accounting for organizational structure and innovation raises some remaining concerns. This kind of intangible resource lacks direct connection with actual monetary outflows, and enforceable conventions thus appear to be more difficult to establish. In fact, cost accounting has already opened the door to considering supplementary non-monetary systems of disclosure by leaving the stock method (which requires a set of homogeneous measures of value) to enter an overall accounting representation based upon a set of recognitions and classifications summarized by financial statements coupled with some narrative explanation (qualitative information). Therefore, following Benston, Bromwich, Litan and Wagenhofer (2003) – reviewed by Biondi (2007) – organizational structure and innovation may be accounted for through a system of non-monetary measurements that, in turn, may be audited and enforced according to accepted conventions at the entity, industry or economy levels. An interesting case of such a system is provided by the French regulation on social reporting (“*bilan social*”), which already requires big companies to disclose a conventionally standardized set of non-financial measures on workforce-related issues such as remuneration, training, and security at work. In addition, narrative information may be disclosed on these matters according to accepted principles of informational veracity.

In conclusion, contrary to current wisdom, the problems with accounting for intangibles actually derive much more from the alleged market basis that many advocate, than from the origins of traditional cost accounting systems in tangible economies. Among methods of accounting on entity-specific bases, improvements on cost accounting appear to be well suited for recognizing and accounting for intangibles while coping with the main goals of auditing and enforceability of public information disclosure. Intangibles may then be recognized and accounted for through capitalization of bundles of imputable monetary outflows (expenditures), supplementary systems of non-monetary measurements, and trustworthy disclosure of narrative information.

#### **4. What kind of directors are required for governing intangibles?**

This section draws upon previous discussion to derive a theoretically-informed heuristic analysis regarding board composition and role. We argue that, in the presence of intangibles that drive the special economics of the firm, the board must cope with entity-specific, insider-relating information, in order to fulfill its controlling role of governance. From this perspective, and contrary to current “*conventional wisdom*” (Bhagat and Black, 1999), independence is not and cannot be the only quality possessed by effective directors that face entity-specific concerns.

##### **4.1. Independent directors: the conventional wisdom**

In every jurisdiction, corporate law provides listed companies with a board, in charge of the control of the firm: it might either be a board of directors (in the USA, the UK or Japan) or a supervisory board (in Germany) – with French company law allowing either<sup>7</sup>.

The controlling function of the board entails two interrelated tasks:

- The first task relates to the monitoring of corporate executives: in particular, the board has ultimate power to dismiss the CEO. As such, a well-functioning board should be able to identify a poorly performing CEO and then to replace him/her.
- The second task relates to the disclosure of information to outside stakeholders. This task is primarily accomplished through the certification of financial statements and other public information, with directors working in close connection with external auditors. The Sarbanes-Oxley Act (SOA), passed in 2002 in the USA, gives the audit committee power (and responsibility) over the firm’s auditor relationship and audit policies. Under French corporate law (Code de commerce, art. L232), the board of directors of listed companies must certify the financial documentation (*Documents comptables*), which includes the balance sheet, the

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<sup>7</sup> The analysis provided in the rest of this article is valid in both cases (board of directors and supervisory board).

income statement but also the *Rapport de gestion* (business report). This latter includes, among other things, a document on the general situation of the company and its expected evolution, and a document detailing how social and environmental consequences of corporate activities are dealt with.

Under the market model of accounting and governance, what qualities are most important in order for directors to fulfill their controlling function? The validation of financial statements, and more broadly the provision of information to outsiders, mainly consisting of checking that appropriate market values have been used to evaluate corporate net assets (or bundles of them) is important. The case of an accumulation of poor performances, as revealed by the stock market on the basis of the market-based (sub)set of information, should lead directors to replace the CEO, this second situation being the main role of the board. The fundamental quality of directors is their “independence” in order to avoid any collusion or conflict of interests. In their model, Ferreira, Ferreira and Raposo (2008) therefore define independence as the probability for a CEO to be fired and replaced by the board, once the stock market (or the board itself) has discovered the CEO’s poor performance. In particular, the board does not require specific, insider knowledge of the firm to accomplish efficient monitoring of corporate executives.

Board independence was primarily advocated in the beginning of the 80s by U.S. activist shareholders and in particular by public pension funds grouped in the “Council of Institutional Investors”. In turn, independence has become a central requisite in the many corporate governance codes that have been published over the past twenty years<sup>8</sup>. In addition, depending on the jurisdiction, company law and/or stock market regulations now require the presence of some independent directors. A conspicuous example of this “conventional wisdom” (Bhagat and Black, 1999) is offered by the rating provided, since 2002, by *Institutional Shareholder Services*. This private firm assesses the corporate governance of 7500 listed companies (including 2500 in the USA), on the basis of 60 different criteria. This assessment is subsumed by an index called *Corporate Governance Quotient* (CGQ). In 2005, the adoption of a “super-majority board” (defined here as a board with at least 90% independent members) was considered as the 4<sup>th</sup> most important criteria out of 60, with a material impact on the final rating.<sup>9</sup> Following this influential support of independence, the share of “independent directors” has steadily increased over the last decade in the US, as well as in the UK and in France.

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<sup>8</sup> See, for example, the Cadbury (1992) and the Higgs (2003) Reports in the UK and the Viénot (1993 and 1999) and Bouton (2002) Reports in France.

<sup>9</sup> Institutional Shareholder Services, 2005, “Explaining the CGQ methodology change process”, <http://www.issproxy.com/pdf/CGQevolvingmethodologyWP.pdf>

A number of studies in finance have focused on the impact of independence. Empirical evidence generally shows a negligible or negative effect on firm performance (as measured by stock market value or productivity)<sup>10</sup>. While numerous explanations have been put forward<sup>11</sup>, we argue that independence, as commonly defined and advocated, might present some important drawbacks in an economic environment (and in business models) characterized by intangibles. While a higher degree of independence increases the propensity of the board to dismiss poorly performing managers, it may also involve a (non-monetary) cost by decreasing the specific knowledge that the board has of the business firm, thereby undermining its ability to both disclose information on and monitor corporate executives in an intangibles-driven business model. The following heuristic model draws upon this intuitive trade-off between independence of and entity-specific knowledge possessed by the board.

#### **4.2. Independence and entity-specific knowledge: the tradeoff**

Whenever the special economics of the firm materially involves intangible resources, we have argued, the relevant set of information – i.e., the proper set to assess business performance - necessarily encompasses some non-market, entity-specific subsets.

Here the board plays a decisive cognitive role. Indeed, it is charged with certifying the disclosure of firm-specific information by corporate executives (for example, the “*Rapport de gestion*”), and this disclosure concerns resources lacking in market pricing and involving complementarities. Furthermore, in the presence of intangibles, directors cannot rely on stock market signals to gauge the quality of their CEO. They must assure efficient monitoring – that is, be able to detect a “bad” CEO – with limited, if any assistance from capital markets. In sum, both the certification of firm-specific information and the monitoring of the CEO in the presence of intangibles require discovery, development, and maintenance of specific knowledge of the business firm.

To be sure, independence is still important, as a way to prevent that (i) biased firm-specific information be certified and (ii) (identified) poorly performing CEOs remain in place. But cognitive concerns become as important as disciplinary ones. Efficient monitoring requires both the ability to detect a “bad” CEO (cognitive dimension) and the disposition to fire the

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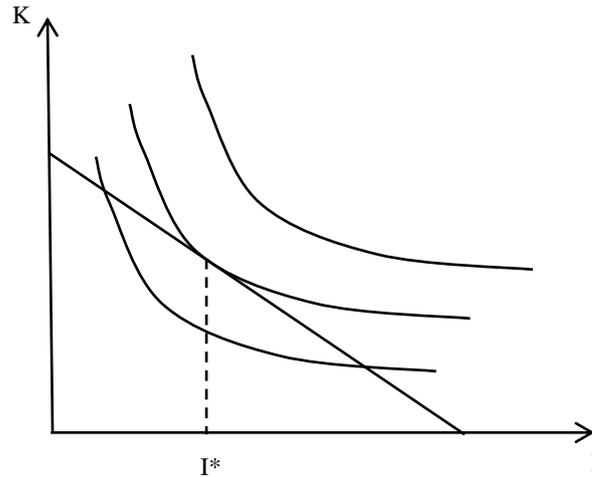
10 See the conclusion of the meta-analysis performed by Dalton, Daily, Ellstrand et Johnson (1998) (« *The evidence suggests, then, that board composition has virtually no effect on firm performance* », p.278) or the conclusion of the survey by Bhagat and Black (1999) (“[m]ost studies find little correlation, but a number of recent studies report evidence of a negative correlation between the proportion of independent directors and firm performance – the exact opposite of conventional wisdom”, p.942).

<sup>11</sup> See for example Gordon (2007), who argues that independence has no individual (firm) effect, but systemic effect, or Jensen, Murphy and Wruck (2004) who stress that outside directors are often CEO of other companies. As such “it is natural for them to subconsciously (if not consciously) view the board through CEO eyes – a lens where the power of the CEO is not seriously challenged” (p.55).

“bad” CEO (incentive dimension) – just like trustworthy certification of disclosed information requires the ability to assess firm-specific information together with the willingness to refuse accreditation of biased or narrow reports. As a consequence, the global quality of control over the business firm increases with both independence of directors and their access to entity-specific knowledge.

A heuristic model may help to clarify this idea. Define  $I$  as the level of independence of the board,  $K$  as its level of entity-specific knowledge, and  $C$  as the global effectiveness of control on corporate executives.  $K$  may be interpreted as the ability of the board to discover and disclose non-market, entity-specific information (related to  $X_k$ , with  $k = 1, \dots, m$  in the equation 4 above). The previous discussion suggests  $C$  as a growing function of  $I$  and  $K$ , so we can write:  $C = F(I; K)$ , with  $F'_I > 0$  et  $F'_K > 0$ .

Figure 1 plots the level of independence  $I$  on the x-axis and the level of (firm-specific) knowledge  $K$  on the y-axis. Then, the function  $F$  is used to draw iso-control curves, which represent the sets of points yielding the same degree of control by the board. Iso-control curves located further to the northeast on the figure represent higher level of control. Those curves reflect the technology of control: they indicate how much knowledge is necessary to compensate for an incremental decrease in the level of independence. As is standard in a neo-classical economy, those curves are convex to the origin. When independence increases, the relative value of independence in terms of knowledge decreases: the marginal rate of substitution is then decreasing (in absolute value). However, the shape of the iso-control curves varies across business models. The more the relevant set of information to assess corporate conduct includes market signals, the less firm-specific knowledge is valuable: for a given point, the marginal rate of substitution increases (in absolute value). In the degenerated case, where the firm performance is gauged on the sole basis of market pricing, iso-control curves are vertical: no specific knowledge is required, and the degree of control depends only on the degree of independence of the board.



**Figure 1 : the control tradeoff between independence ( $I$ ) and knowledge ( $K$ )**

The previous analysis has assumed that control function is increasing in independence and knowledge. The second building block concerns the direct relationship between the two arguments of this function: independence of and firm-specific knowledge by directors.

The propensity of directors to collude with wrong-headed executives is, of course, a *subjective* disposition. Yet distant, minority shareholders and other outsider stakeholders need to rely on clear-cut proxies of that subjective disposition. Accordingly, the basic idea common to a number of existing definitions of “independence” is to identify some *objective* criteria that minimize the likely collusion between directors and corporate officers. Generally speaking, independence is compromised if the director of a company (*i*) is, or has been, a corporate executive of that company or of its affiliates, (*ii*) is, or has been, employed by that company or by its affiliates, (*iii*) is employed as an executive of another company where any of that company’s executives sit on the board, (*iv*) is a large block-holder of that company, (*v*) has a significant business relationship with that company or its affiliates. On this basis, three types of directors are usually distinguished according to their relative degree of independence (Clarke, 2007):

- “executive” or “inside” directors who are corporate executives;
- “affiliated” or “gray” directors who are not executives, but do not meet one of the previous criteria; this category encompasses in particular employees, long-term block-holders or investment bankers in relation with the company;
- “independent” directors who are outsiders and fulfil the whole set of criteria.

As the previous definition makes clear, the usual objective criteria applied to proxy independence tend to ‘exteriorize’ directors from the business firm (Rebérioux, 2007). In turn, this distance tends to reduce their ability to discover, develop and maintain firm-specific

knowledge. Indeed, it is widely recognized that independent (outside) directors experience a cognitive disadvantage over non-independent (insider) directors (Baysinger and Hoskisson, 1990, p.74; Klein, 1998, p. 278 ; Hillman and Dalziel, 2003 ; Osterloh and Frey, 2006). In the previous graph, this inverse relationship between  $I$  and  $K$  may be represented by a downward sloping line. The (absolute value of the) slope – the relative “quantity” of insider information that is lost by increasing the level of independence – depends on a variety of factors, including the age of the firm, the more or less stringent regulatory definition of independence, the number of different markets the firm operates in, and so on.

The previous analysis shows that while board independence offers decisive advantages in terms of control, it also has a non-monetary cost by reducing its ability to cope with entity-specific information (because of the distance it imposes between directors and the firm inside). To be clear, asking a pure independent director (an academic lawyer in corporate governance, for example) to join the board of a bio-technology firm – a board that has the task of certifying the disclosed information on the way environmental consequences are dealt with – is like appointing an economist to an academic jury for a PhD dissertation in theological aesthetics. By contrast, being part of the firm as a going concern (as do executives or non-executive employees) or being in close connection with it (as do investment bankers or large block-holders), provides some noticeable advantage in the areas of discovery and certification of firm-specific information based on specific knowledge of the firm and its business model.

Accordingly, a trade-off exists that determines an optimal level of independence. This optimal level is marked  $I^*$  in figure 1 and is located at the point where an iso-control curve is tangent with the downward sloping line.<sup>12</sup> Beyond this level, further increases in directors’ independence undermine the overall ability of the board to perform an effective control on the business venture. This means “excessive” independence may have adverse consequences and ultimately damage the performance of the firm. This implication provides some support to the emergent critique of the independence “vogue”. This critique foreshadows public opinion pressures (by institutional investors, regulators, the media, etc.) that have led listed companies to include ‘too many’ independent members in their boards, and is championed by Roberts, McNulty and Stiles (2005), the main contributors to the Higgs Report<sup>13</sup> published in November 2003: “*the advocacy by institutional investors, policy advisors and the business*

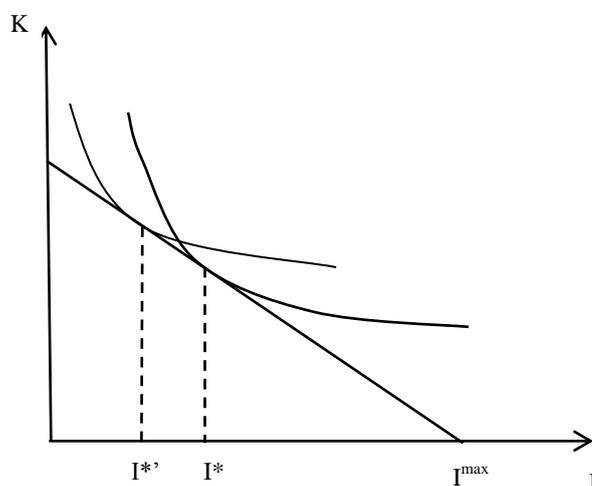
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<sup>12</sup> Ferreira et al (2008) propose a model, where shareholders optimize on the level of independence. Like our argument, the main advantage of independence is to make sure that a bad CEO will be fired. But the trade-off they propose is different: in their model, there is a monetary cost supported by shareholders for independency (due to dispersed ownership in particular). Here, the cost of independence is non-monetary: it is the reduced ability of directors to acquire and certify firm-specific information. A further difference might be pinpointed: while the ability for the board to identify a bad CEO is exogenous in their model, our analysis suggests that this ability is endogenous. In particular, it is decreasing with the level of independence.

<sup>13</sup> The Higgs Report supported the revision in November 2003 of the British Combined Code, which is the main source of regulation for listed companies in the UK.

*media for greater non-executive independence may be too crude or even counter-productive*” (p. S19). Furthermore, the rather disappointing – to say the least – effect of independence on performance showed by empirical evidence may find here a plausible explanation.

In this simple framework, the effect of a growing importance of intangible resources, relative to tangibles, is straightforward: the relative value of independence in terms of knowledge decreases. As the marginal rate of substitution diminishes (in absolute value), the optimal level of independence ( $I^*$ ) becomes smaller. This situation is depicted in figure 2 below. By contrast, full independence or super-majority board (with only a very small number of non-independent board members) corresponds to a corner solution ( $I^{max}$ ), where the whole controlling function of the business firm is reduced to watching that accurate market prices have been utilised as references to value corporate net assets (or bundles of them).



**Figure 2: the effect of growth in intangible assets**

Furthermore, some types of actors are better suited to cope with non-market information in an intangibles-driven business model. First of all, as already mentioned, actors that have long-term relationships with the firm as a going concern are natural candidates. As such, ‘grey’ or ‘affiliated’ directors (employees, block-holders, etc.) may be highly valuable: their very position allows cognitive advantages over purely ‘independent’ directors, while they rest distinct from the executive managerial team. Employees appear to be the best candidates among them, since workforce training in firm-specific capabilities and labor organization are main components of intangibles (see Corrado et al, 2006). The inclusion of employee representatives on the board may then enhance its ability to cope with firm-specific information and intangible drivers of performance. This point is supported by empirical evidence provided by Fauver and Fuerst (2006), who show that the inclusion of worker representatives in the (supervisory) board of German firms is positively correlated (up to a certain point) with the performance of those firms.

## 5. Conclusion

From a microeconomic point of view, intangibles have some remarkable features: in particular, they are characterized by blurred ownership and involve strong complementarities. As a consequence, they are not marketable and do not have efficient market pricing. No market basis exists to discover and disclose specific information about these fundamental drivers of performance of the business firm. Therefore, the control of a business model driven by intangibles requires non-market, firm-specific information, with some far-reaching consequences on financial reporting and the board composition and role.

On the one hand, accounting and reporting for intangibles requires introducing a special informational device based on entity-specific expectations and data. This especially points to the attractiveness of historical cost accounting systems, based on the sequence of realized monetary flows coupled with narrative explanations. On the other hand, the board of directors is expected to validate non-market, insider-related information relevant to investors and external users. To do so, actors that have close, long-term relationships with the business venture – that is, non-independent directors – may be efficiently appointed to the board.

In sum, our analysis points to the attractiveness of pluralistic board appointments, composed of independent members, corporate executives, affiliated members such as employee representatives and other actors with specific knowledge of the business model. By contrast, and except in situations where business revenues originate from a simple set of separable tangible resources, our analysis cautions against ‘super’ or ‘full majority’ boards.

Private equity might appear to offer a similar solution, by emphasizing the advantages stemming from insider control (Jensen, 1989; Holland 2001). However, we have insisted on intangibles; there is sound reason to believe that the financing of these special resources requires patient equity financing that allows discretion and applies to projects where resources are less re-deployable and more specific (Williamson 1988) – This is in opposition to rushed, leveraged financing that lies at the very basis of private equity, especially in the case of leveraged buy-outs. In addition, private equity funds and other insiders may opportunistically exploit the special economy driven by intangibles through entrenchment and other predatory strategies (Shleifer and Vishny 1989; Froud and Williams, 2007), which, in turn, may damage the ongoing development of intangibles in the firm. On the contrary, to some extent, our analysis – by stressing the relevance of a pluralistic board including worker representatives – provides support to the stakeholder theory of the firm and of its governance. From our perspective, this latter model should be coupled with accounting systems providing entity-specific information and based on historical flows. Following Ijiri (1975), this historical

entity-specific basis of accounting is the best suited to plainly disclose income-sharing dynamics among different stakeholders (including shareholders) and is useful in settling conflicts between diverging interests. In particular, it may better detect eventual predatory strategies from insiders in the special economics of the business firm.

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