

MEASURING AND REPORTING INTELLECTUAL CAPITAL

EXPERIENCE, ISSUES, AND PROSPECTS

AN INTERNATIONAL SYMPOSIUM

PROGRAMME NOTES AND BACKGROUND

Technical Meeting
Policy and Strategy Forum

9-11 June 1999

Royal Netherlands Academy of Arts and Sciences
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Measuring and Reporting Intellectual Capital: Experience, Issues, and Prospects

An International Symposium
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Programme Notes and Background

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NOTES TO THE AGENDA

Goals and objectives of the Symposium

“Intellectual capital” is of substantial and growing importance in innovation and productivity growth, enterprise competitiveness and economic performance. Intellectual capital comprises a number of components, including R&D, technology and intellectual property rights; human resources; organisational and workplace structure; marketing, customer and supplier networks; and software. However, these components are often poorly identified and measured, information is collected in widely different ways, and financial accounting and reporting practices in general fail to recognise them as assets. Where non-financial information is available, it is ad hoc, difficult to verify, and not comparable across companies or countries. The resulting gap in transparent, reliable and accurate information interferes with the effective management of intellectual capital, distorting the allocation of resources among different forms of intellectual capital, and between intellectual and other forms of capital.

The goal of the International Symposium is to assess the feasibility and value of improving non-financial information on intellectual capital so as to better inform decision-making. This symposium will explore how firms invest in intellectual capital and will examine:

- *How firms invest in intellectual capital, and how the resulting intellectual assets are currently identified, measured, reported and disclosed by enterprises.*
- *The benefits and costs to firms of identifying and measuring intellectual capital, and reporting such information.*
- *The effects of better information on internal enterprise management, investment and lending decisions, statistical data collection, and government policy.*
- *How information on intellectual capital that is relevant for business management and government policy makers might be improved, and*
- *To what extent indicators developed at enterprise level can be aggregated to the macroeconomic level.*

A report on the Symposium will be published to better inform the public debate. It will address the technical feasibility of improving the quality and comparability of information on intellectual capital, the demand for better information, the use of this information and possible strategies for increasing transparency and improving the quality of information on intellectual capital.

The Symposium is organised by the OECD and co-organised with the Netherlands Ministry of Economic Affairs and Ministry of Education, Culture and Science and the Nordic Industrial Fund. Additional support is being provided by the Canadian Institute of Chartered Accountants, The Ernst & Young Center for Business Innovation, the European Commission (DG3 and DG22), and the Institute of Chartered Accountants in England and Wales.

The Symposium will consist of two main events: a Technical Meeting lasting 1½ days and a Policy and Strategy Forum lasting 1 day. The report of the findings and conclusions of the Technical Meeting will serve as the main starting point for the subsequent Policy and Strategy Forum, which will

conclude with a Roundtable including policymakers, Business representatives and experts. The roundtable will discuss what steps to take to improve information on Intellectual capital:

- What should be the priorities of further efforts to improve information on intellectual capital?
- What are the most important barriers and incentives for future reporting?
- How to select and promote further structured experiments in this area?

The technical meeting

The Technical Meeting will consider the feasibility of developing indicators for identifying, measuring and reporting investment in, and management of, intellectual capital at the level of the enterprise. In order to do this, participants in the Technical Meeting will examine the results of efforts by Research Teams, consisting of outside experts and company representatives, to construct such indicators (*Programme items 1 - 2*). The Research Teams will present, compare and discuss experience and progress towards developing indicators; their use and value inside and outside the enterprise; their relation to each other and to other information currently reported for statistical purposes or disclosed in connection with existing reporting requirements. They would also consider the extent to which the present state of the art allows cross-company and intra-company intellectual capital indicators to be generated within a format which allows comparison of different indicators (*Programme items 3 - 4*).

More precisely the Research Teams could, for a number of indicators and branches consider the following subjects:

- The robustness and validity of the indicators, and the extent to which they can be verified.
- Their reliability across different firms, industries, and countries.
- Their usability as a source of new and better information to improve enterprise decision-making, and information on the health of companies for external purposes, providing information for lenders and investors, government policy makers, and other users of information on intellectual capital, and those involved in development of aggregate indicators and statistics.
- The costs of generating indicators.
- Confidentiality issues.
- The relationship between these intellectual capital indicators, and other information already available or being developed for: i) financial reporting; ii) other forms of reporting; iii) existing benchmarking activities; and iv) reporting for government statistical surveys and the development of aggregate indicators to inform national policy making.

Based on the findings of the Research Teams a Plenary Session of the Technical Meeting is then expected to discuss what has been learned and what further work may be needed, and to reach a consensus with respect to the following (*Programme items 5 - 6*):

- Do areas of Intellectual Capital (for example human resources; R&D, technology and intellectual property rights; organisational and workplace structure; marketing, customer and supplier networks; software) *differ* with respect to the scope for development of robust, reliable and usable intellectual capital indicators?
- Are there *differences between countries* with regard to the conditions that encourage or discourage development of these indicators?

- *Under what conditions* would indicators be cost-effective and pose minimal new burdens on firms? Who are the users of such information, and what are their needs? How important are internal management needs for information on intellectual capital to improve enterprise decision-making, and to what extent are external users looking for transparent, reliable and comparable indicators of intellectual capital? Are definitions and metrics sufficiently developed? If not, where are improvements most urgently needed?
- *At what level of detail* would it most feasible and useful to develop indicators that are comparable? At broad branch level? At more detailed industry level?
- Do *small and medium-sized enterprises* differ from larger companies with respect to their needs for, and use of, intellectual capital indicators and their capacity to generate and use such indicators?
- To what extent could better *indicators at the level of the enterprise improve* the availability and quality of *statistics* for national policy making?

The conclusion of the technical meeting should reveal the extent to which companies generate some form of intellectual capital indicators for internal and external purposes - and what role public policy has played, and in the future may play, to facilitate the development of such indicators.

The policy and strategy forum

The Policy and Strategy Forum will consider the possible mismatch between the existing information on intellectual capital, and the demands for information that result from the progressive shift towards more knowledge-intensive economies. It will consider the need for and feasibility of remedies. The Forum will examine the issues that arise due to inadequate information on investment in and management of intellectual capital, and the strengths and weaknesses of different approaches to measuring and reporting intellectual capital. It will assess progress in the development of indicators; and discuss possible next steps to develop improved, more transparent, indicators of intellectual capital.

The Forum will further consider changes in the importance of intellectual capital as a factor explaining enterprise competitiveness and economic performance, and consider the implications for measuring and reporting intellectual capital of the shift to a more knowledge-based economy. It will examine the adequacy of information on intellectual capital available under existing reporting and disclosure practices and requirements, or collected for statistical purposes. It will consider the importance of information on intellectual capital for improving internal corporate decision making, and external lending and investment decisions; and the risks to public policy making that may arise from inadequate information on intellectual capital (*Programme items 1 – 3*). Initial presentations will be followed by interventions by discussants representing enterprises and potential users; and by questions and general discussion. Initial presentations will explore issues from a number of perspectives, including:

public policy makers;
the accounting profession;
business researchers; and
investors and lenders.

It will further consider the technical feasibility and value to users of different approaches to improving information on intellectual capital at the level of the enterprise (*Programme item 4*). The approaches to be examined could include:

- development of voluntary intellectual capital indicators, as presented and discussed in the Technical Meeting of the Symposium;
- development of comparative information through benchmarking exercises that compare companies according to certain criteria;
- information that may become available following recent developments in formal reporting and disclosure standards for non-financial and financial information on some components of intellectual capital.

Presentations and ensuing discussion are intended to examine the pros and cons of different approaches to identifying, measuring and reporting intellectual capital with respect to issues that include:

- whether information on intellectual capital is transparent, robust, reliable and verifiable;
- the level and distribution (shifting) of costs of generating information on intellectual capital;
- identification of the kind of information on intellectual capital most useful for internal enterprise decision-making, the conditions under which enterprises would be likely to develop and use this information, and the incentives to improve this information;
- availability of and incentives to use tools to improve the management of intellectual capital;
- the extent to which enterprises will be willing to disclose improved information on intellectual capital to investors and lenders and the extent to which the latter perceive a need for such information;
- approaches to generating information that will allow public authorities to improve the measurement of stocks and flows of intellectual capital, and to identify bottlenecks in investment and utilisation of intellectual capital.

A final *Roundtable* should then debate what next steps might be taken to improve internal and external information on intellectual capital (*Programme item 5*).

Drawing on the proceedings of the earlier sessions, the Round Table participants will address the following questions:

- In what areas of intellectual capital do the current gaps in information pose the most serious barriers to better internal management of such assets and improved enterprise decision-making? In view of the technical state of the art, the stakes involved, and the needs of users, in what areas would it be most worthwhile to concentrate efforts to improve intellectual capital measurement and reporting?
- What are the most important barriers that must be overcome, and what incentives are needed before enterprises would be willing to voluntarily report improved information on intellectual capital, and before outside users would be willing to use such information?
- What can be done to encourage and carry forward a process of structured experimentation to improve the transparency, reliability and comparability of indicators and information on intellectual capital?

The Policy and Strategy Forum finalises the symposium by concluding on these questions, pointing out the priority issues which should be addressed, the policy action to be taken and the players to be involved and their respective roles in this process.

THE HISTORICAL AND THEORETICAL CONTEXT

The emergence of the knowledge society

Whereas in the past, competitive advantage was grounded mainly in unique technology, outstanding products, creative marketing and aggressive pricing, leading companies today are having to cope with a radical change in their approach to competitiveness: the emergence of the knowledge society. As with previous economic shifts, the transition now under way is driven by the convergence of technological innovation and changes in patterns of communication and is stimulated by the process of liberalisation and globalisation of markets.

The current generation of digital information and communications technology allows the mobilisation of complex information structures in a way not hitherto possible, enabling the coding, stocking, transmission, processing, buying and selling of digital artefacts independent of distance. Furthermore, the scope for innovation, operations and market supply is global. As a result, entrepreneurial skills in all sectors of the economy are actively engaged in harnessing tools that will induce a cultural and social revolution with far-reaching consequences for societal cohesion, economic relations and individual identity well into the 21st century.

The impact of information and communications technology (ICT) is felt not only in the computer and media sectors but also throughout all branches of the economy. Around the nucleus of applied information technology, major technological breakthroughs have taken place in fields as diverse as advanced materials, energy production and conservation, nuclear and medical science, biotechnology and environmental control. This process is also underpinning new modes of production in manufacturing and the agri-food industry and new methods of distribution, transportation, communication, trade and public services.

Consequently, the last quarter of the twentieth century has witnessed the emergence of a new economic order challenging the established norms of wealth creation, investment return and risk. Dominant market players increasingly deploy *intellectual capital* as a key strategic tool, and for many firms in the high-tech sectors – notably software, bio-technology, media and business services – the effective exploitation of intellectual capital is often *the* critical factor in sustaining competitive advantage.

The rise of the knowledge society can, however, be considered a quantum jump in a long history of development of human skills and know-how. In fact, two centuries ago, Adam Smith, in *The Wealth of Nations*, underlined that improvement of workers' skills was a fundamental source of economic progress. He also stressed that investment in human capital and skills affects personal incomes and the structure of wages. Attempts to quantify the actuarial value of a person's knowledge and skills were made by Lotka (1880-1949) and J.R. Walsh. Frank Knight (1885-1962) was probably one of the first to argue that improvements in the stock of intellectual capital might allow an economy to overcome the (classical) law of diminishing returns. Conceptual analysis of the impact of intellectual capital accelerated considerably since the Second World War.

During these last fifty years or so, the work on intellectual capital, here considered more or less synonymous with “intangibles”, has proceeded along four different axes:

- Analysis of the sources of economic growth (productivity);
- Analysis of investment in education and knowledge of individuals (human capital);
- Analysis of research and development, technology and innovation and policy issues; and
- Compilation of data on investment in and stock of intangibles in national and business accounting and business reporting.

The following sections present a general synthesis of the work undertaken on intellectual capital formation in the different disciplines of economic and technological analysis. In order to simplify the presentation the various contributions are considered under the headings outlined above. In reality, however, the classification of these contributions involves a certain degree of arbitrariness as many of these contributions cover more than one field of interest. A chronological presentation of the main contributions to the work on intangibles is provided in an annex.

Sources of economic growth and productivity

The analysis of the relation between factor use and output is largely based on a production function including capital and labour and allowing for substitution between the two factors of production presented in 1928 in an article by Cobb and Douglas. Subsequently the implications and limitations of this approach were made evident and a series of alternatives proposed by a number of researchers. Nevertheless the analysis of the relation between factor use and output has been a staple of economic analysis for the whole post-war period, with the development of a branch of quantitative analysis of the growth process commonly known as “growth accounting”.

Growth accounting which aims at explaining the growth of productivity was initiated essentially by Denison in 1962. When investigating the sources of growth in the United States from 1909 to 1958 he concluded that the knowledge, skill and energy of labour were important determinants of economic growth. Subsequent analysis by, notably, Kendrick, Jorgenson and Griliches, has aimed by and large at identifying the contribution of various, mainly “intangible”, factors to the overall growth in productivity, in this context defined as the combined productivity of capital and labour, generally called “total factor productivity”. As recognised by Denison himself, growth accounting by definition cannot take appropriate account of the interaction among determinants and does not involve a “controlled experiment”. The underlying causal relationships in the “black box”, consequently, can only be approximated by detailed, careful classification of the ingredients in the production function.

More recently a number of researchers, notably Romer, Lucas and Barro, have argued that knowledge accumulation, while being an essential feature of economic growth, cannot be analysed only as an independent factor of production. This approach, under the name of **endogenous growth theory**, consequently, aims at identifying and analysing the reciprocity between tangible and intangible capital formation and the interaction between public policy and the market.

Analysis of the “residual factor” (the part of economic growth not explained by increasing use of capital and labour) has been pursued during subsequent decades with important contributions presented, notably, in the framework of the OECD Technology/Economy Programme. It has also been stimulated by the arrival of a new generation of researchers in the US (notably Martin Bailey) and the emergence of new patterns of growth, notably the slowdown of productivity growth after 1973.

In connection with the work on the Technology/Economy Programme (TEP, see below), **the OECD** in 1989 organised a conference focussing on the “productivity paradox”, to examine why the apparent acceleration of technical change in the 1980s had not shown up in the productivity indicators. The main conclusion of this conference was that the productivity paradox was attributable in large measure to difficulties in measuring the productivity of service industries and taking due account of quality improvements in innovative products and processes.

A comprehensive stock-taking of the findings and issues in the research on productivity measurement and the productivity “paradox” took place at a conference in Ottawa in 1997 organised by the Canadian Centre for the Study of Living Standards. Contributions given by a number of leading researchers and experts largely confirmed the conclusions of the earlier OECD conference and broke some new ground with respect to measuring the output of the service industries.

Theory of human capital formation

In parallel with the analysis of the sources of economic growth an important strand of economic theory has focussed on investment in and the stock of human capital, that is, the knowledge, skills and mobility of individuals. This strand of research took as the starting point the impact on life-cycle income and income distribution of investment in education and training. An article by J. Mincer in 1958 may constitute the first step towards the elaboration of a theory of investment in human capital. However, the principal contribution was made by Gary Becker in 1962 (a contribution to a NBER conference) and, notably, in 1964, in a seminal volume: *Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education*. Fritz Machlup, also in 1962, presented a first comprehensive review (but without a theoretical discussion) of “The Production and Distribution of Knowledge in the United States”. A further step was taken in 1969, by T.W. Schultz, in *Investment in Human Capital*, in E.S. Phelps (ed.) “The Goal of Economic Growth”.

Gary Becker’s initial formalisation of a theory of human capital formation undertook a brief formulation of a theory of investment in education with the aim of providing a conceptual framework for an estimation of the rate of return on college and high-school education in the United States. As stated in the first edition of his work (page 30 in the third edition), this general analysis would offer a unified explanation of a wide range of empirical phenomena that had either been given ad hoc interpretations or had confused investigators. The main thrust of the theory developed by Becker was, indeed, to apply elements of microeconomic theory to the decision making by individuals, families and the authorities concerning investment in education and training. The second strand of research then provided comprehensive quantitative evidence and verification of the basic conceptual framework.

Without presenting a formal conceptual framework, Fritz Machlup, in the late 1970s and early 1980s prepared, in three volumes, a comprehensive, indeed unique, assessment of many different aspects of the knowledge economy, including a review of the formalisation of conceptual frameworks presented by other authors. The third volume, in particular, published only after his death in 1983, contained a detailed discussion of “education production functions” and constitute an indispensable complement to the more formal approach by Becker.

Research and development, technology and innovation

A third strand of research, mainly in the form of applied economic theory, has dealt directly with the patterns of technological development, the classification of activities, assessment of different aspects of the innovation process, etc.

Whereas Schumpeter already had emphasised technical progress and innovation as the main factors of “creative destruction”, many OECD member countries took steps, in the 1960s and 1970s, to formulate and implement policies in favour of R&D and, notably, the application of the results of scientific research. Seeking to harmonise the approach to R&D policies and data collection, the **OECD**, consequently, already in June 1963 held a meeting of national experts on research and development and with their assistance prepared a first version on *Proposed Standard Practice for Surveys of Research and Development* (the Frascati Manual). This manual (now in a fifth edition), consequently constitutes an important step in the direction of providing a harmonised approach to the collection and interpretation of data on R&D from the input side.

Soon it became clear, however, that the evaluation of R&D could not rely only on data on expenditure on activities classified as such or the share of staff devoted to R&D. There was a perceived need to provide some common standards for evaluating the results (the output) of research activities and, indeed, of all categories of intellectual capital formation. A first attempt at setting standards was made by the publication, in 1987, of an OECD report on *Evaluation of Research*. A further step was taken by the preparation, in 1996, of an OECD report on *Measuring What People Know* (by Riel Miller of the OECD Secretariat).

In parallel the OECD, as indicated in the preceding section, in 1988 launched a major programme aimed at formulating an integrated approach to technological, economic and social issues (The Technology/Economy Programme, or TEP). The reports prepared in the framework of this programme provide an opportunity to examine the consequences of the qualitative changes in the knowledge intensity of production of goods and services, the role of intangibles in the economy, the forms of organisation and the management of firms.

Accounting for and reporting on intellectual capital.

From the beginning of the growth accounting exercises in the 1960s it has been recognised that available accounts and statistical data could provide only scant and incomplete evidence of the presence of “intangibles”. Firstly, there was a perceived need to distinguish more clearly between, on one side, investment in (expenditure on) intangibles and, on the other, the resulting improvement in the *stock of intellectual capital*. Secondly, the classifications utilised in national and business accounts in general did not allow a separate identification of investment in intangibles. Thirdly, the general failure to distinguish between “services” and “intangibles” creates a fundamental problem of perception and taxonomy in the analysis of economic performance. While there is broad recognition that intellectual capital formation has become a decisive factor of economic growth and welfare, our knowledge of the process has, therefore, remained elusive, subjective and scattered.

The very fact that intangibles are only incompletely revealed in available statistical data and company accounting and reporting, furthermore, may be at the origin of several potential distortions of resource allocation and policy making:

- Capital markets – in part due to prudential rules and regulations – still put an excessive emphasis on fixed capital. Intellectual capital can rarely be recognised as collateral for bank loans and the cost of capital is frequently higher for companies relying heavily on intellectual capital.
- The widely applied mandatory expensing of investment in intangibles is the cause of under-reporting of profits in early-stage companies and overstatement of profits in the later phase of exploitation of intangible assets. This will strengthen the hands of managers and insiders, in

possession of efficient information but weaken the position of shareholders and increase the volatility of share prices.

- Even inside companies insufficient information on the level and evolution of intellectual capital may create the risk of distortion of management decisions and formulation of an adequate company strategy.
- Overemphasis on fixed investment and Inadequate reporting of intangible investment and intellectual capital may be a source of distortions of public policy, for example on taxation of company profits, rules of depreciation of different kinds of capital, etc.

There is, therefore, a large and increasing need for improving the insight into the role of intangibles in the economy by generating new indicators at all levels of decision making and economic analysis.

In growth accounting the response has in general, as indicated above, been to move beyond the original elementary definition of capital and labour as homogenous entities towards a detailed classification of capital by category and vintage and of labour by level of education and skill and to take account of hours worked etc. This analysis has, however, not involved modification of the traditional statistical data but has mainly relied on the search for additional indicators, frequently through ad hoc surveys or education statistics, etc.

In fact, the accountants, whether in national or business accounting, have been very reluctant to fundamentally reform the basic principles of accounting as practised throughout most of the 20th century. Indeed, as argued by senior accountants throughout the industrial countries, there has been a broad consensus in the profession that the purpose of company balance sheets cannot and should not be to show the *market value* of a company as a going concern but only to provide an evaluation of individual, identifiable and separable assets according to their market value if detached from the reporting company.

As Intellectual capital seems to have attributes that differ vastly from the tangibles (and a few intangibles) reported in financial statements, many companies have explored new ways of reporting intellectual capital in order to disclose information on the knowledge resources and other intangibles of the firm. This is done with the purpose of improving the basis for investment decision and management of these resources for future growth and development of the enterprise.

Indeed, even respecting the fundamental principle of including in the balance sheet only assets that are clearly identified and separable, there is a considerable scope for showing the presence of intangibles in the company. This involves reconsideration of classifications of costs and investments and for the compilation of alternative below-the-line indicators for the presence of intangibles and intellectual capital and the management of knowledge, competence and innovation. Such efforts have been deployed in the 1990s mainly in the framework of corporate reporting and capital market analysis.

The endeavours to reconsider corporate reporting with the aim of generating indicators for intangibles have, in fact, been spearheaded by a small number of corporations which, due to heavy reliance on intellectual capital, took a particular interest in the subject.

Among the pioneers are found corporations like the Swedish insurance company, Skandia, the Danish company Rambøll and the Dow Chemical Company. Skandia and Rambøll in 1994 included various aspects of their intellectual capital in their annual reporting and Dow Chemical Company, also in 1994, prepared and published a conceptual framework for assessing the contribution of intellectual capital to the overall value of the company

The European Commission in 1994 sponsored a study by PIMS Associates and the Irish Management Institute of intangible factors behind growth, competitiveness and jobs, and in 1996, together with Danone, Interbrand and Oracle, provided funding for a study of “Intangibles in the European Economy” by the Centre for European Policy Studies. The European Commission and private sponsors also provided support for a new study of intellectual capital by the latter institute in 1997-1998.

The OECD and Ernst & Young in 1996, in Helsinki, organised a conference on the valuation of companies in the knowledge society. Papers from this conference were published as “Enterprise Value in the Knowledge Economy” Ernst & Young and OECD, 1997.

Stocktaking took place at a symposium on “Financial Accounting and Reporting of Intangible Assets” sponsored by the United States Securities and Exchange Commission in April 1996. An important contribution to this symposium was provided by Professor Baruch Lev, who, on the academic side, has been one of the leading promoters of research on the impact of intangibles on the stock market capitalisation of corporations.

The Danish government in 1996-1997 sponsored the preparation of a report on various attempts, at the company level, to prepare “intellectual capital accounts” (based on the experience of 10 Nordic companies). In the Netherlands, Statistics Netherlands in 1998 published a detailed report on intangible investments, commissioned by Eurostat (the statistical arm of the European Commission). This report considered in considerable detail the definitions of and the scope for compiling data on various elements of intangibles from international sources, from company balance sheets, company registrations, etc.

Further initiatives to consider the scope for and the practical implications of developing better and more comprehensive intellectual capital indicators were taken in 1998 by the Brookings Institution and the Danish government, the latter through the organisation of a pilot project with participation of some 20 Danish firms. The project is implemented in co-operation with researchers from Copenhagen Business School, Aarhus University and Arthur Andersen Business Consulting. The first results of this latter pilot project were made available in April-May 1999.

In the framework of the preparation of the OECD Symposium, however, a number of other research projects were launched and existing projects identified and brought into the framework of preparation of this event. This Symposium will, therefore, constitute an ideal forum for an assessment of the findings of these different projects and pilot schemes and to allow some conclusions to be drawn as to the future development of intellectual capital indicators at the level of the firm and branches of activity.

LITERATURE ON INTELLECTUAL CAPITAL: SELECTED BIBLIOGRAPHY

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3. Analysing R&D, technology and innovation.
4. Accounting for and reporting on various aspects of intellectual capital.

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GLOSSARY

A selection of terms figuring in the Symposium programme and/or in the literature and reports on intangibles and intellectual capital

Acquisition	A business combination in which one of the enterprises, the acquirer , obtains control over the net assets and operations of another enterprise, the acquiree , in exchange for the transfer of assets or the issue of equity.
Active market	An active market exists if, and only if, all the following conditions are met: (a) the items traded within the market are homogeneous; (b) willing buyers and sellers can normally be found at any time; and (c) prices are available to the public.
Amortisation	The systematic allocation of the depreciable amount of an asset over its useful life.
Asset	A tangible or intangible element with the potential to contribute value.
Book value	The value of a company as shown in the regular (annual) balance sheets established according to accounting rules in force. See also “one book principle” and “two book principle”.
Brand	The combined position, image, symbol, name or design intended to identify goods or services from those of competitors.
Brand identity	The position and perception of the brand in the market place.
Business combination	The bringing together of separate enterprises into one economic entity as a result of one enterprise uniting with or obtaining control over the net assets and operations of another enterprise.
Carrying amount	The amount at which an asset is included in the balance sheet after deducting any accumulated amortisation and accumulated impairment losses thereon.
Competitive Advantage Period (CAP)	The period of time a company's rate of return on invested capital (ROIC) will exceed its weighted average cost of capital (WACC) on incremental investments.
Control	An enterprise controls an asset if the enterprise both has the power to obtain the future economic benefits flowing from the underlying resource and also can restrict the access of others to those benefits.
Copyright	An ownership right granted to an author of a written work, computer programs, music, etc.
Corporate governance	The basic principles guiding the management of corporations such as: the structure of the Boards and the influence of shareholders, staff, banks, public authorities and other “stakeholders”.
Current cost valuation	Valuation of an asset at the cost at which it could be acquired in the market at present (replacement cost)

Customer capital	The value of a company's relationship with customers, part of the organisational (structural) capital.
Depreciable amount	The cost of an asset, or other amount substituted for cost in the financial statements, less its residual value.
Economic Value Added (EVA)	Net after-tax operating profit minus a charge for the capital employed to produce those profits. The capital charge is the required, or minimum, rate of return necessary to compensate all the firm's investors, debtholders as well as shareholders, for the risk of the investment (EVA=NOPAT-(WACC*Invested capital)).
Experience knowledge	Explicit knowledge about the history of products and processes: "How did we do things like this?"
Fair value of an asset	The amount for which that asset could be exchanged between knowledgeable, willing parties in an arm's length transaction.
Favoured contracts	Contracts existing giving the organisation a favourable position, typically generated due to strength of bargaining power on the part of the organisation.
Franchise	A contract between a franchiser and a franchisee which enables the franchisee to exploit a name, process or equipment and the goodwill and know-how associated with it in return for a consideration.
Frascati Manual	Proposed standard practice for surveys of research and experimental development, OECD 1993
Future economic benefits	Future economic benefits flowing from an asset may include future revenue from the sale of products or services, cost savings, or other benefits resulting from the use of the asset by the enterprise itself.
Goodwill	Goodwill represents future economic benefits from synergy between identifiable assets or from intangible assets that do not meet the criteria for recognition as an identifiable intangible asset.
Historic cost valuation	The valuation of an asset at the cost of acquisition, as reduced according to the rules governing amortisation.
Human capital	The (estimated, imputed) value of the qualifications, scientific and technical knowledge, skills, mobility and experience of an individual and which is the property of this individual (although it may temporarily be controlled by an employer in case the individual is employed).
Human resource accounting	The systematic recording of spending on human resources controlled by the company.
Identifiability	To be recognised as an intangible asset IASC requires that the asset, that is the resource controlled by the enterprise, be identifiable in order to distinguish it from goodwill.
Impairment loss	The amount by which the carrying amount of an asset is reduced to its recoverable amount.
Information Technology (IT)	Information Technology (IT) refers to a specific form of technology. IT consists primarily of software, but includes also other items such as databases, know-how and software rights. Unlike technology in general, IT-activities are primarily aimed at the electronic processing of information.

Innovation	Innovation occurs when a new or changed product is introduced to the market, or when a new or changed process is used in commercial production. The <i>innovation process</i> is the combination of activities – such as design, research, market investigation, tooling up, etc. – which are necessary to develop an innovative product or process.
Innovation competences	The institutionalised <i>intelligence</i> of an enterprise (ideas, creative talent, R&D in process, capacity to turn R&D into viable products, learning and renewal capacity).
Innovation capital	Capacity to innovate by differentiating products and staying ahead of competitors through process improvement (synonymous with Innovation competences).
Intangible investments	Intangible investments are all new goal-oriented activities to a firm or disembodied tools used by a firm, at tactical and strategic level, during the reference period. At the tactical level they are aimed at a quantitative change or extension of existing knowledge or at the acquisition or improvement of existing goods, while at the strategic level they are aimed at the acquisition of completely new knowledge. When accumulated, intangible investments become intangible assets.
Intangible assets	Non-monetary assets without physical substance held for use in the production or supply of goods or services, for rental to others, or for administrative purposes.
Intangible goods	Intangible goods consist mainly of immaterial products in the form of information and scientific, literary, artistic or entertainment creations that generally are stored or recorded on media such as paper, tape or disk. They can be bought, sold, stocked, licensed and traded in the same manner as physical goods. They have nothing in common with <i>services</i> .
Intellectual capital	The (estimated, imputed) economic value of intangible assets of a company. Intellectual capital may be broken down in two categories: (a) organisational ("structural") capital; and (b) human capital.
Intellectual Property	Property rights concerning the exploitation and commercialisation of intangible assets.
Invested capital	The sum of a company's total book debt and book equity capital base, including retained earnings and equity-equivalent reserves, such as capitalised R&D expenses.
Know-how	Knowledge owned by an individual, a firm or an institution.
Knowledge management	The management of the intellectual capital controlled by a company, that is, the (explicit) selecting, mapping, training, leveraging, and organisation of the human capital and organisational competences available to a company,
Knowledge-based Economy	A commonly used characterisation of the fact that in the most advanced economies a large share of output is generated in the form of immaterial goods and services either incorporated in material goods or marketed directly.
License	Permission granted by an owner of intellectual property granting certain rights to another.
Licensing	Rights owned by a company to manufacture, market or sell goods and services originating from another enterprise.
Market capitalisation	The stock market value of a (quoted) corporation (see also “market value added” and “book value”).

Market competences	Capacity to exploit intellectual property, form alliances and ensure customer and vendor satisfaction, retain clients, ensure efficient follow-up, ensure brand loyalty and high retention rates.
Market Value Added (MVA)	The difference between market capitalisation and book value of a company.
Marketing	Like technological innovation, marketing consists of new goal-oriented activities to a firm or rights used by the firm in these goal-oriented activities. Unlike technological innovation they are purely aimed at the positioning and development of target markets and groups. Marketing includes market research, advertising, marketing rights and certification.
Minority interest	That part of the net results of operations and of net assets of a subsidiary attributable to interests which are not owned, directly or indirectly through subsidiaries, by the parent.
Monetary assets	Money held and assets to be received in fixed or determinable amounts of money.
Negative goodwill	Any excess, at the date of an acquisition, of the acquirers's interest in the fair value of the identifiable assets and liabilities acquired over the cost of the acquisition.
One-book principle	The principle that financial statements published by a company must comply with the tax rules and be set up with the main objective of determining what income can be distributed to "stakeholders" (shareholders, tax authorities and employees). The "one-book principle" is applied in Germany, Belgium, Denmark, France, Italy, Japan, Norway, Spain, Sweden and Switzerland (see also "Two-book principle").
Opportunity cost	In accounting terminology: the market value of an asset if it is separated from the business as a going concern and sold in the market place. The opportunity cost, consequently, is a "shadow price" which, when compared against the estimated discounted value of the earnings of the asset in its present utilisation, can determine whether its should be disposed of or not.
Organisation	A system in which people try to accomplish specific goals in a dynamic environment. In order to do this during a longer period of time, structural, technological and/or cultural changes are necessary. So in line with technology, the concept of innovation can be introduced to define organisational intangible investments.
Organisational capital	The (estimated, imputed) value of intangible assets owned and controlled by a company. Organisational capital basically consists of (a) intangible goods which are identifiable and normally subject to intellectual property rights; and (b) intangible competences, such as innovation competences, organisational competences and market competences.
Oslo Manual	Guidelines for collecting and interpreting technological innovation data, OECD/Eurostat 1997,
Parent	An enterprise that has one or more subsidiaries.
Patent	A monopoly right which is owned and can be bought, sold, hired, or licensed.
Process knowledge	Explicit knowledge about the way things are done in the company: "How do we do this?"
Registered Designs	Protects novel designs.

Research and experimental development (R&D)	Research and experimental development (R&D) comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications.
Residual value	The net amount which an enterprise expects to obtain for an asset at the end of its useful life after deducting the expected costs of disposal.
Separability	The scope for selling an asset independently of the rest of the business. Thus, an asset is "separable" only if it has a value which is completely independent of what it is earning in the business under analysis (scrapping value).
Strategic alliances	Relationships with other companies or organisations in order to gain a favourable position in the market place or leverage joint resources to mutual benefit. Strategic alliances may concern R&D, technology, production processes or marketing.
Technological Product and Process Innovation	Implemented, technologically new, products and processes or significant technological improvements in products and processes. A TPP Innovation has been implemented if it has been introduced on the market (product innovation) or used within a production process (process innovation).
Technological innovation	The term technology encompasses both tangible and intangible resources, and both operational and investment activities. Technological innovations are new goal-oriented activities to a firm or rights used by the firm in these goal-oriented activities. They are aimed at the increase of the stock of technical knowledge and the use of this stock of knowledge to devise new applications. For their measurement the OECD has developed guidelines (Frascati and Oslo manual) in which innovation is divided into several phases or sorts of activities.
Trade Mark	A mark or sign which is capable of being represented graphically and which distinguishes goods of one company from another.
Two-book principle	The principle allowing a company to distinguish between financial statements prepared for tax purposes and financial statements prepared for investors and creditors. The objective of the second "book" is to provide information enabling investors and creditors to predict the future cash flow and profitability of the company and to evaluate how managers have utilised their resources. The "two-book principle" is applied in United States, Australia, Canada, Ireland, Netherlands, New Zealand and United Kingdom (see also "one-book principle").
Uniting of interests	A business combination in which the shareholders of the combining enterprises combine control over the whole, or effectively the whole, of their net assets and operations to achieve a continuing mutual sharing in the risks and benefits attaching to the combined entity such that neither party can be identified as the acquirer.
Useful life	Either: (a) the period of time over which an asset is expected to be used by the enterprise; or (b) the number of production or similar units expected to be obtained from the asset by the enterprise.

ACRONYMS AND ABBREVIATIONS

AICPA	American Institute of Certified Public Accountants
CICA	Canadian Institute of Chartered Accountants
CAP	Competitive Advantage Period
CEC	Commission of the European Communities
CEPS	Centre for European Policy Studies, Brussels
ECE	United Nations Economic Commission for Europe
EPS	Earnings per share
EU	European Union
Eurostat	Statistical Office of the European Communities
EVA	Economic Value Added (see Glossary)
FASB	Financial Accounting Standard Board, United States
FCF	Free Cash Flow
FIFO	First-in-first-out : Principle of accounting for inventory movements (see also LIFO)
GAAP	Generally Accepted Accounting Principles (United States) Privately determined accounting standards, mainly under FASB. Accepts the "two-book principle", that is, the GAAP requires companies to allocate the cost of equipment so as to reflect its consumption in the production process independently of the valuation rules imposed by tax authorities
HGB	Handelsgesetzbuch (Germany) The German Commercial Code (1985) requiring conformity between the tax code and accounting principles ("One-book Principle").
IAS	International Accounting Standard issued by IASC
IASC	International Accounting Standards Committee
IBFD	International Bureau of Fiscal Documentation Documentation on taxation in different countries in the world
ICAEW	Institute of Chartered Accountants in England and Wales
ICT	Information and Communications Technology (synonymous with IT)
IOSCO	International Organization of Securities Commissions
IRS	Internal Revenue Service (United States)
IT	Information Technology
LIFO	Last-in-first-out, Principle of accounting for inventory movements (see also FIFO)
MVA	Market Value Added
NACE	General Industrial Classification of Economic Activities within the European Communities
NOPAT	Net Operating Profits After Tax
OECD	Organisation for Economic Co-operation and Development, Paris
ROIC	Rate Of Return on Invested Capital
S&T	Science and Technology
SEC	United States Securities and Exchange Commission, Washington D.C.
TPP Innovation	Technological Product and Process Innovation
WACC	Weighted Average Cost of Capital

For full programme documentation:

<http://www.oecd.org/dsti/sti/industry/indcomp/act/Ams-conf/symposium.htm>

The goal of the International Symposium is to debate the feasibility and value of improving information on intellectual capital in order to strengthen the basis for decision making.

A report on the Symposium will be published to better inform the public debate. It will address the technical feasibility of improving the quality and comparability of information on intellectual capital, the demand for higher-quality information, the use of this information and possible strategies for increasing transparency and improving information on intellectual capital.

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RESEARCH ARTICLE. Mushun Wang. Measuring Intellectual Capital and Its Effect on Financial Performance: Evidence from the Capital Market in Taiwan. © Higher Education Press and Springer-Verlag 2011. Abstract This paper studies intellectual capital in companies in Taiwan, China. Intellectual capital is an invisible, yet important resource for companies. The first aim of this paper is to provide a systematic investigation on how to measure intellectual capital. Results show that the coefficient of value-added intellectual capital is positively related to return on assets and market capitalization in both fixed and random effects. Similar results are also obtained with dynamic panel data. INTELLECTUAL CAPITAL Intellectual capital is the term used to describe the intangible assets provided to an entity by its employees' efforts and also knowledge assets such as patents, trademarks, copyrights, and other results of human innovation and thought. Financial reporting limitations have led to efforts to measure intellectual capital indirectly outside the financial statements. Such measures sometimes accompany the financial statements in reports to stockholders. In order to accurately assess the value and prospects of such firms, these critics contended, it was necessary to somehow quantify and account for the collective knowledge and the organization of that knowledge within a firm.