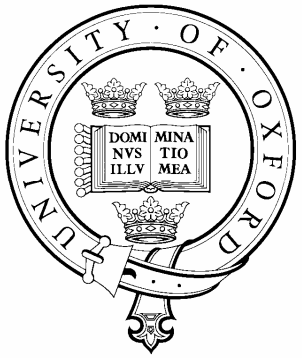


On the Origin of Wealth by Means of Adopting a New Value Paradigm

Alexander G. Welzl

Distinguished Visitors Lecture
Department of International Development, Oxford

24 November 2009

Preface

I dedicate this lecture to Charles Darwin
- the legacy of the past

… to my four year old daughter, Magdalena
- the promise of the future

… and to the crew of Apollo 11
- who changed perspectives of mankind forever

Learn. Adapt. Evolve. Prevail.

The Journey Begins … with a Modern Tale of a Summer Night Dream …

y lecture is a tale about a journey. So lets start our journey with a short story – a story of a summer night dream. Maybe some of you have seen the movie ‘Apollo 13’. It is the story of a spectacular defeat – and a victory coming with it at the same time. A successful failure - the same as it sometimes occurs in our individual lifes and societal development.

There is a scene in this movie that will always remain in my mind because for me it holds the metaphor of the 20th century – and the foundation of our future in the centuries ahead.

On a mild, Californian summer night on July 20, 1969 veteran astronaut James ‘Jim’ Lovell goes into his garden and looks into the starry sky after watching Armstrong’s historic step on the surface of the moon via TV. Filled with anticipation and impatience Jim ‘daydreams’ of his coming journey to the moon and the grey surface of earth’s companion – the place where he should be quite soon as well …

The Moon – a Small Step for One Man and a Giant Leap for Mankind …

Following a sudden impulse Jim closes one eye, stretches out his arm and puts his thumb in the air – moving it back and forth, one time to hide and the other time to reveal the image of the moon in the night sky.

James Lovell looks up in the sky like millions of ancestors before him, but soon he will have the privilege to change his individual perspective…

Earthrise – our Homeplanet

Source: http://en.wikipedia.org/wiki/Earthrise

… we change into space: this time we are on board of troubled spacecraft 'Odissey' on her way back to earth. After having surrounded the moon the crew of Apollo 13 mission and its Captain, Jim Lovell, fight for survival on their way back to the homeplanet without being sure if they will succeed in the end.

Jim imagines himself having landed on the surface of the moon like Armstrong already did, seeing the earth rise amidst the dark of space… Then he looks out of the window of their spacecraft and following a sudden impulse he does the thumb trick again looking at the earth, far away from them in space.

This time it is the earth that vanishes behind his thumb…

Changing perspectives
are the fuel of evolution…

…foresight and adaptability
are the gift of mankind.

2009 - a Year of Historic Anniversaries, Historic Moments and New Perspectives

- 150‘s anniversary of Charles Darwin‘s book ‚On the Origin of Species‘
- 40‘s anniversary of Man‘s landing on the Moon
- 20‘s anniversary of the velvet revolution in Prague
- 20‘s anniversary of the fall of Berlin wall

- 1st inauguration of a coloured President of the United States of America

- 1st anniversary of the Lehman crash
- Largest financial crisis and economic downturn since decades

Renaissance 21
- Rationale of This Lecture

The dawn of this century calls for change in our global financial and economic system. A kind of 'renaissance' could create room for new ideas that could reshape the politicial, societal and economic landscape.

Three axiomatic assumptions – for fundamental economic renewal:

1. **The invisible hand is not trustworthy –** Individual market participants in globally entangled financial and real markets act on the basis of bounded rationality only – and so do they collectively as well

2. **Capital definition is incomplete -** Current capital definition is limited to the extent that it does not take into account the most important assets of 21st Century: human capital and knowledge

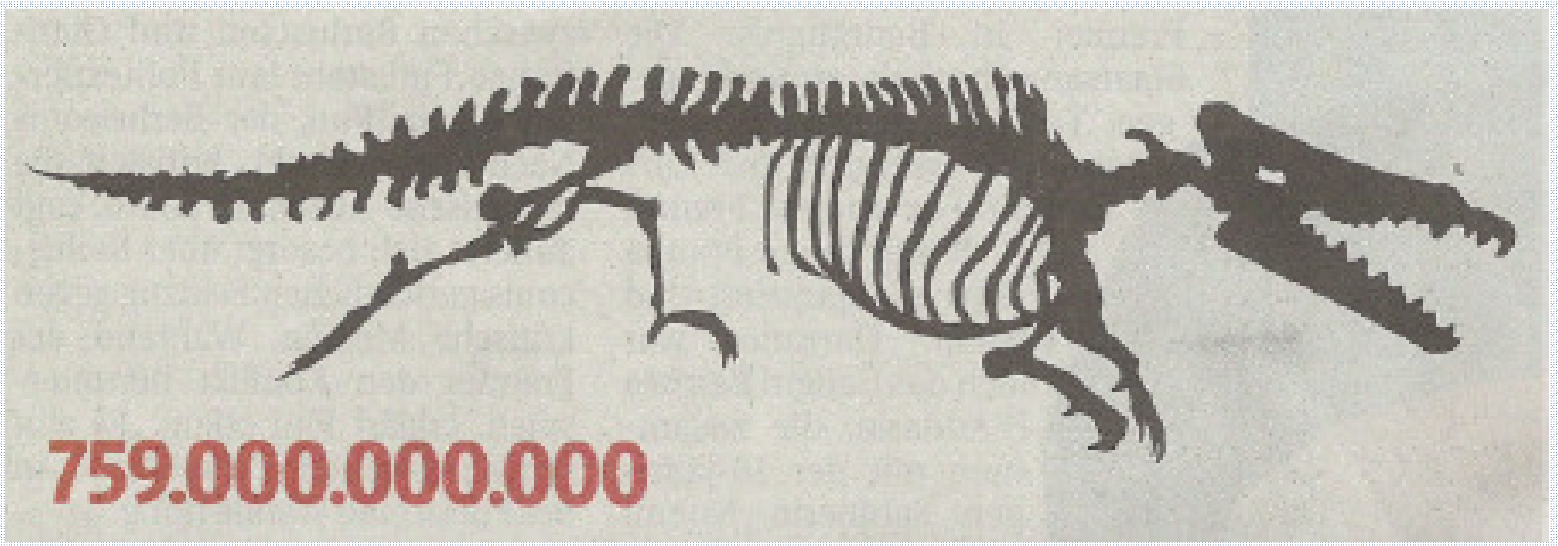
3. **The monetary system and infinite growth are not laws of nature -** Focus on growth and purely monetary measurement of macroeconomic success fail to be suitable paradigms for the future of our societal development

Structure of the Lecture

- **Chapter I (pages 10 – 23):**
  Economic Theory and Model of Man
- **Chapter II (pages 24 – 57):**
  Microeconomic Level
- **Chapter III (pages 58 – 79):**
  Macroeconomic Level

Chapter I:
Economic Theory and Model of Man

Markets Are Not Rational
- and Numbers Never Show the Whole Picture



G-20 Summit, April 2009: the leading industry nations decide to provide the financial markets with 759 billion €.

A single employee with an annual salary of 50,000 € would have to work 15.2 million years for that. This would equal nearly the time span from the age of Neogen, when the first birds and mammals appeared on earth, until today.

Issues of This Chapter

- **‚Model of Man' in mainstream economic theory and in behavioural economics:** homo oeconomicus (complete information, rationality and self-interest) vs. ‚Renaissance 21 Man' (fairness/corruption, stories etc.)
- **Some basic assumptions/axioms and real world characteristics of mainstream (neoclassical/ neoliberal) economic theory:** invisible hand of the market, individualisation of gains and socialisation of losses, use of complex language/metaphors to create information asymmetry
- **Towards new axioms:** growing importance of extra economic factors, intangible assets as capital, monetary quantification and valuation has its limits

Progress in Economic Theory needed - Towards a More Realistic Picture

Prof. Reinhard Selten
Nobel Prize in Economics 1994

'The prevailing portrayal of economic behavior in economic theory is based on very strong assumptions of rationality, which are not fulfilled in reality. **If economic subjects were completely rational, as defined in economic theory, the markets could be left to their own devices without the risk of development of serious and long-lasting imbalances. But such optimism about stability is unjustified.**

Economic theory must progress to form a more realistic picture of human behavior. A lot of empirical and experimental research is needed for this purpose.'
DER SPIEGEL 11.12.2008

Behavioural Economics
- in Search of New Ingredients

Prof. George A. Akerlof, Nobel Prize in Economics 2001

"Economic theorists, like French chefs in regard to food, have developed stylized models whose ingredients are limited by some unwritten rules.

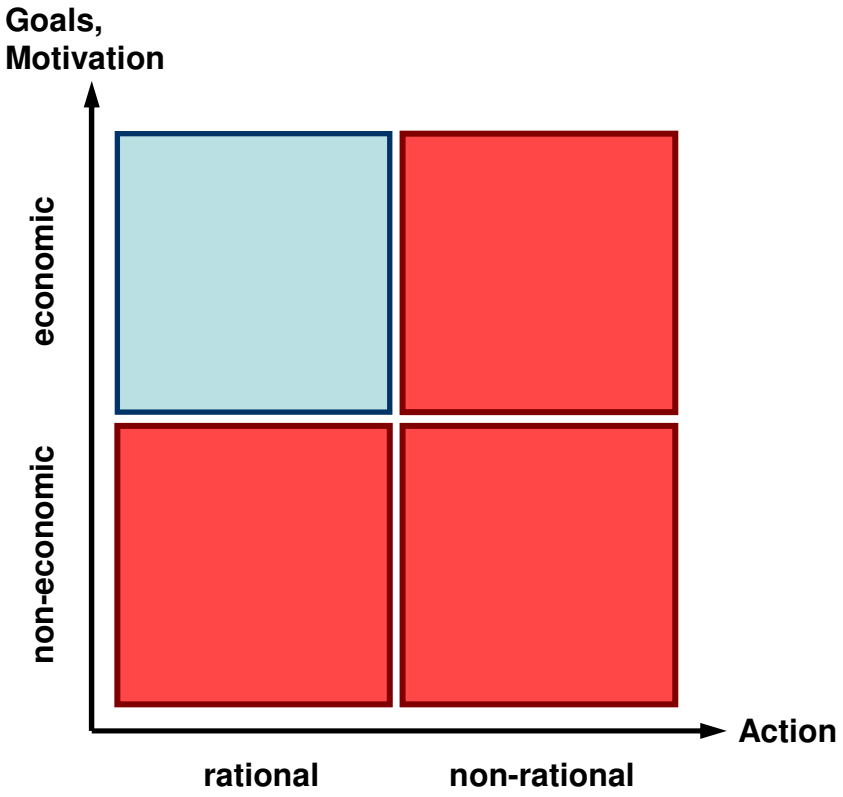
Just as traditional French cooking does not use seaweed or raw fish, so neoclassical models do not make assumptions derived from psychology, anthropology, or sociology.

I disagree with any rules that limit the nature of the ingredients in economic models."

University of California, Berkeley – 10.10.2001
http://www.berkeley.edu/news/features/2001/nobel/index.html

Mainstream vs. Behavioural Economics - Towards Creating a Realistic Picture

Man as Economic Subject - Motivation & Action



Source: Animal Spirits (Akerlof, Shiller/2009)

Macroeconomic Theories, their Main Ideas and Model of Man:

- **Neoclassic/Neoliberalism**

  homo-economicus (man follows economic goals only & in a fully rational manner), efficient markets (‚invisible hand of the market'), mathematically driven interpretation of (economic) reality, neglection of non-rational and intangible aspects of economic reality and value creation

- **Behavioural Economics**

  Man driven by ‚animal spirits' (trust, sense of fairness, ethical behaviour and corruption, money illusion, narrations), public rules and regulation for markets necessary (‚leavening hand of wise policy'), qualitative & quantitative elements of interpretation, integration of non-rational and intangible aspects of economic reality and value creation

Bonn ‚EconLab' – a Laboratory for Experimental Economics

„Homo oeconomicus is dead. Intangible assets like fairness and trust contribute more to increasing economic efficiency than radical self-interest"

Armin Falk, Professor of Macroeconomics, University of Bonn and Director EconLab

The EconLab:

- Oldest laboratory of experimental economics in Europe
- Meeting place of experts interested in experimental economics and bounded rationality
- Host of experts in game theory
- Innovative focal-point of microeconomic research for experts favouring rationality as well as for those in favour of bounded rationality concepts alike

Understanding bounded rationality, describing 'natural laws' of economy:

The founder and research coordinator of Bonn EconLab, Prof. Reinhard Selten, has a specific long-term goal for his research agenda: he is dedicated to unveal structural elements common to single descriptive theories and capable of creating linkages between them. Finding this common ground might lead to a genuine alternative of normative theories and in the end even contribute to a general theory of bounded rationality.

Soft Technology - Meet the Challenges in the 21st Century

- In the 21st century we face challenges that we never met before.
- The origin of these problems is mostly caused by human's unrestrained greed, simplistic pursuit fortune and material civilization.
- In the context of information age, human spiritual world and mental activities have been quickly and seriously influenced by the world-wide exchange of information in an unprecedented manner. And all information go through cultural & institutional filters and all social behavior and psychological activities are restricted by soft environment especially byinstitutions and culture.
- Using hard tech, namely tangible solution, can only mitigate & solve part of the problems.
- What we need is systemic solutions integrated by various knowledge and technologies.
- Soft technology is just focusing on technology from social, philosophical and cultural perspectives, adapts to provide intangible solutions, and conduces to shape a comprehensive and systemic solution via the integration of hard technology and soft technology.

Source: Zhouying Jin CTISS, Chinese Academy of Social Sciences (2009)

Soft Environment
– Institutions, Culture, Values

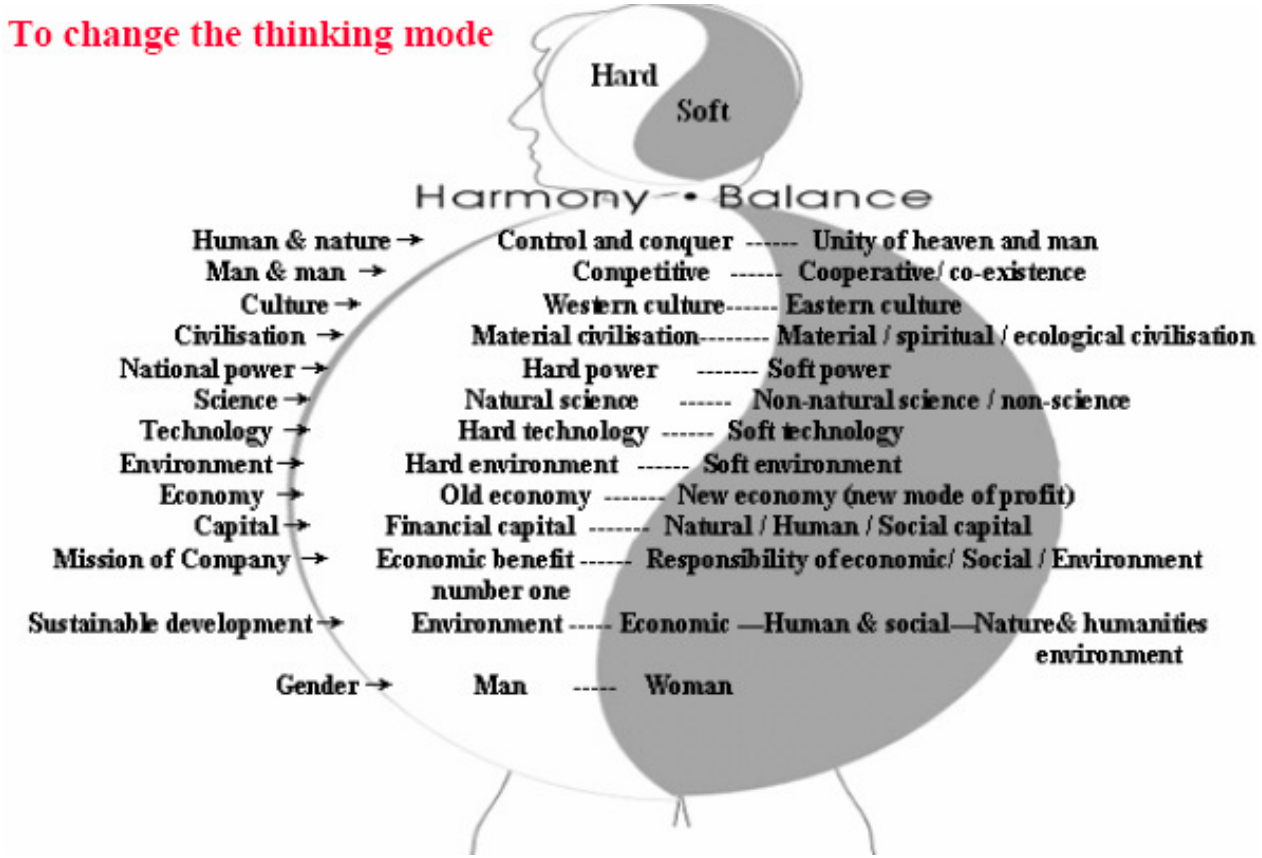
Source: Zhouying Jin CTISS, Chinese Academy of Social Sciences (2009)

The Limitation of Institutions

- The institution is not omnipotent or catholicon.
- Using the law can only solve part of the problem, legal changes must be realized by changing the people's fundamental values and attitude.
- Numerous examples can illustrate the limitations of the institution, eg. all business activities, including the management of patents;
- The institution is insufficient to restrain all human behavior and mental activities completely.
- The most fundamental thing is to raise the public's awareness of credit and credibility and emphasize the importance of the business ethics (eg: Juhani Pekkola), the moral market (eg: Hazel Henderson) and education.

Source: Zhouying Jin CTISS, Chinese Academy of Social Sciences (2009)

The Principles for the 21st Century - Harmony, Balance and Equality



Source: Zhouying Jin CTISS, Chinese Academy of Social Sciences (2009)

The Global Financial Meltdown - a Diagnosis of the Unthinkable

The financial system is the economy's plumbing. And like the plumbing in a house, it is taken for granted when it works, but when it doesn't, watch out. In the same way that modern living depends on a reliable flow of water running through pipes, the modern economic system depends on a reliable flow of financing through intermediaries.

What a difference two years make. Since August 2007, the financial system has experienced a sequence of critical failures. **How could this happen? No one thought that the financial system could collapse.**

A financial crisis bears striking similarities to medical illness. In both cases, finding a cure requires identifying and then treating the causes of the disease. Looking at the past few years, **we can divide the causes of the current crisis into two broad categories: macroeconomic and microeconomic.** The macroeconomic causes fall into two groups: problems associated with the build-up of imbalances in international claims and difficulties created by the long period of low real interest rates. The microeconomic causes fall into three areas: incentives, risk measurement and regulation.

Source: Bank of International Settlements, 79th Annual Report, 1 April 2008– 31 March 2009 (Basel, 29 June 2009)

Wrong Incentives and the Real Rules of the Game

The financial stress that began in the summer of 2007 has revealed a myriad of limitations in microeconomic financial arrangements.

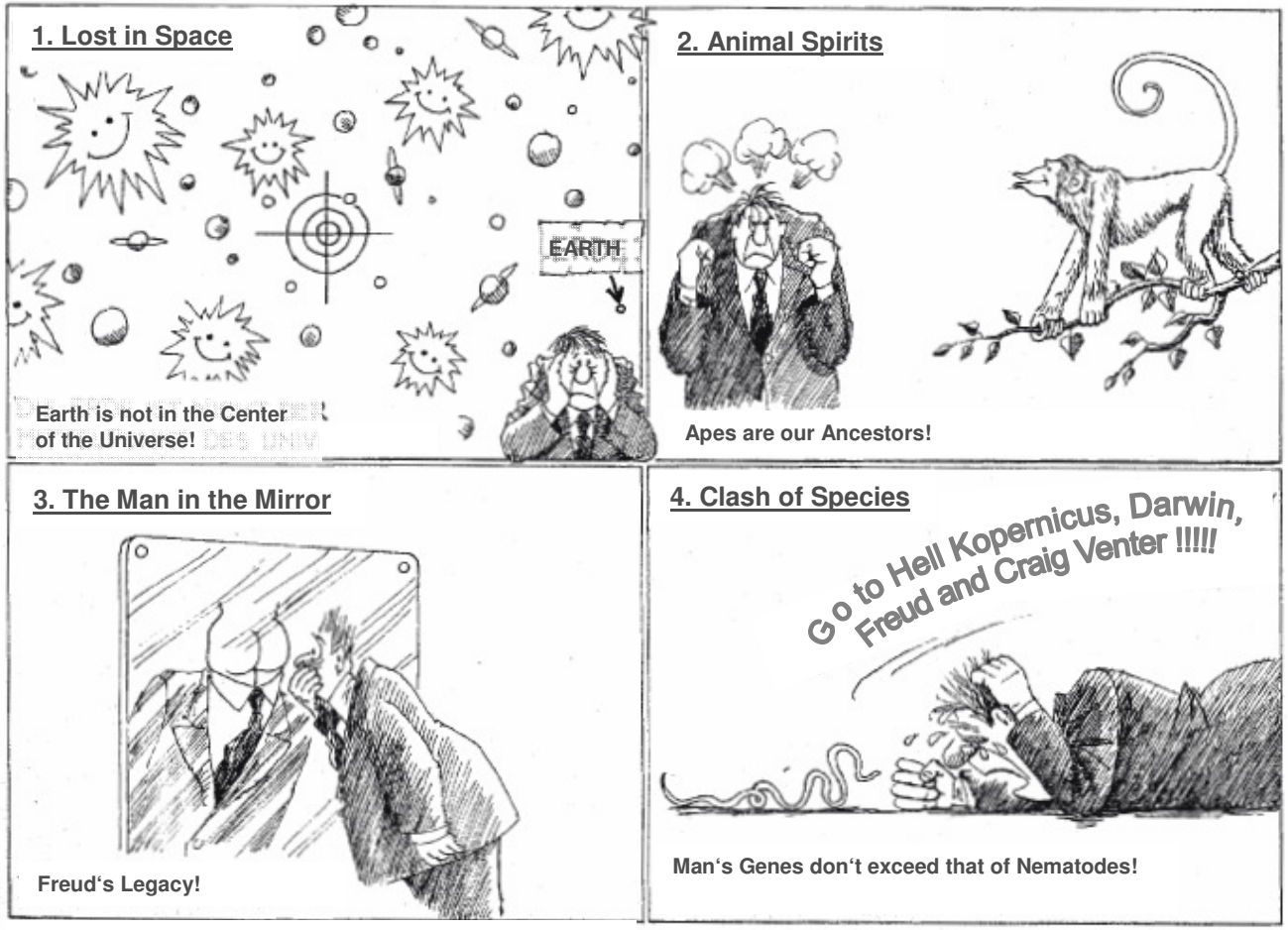
The crisis has revealed **distorted incentives** for consumers, for financial sector employees and for rating agencies. Few people have any knowledge of the balance sheets of the banks where they do business (…). And the **overall level of financial literacy among the general population is low**. This lack of knowledge combined with the existence of financial oversight structures made people all too willing to **mistake the complexity of the system for sophistication**. And it made them all too willing to assume that their investments were safe. After all, someone else was watching – be it a trusted manager, an equity analyst, a credit rating agency or a government official. But none of them were. **The system that consumers so readily assumed was sophisticated and safe was, in fact, recklessly complex and opaque.**

Compensation schemes further encouraged managers to forsake longrun prospects for short-run return. In some cases, **profits calculated with complex mathematical models** were used to determine rewards even when **markets for the assets underlying the calculations did not exist** and so they could not be sold. Equity holders (because of limited liability) and asset managers (because of their compensation system) were **unduly rewarded for risk-taking: they received a portion of the upside, but the downside belonged to the creditors (or the government!).** In the end, the overall difficulty in distinguishing luck from skill in the performance of asset managers, combined with compensation based at least in part on the volume of business, encouraged managers and traders to accumulate huge amounts of risk.

Added to failures in monitoring by individuals and flawed compensation schemes were the **skewed incentives of the rating agencies**. There are a number of problems with this system.

Source: Bank of International Settlements, 79th Annual Report, 1 April 2008– 31 March 2009 (Basel, 29 June 2009)

‚Model of Man' – Our Self-Perception Changed Quite a Bit Recently…

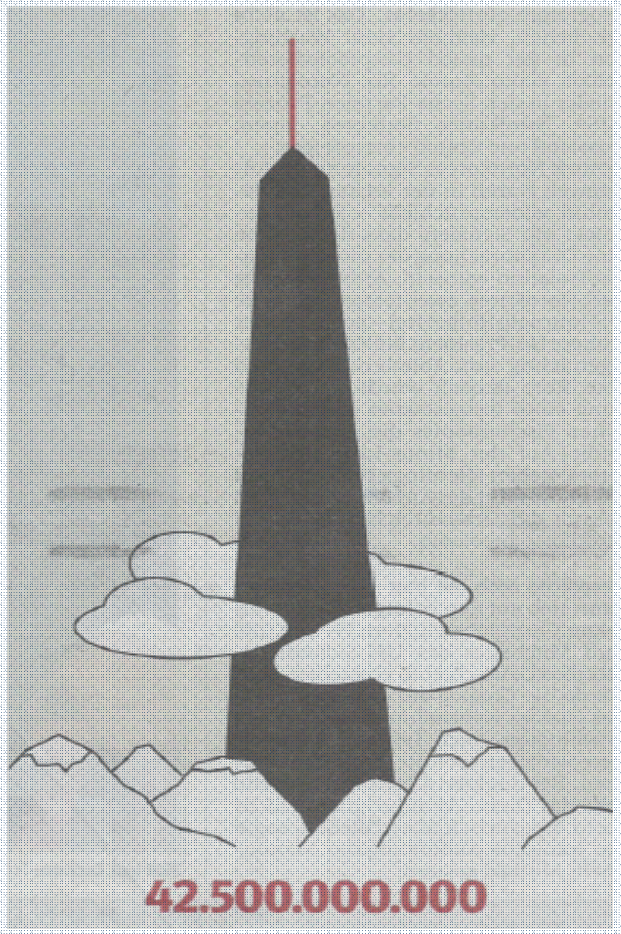


Man's Four Big Humiliations

Source: BOKU IC Report 2004 http://www.boku.ac.at/fileadmin/_/H13/Publikationen/BOKU_Wissensbilanz_Screen_1209.pdf

Chapter II: Microeconomic Level

Money Valuates Business
… but it Doesn‘t Show Consequences



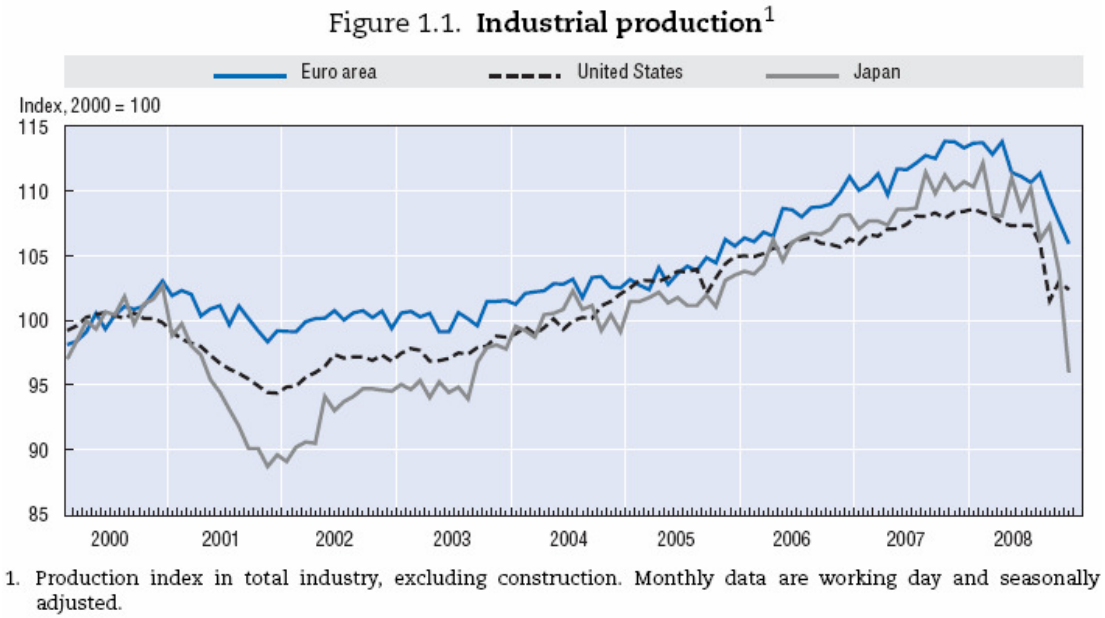
With 42,5 bn Euro - between October and December 2008 - the global US-based insurance corporation AIG produced the largest ever loss of a company in economic history.

If one would build a tower with 100-Euro-banknotes it would be as high as 42,5 kilometers – with its steepletop reaching far into stratosphere.

Issues of this Chapter

- **The definition of Capital:** treatment of intangible assets as capital and investment instead of expense
- **Corporate value creation:** from short- to long-termism, inclusion of intangible assets in value creation models
- **Accounting and compensation:** towards long-termism in individual and corporate success measurement (and executive compensation models), renewal of corporate reporting structure and content, reduction of information asymmetry

‘Never waste a good crisis‘
- Hillary Clinton, Brussels, 6 March 2009



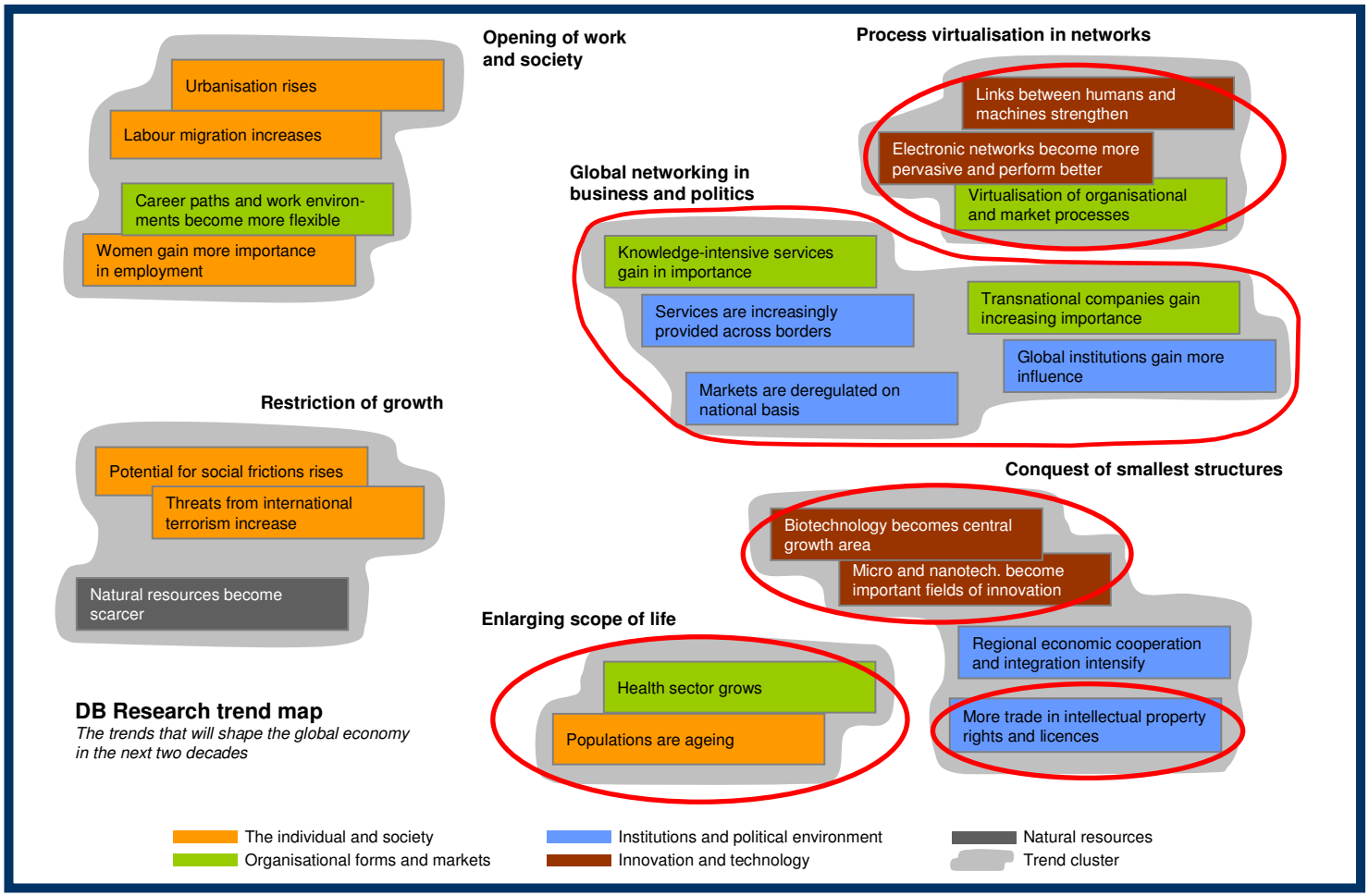
Source: Going for Growth, OECD March 2009

‘Reforms to strengthen human capital are identified as a priority for most countries.’

Angel Gurría, OECD Secretary-General, Paris, 3 March 2009

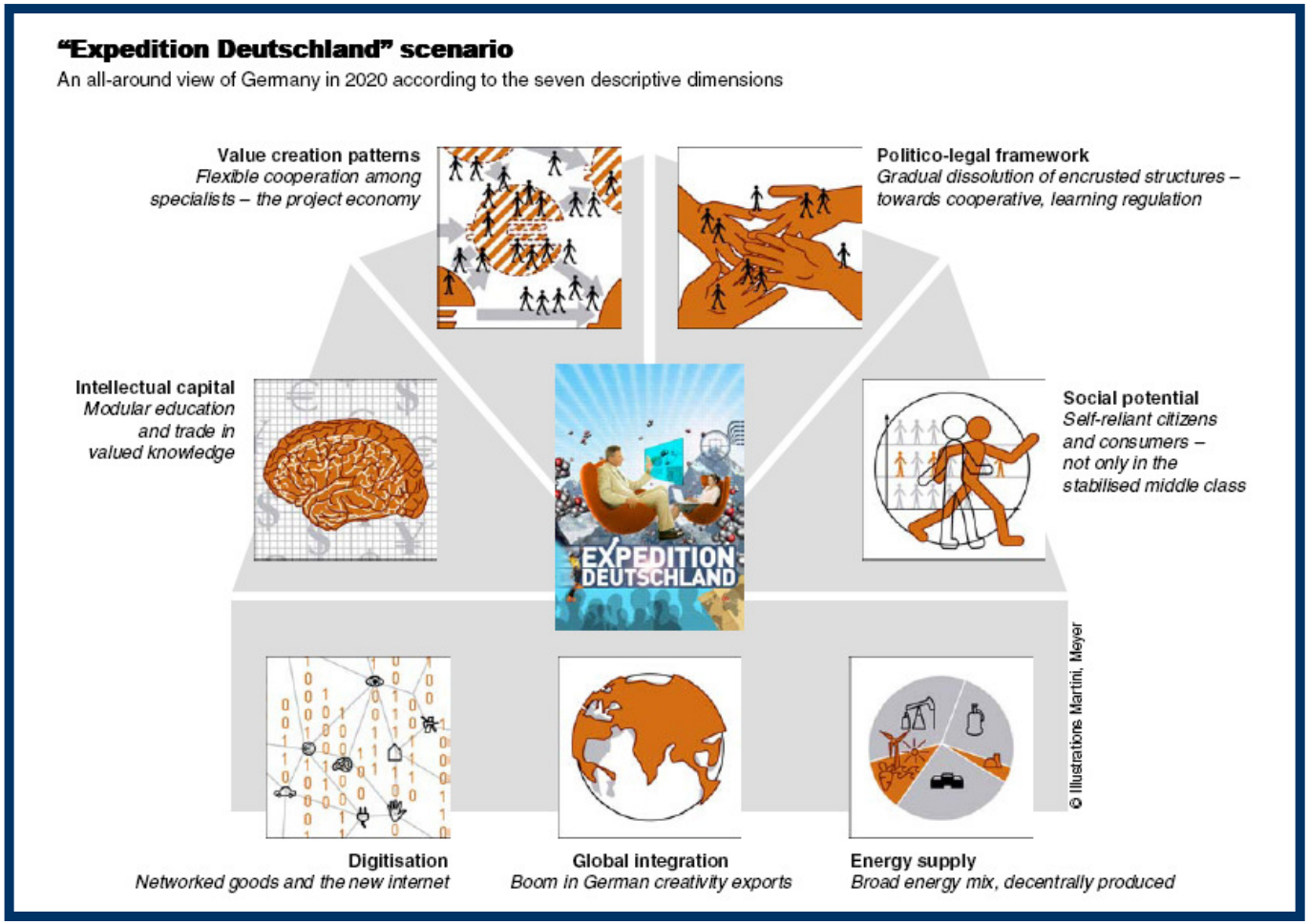
- **Increased public spending on education and training**
  - could raise potential output
  - effects are generally realised only over a long horizon
- **Focus on infrastructure for education**
  - could provide some short-term stimulus
  - enhance longer-term growth by helping to improve support facilities for better education

Macro Economic Development - Towards Knowledge Economies



Source: DBR 2006

Picture of the Future ‚Germany 2020‘ - New Challenges for a Land on Expedition



Source: Hofmann et al, Deutsche Bank Research (2007)

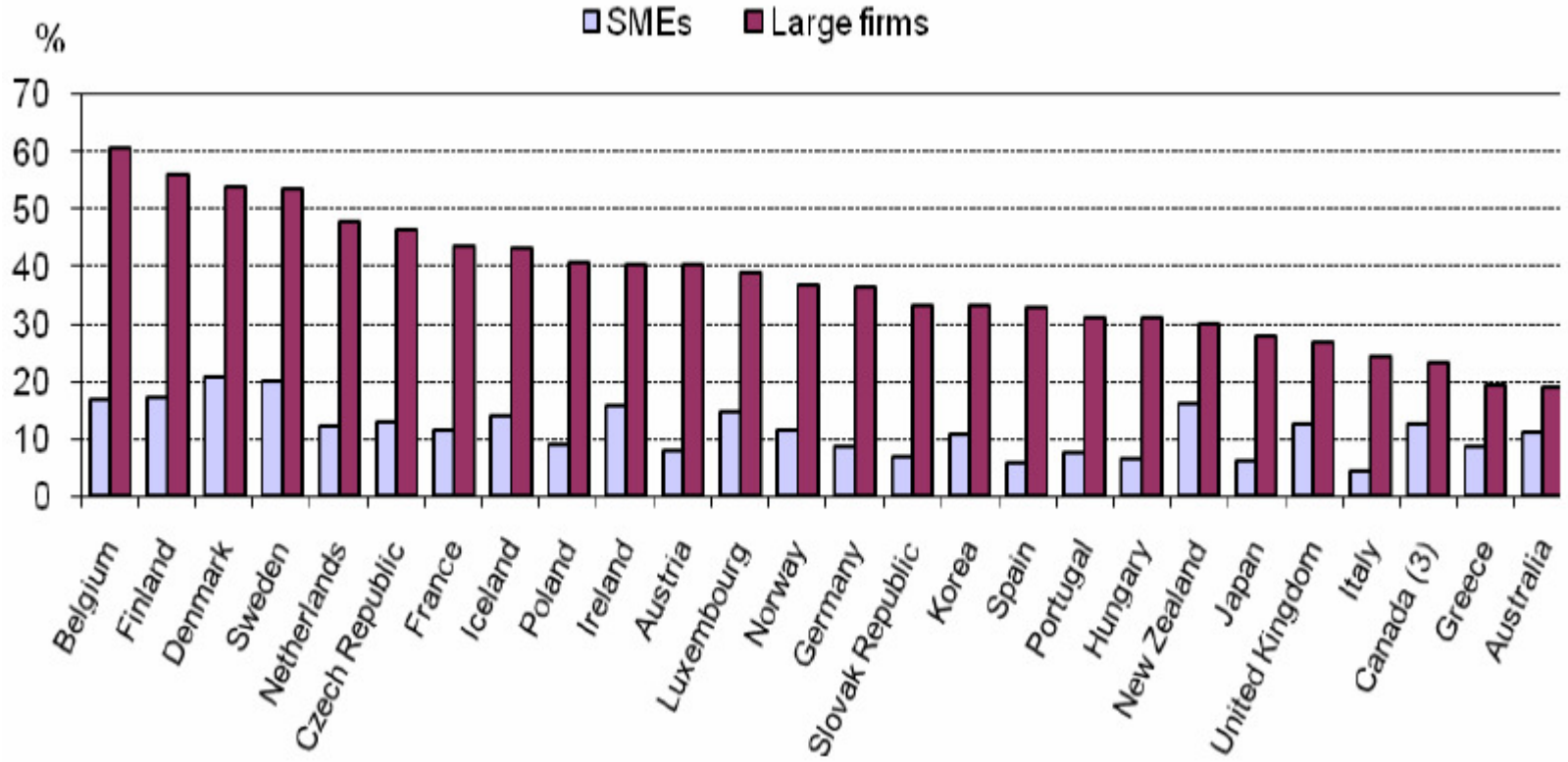
Innovation, Competitiveness and Economic Development: Key Messages

- **Innovation becomes increasingly important for sustainable growth and development in globalised, ICT driven, knowledge-based economy**
- **Open Innovation paradigm is emerging, in which intellectual asset management (human resources, R&D, innovation, networks) and business models play a larger role.**
- **Symposium 'Global Open Innovation Networks', Paris, 23.01.2009:**
  http://www.oecd.org/document/61/0,3343,en_2649_34269_41946749_1_1_1_1,00.html
- **Comprehensive package of efficient framework policies and science & technology policy is necessary to modernise national innovation system.**

Sources: Tojo, OECD (2006), OECD DSTI (2009)

Collaboration in Corporate Innovation: Reducing Costs & Risks, Rising Competitiveness

Share of companies collaborating in innovation activities, by size, 2002 - 2004

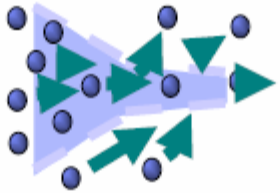


Source: Wyckoff, OECD (2009)

Innovation Moving Out of the Lab: from Closed Innovation to Networks

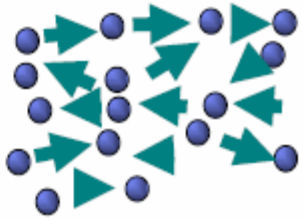
Centralized, inward-looking innovation

Closed Innovation



Externally focused, collaborative innovation

Open Innovation

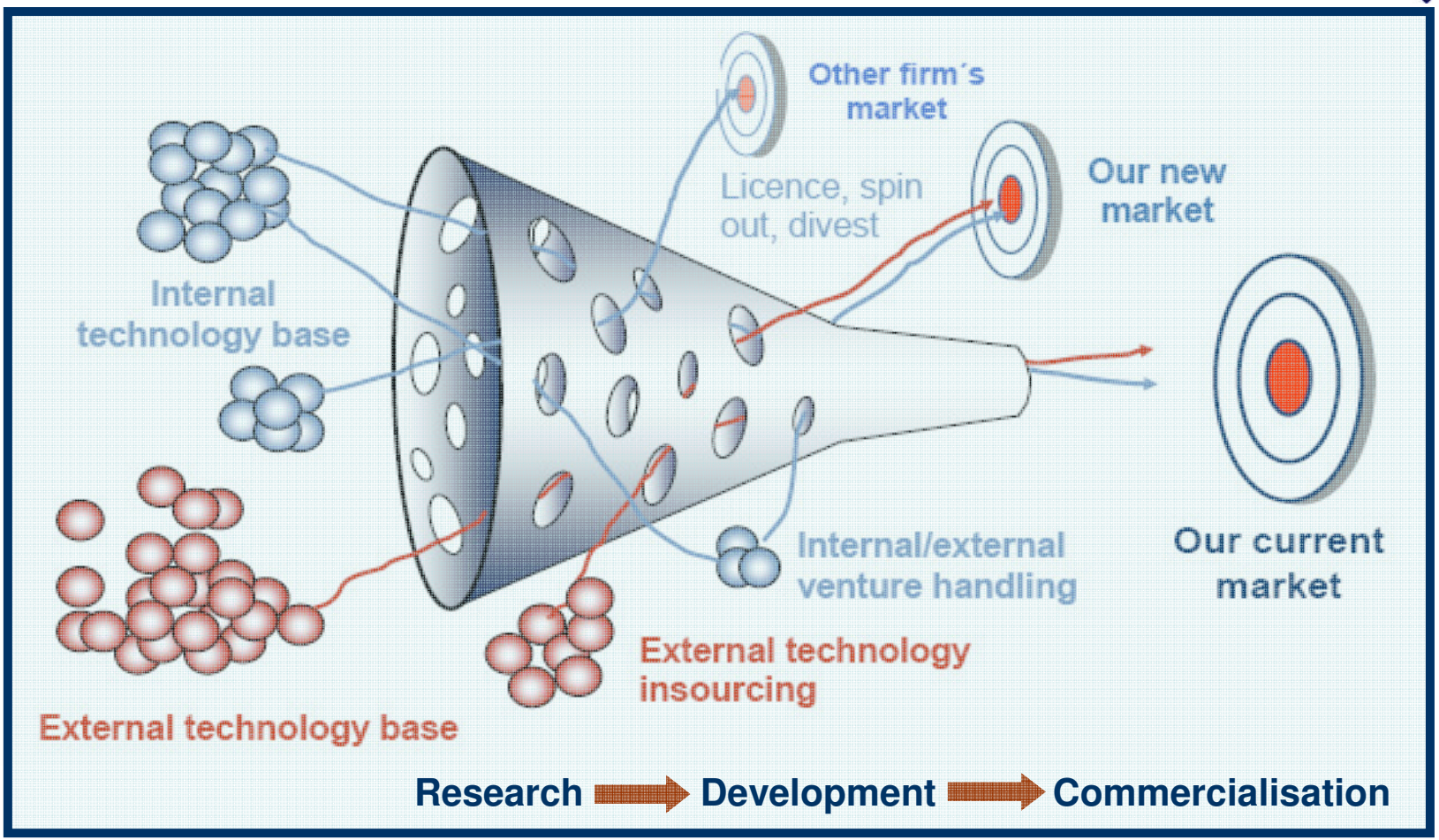


Ecosystem-centric, cross-organizational innovation

Innovation Networks

Sources: Chesbrough (2003), Forrester (2004), von Hippel (2005)

The Open Innovation Paradigm



Source: Chesbrough (2005), Tojo, OECD (2006, 2008)

Corporate Intangible Capital and its Contribution to Economic Growth

- **Knowledge creation:**
  - part of wide-ranging process of investment in intangible capital.
- **Intangible capital investment:**
  - includes expenditures for human capital (education and training), research (public and private scientific research, business product research and development), market development, and organizational and management efficiency.
- **Nature of intangible capital:**
  - strategic investments in long-run growth path: source of growth at macroeconomic level, driver of value creation for individual firms
  - policy makers increasingly see them as essential for sustained economic health of economy (witnessed by European Lisbon Strategy and the America Competes Act of USA)
- **Status of measurement and reporting:**
  - Costs of most intangibles still expensed (company financial statements, national income and product accounts)
  - This implys that they detract from value-added growth rather than increasing it
  - Measurement has to be improved

Source: Corrado, Hao, Hulten and van Ark (EIB 2009)

Intangible Investments
- from Expenditure to Capital

- Empirical studies of economic growth have traditionally focused on the contribution of capital in terms of plant and equipment, vehicles, and buildings. Their status as capital is beyond dispute because they are created using current resources in order to increase future production and consumption.
- However, CHS (2005; 2009) point out that this criterion applies equally to all expenditures on intangible capital, which also aim to increase future output and consumption.
- In recent decades, the accounting treatment of intangibles has begun to change, with the decision to capitalize software expenditures and treat the result as a contribution to GDP.
- More recently, it has been proposed to extend the capitalization of intangibles to expenditure on research and development (R&D). For example, the U.S. Bureau of Economic Analysis will count R&D as investment in its headline GDP measure in 2013, and in a satellite account until then.
- These moves are supported by recent decisions by the United Nations to do likewise in its System of National Accounts.

Source: Corrado, Hao, Hulten and van Ark (EIB 2009)

Intangible Investment in % of GDP in the Market Sector (Categories, 2006) I

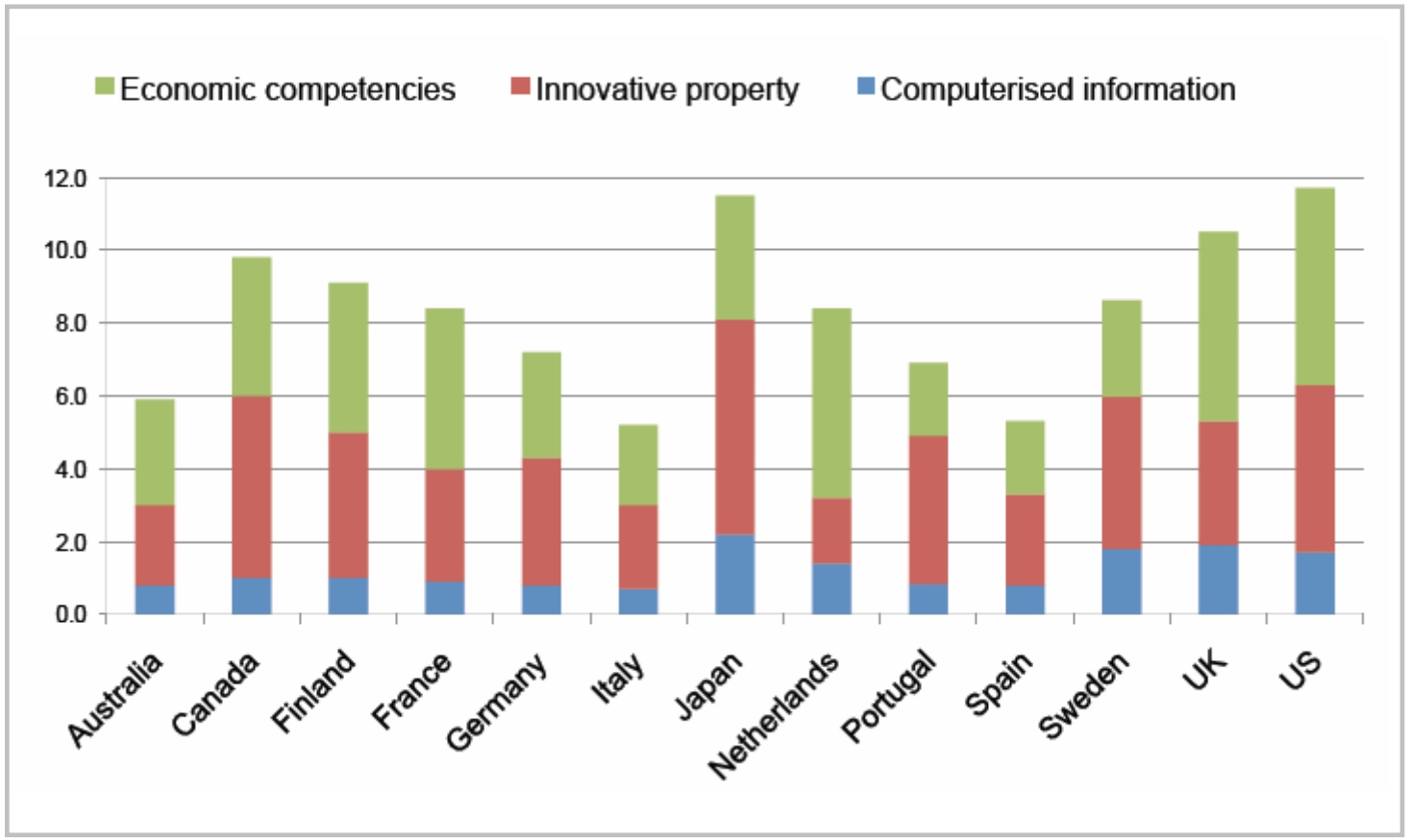
Type of Investment	Germany 2006	France 2006	Italy 2006	Spain 2006	UK 2006	US 2006
1. Computerized information	**0.73**	**1.42**	**0.64**	**0.79**	**1.55**	**1.61**
a) Software	0.71	1.37	0.63	0.76	0.00	
b) Databases	0.02	0.05	0.01	0.03	0.00	
2. Innovative property	**3.59**	**3.18**	**2.21**	**2.78**	**3.16**	**4.37**
a) R&D, including social sciences and humanities	1.72	1.3	0.58	0.63	1.07	
b) Mineral exploration and evaluation	0.01	0.04	0.09	0.04	0.04	2.25
c) Copyright and license costs	0.21	0.31	0.1	0.18	0.22	
d) Development costs in financial industry	0.75	0.6	0.58	0.52	0.07	2.12
e) New architectural and engineering designs	0.9	0.93	0.86	1.41	1.74	
3. Economic competencies	**2.84**	**3.3**	**2.19**	**1.9**	**5.84**	**5.50**
a) Brand equity	0.56	0.99	0.71	0.42	1.15	1.47
Advertising expenditure	0.41	0.73	0.47	0.19	0.91	
Market research	0.15	0.26	0.24	0.23	0.24	
b) Firm-specific human capital	1.29	1.51	1.02	0.81	2.54	
Continuing vocational training	0.65	1.25	0.71	0.71		
Apprentice training	0.64	0.26	0.32	0.1		4.03
c) Organizational structure	1	0.81	0.45	0.68	2.14	
Purchased	0.54	0.32	0.15	0.27	0.51	
Own account	0.46	0.49	0.3	0.41	1.63	
Total Investment	**7.16**	**7.90**	**5.04**	**5.47**	**10.54**	**11.48**
pro memoria						
Total Spending	**7.55**	**8.51**	**5.43**	**5.70**	**11.56**	

Sources: Hao *et al.* (2009) for Germany, France, Italy and Spain; CHS (2009) for the US and Marrano *et al.* (2009) for the UK. They all have updated their results to 2006.

Notes: 60 percent of expenditure on advertisement, 80 percent of expenditure on own-account organizational structure and 100 percent of all the other expenditure are considered as investment (CHS 2005). GDP here is conventionally-measured GDP (including software and mineral exploration but excluding other intangibles). Marrano *et al.* (2009) estimate item 2(d) using the wages of research occupations of financial industry, and estimate item 2(e) using the wages of designers and engineers.

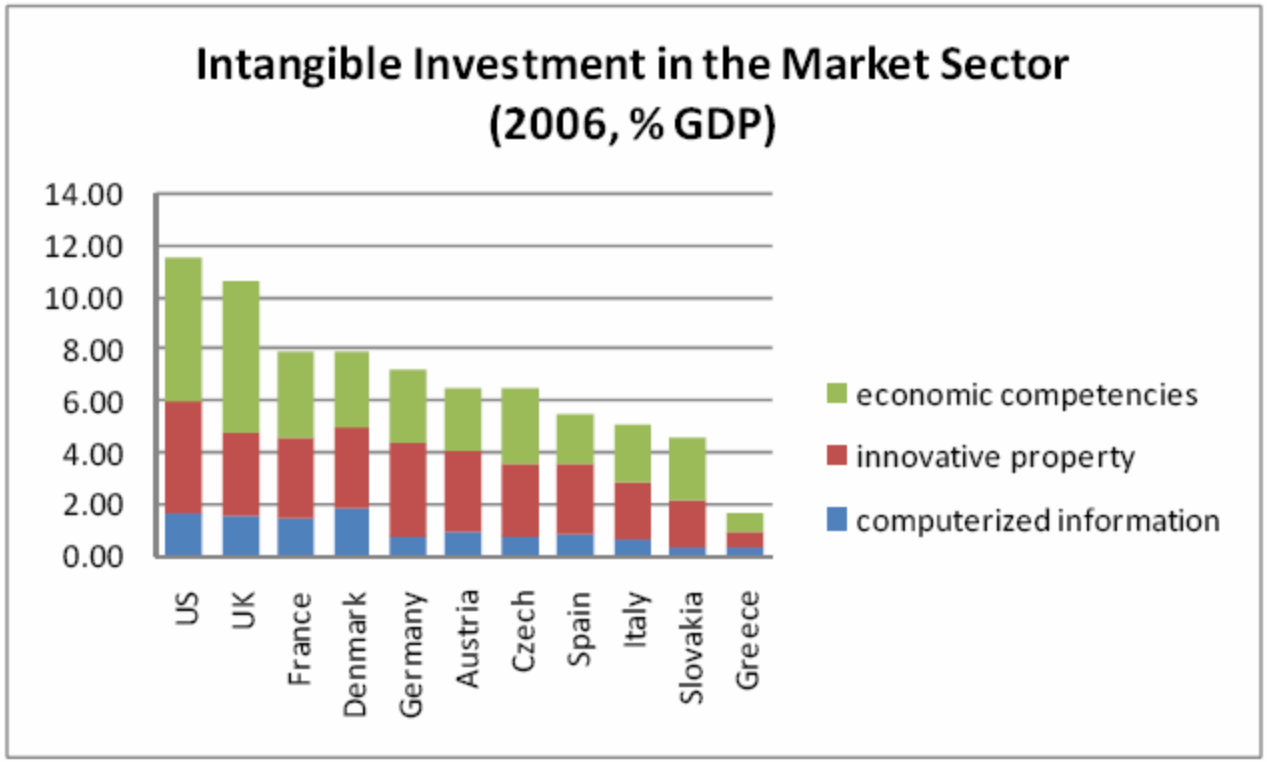
Source: Corrado, Hao, Hulten and van Ark (EIB 2009)

Intangible Investment in Asia, Europe, US in the Market Sector (% of GDP, 2006) II



Sources: Tojo, OECD (2009), Table 6.1 of Barnes and McClure (2009), Edquist (2009a) for Sweden, and Lima et al (2009) for Portugal.

Intangible Investment in % of GDP) in the Market Sector (Categories, 2006) III

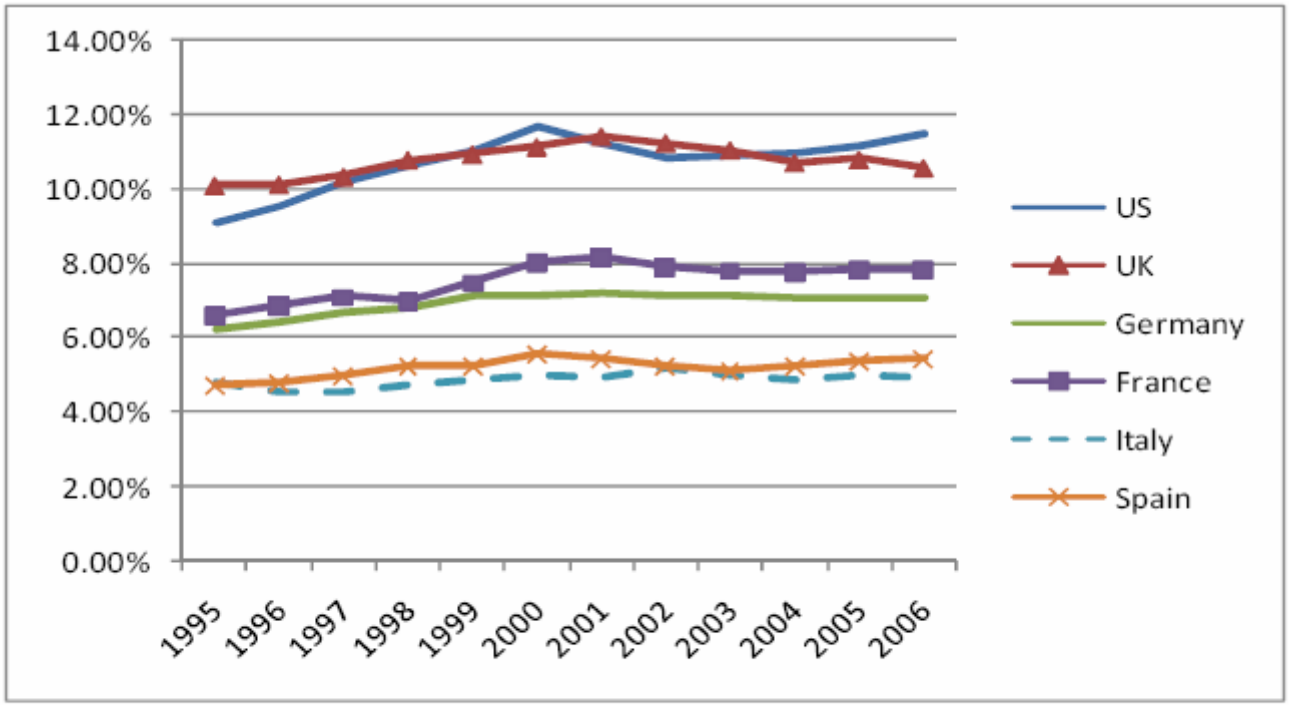


Source: See Table 1

Note: GDP is conventionally-measured GDP (including software and mineral exploration but excluding other intangibles).

Source: Corrado, Hao, Hulten and van Ark (EIB 2009)

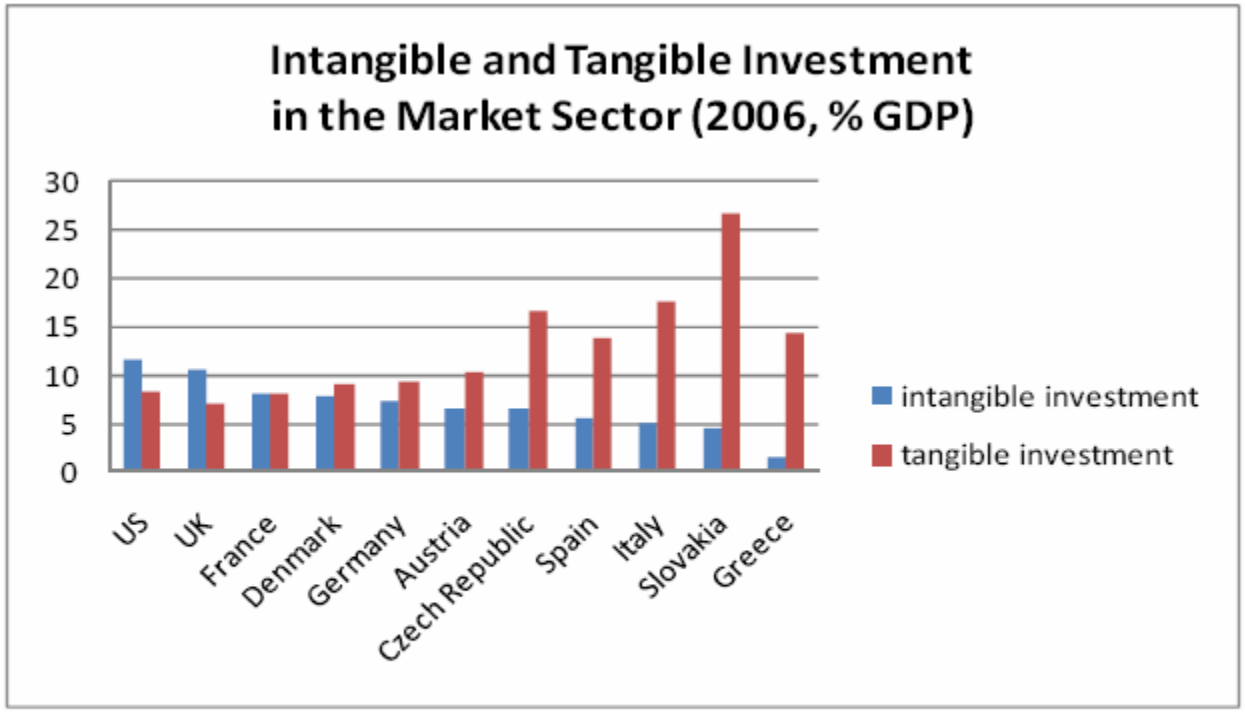
Intangible Investment in % of GDP in the Market Sector (1995 - 2006)



Source: See Table 1
Note: GDP is conventionally-measured GDP (including software and mineral exploration but excluding other intangibles).

Source: Corrado, Hao, Hulten and van Ark (EIB 2009)

Intangible and Tangible Investment in the Market Sector (% of GDP, 2006)

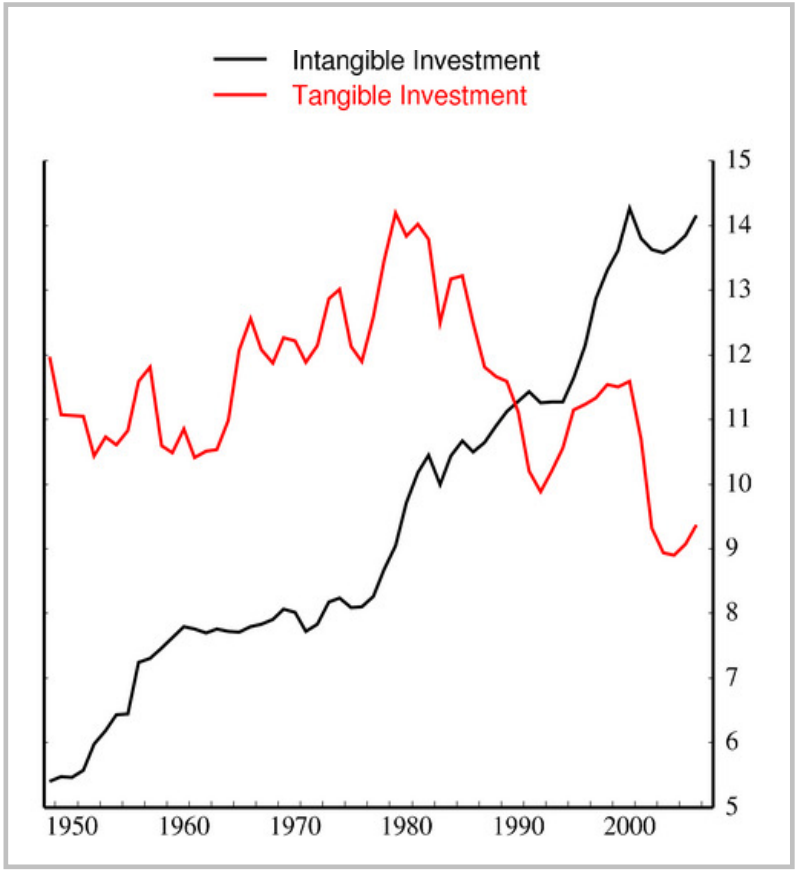


Source: See Table 1

Note: GDP is conventionally-measured GDP (including software and mineral exploration but excluding other intangibles).

Source: Corrado, Hao, Hulten and van Ark (EIB 2009)

Intangible Business Investment in the US (ratio to business output)



- Investments in intellectual assets are matching to those in tangible capital
- U.S. intangible business investment was **more than $1 trillion in the late 1990s**: software, innovation (R&D, design, etc.) and firm competitiveness (brand, human capital, organisation)
- In first 6 years of this decade: intangible business investment 40% larger than tangible investment

Source: Tojo, OECD (2009), Corrado, US Federal Reserve Board (2007); Corrado, Hulten, and Sichel (2006, 2007); Hofmann, DB Research (2006);

Intangible Assets/Intellectual Capital – The fourth Production Factor

OECD Definition of Intellectual Capital/Intellectual Assets (2008):

'Resource utilised in future value creation without a physical embodiment'.
It includes

- **Proprietary Knowledge**
- **Human Capital**
- **Relational Capital**
- **Organisational Capital**

EFFAS* Definition of Intellectual Capital/Intellectual Assets (2008):

- **Staff and management skills, human capital**
- **Software**
- **R&D, Innovation and innovation capacity**
- **Brands and patents**
- **Strategies**
- **Processes**
- **Relationships with suppliers, partners and customers**

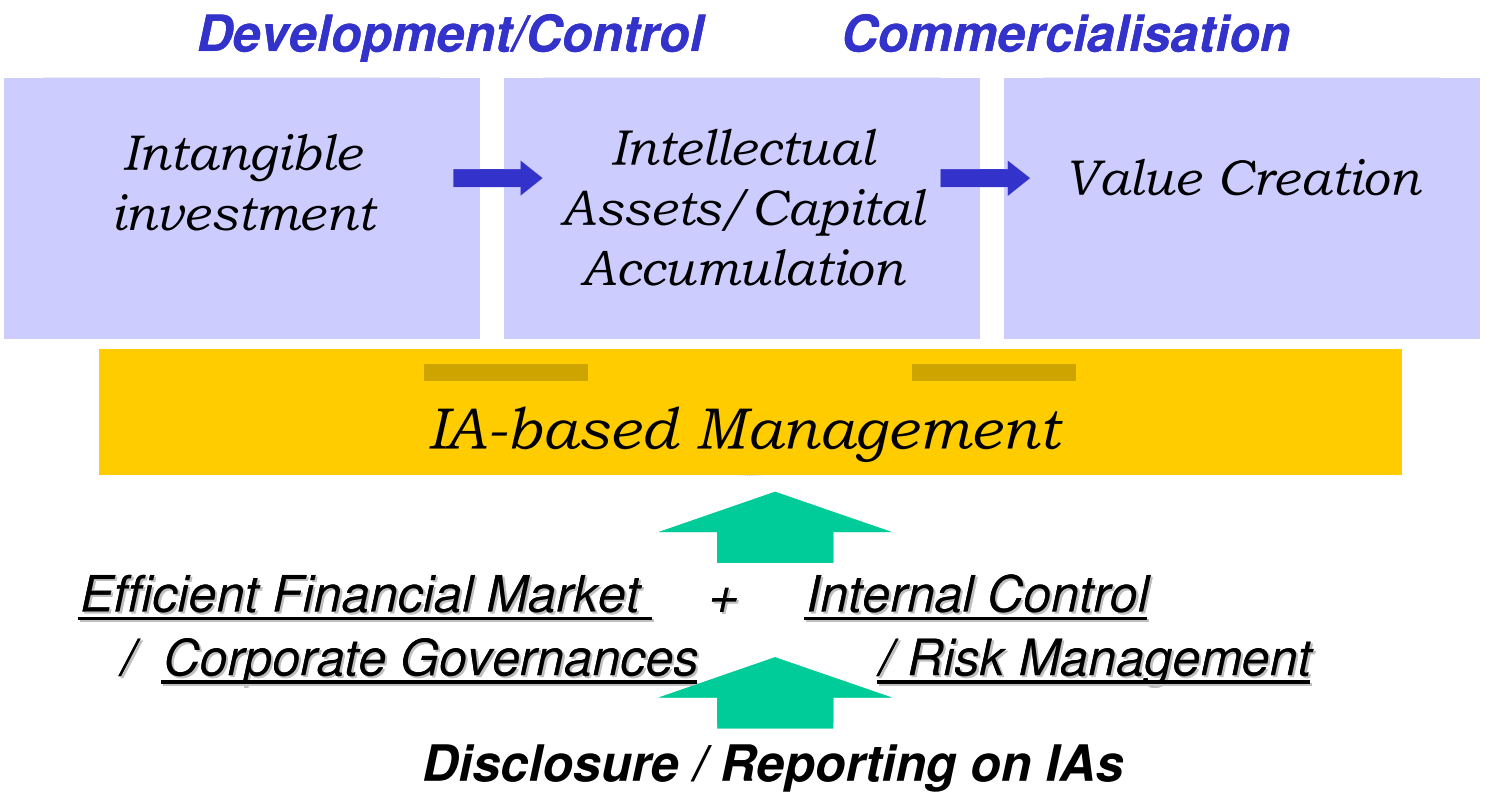
*** EFFAS – The European Federation of Financial Analysts Societies www.effas.com**

OECD IC-Model – Development, Retention, Commercialisation

Research & Development	**Knowledge (IPR, Product, Process)**	**Market of IAs**
Training Education	**Human Resources (Skills, Creativity,..)**	**Product Market**
Back Office Spending Marketing Customer Relations...	**Organization / Reputation / Brand / Networks / Alliances**	**Productivity**

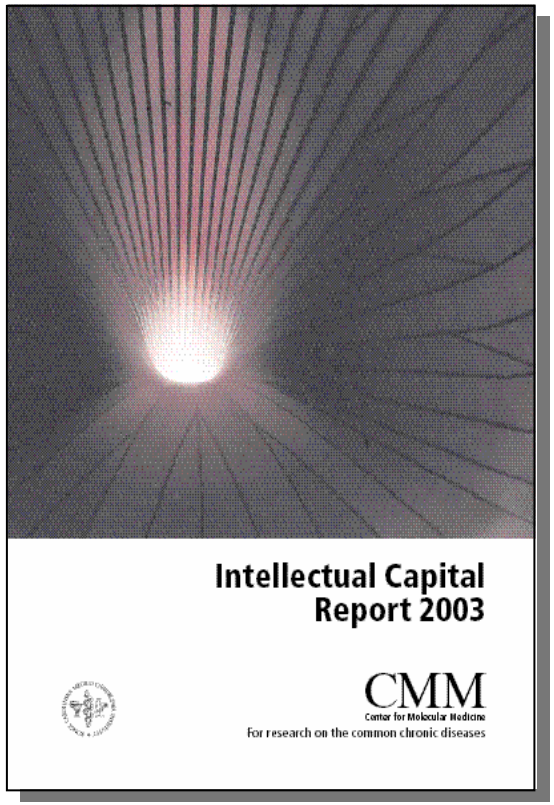
Source: Tojo, OECD (2008)

The OECD Model of Intellectual Capital - based Value Creation



Source: Tojo, OECD (2008)

IC-based Value Creation at the Center of Molecular Medicine (CMM), Stockholm



The CMM IC-based Value Creation Model:

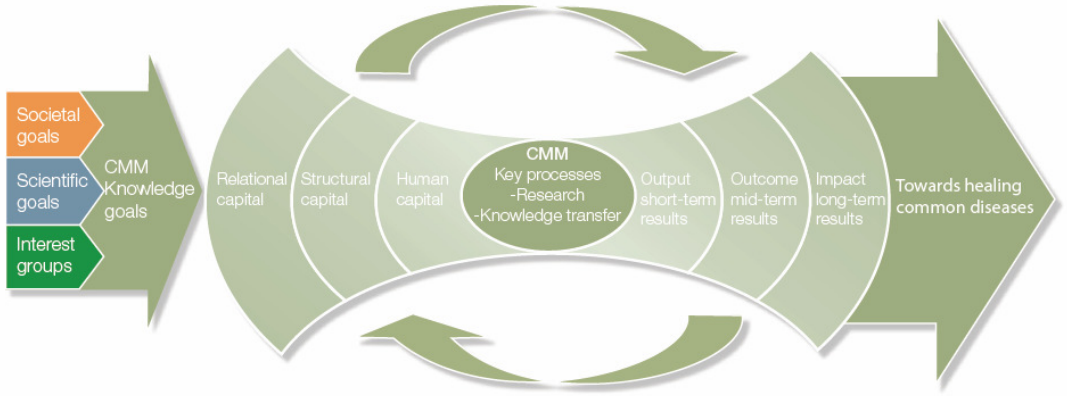
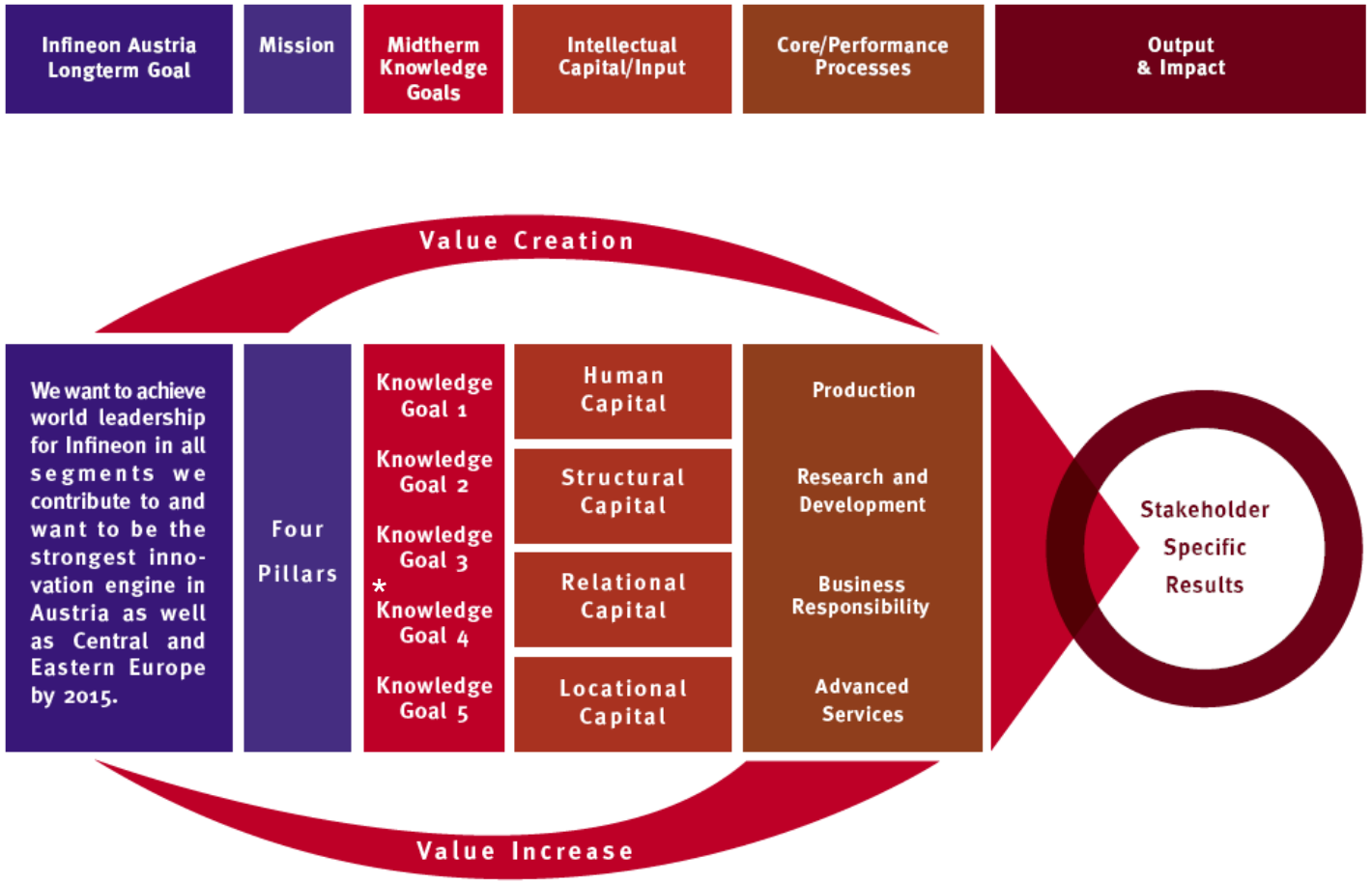


Fig 1. The Intellectual Capital Report Model illustrating the input and output of research and knowledge transfer.

Source: CMM (2009) http://www.cmm.ki.se/en/Resources/Intellectual-Capital/

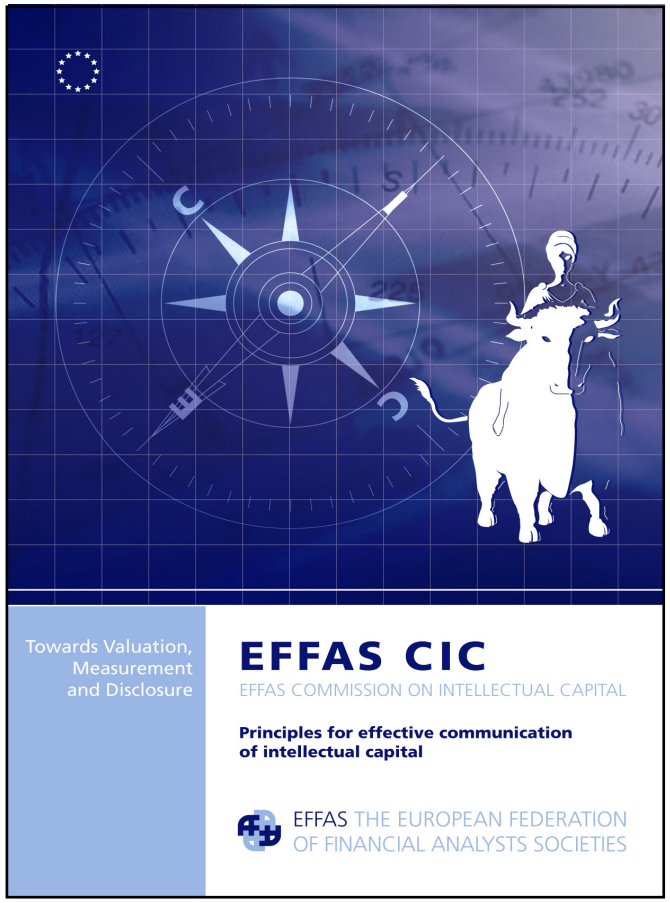
Subsidiary of NYSE-listed Semiconductor Corporation: Infineon Austria's IC Report Model



*** Infineon's Four Pillars: Profitable Growth / Customer Focus / Collaborative Leadership / Operational Excellence**

Source: Infineon (2006)

Intellectual Capital Disclosure and Valuation in the 21st century



EFFAS* Commission on Intellectual Capital (EFFAS CIC)

- Founded in 2006
- Chairman: Alexander G. Welzl
- Vice Chairman: Giampaolo Trasi
- Global pioneers in investment professionals community
- Ten commandments of intellectual capital measurement, disclosure and valuation
- Sector specific approach: development of industry specific intellectual capital indicators

EFFAS 'Principles for Effective Communication of Intellectual Capital', 2008

http://www.effas.com/pdf/EFFAS_CIC_web.pdf

* EFFAS – The European Federation of Financial Analysts Societies www.effas.com

Starting Point for New Metrics Systems to Capitalize on the Long-term

„Accurate financial accounting data are neither inherently right nor wrong, they are only more or less useful for the questions that people want answered.“

Charles Hulten, 2008

Professor of Economics, University of Maryland and NBER, Senior Fellow to The Conference Board (USA)

Source: Hulten & Hao, The Conference Board (2008)

In the Beginning was the Word…
On the Phenomenology of Money as a Language

- **Accounting plays a significant role in shaping thoughts, beliefs, meanings and actions of firms and in this sense frames the way market participants understand and act with respect to a particular issue.**

- **More than any other language, accounting serves to 'normalize' social and cultural realism.**

- **Meanings of proprietary knowledge (like 'patents', 'trademarks' etc.) arise in the context of a network of signs, messages and images, which suggests that 'imagined business communities' are 'designed' communities, that privilege the communication of tangible assets over intangibles.**

- **Current accounting standards leave limited linguistic space to communicate the value of intangible assets/intellectual capital.**

Source: Ghafele (2009), modified

Accounting – A Language Shaping our Reality and Picture of the World

- Accounting constitutes a very specific form of language. Unlike literature or political language, the language of accounting is highly standardized, mathematical in nature and seeks to reflect the norm, the regular, and the systematic rather than express individual creativity or even explicit political positions.
- The language of accounting is a highly normative vernacular that documents past performance rather than expectations of the future, a language that prefers the past tense over the future tense.
- Drawing some parallels to the official and officialized language of accounting one may argue that accounting is the decisive instrument to create and maintain imagined business communities.
- In that context the word 'imagined' should not be misread as some sort of 'phantasm', but understood as the constitutive element enabling companies, as well as state authorities to grasp a specific understanding of the market, while at the same time dismissing other forms of understanding.

Source: Ghafele (2009)

Accounting Doesn‘t Deliver Objectivity

- **Very likely, fundamental principles of accounting, such as the conservatism principle, tend to turn accounting in a precise, yet irrelevant means to grasp innovation.**
- **Accounting viewed as a language is a social, cultural and historical artifact rather than a natural or technical phenomenon.**
- **We should understand accounting as a social practice, expressing political as well as power interests, rather than an objective reflection of a ‘-de-facto-‘ business world.**
- **Accounting literature is still strongly dominated by paradigms and underlying assumptions of neo classical economics, which views homo economicus primarily as a rational actor de- contextualized from any institutional context.**

Source: Ghafele (2009), modified

Accounting as Discourse

- Accounting does not just simply map business, or objectively mirror an existing, pre-defined business context, rather it creates that business context by offering a complex system of representation.
- Accounting as a discursive practice is not descriptive of business operation, but actively categorizes and combines operations in specific ways that make sense in the language of accounting.
- Accounting plays a role in shaping thoughts, beliefs, meanings and actions of firms (Alvesson & Karreman, 2000) and in this sense frames the way market participants understand and act with respect to that issue.
- Because accounting enjoys a high level of official sanction, probably similar to the Latin of the Christian Church, it has significant power in shaping certain understandings of a subject and turn it into generally accepted truths.
- Thus, the firm may be viewed as an artifact of accounting production.

Source: Ghafele (2009), modified

Some Consequences of the Current Accounting Scheme

- As current accounting standards reflect intangible assets/ intellectual capital in a controversial way, the earnings as well as the book value of equity are ill reflected.

- This has various consequences on how business communities are constituted:

  a) IA/IC intensive companies may find it difficult to pass the funding hurdle since the costs of capital increase

  b) The regulator may find it hard to understand how innovative firms create value, leading thus to potential losses from taxation, as well as an avoidable lack of transparency

  c) The management of a firm may be hampered since managers may find it hard to track how IP relates to value creation

Source: Ghafele (2009), modified

Our Pictures of the World
… are Created in our Minds

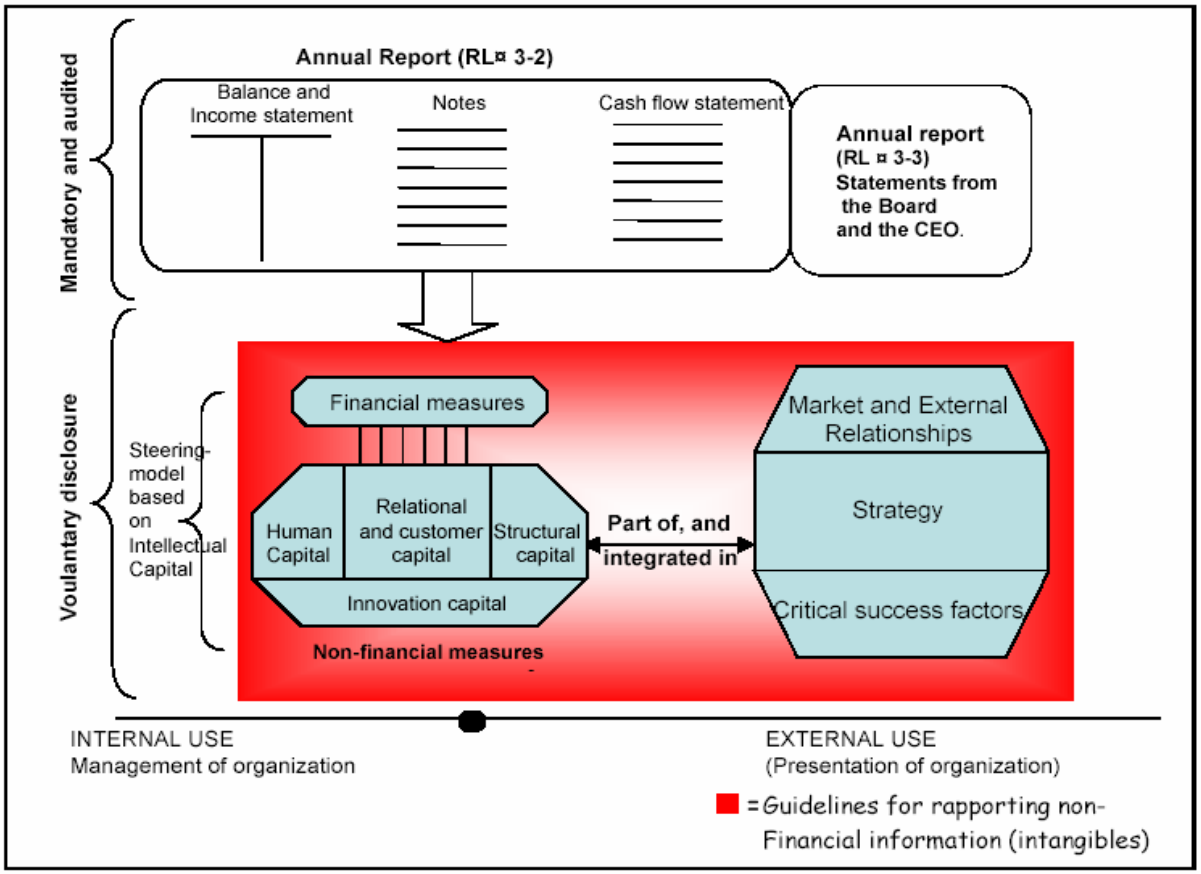
- Social more than technical by nature, the lack of awareness on intangible assets/intellectual capital reveals the blind spot of a primarily modernist - engineering driven - business culture.

- Apparently, what is needed is more than mathematics: A business culture that deals with intangible assets/intellectual capital in the same "natural" way as it does with machinery and other tangible items.

- If accounting is to remain relevant, it needs to capture the behavioral dynamics of innovation, assess the impact of intangible assets/intellectual capital on organizational economics and tell a more comprehensive story on the relationship between the past and the future by finding ways to systematically identify and map all of a firm's assets and liabilities, be they tangible or intangible in nature.

Source: Ghafele (2009), modified

Consequence: Convergence of Internal & External Reporting (Performance Metrics)



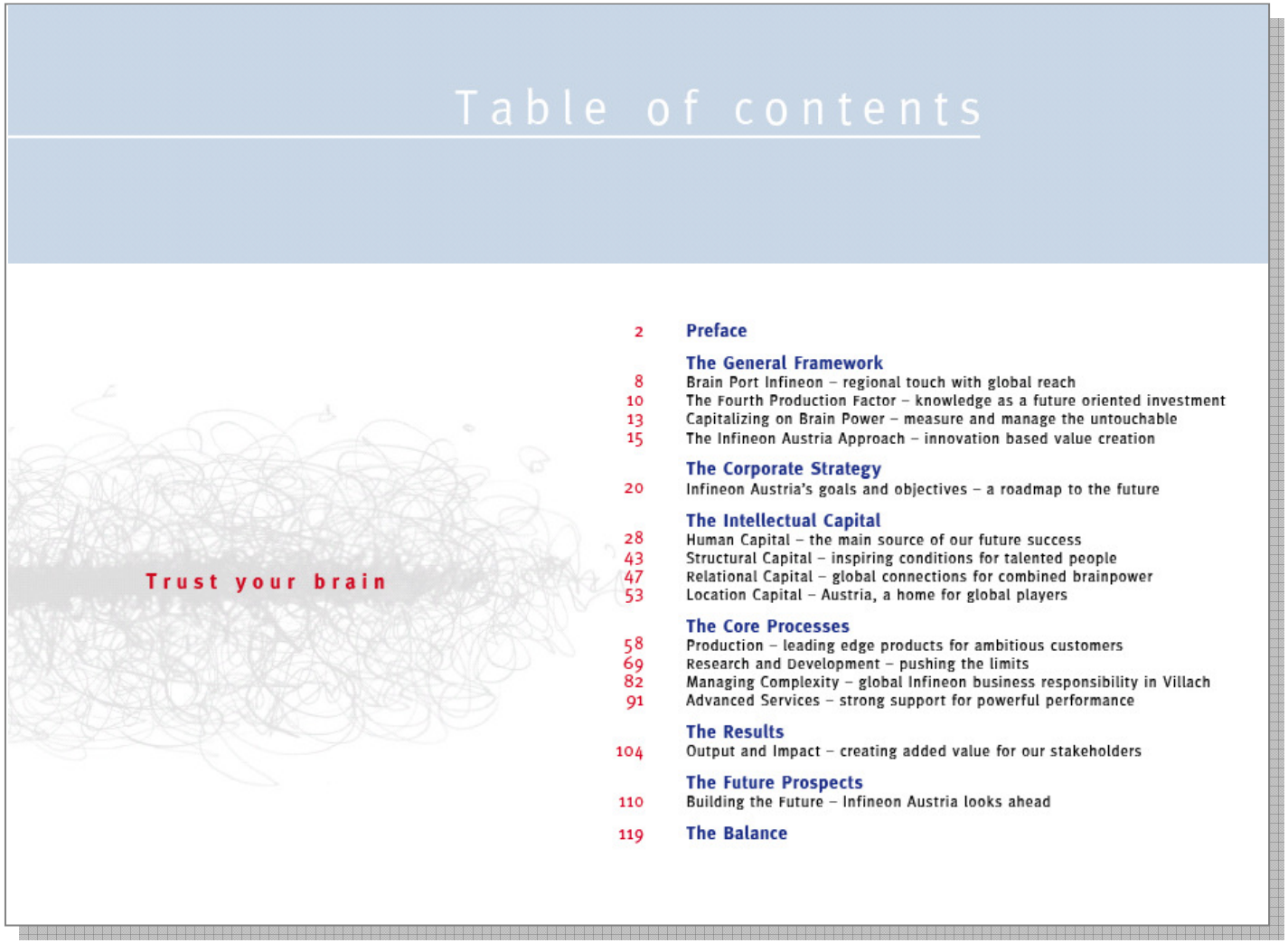
Overall model for reporting of non-financial information

Source: NFF - The Norwegian Society of Financial Analysts, Oslo (2002)

Corporate Reporting on Intangible Investment and Long-term Value Creation

Source: Infineon Technologies (2006)

… and its Content



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Trust your brain

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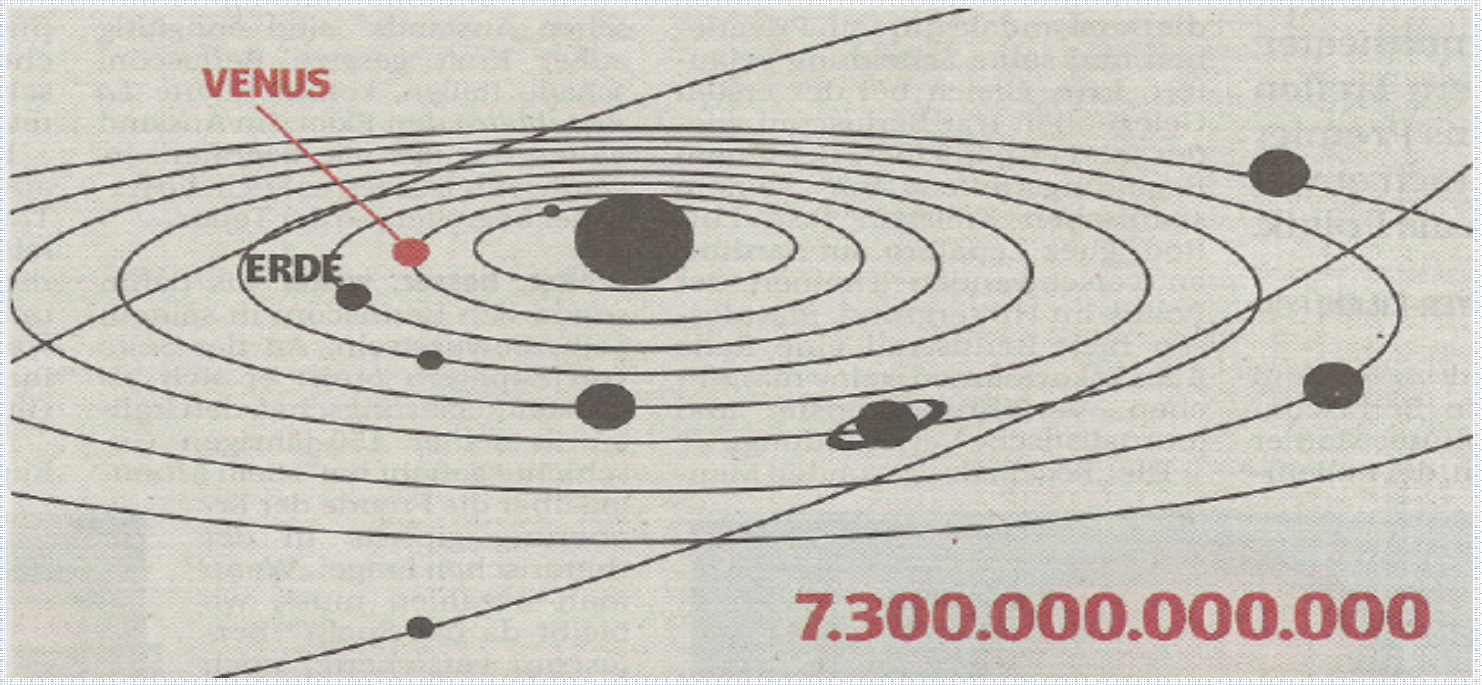
Source: Infineon Technologies (2006)

Chapter III: Macroeconomic Level

Space – the final frontier



7300 bn Euro: thats the estimated sum the worldwide losses due to the crisis will add up to until end of 2009 based on a Commerzbank Research estimation. This includes write-offs and bankruptcies of financial services providers, depreciation of real property and market downturn of world economy.

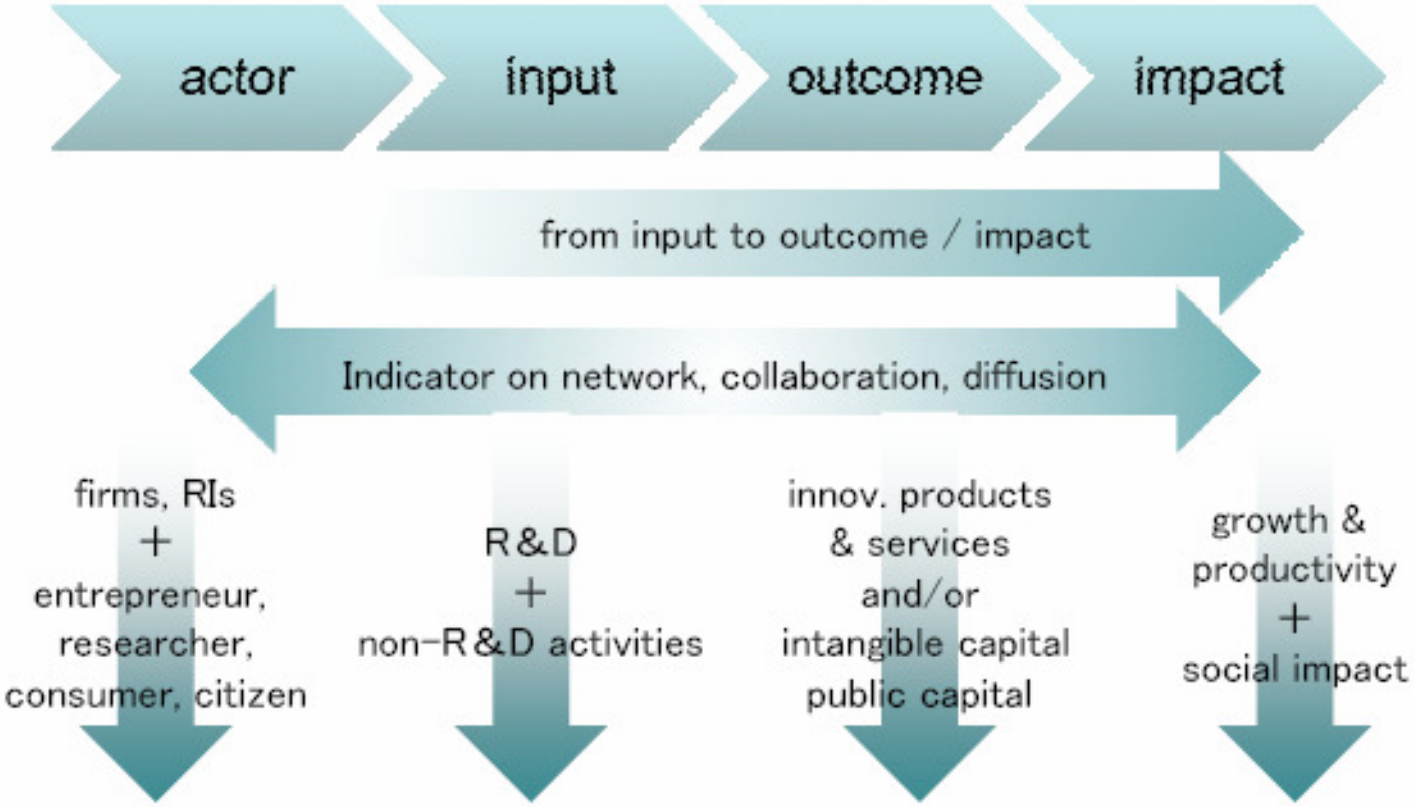
With 100-Euro banknotes strung together this would create a band 10.7 million kilometers long. This would equal more than a quarter of the 38.9 million kilometer distance between Earth and Venus in our solar system.

Issues of this Chapter

- **GDP changes for a more holistic assessment of renewal, development and wealth:** new metrics and assessment approaches for macroeconomic development and wealth are needed

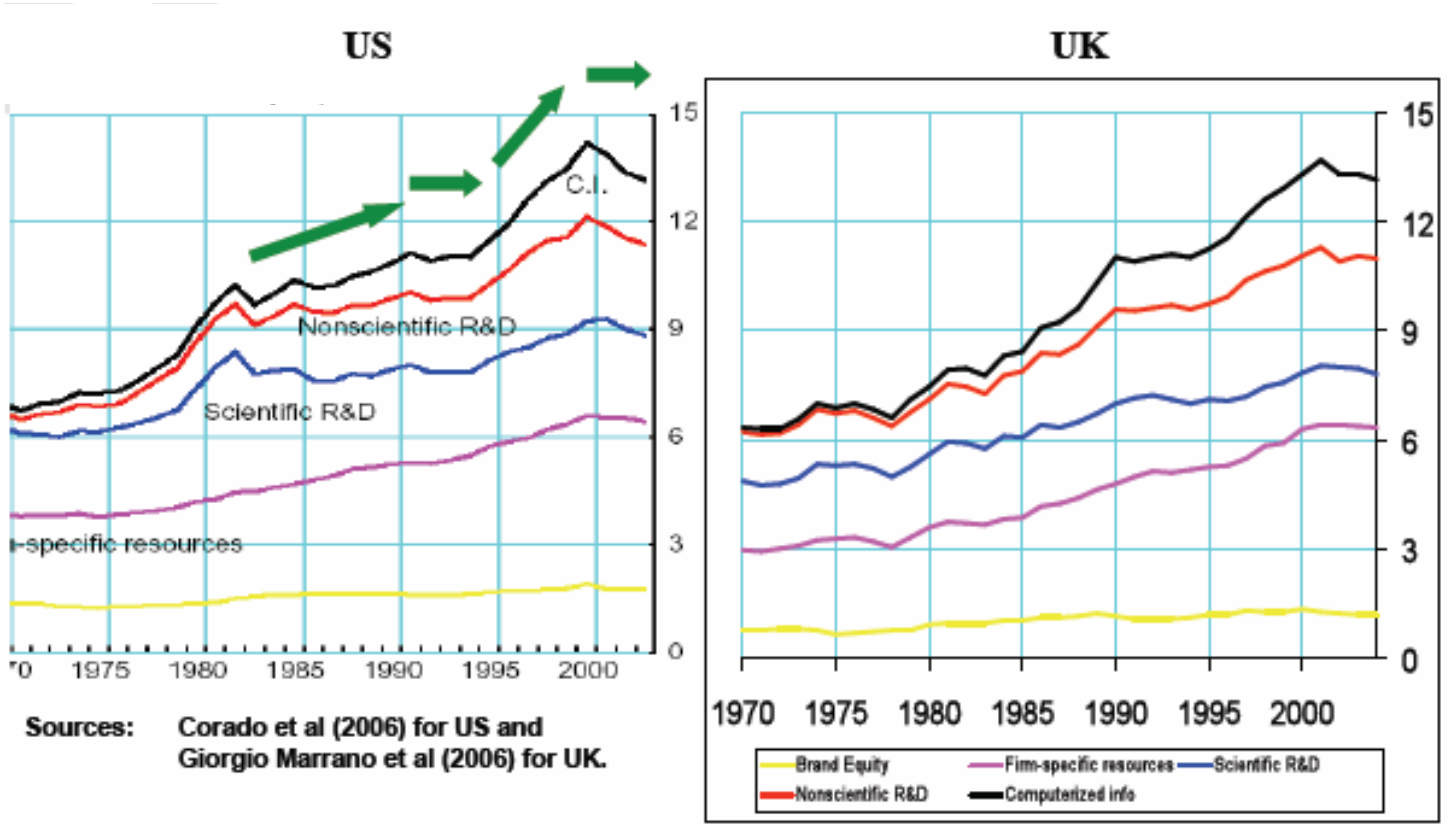
- **On a planet with limited space and resources growth per se can not be a prevailing paradigm:** some evidence for a revised perspective and changing mindsets

Challenge of New Value Creation Patterns for National Performance Measurement



Source: Tojo, METI (2009), http://www.rieti.go.jp/en/events/09100201/pdf/3-5_E_Tojo_PPT_o.pdf

Comparison of US and UK
- similar Dynamics in Intangible Investments



Source: Tojo, OECD (2009), http://www.coinvest.org.uk/pub/CoInvest/COINVESTConferenceoecd/Tojo_Coinvest_02Jun2009.pdf

Types of Intangible Investment and Current Treatment in tNational Accounts

Type of intangible investment	Includes the following intangibles	Current treatment in National Accounts
Computerised information	(1) Computer software (2) Computer databases	Both treated as investment
Innovative property	(1) Scientific R&D (2) Mineral exploration (3) Copyright and license costs (4) New product development costs in the financial industry (5) New architectural and engineering designs (6) R&D in social science and humanities	Only (2) and (3) treated as investment
Economic competencies	(1) Brand equity (2) Firm-specific human capital (3) Organisational structure	None of these treated as investment

Source: HM Treasury (October 2007), Intangible investment and Britain's productivity: Treasury Economic Working Paper No. 1
http://www.hm-treasury.gov.uk/d/pbr_csr07_macroeconomic333.pdf

Toward Better Measurement of Innovation and Innovation Capacity

- **While all countries account for investment in tangible assets in their gross domestic product (GDP) statistics, no country currently includes a comprehensive estimate of business investment in intangible assets in their official accounts.**

- **Most economists agree, however, that intangible assets—which represent an important input into the innovative process—are critical components of the modern economy.**

- **Understanding the role of intangible assets—and thus the role of innovative activity in general—is critical to understanding the modern economy.**

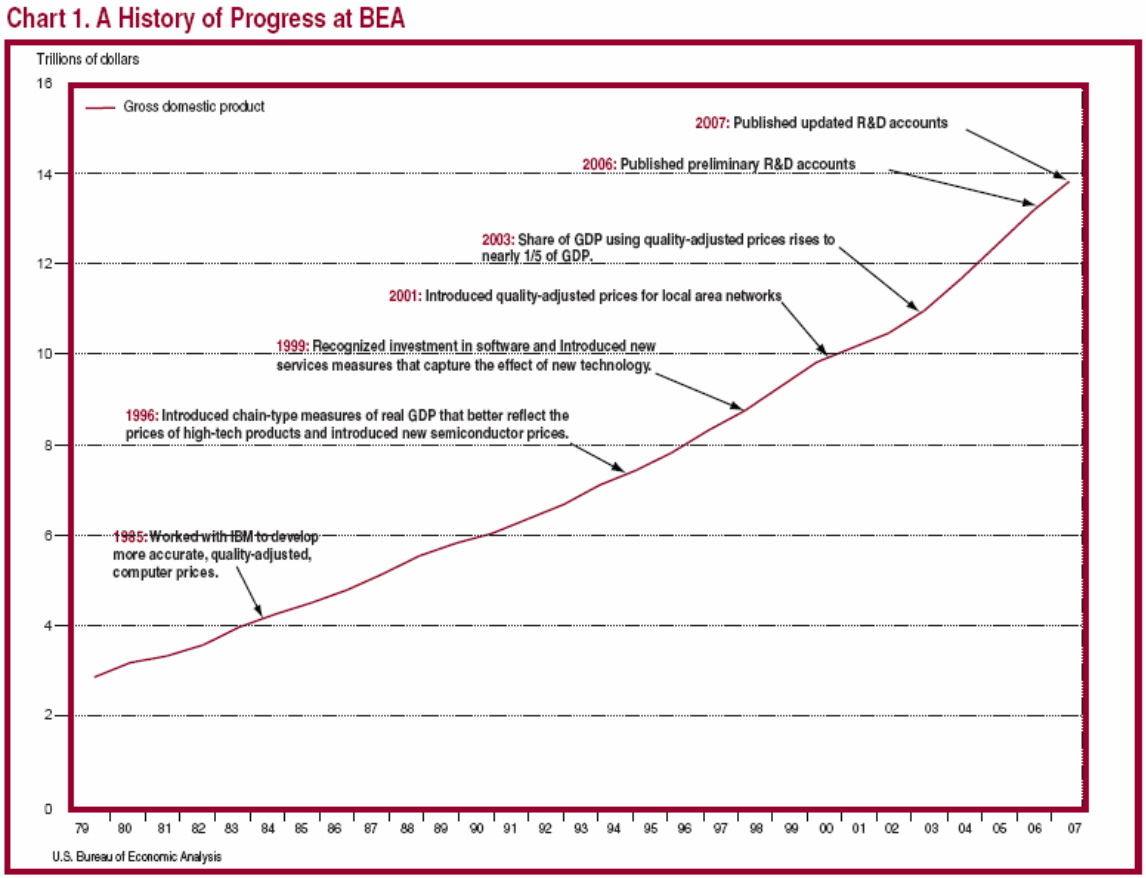
Source: BEA, US (2009)

Status Quo of Inclusion of Intangible Investments in GDP Accounts (US) I

- Indeed, some intangible investments are already included in the GDP accounts. Expenditures on software, for example, have been treated as investment in the core accounts since 1999.
- In 2006, BEA launched a research and development (R&D) satellite account, to explore investment in R&D and its larger economic effects.
- BEA is currently exploring the feasibility of creating satellite accounts that would report investment in a variety of other intangible assets.

Source: BEA, US (2009)

Status Quo of Inclusion of Intangible Investments in GDP Accounts (US) II



Source: BEA, US (2009)

Using Satellite Accounts as a First Step

- A satellite account refers to a set of accounts that allows for experimental measurement in a framework consistent with GDP but separate from the official accounts.
- Satellite accounts typically allow for a more detailed look at specific parts of the economy, measures based on new methodologies and source data, and new estimation approaches.
- The R&D satellite account, for example, provided a means of exploring the impact of capitalizing R&D spending on GDP growth and a framework through which various methodological and conceptual issues can be worked out.

Source: BEA, US (2009)

Current Status of Satellite Accounts for Intangible Investments in the US

- As of now, BEA's main efforts to measure innovative activity have focused on its R&D account, which was produced in partnership with the National Science Foundation (NSF).
- The account was also expanded to include detail about the effects on BEA's industry, regional, and international accounts.
- In the satellite account where R&D is properly treated as investment, investments in R&D contribute approximately 0.2 percentage point to the 3.3 percent growth rate of GDP in 1995–2004.
- BEA has continued the necessary research to incorporate R&D investment into core GDP accounts in 2013.2

Source: BEA, US (2009)

BEA's Road Map for the Future

- Currently, there are no plans to include investment in any other types of intangible assets in the core accounts.
- However, BEA will continue to work with the NSF in its efforts to expand the NSF survey beyond technological innovation and R&D and to explore the potential impact on macroeconomic aggregates of treating these other asset classes as investment.
- BEA is also exploring measures of individuals' investments in human capital—another type of intangible asset.

Source: BEA, US (2009)

Innovation and Economic Growth

- **In January of last year, the Commerce Department's Advisory Committee on Measuring Innovation in the 21st Century Economy published a report**

  'Innovation Measurement: Tracking the State of Innovation in the American Economy'

- **It included the following definition of innovation:**

  'The design, invention, development and/or implementation of new or altered products, services, processes, systems, organizational structures, or business models for the purpose of creating new value for customers and financial returns for the firm.'

Source: BEA, US (2009)

Modelling Innovation on Microlevel … has an Impact on Macrolevel

- Modeling innovation at a microlevel is difficult, in part because the process of innovation involves a complex set of economic actors and interactions that in principle require that one take account of networks, linkages, and complementarities.
- A linear model—in which research expenditures lead to product development and then commercialization—is not an accurate model for the innovation process.
- This narrow focus on the formal research process misses the feedback between innovators, their competitors, and their customers.
- For example, it is commonly understood that innovation is influenced not only by the actions of a particular firm but also by the institutional environment, the structure of the production process, the other firms and customers that the firm interacts with, the public research infrastructure, and the characteristics of the labor market.

Source: BEA, US (2009)

Innovation Creates Useful Knowledge - it has Input and Output Characteristics

- Summing up, the innovation process leads to the creation of economically useful knowledge that exists separately from either people or tangibles, such as equipment or structures.

- This economically useful knowledge is an intangible that is an output of a productive process as well as an input into the creation of new output.

- By identifying measures of this knowledge, measuring them using national accounting, and incorporating them into a growth-accounting framework, one can begin to develop a comprehensive set of statistics to better understand innovation as a driver of economic growth.

Source: BEA, US (2009)

The Starting Point: Domestic Income and Product Account of the US

Table 1. Domestic Income and Product Account, 2007

[Billions of dollars]

Line			Line		
1	Compensation of employees, paid	7,819.4	15	Personal consumption expenditures (3–3)	9,710.2
2	Wage and salary accruals	6,362.8	16	Durable goods	1,082.8
3	Disbursements (3–12 and 5–11)	6,369.0	17	Nondurable goods	2,833.0
4	Wage accruals less disbursements (4–9 and 6–11)	–6.3	18	Services	5,794.4
5	Supplements to wages and salaries (3–14)	1,456.6	19	Gross private domestic investment	2,130.4
6	Taxes on production and imports (4–16)	1,015.5	20	Fixed investment (6–2)	2,134.0
7	*Less:* Subsidies (4–8)	52.3	21	Nonresidential	1,503.8
8	Net operating surplus	3,386.0	22	Structures	480.3
9	Private enterprises (2–19)	3,393.9	23	Equipment and software	1,023.5
10	Current surplus of government enterprises (4–26)	–7.9	24	Residential	630.2
11	Consumption of fixed capital (6–13)	1,720.5	25	Change in private inventories (6–4)	–3.6
			26	Net exports of goods and services	–707.8
12	Gross domestic income	13,889.0	27	Exports (5–1)	1,662.4
			28	Imports (5–9)	2,370.2
13	Statistical discrepancy (6–19)	–81.4	29	Government consumption expenditures and gross investment (4–1 and 6–3)	2,674.8
			30	Federal	979.3
			31	National defense	662.2
			32	Nondefense	317.1
			33	State and local	1,695.5
14	GROSS DOMESTIC PRODUCT	13,807.5	34	GROSS DOMESTIC PRODUCT	13,807.5

Source: BEA, US (2009)

BEA's Plans in Detail: 2009 and Beyond I

- In addition to incorporating R&D spending as investment into its core accounts in 2013, BEA is considering an expanded satellite account that would contain experimental statistics for a broader array of intangible assets alongside our existing measures for R&D.

- In order to develop comprehensive statistics on investment in innovation and intangibles, expanded survey data will be needed to augment the high quality data currently available from NSF.

- Expanded collection of the data for nontechnological innovative expenditures is a high priority for augmented innovation statistics. There are three key areas:

  a) spending for the development of new business models,

  b) the creation of artistic and literary originals,

  c) and spending for the design of new products that is not currently captured by existing surveys.

Source: BEA, US (2009)

BEA's Plans in Detail: 2009 and Beyond II

- **Work with BLS:** to develop an integrated production account that will provide a more consistent framework for estimating the contributions of innovation to economic growth and productivity. Next steps, which will require incremental funding, include expansion to industry-by-industry estimates and quarterly estimates.

- **Work with the NSF and the Census Bureau:** to develop detailed estimates of innovation-related intermediate inputs. These inputs, ranging from IT equipment to scientists and engineers, are critical to understanding the sources of innovations own contributions to growth.

- **Work with the NSF and the Census Bureau:** to publish innovation statistics on firm- and establishment-level data in order to provide more comprehensive estimates of employment in innovation occupations.

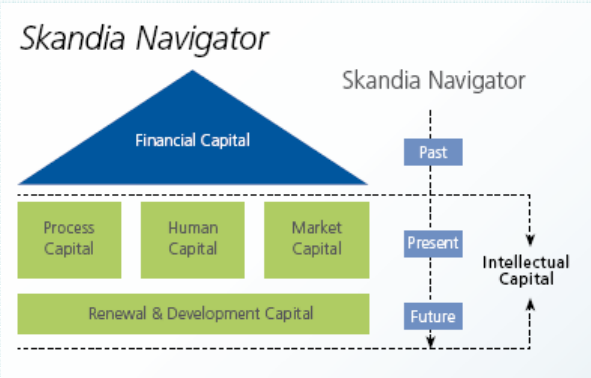
- Begin exploring methods and data sources to construct estimates for human capital, an important conduit for the diffusion of innovations.

Source: BEA, US (2009)

Regions and Nations have Started already to Implement Reports on Intellectual Capital

National Intellectual Capital Report of Israel

Intangible Assets/Intellectual Capital Based Value Creation Model and Indicator Framework of Israel



Regional IC-Report of Upper Austria

National IC-Report of Poland

A Century of Decency

Former CDU - Prime Minister of Saxony (Germany) Kurt Biedenkopf, 79, publicly addresses the limits of growth and says:

‚Since more than three decades industrialized countries follow a misleading growth paradigm. Growth became a fetish. This caused all the irrational consequences that we encounter today: exploitation of ecosystmes and natural resources, climate change and huge burdens for the following generations. We all lived beyond our means. Now we have to change our style of life: the 21st century has to become an era of decency.

Der Spiegel, July 27, 2009

Stiglitz – Sen – Fitoussi 2009: Measuring what Matters for Wealth

- Between the time we began working on this Report and the time we completed it, the economic context has radically changed. We are now living through one of the worst financial, economic and social crises in history. Part of the reason why the crisis took many with such surprise is that the measurement systems we use to assess and monitor economic performance failed. They suggested that in the years prior to the crisis the economy was doing far better than it was. The crisis has raised questions of how to value assets (…)

- No single measure, or even a limited set of measures, can provide all the information required to assess and manage an economy. But many are asking today, why did neither the private accounting system nor the public one deliver an adequate early warning?

http://www.stiglitz-sen-fitoussi.fr/documents/overview-eng.pdf

Leeway – not Lehmann
Towards Economic Paradigm of 21st Century

"The success of our economy has always depended not just on the size of our gross domestic product, but on the reach of our prosperity; on the ability to extend opportunity to every willing heart— not out of charity, but because it is the surest route to our common good."

President Barack Obama, Inaugural Address, Washington D.C., January 20, 2009

- **Corporate/national level:** renewal and development as new leading paradigm (instead of merely growth)
- **Individual level:** striving for individual leeway to create room for new opportunities and perspectives for prosperity
- **Lessons from Evolution and global ecosystems:** a living organism does not grow all the time but it renews and develops in an evolutionary, environmental context within a system of positive and negative feedback loops.

It is All About Perspectives and Valuation Stupid!

A Journey Taking Definitely Longer than 80 Days has begun…

Leif Edvinsson (founder of the global intellectual capital movement in the 90ies of the 20th century) and Alexander G. Welzl during a meeting of EU PRISM Group taking place at The Reform Club in London, October 2002.

The Reform Club is the starting point of Phileas Fogg‘s journey around the world in 80 days in Jules Verne‘s famous novel.

Thank you!

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