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The Macro-View of Intangibles: How much do we really know?

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Executive Action Series



Innovation and Intangible Assets

Gaining the Competitive Edge in Economic Recovery

by James K. Hsu, Kirsten Sigge, Ben Cheng, and Charles R. Huber

Intangible assets drive innovation and contribute much to a firm's and a country's competitive edge in the knowledge economy. On the firm level, they constitute a substantial portion of market value, sometimes accounting for twice as much as tangible assets such as property, plant, and equipment. On the macro level, investments in intangible assets have raised wealth and living standards in the United States and Europe.

Counting What Really Counts

Pick up the annual report of a company and you will find a wealth of data on the company's performance. Income statements and balance sheets provide valuable metrics of financial results. But where are the investments made by the company in its own product development and brand equity or the acquisition of human resource and supply chain management systems? Are investments in innovation accelerating or declining? Where is the development of the iPod or Apple books, the investments in technical innovation, design, and marketing? Where is the investment in sales force training needed for MetLife's new Hybrid 401 (K) insurance product?

The short answer is that most innovation-related intangibles are developed within companies and appear as a current cost of doing business. They are not identified as investments on the financial statements. This treatment reflects the conservatism of financial accounting practice which is transaction based and oriented to market valuation. The direct costs of internally developed intangibles are reported because they are market based, but the corresponding value created is not market based and is therefore omitted. While this conservatism has proven valuable in its own right, as the revelations of accounting scandals have recently shown, its omission of nonmarket-based transactions also reveals an essential shortcoming. Recent research has shown that omitted intangible investments are the basis of much of a company's economic dynamism and

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Intangible Assets: A New Driver of the Modern Economy

What is an Intangible Asset?

The intangible assets are not touched or seen, such as patents, trademarks, and copyrights. In the modern economy, however, many assets that are not touched or seen, such as research and development (R&D), are not equity and human resources.

Intangible investment includes a wide array of spending including a spend that is toward human capital, talent, research, product research, and development, market penetration, and organizational and management efficiency.

It is also useful to break down the types of intangible assets into five major categories: research and development, human capital, and organizational innovation.

From the narrow viewpoint of economic self-interest, policy-makers in high-income countries should encourage investment in intangibles to power their country's advantage in the globalized world. On the other hand, policy-makers in emerging economies may see the promise of this form of investment as a way of driving the transition to higher long term growth and faster convergence to the technological frontier.
Measuring Intangible Capital and its Contribution to Economic Growth in Europe



Research
Our research covers three fields:

- Intangible assets in the modern U.S. in the past 50 years
- How Do You Measure "Tangible Research and Dev?"
- Intangible assets in U.S. firms from 1987 to 2008
- What is a Company Really Worth? Intangible Capital and the "Market Value" Puzzle
- Intangible assets in Europe from the late 1990s to 2008
- Measuring Intangible Capital and its Contribution to Economic Growth in Europe

U.S. Macroeconomic Analysis

The innovation that has shaped recent economic growth is not an autonomous event. Instead, a surge of new ideas (technological or otherwise) is linked to rapid growth through a complex process of investments in technological expertise, product design, market development, and organizational capability.
How Do You Measure a Technological Revolution?



Intangible investment dropped from 11.7% of total investment in 1987 to 10.2% in 2007, while intangible investment increased from 4.8% of business output to 13.7% during the same period.

U.S. Firm Analysis

By examining accounting standards, a unique lens is being used to see how the research &



Intangibles matter to better understand the growth story

- Intangible expenditure is an important asset when capitalized, in many cases more important than tangible capital in terms of % of GDP
- Intangibles increase in importance as share of GDP, roughly related to level of per income
- Labor productivity growth is faster, but more so between 1995-2000 than between 2000-2005
- Intangibles are positively related to differences in labor productivity growth between countries (NMS, Scandinavian, Anglo Saxon, Continental) – explaining some of the cross-country differences
- A significant portion of TFP growth can be explained by increased in intangible capital, but a residual still remains
- A growth and competitiveness agenda without a broad conceptualization of intangibles can cause policy mistakes



The data: where are the bottlenecks?

- Economic competencies remain the Achilles' heel of intangibles measurement:
 - What to include conceptually? Go back to theory first?
 - How to measure actual expenditure?
 - How to deflate?
 - How to depreciate?
- How much progress is possible without greater data availability:
 - National accounts?
 - Industry level results?
 - Private data sources?
 - More firm-level data:
 - Surveys, like innovation surveys?
 - Link to financial accounting?



How do we model this?

- Growth accounting is good as a start, but is it the final answer?
 - No measure of causality
 - Misses interaction effects
 - Compensation weights are at best a proxy
- Is regression analysis the obvious next step?
 - Which data for intangibles: when relating only “new intangibles” with high depreciation rates the link with current growth becomes more automatic
 - Would complete intangibles be better in picking up within-country effects?
 - Is unemployment sufficient as a control variable for business cycles?
 - Is Luxembourg as outlier characteristic of the general problem?
 - But what regression model to use if we don't know so well what the theory behind intangibles and growth is?



Regressions – technical comments

- Very low sample size of 150 observations for panel regressions
 - > Reliable conclusions?
 - > Equal sample size OLS and panel regressions?
- Which model is preferred? Fixed effects OR random effects
 - ✓ Econometrical test?
 - ✓ Fixed effects model: unobserved heterogeneity is stable (of fixed) over time
 - ✓ Random effects: additional assumption that the unobserved effect is uncorrelated with each explanatory variable
 - ✓ If unobserved effects are large and important, RE estimates are similar to FE estimates.
 - ✓ If unobserved effects are unimportant, RE estimates are closer to a pooled OLS model
 - ✓ In general, RE gives more accurate p-values
- Dynamic panels: Test for serial correlation?



Do we need more theory first?

- CHS put emphasis on “investment nature“ of intangibles (consumption foregone) but is that sufficient? For example:
 - Internalization of returns on intangibles vs. spillovers
 - Where does it add value, where does it redistribute value (e.g. marketing)
- How far do we extend the boundaries of intangible capital?
- A distinction between control variables and policy variables is key
 - Roth & Thum: FDI, trade openness, stock market, inflation, tax, gov’t efficiency, political stability, gov’t expenditure, education expenditure, social expenditure
 - Haskel and Hao: industrial structure, financial market depth, labor market, risk
- May be a more cautious approach with simple correlations can tell the same story without claiming too much in terms of causality
- What do we do with residual TFP?
- A micro & macro integration is more important than ever

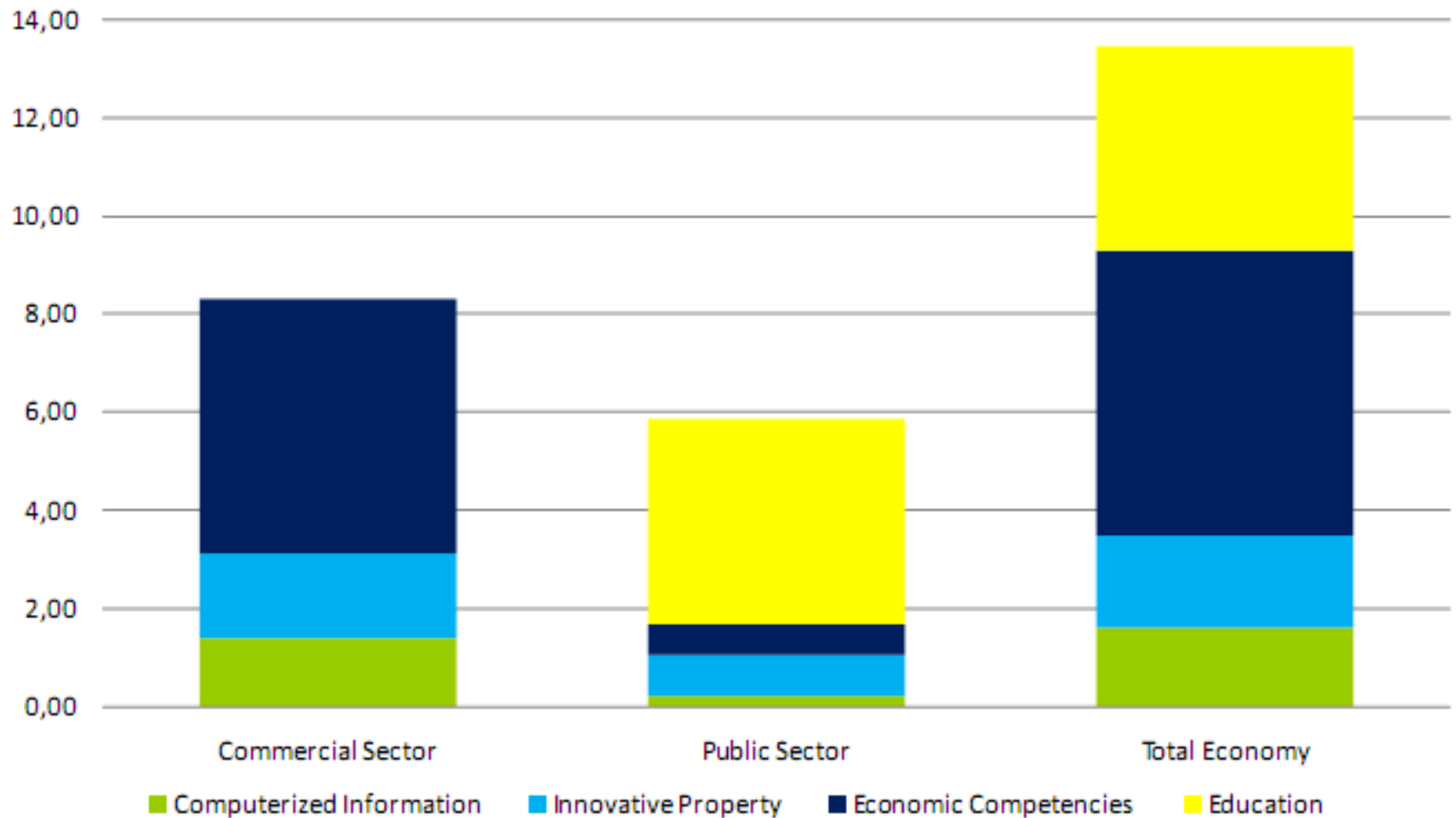


Some consideration with regard to policy

- Differences between countries are large (e.g. Germany low on competencies; Scandinavia and UK relatively high)
 - Sector specific?
 - Policy or institutional orientation?
 - Anglo-Saxon countries have overstated goodwill?
 - Substitutability with public investment
- Are fiscal incentives the way to go to support intangibles growth?
How much of the returns are internalized
- Why are so focused on private intangibles? Shouldn't policy focus be on public intangibles?
- Business implications: strategy and financial accounting
- What's next? Intangibles need a "home":
 - Growth analysis
 - Innovation research
 - Labor market analysis
 - Financial accounting



Intangible Investment in the Commercial Sector, Public Sector, and Total Economy 2008 (% GDP)

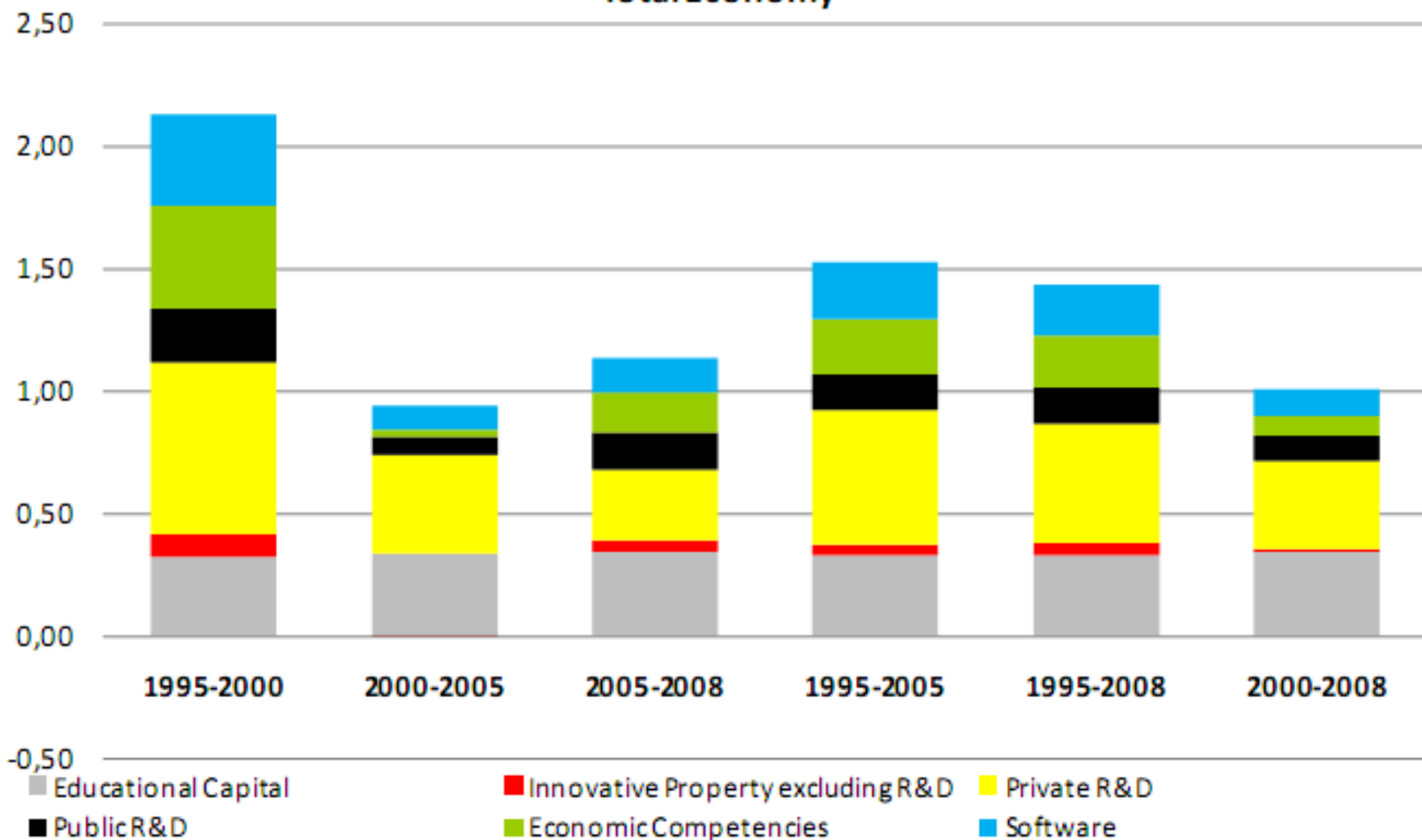


Data source: Statistics Netherlands

Note: GDP is conventionally measured GDP (as published from Statistics Netherlands)



Contributions of Subcomponents of Intangibles to GDP Growth - Total Economy



Data sources: Statistics Netherlands and EU KLEMS database, November 2009, at <http://www.euklems>.

