



Intellectual Capital for Communities in the Knowledge Economy Nations, Regions, Cities and Emerging Communities



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Intangible Capital and the Symmetry Dimension: Implications for Economic Growth

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The views expressed are my own and should not be attributed to the Board of Governors of the Federal Reserve System or to other members of its staff. This presentation draws heavily on my joint work with Charles Hulten and Dan Sichel.

Patterns of Growth Depend on Where You Look

- In both financial and GDP accounting, investments in knowledge capital traditionally have *not* been classified as capital spending.
- This omission significantly affects how patterns of U.S. growth are perceived.
- Corrado, Hulten, and Sichel (2005 and 2006) were the first systematic quantifications of intangible *business* spending consistent with concepts in GDP accounts.

Key Questions

- **Are intangibles really capital?**
- **What do we know about intangibles?
(What do we need to know?)**
- **What is the role of intangible capital in
the recent U.S. economic performance?**

Criteria for Defining Business Intangible Investment

- **Intangible business spending is investment if it is intended to boost the output of the firm in a future period (symmetry with tangibles)**
- **This expanded view of investment is grounded in basic economic theory**
- **The expanded view, aka symmetry, is the key idea in CHS work**

Types of Intangible Business Spending

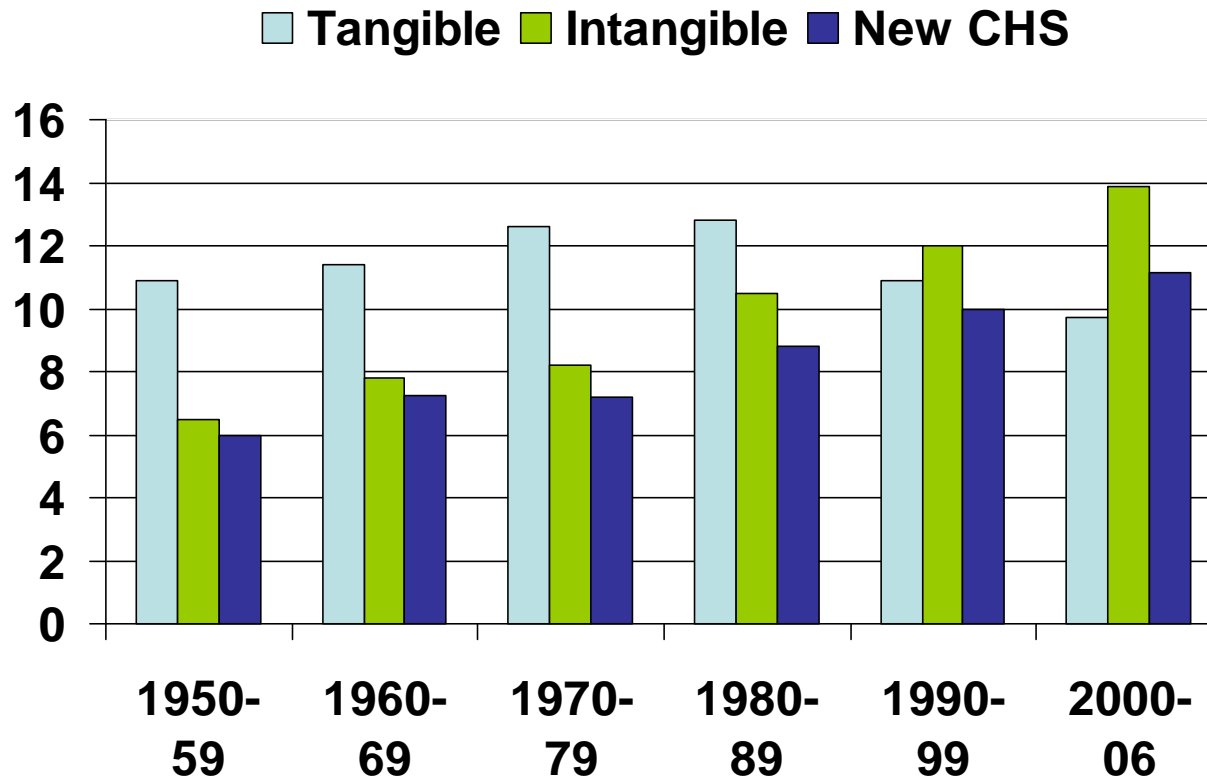
- **Computerized information**
 - Computer software, computerized databases
- **Innovative property**
 - Scientific R&D
 - Copyright and license costs
 - Other new product investments by industries
- **Economic competencies**
 - Brand equity (advertising, mkt. research)
 - Firm-specific resources (training, managerial time)

The Expanded View of Investment is Wider and Deeper

- **Wider: Innovative Property includes more than scientific R&D**
 - Symmetric treatment of investments in innovative property across industries: eg., entertainment
- **Deeper: Economic competencies are part of the “downstream” innovation process**
 - Symmetric treatment of all aspects of “product” innovation
 - Symmetric treatment of all aspects of “process” innovation

Business Investment

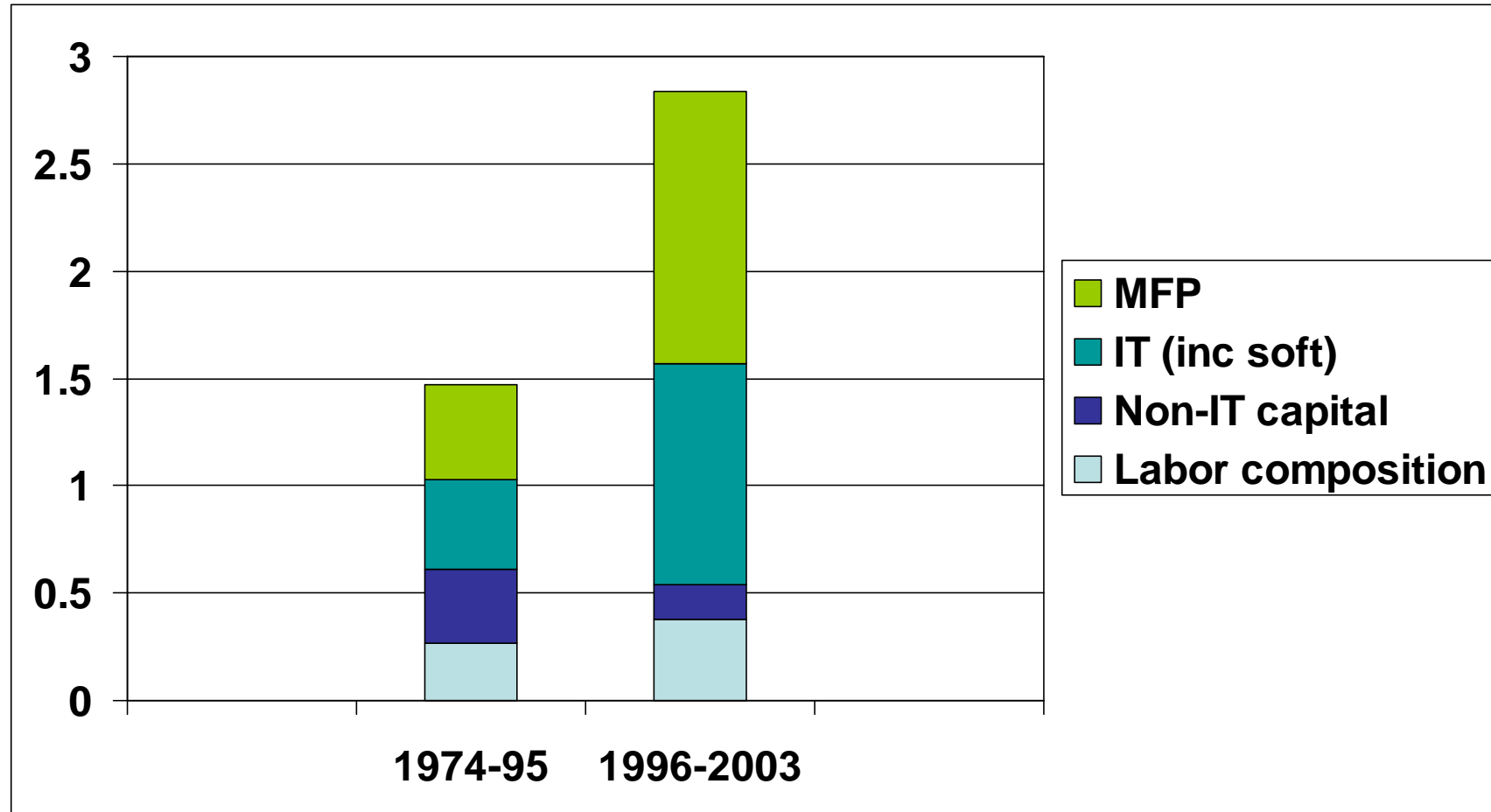
percent of business output



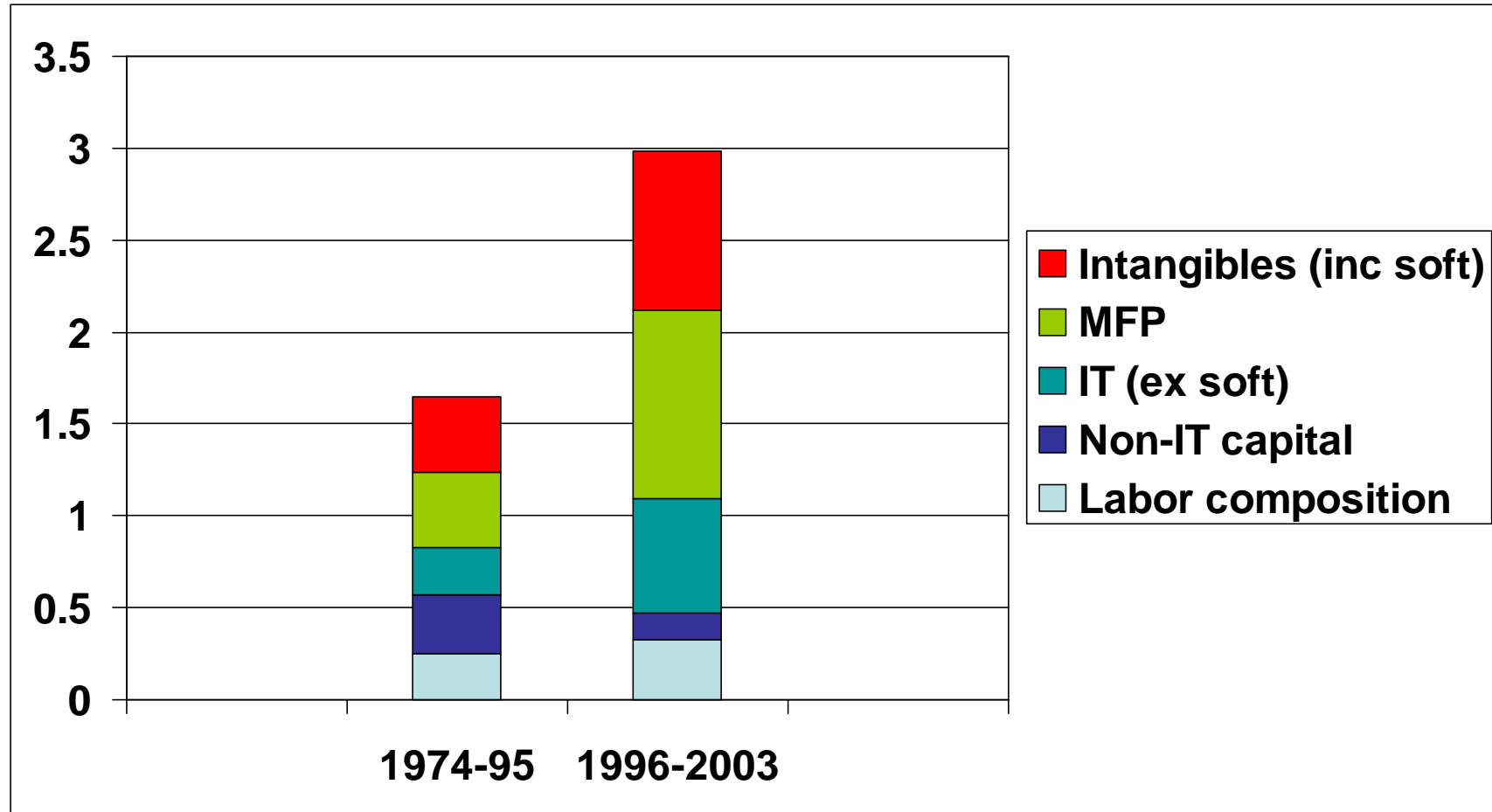
How Important Are Intangibles?

- **U.S. intangible business investment was more than \$1 trillion in the late 1990s.**
- **In the first 6 years of this decade, intangible business investment was 40 percent larger than tangible investment.**
- **Nonfarm business output in the U.S. would be about 11 percent higher.**
- **The saving rate would be higher; more capital accumulation.**

Baseline Labor Productivity (percent change, annual rate)



Labor Productivity incl. new Intangibles (percent change, annual rate)



Implications for Thinking about Economic Growth

- **The expanded view of investment – the symmetric treatment of intangibles and tangibles – results in:**
 - **Higher rate of growth in labor productivity**
 - **Significantly larger role for capital as a source of economic growth**
 - **New players (non-scientific R&D and firm-specific resources) are major contributors.**
- **Intangibles contribute a bit to mid-1990s acceleration in U.S. labor productivity – but the overall story (the role of IT, etc.) doesn't change.**

Conclusions

- **Role of intangible investment has largely been overlooked in the U.S. economy.**
- **Fuller accounting for intangibles significantly changes picture of investment for U.S. economy.**
- **Patterns of growth among intangible components suggest that economies at different stages of economic growth will have different results.**