Economic Growth
and Information Technology
in the U.S. and Japan

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Economic Growth in the Information Age

INTRODUCTION:
Prices of Information Technology

THE INFORMATION AGE:
Faster, Better, Cheaper!

ROLE OF INFORMATION TECHNOLOGY:
IT Prices and the Cost of Capital

ECONOMIC GROWTH in the U.S. and JAPAN:
IT Investment and Productivity Growth

ECONOMICS ON INTERNET TIME:
The New Research Agenda
The Information Age: Faster, Better, Cheaper!

Moore (1998): "If the automobile industry advanced as rapidly as the semiconductor industry, a Rolls Royce would get half a million miles per gallon, and it would be cheaper to throw it away than to park it."

Invention of the Transistor:

Development of Semiconductor Technology.

The Integrated Circuit:

Memory Chips; Logic Chips.

Moore’s Law: The number of transistors on a chip doubles every 18-24 months (Pentium 4, released November 20, 2000, has 42 million transistors).
Integrated Circuit Complexity

- Transistors Per Die
- 1965 Actual Data
- MOS Arrays
- MOS Logic 1975 Actual Data
- 1975 Projection
- Memory
- Microprocessor

Source: No Exponential is Forever, Gordon Moore ftp://download.intel.com/research/silicon/Gordon_Moore_ISSCC_021003.pdf)
Holding Quality Constant
Matched Models and Hedonics

**Semiconductor Price Indexes:**
Memory and Logic Chips.

**Computer Price Indexes:**
The BEA-IBM Collaboration.

**Communications Equipment:**
Terminal, Switching, and Transmission.

**Software:**
Prepackaged, Custom, and Own-Account.