Knowledge-Based Capital in a Data-Driven Economy

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The Shift to a Data-Driven Economy

Most measures of economic activity, such as GDP, divide economy into goods and services.

Digitization has broadened the importance of data in personal consumption, investment, government output, and trade.

We need a framework where data, goods, and services are treated symmetrically.
The Industrial Economy

Creation of Economic Value

Goods

Consumers, Businesses, Government
Service Economy

Creation of Economic Value

Goods

Services

Consumers Business Government
Data-Driven Economy

Creation of Economic Value → Goods → Services → Data → Consumers Business Government
Data is Different....

- **Goods**
  - Tangible
  - Can be stored

- **Services**
  - Intangible
  - Cannot easily be stored

- **Data**
  - Intangible
  - Can be easily stored
The production and use of data is becoming a fundamental component of economic value creation, just like the production and use of goods and services.
Data-Driven Value Creation

Provision of data to customers
• i.e. Facebook, health-related information

Enterprise investment in data
• i.e. marketing databases, genomic databases

Government acquisition and provision of data
• i.e. GPS tracking of buses

Cross-border trade in data
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The rate of knowledge acquisition is increasingly tied to digital methodologies—i.e. genomic databases, ‘big data’ experimentation.

Knowledge itself is increasingly digitized

Most knowledge-based capital fits into the broader framework of the data-driven economy
Based on help-wanted ads containing one or more of the key words hadoop; teradata; mapreduce; and ‘big data.’ Help-wanted ads are translated to jobs using the methodology described in “Where the Jobs Are: The App Economy” (Mandel 2012).

Data: The Conference Board, Analysis: South Mountain Economics LLC
Implications for GDP and growth

Real U.S. GDP growth, with and without unmeasured data consumption
(first two quarters of 2012, annual rates)

Data: Bureau of Economic Analysis, Progressive Policy Institute
(from “Beyond Goods and Services: The (Unmeasured) Rise of the Data-Driven Economy” (October 2012)}