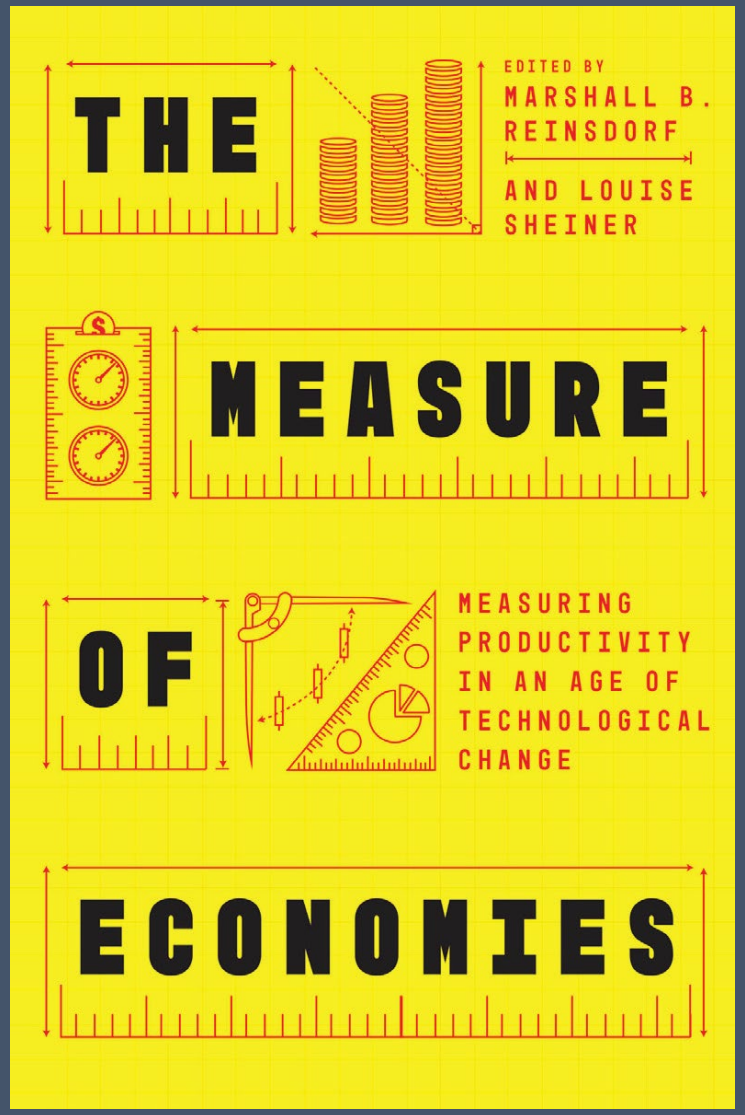

The Measure of Economies: Productivity Measurement in An Age of Technological Change

Marshall Reinsdorf

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Why this Book?

Productivity growth, a key determinant of economic growth and future prosperity, slowed considerably in the mid-2000s in the US (and elsewhere) and didn't recover

> After averaging 3.1% per year in 1995-2005, business sector labor productivity growth fell to 2% in 2006-2011, and just 1.2% in 2011-2019

At the same time, the digital transformation brought many new and free goods and product capabilities, and growth of economic well-being seemed to accelerate

Much debate about whether mismeasurement explains the productivity slowdown and whether GDP and price indexes miss significant sources of growth of output/welfare, but often either with limited understanding of the relevant measurement concepts and practices, or couched in terms only accessible to experts in the field

What the Book Does

The book provides an accessible and intuitive yet rigorous exploration of the state of knowledge in the field along with practical recommendations for measurement improvements

Eleven distinguished experts contributed eight chapters that give the background needed to understand the issues, explain the measurement challenges, assess the potential mismeasurement, and recommend practical improvements

The book's analysis of the measurement issues suggests that productivity growth tends to be underestimated but increased mismeasurement played only a small role in the productivity slowdown

What's in the Book?

Chapter 1 explains the relationship between GDP and a measure of economic welfare, and provides the background on GDP for understanding the productivity measurement issues

Two chapters examine price index compilation challenges, one as part of a stocktaking of the statistical agencies' progress since the 1995-1996 Boskin Commission, and another as part of analysis of the issues raised by new goods, new varieties, and quality changes

A chapter explains what intangible investment is and why it's a critical for productivity, and identifies broader measures of intangibles needed to understand economic growth

There is also a chapter on the digital economy and the associated measurement issues

What's in the Book?

A chapter discusses outcome-based indexes for capturing the benefits of advances in health care technology, and how they can be integrated in the framework of GDP

A chapter develops an environmentally-adjusted productivity index and finds a that it substantially changes the growth picture following the passage of the Clear Air Act

The book concludes with a discussion of opportunities and challenges in using non-survey data in official statistics and a vision for reorganizing the US statistical system

Below I'll provide some highlights the first four chapters

Chapter 1. GDP and Economic Well-being

A very readable explanation of GDP and the aspects of economic well-being that it captures or omits

- GDP's purpose is measuring domestic production
- An important excluded aspect of economic well-being is non-market home production

Other themes:

The questions that free goods and profit-shifting by multinational enterprises raise for nominal GDP

Cost of living indexes, and the Fisher index of real consumption as a measure of the growth of economic welfare from consumption of market goods and services

Real GDP tends to track growth of economic welfare from consumption including spending on behalf of households (given more precisely by the SNA concept of "actual individual consumption")

Chapter 2. Measurement of Output, Prices and Productivity: What's Changed since the Boskin Commission?

Price index compilation methods play a critical role in measuring output and productivity growth: *upward* bias in price indexes causes *downward* bias in output and productivity growth

The chapter explains how the indexes of prices, output, and productivity are compiled and documents the measurement improvements and new challenges since the Boskin Commission

The Boskin Commission of 1995-1996 found that biases in the CPI could have totaled +1.1 % points

Moulton's estimate of the downward bias in the growth rate of nonfarm private business output is 1.08 %/year in 1996 but just 0.53 %/year in 2021 (with wide ranges around the estimates)

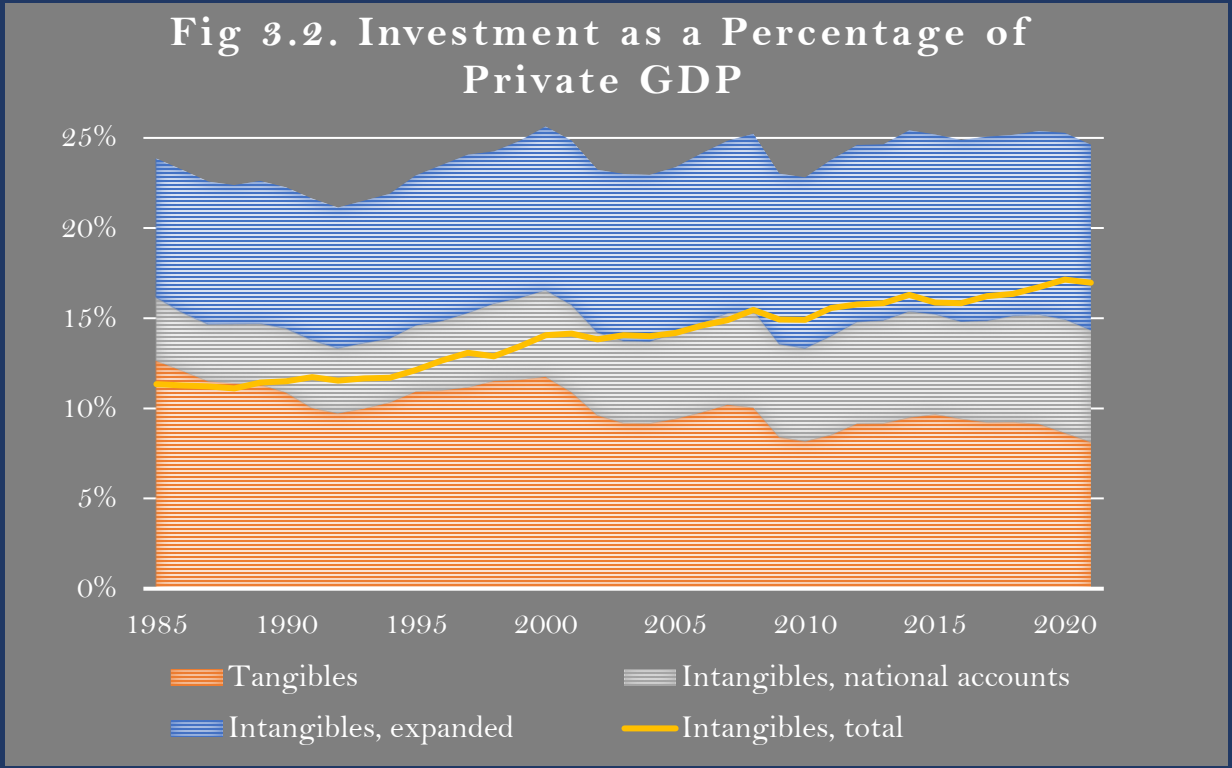
Chapter 3. Intangible Investment: What it Is and Why it Matters

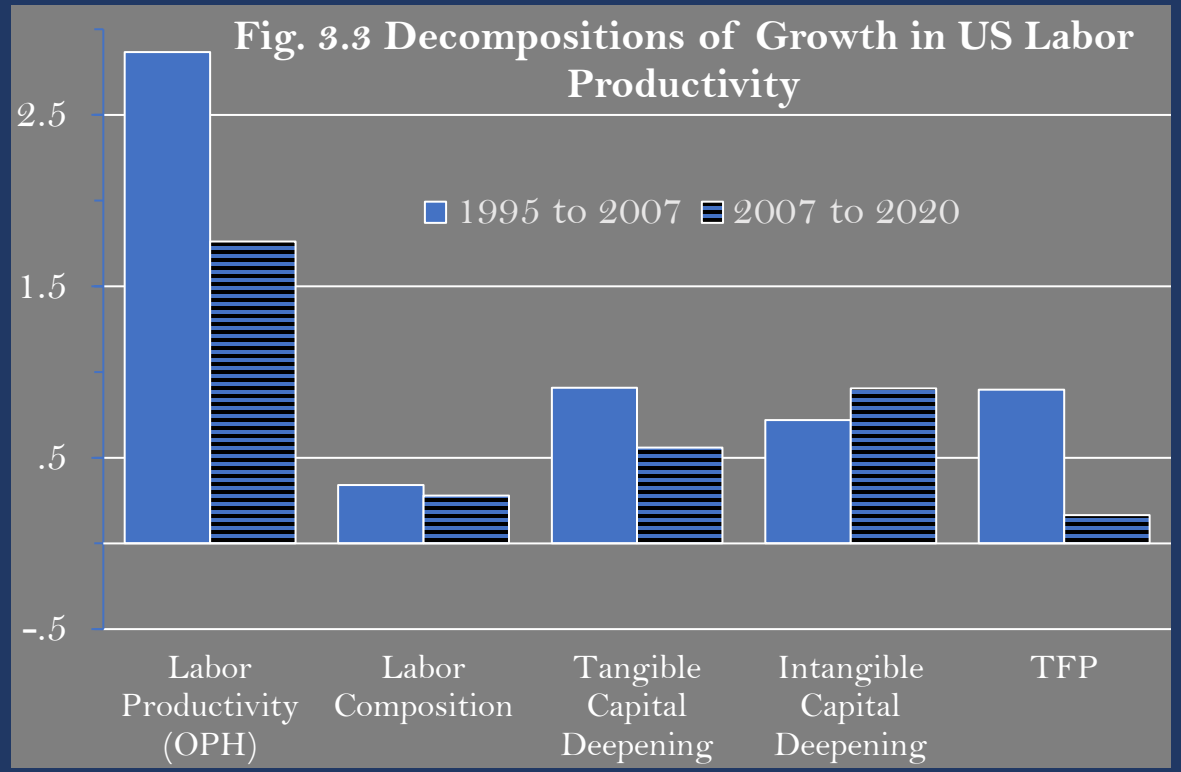
Explains why intangible investment is a critical driver of productivity and the types of intangible assets

Intangible capital has become more important than tangible capital

Slower diffusion of intangibles may have contributed to the productivity slowdown

Provides the definitions, values, deflators, and service lives needed to bring more intangibles into GDP





4. Productivity Measurement: New Goods, Variety, and Quality Change

Technological progress and innovation often take the form of new or improved goods, but capturing the value of new goods, variety, and quality changes in price indexes is not easy

Provides a comprehensive review of the concepts, techniques, and statistical agency practices, along with a thought-provoking look at broader questions, radical approaches, and the limits of what is measurable

Statistical agency practices for handling product entry and exit include splicing together price changes of continuing items to construct “matched models” indexes, and explicit quality adjustment using hedonic regressions, options pricing, and producer’s cost

Approaches based on unit values and reservation prices are also discussed