Options for Integrating the Annual Industry Accounts

Brian C. Moyer, Chief
Annual Industry Branch
Industry Economics Division
May 9, 2003

Topics

I. Overview of the Accounts

II. Benefits of Integration

III. Steps to Integration

IV. Results of Integration: Timing and Products

V. Questions

The Accounts

- Benchmark I-O Accounts
- Annual I-O Accounts
- GDP-by-Industry Accounts

I-O Accounts:

- ✓ Prepared within a balanced framework
- ✓ Focus primarily on products
- ✓ Directly estimate gross output and intermediate inputs
- ✓ Residual: Value Added / Gross Output - Intermediate Inputs

GDP-by-Industry Accounts:

- ✓ Focus primarily on industries
- ✓ Directly estimate gross output and value added
- ✓ Value Added / Compensation of Employees +
  Property-Type Income +
  Indirect Business Taxes
- ✓ Residual: Intermediate Inputs / Gross Output - Value Added
- ✓ Also estimate real (inflation-adjusted) measures

Value Added by Industry for 1992 (billions of dollars)			
	I-O Accounts	GDP-by-Industry Accounts	Percent Difference
Manufacturing sector	1,171.4	1,082.0	-8.3
Trade sector	928.4	966.3	3.9
Services sector	1,206.0	1,209.3	0.3

Which data are better? It depends…

- I-O Accounts
  - ✓ Value Added / Gross Output - Intermediate Inputs
  - ✓ Quality of gross-output data is high
  - ✓ Quality of intermediate-inputs data depends on time period and industries covered

- GDP-by-Industry Accounts
  - ✓ Value Added / Compensation of Employees + Property-Type Income + Indirect Business Taxes
  - ✓ Quality depends on consistency of source data
  - ✓ Quality of property-type income data depends on company-establishment adjustments to profits, net interest, and capital consumption allowances by industry

Benefits of Integration

- ✓ Improve the consistency of the industry accounts: A common set of estimates for gross output, intermediate inputs, and value added
- ✓ Use the best available source data
- ✓ Improve the reliability and accuracy of the estimates
  - Estimates prepared within a balanced framework
  - Review focuses on both industries and products
- ✓ Provide feedback to the NIPA's

For now …

Partial integration

- ✓ Annual I-O and GDP-by-Industry Accounts
- ✓ Incorporate information from the Benchmark I-O Accounts

In the longer run …

Full industry integration

- ✓ Benchmark I-O, Annual I-O, and GDP-by-Industry Accounts
- ✓ A production-based approach
- ✓ Requires improved/expanded source data
- ✓ Alternative measure of GDP

Steps to Integration

Step 1. Develop a "1997 Prime" benchmark I-O table

Step 2. Develop a time series of gross output, intermediate inputs, and value added by industry

Step 3. Develop a time series of balanced Annual I-O tables

Step 4. Develop real (inflation-adjusted) measures

Integration

Step 1. Develop a "1997 Prime" benchmark I-O table

- ✓ The "1997 Prime" table provides the starting point for integrating the industry accounts
  - Incorporates the results of the 2003 NIPA comprehensive revision
  - Provides "best level" estimates of gross output, intermediate inputs, and value added
- ✓ Options for setting the levels of value added
  - Use the value-added estimates from the 1997 Benchmark I-O Accounts
  - Use the value-added estimates from the GDP-by-Industry Accounts
  - Use both--undertake industry-specific evaluations

Integration

Step 2. Develop a time series of gross output, intermediate inputs, and value added by industry

- ✓ Gross-output, intermediate inputs, and value-added levels are set by the "1997 Prime" benchmark I-O table
- ✓ Source data to extrapolate gross output by industry are available (for example, Census Bureau annual surveys)
- ✓ Options for extrapolating value added by industry
  - Extrapolate with estimates of gross output by industry--assume constant, nominal I-O ratios
  - Extrapolate with estimates of value added from the GDP-by-Industry Accounts

Extrapolated Value Added for 1995 (billions of dollars)		
	Gross-Output Extrapolation	Gross Domestic Income Extrapolation
Goods-producing industries	1,880.2	1,880.4
Services-producing industries	4,693.7	4,510.4
Government	989.5	989.5
Total value added	7,563.4	7,380.2

Extrapolated Value Added for 1995 (billions of dollars)		
	Gross-Output Extrapolation	Gross Domestic Income Extrapolation
Total value added	7,563.4	7,380.2
Published GDP	7,400.5	7,400.5
Level difference	-162.9	20.3
Percent difference	-2.2	0.3

Integration

Step 3. Develop a time series of balanced Annual I-O tables

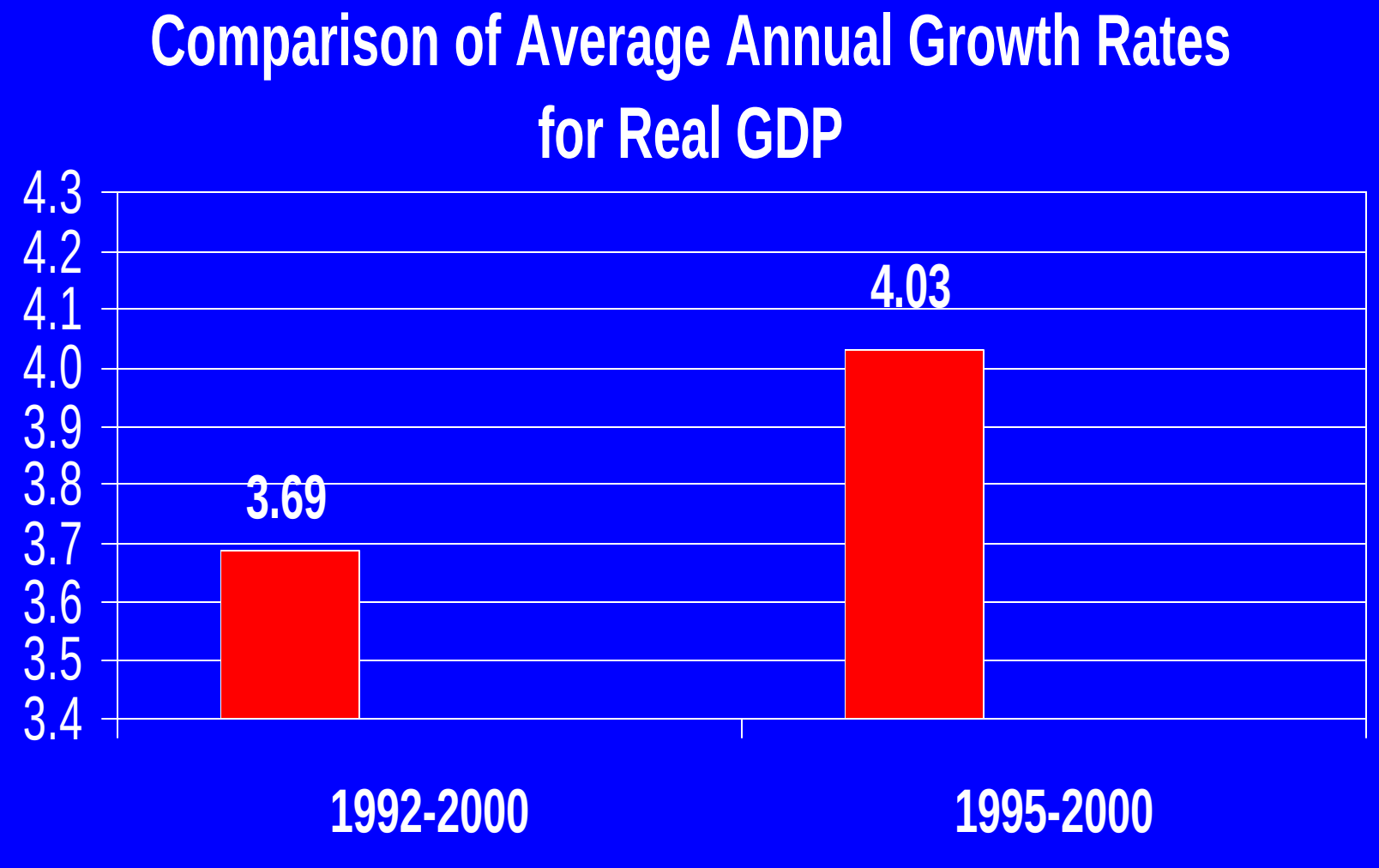
- ✓ Each year's Annual I-O table is balanced given the initial estimates of gross output, intermediate inputs, value added, and final demand.
- ✓ Review of the balanced I-O tables
  - Industry and product review--industry I-O ratios and commodity ratios
  - Feedback to the NIPA's
  - Time-series continuity

Integration

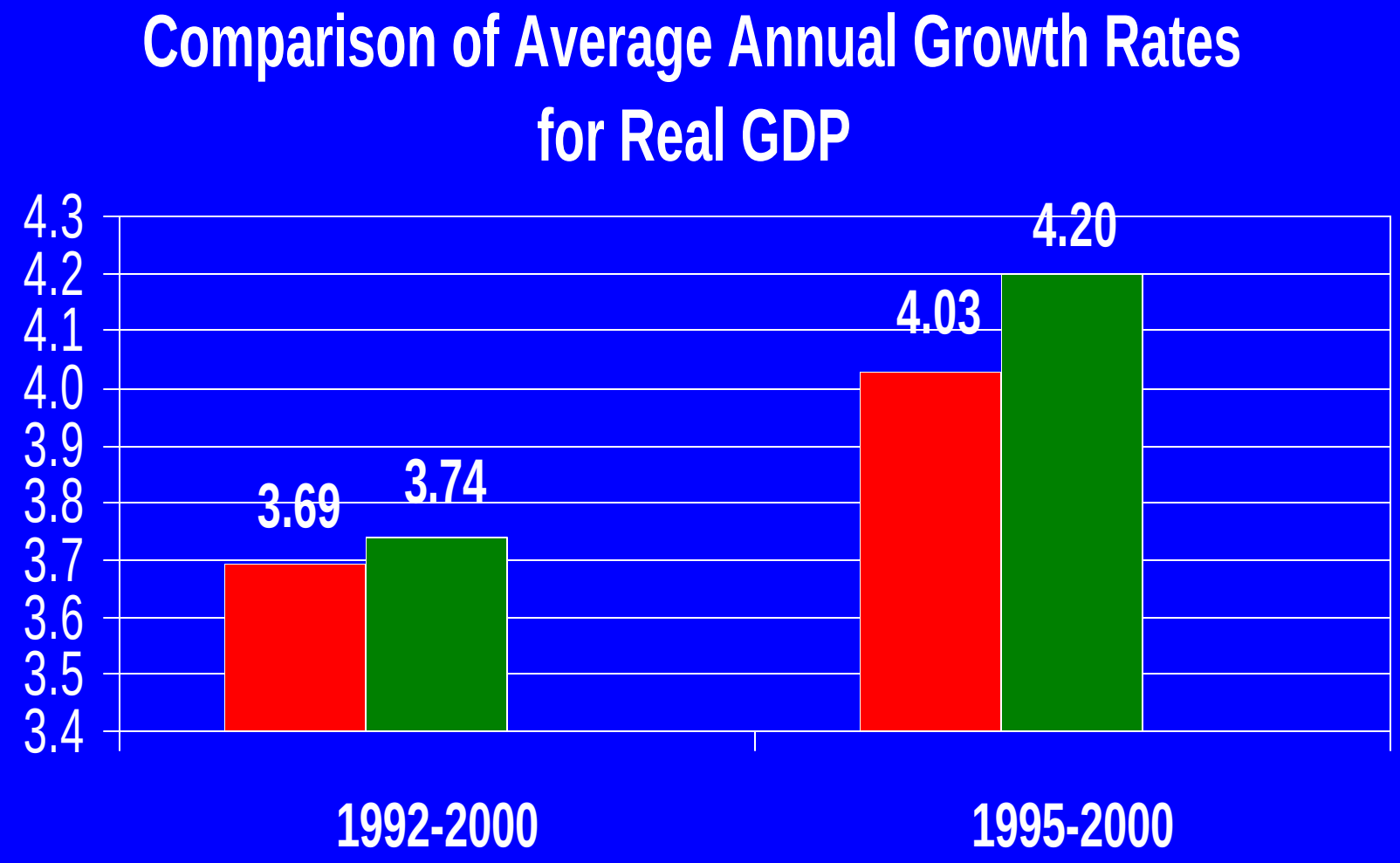
Step 4. Develop real (inflation-adjusted) measures

- ✓ The double-deflation procedure is applied to the time series of balanced Annual I-O tables
  - Price and quantity indexes, contributions, and unit costs
  - Greater consistency with the expenditures-based measures of real GDP

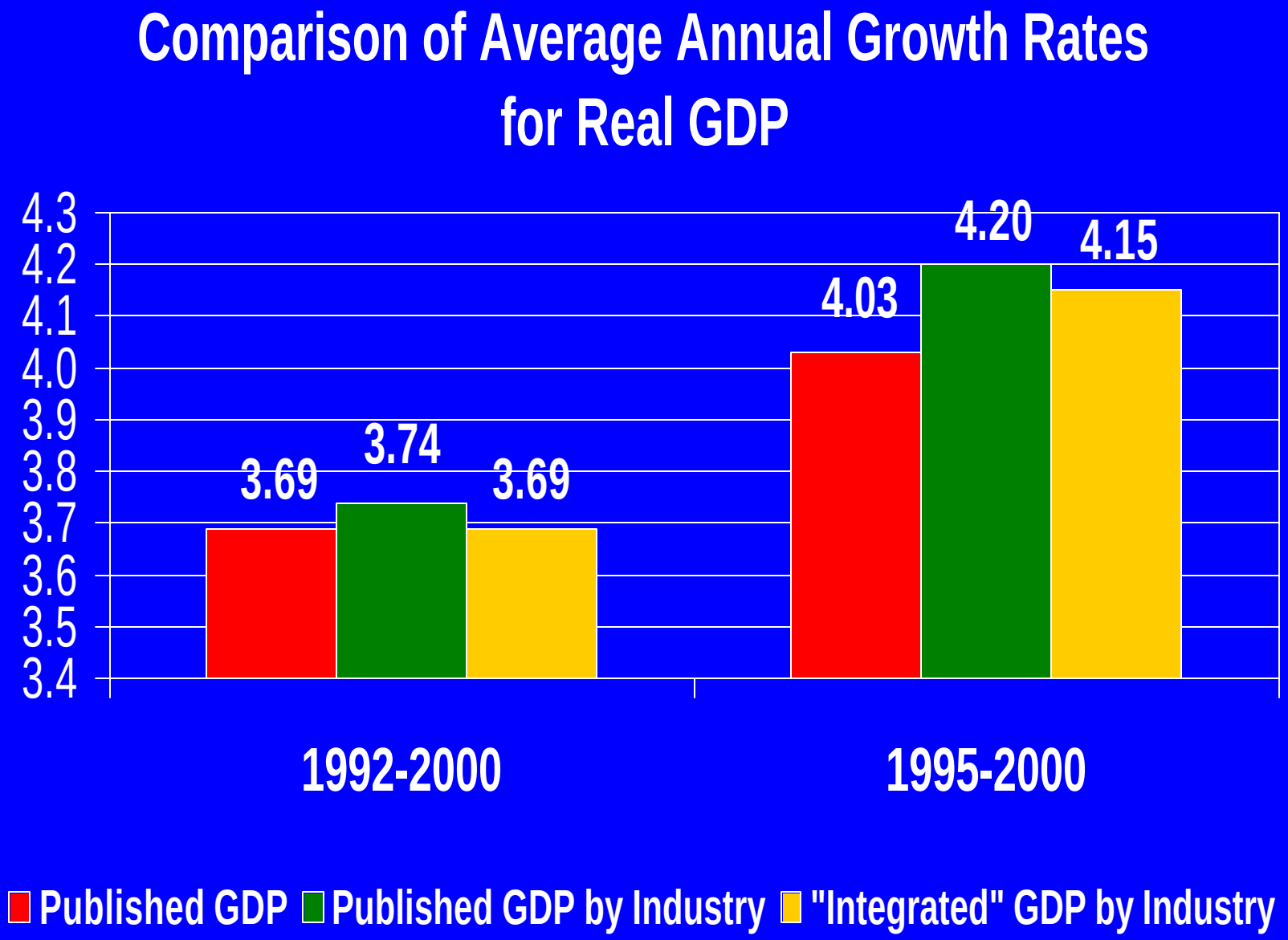
Preliminary Results are Encouraging:



Preliminary Results are Encouraging:



Preliminary Results are Encouraging:



Results of Integration: Timing and Products

- Comprehensive revision to the annual industry accounts released in the Spring of 2004
  - ✓ Integrated Annual I-O and GDP-by-Industry Accounts for 1998-2002
  - ✓ Accelerated Annual I-O Accounts
  - ✓ Consistent with the 2003 NIPA comprehensive revision
  - ✓ NAICS-based
  - ✓ Common level of industry detail

Questions

- Is partial integration the best approach in the short-term, given current source-data limitations?
- Do the “Steps to Integrate” seem reasonable? Are there details that you would like to elaborate on?
- Do you agree with the extrapolation procedures proposed for gross output, intermediate inputs, and value added by industry (Step 2)?