

“Improving the Coverage of Official Statistics in Undergraduate Economics Textbooks”

Remarks prepared for The 2008 World Congress on National Accounts and Economic Performance Measures for Nations

Bob Murphy  
Boston College

May 16, 2008

Let me begin by thanking Alice Nakamura for inviting me to speak today on the role of statistics in undergraduate textbooks, and, more broadly, on the role of statistics in undergraduate economics education. I am particularly delighted to speak before a group that includes so many providers of official statistics, including people from the OECD, various U.S. government agencies, central banks, and other institutions.

As some of you know, I am the author of the instructor’s supplement to *Macroeconomics*, by Greg Mankiw. We will soon be revising the current edition, and I welcome input from you on how we can improve the coverage of statistics in the next version.

From teaching macroeconomics to undergraduates, I have found that students are best engaged when data on the state of the economy are presented in class. They see the relevance of the theory they are learning when the discussion revolves around the measurement of key concepts. And they gain an appreciation for the difficult art of policymaking by confronting ambiguity in the statistical measures themselves.

In my remarks today, I first will review the current state of coverage of official statistics in undergraduate textbooks. I then will point out what I see as shortcomings in how textbooks present the methodologies behind a couple of key statistical concepts. Finally, I will offer some strategies for improving the accessibility of official statistics for undergraduate students and instructors.

So what is the current state of play in textbooks regarding the coverage of official statistics?

Well, three main statistical concepts typically are presented in principles and intermediate macro textbooks: measuring growth and income (using GDP, income, saving, and components of spending), measuring the cost of living (as embodied in the CPI), and measuring the situation in labor markets (as captured by the labor force, unemployment, employment, and wages).

It seems to me that these are the right concepts to be covering. I would perhaps add a fourth concept: measuring international transactions, which often is not featured as prominently in these texts, although often covered in much more detail in international economics textbooks.

How is the data presented in these textbooks?

Compared to 30 years ago, today we have a much better integration of data with text: more graphics, case studies, etc. In preparing this talk, I looked through my faded copy of Branson and Litvack's *Macroeconomics*, circa 1977. No charts of data were presented at all in that book and the only tables were a few that provided National Income Accounting relationships. Although I haven't done a scientific study, I would bet that if you pick up any intermediate macroeconomics or principles text today and compare it to one from the 1970s, the difference would be like night and day!

Much of this, of course, is due to the greater ease of access to data made possible through the internet, significantly reducing the work and time required of authors who seek to employ data in their textbooks. And the change is also due to the timely availability of data: a function, in large part, of the terrific efforts of official providers of statistics at government agencies.

So, textbooks are hugely better on this score than just a few decades ago.

Do we need to do more? I believe that we do, both with regard to how we teach statistical concepts and with regard to how we make available official statistics.

Let me start with the issue of how textbooks explain the methodologies behind statistical concepts. I'll do this by focusing on examples from two areas: first, the measurement of real GDP and second, the measurement of the cost of living, as reflected in the CPI.

Before the advent of chain-weighted real GDP, textbooks described the methodology for computing real GDP as adding up goods and services weighted by base-year prices. Real GDP was presented as being directly computed in level form and expressed in constant dollars of the base year. While this approach was easy for students to understand and technically correct, it masked the point that the official methodology was focused on computing growth rates not levels. In other words, the underlying conceptual basis was the measurement of growth rates allowing construction of an index number for real GDP. The convenience of directly computing a constant dollar value, however, won out as a pedagogical device for presenting the concept in textbooks.

And, of course, the fixed-weight measure for GDP provided for the additional and extremely convenient feature that the fixed-weight dollar measures for the components of spending (C, I, G, NX) would add up exactly to GDP.

With the switch to the chain-weight measure of real GDP, the convenience of directly computing a constant dollar level of real GDP is no longer an option. The conceptual basis of measuring growth rates and then "chaining" them together into an index becomes the only way to accurately describe the process of measuring real GDP. But most intermediate macro textbooks have continued to present the concept of real GDP in terms

of measuring its level by multiplying quantities by price weights, and then describe the shift to chain-weight GDP as using price weights that are continuously updated.

This creates two problems for students: First, they continue to think of real GDP as a fundamental concept in dollar terms rather than as an index number; and second, they have a difficult time understanding why dollar value real GDP doesn't exactly equal the sum of the components of spending.

Some textbooks have begun to incorporate more discussion of the chain-weight approach and some do highlight the conceptual basis of growth rates rather than levels. But, often this is done in side-box or appendix after presenting the fixed-weight approach in the text. I'd like to see such discussion integrated more completely into the text.

Furthermore, although some texts do mention the fact that the spending components no longer add up to real GDP, these texts tend to downplay this issue (to quote a popular text) as a "peculiar feature" that "for technical reasons" occurs with chain-weight real GDP. I think that if texts emphasized how growth rates are the conceptual basis for computing real magnitudes, the adding up issue becomes very understandable. Students certainly can easily be taught that one cannot add index numbers!

Texts also should emphasize the importance of chain-weight GDP in eliminating one reason why economic history was often rewritten. For instance, texts could point out how the earlier practice of updating base-year weights would cause distant (and not so distant) recessions to become deeper as time went by.

Let me now turn to the second example: measuring the cost of living. Textbooks present the CPI as a fixed-weight index. Texts often discuss the problem of substitution bias and other issues such as quality adjustment (or lack thereof) that are believed to lead the CPI to overstate inflation. Some texts mention how the Bureau of Labor Statistics in the United States has made "technical" changes to improve index, thus reducing the overall "bias." And some texts do point out that the BLS now updates the consumption basket more frequently.

Textbooks, in my view, can go further in discussing the CPI, using this as a way to teach students a little bit about difficulties in measuring the true cost of living that move beyond simply the question of whether we are updating the basket of goods frequently enough. In particular, the current methodology of using geometric weighting for most of the lower level components of the CPI and using arithmetic weighting for others should be discussed and used to illustrate how these weighting schemes imply different assumptions about substitutability among goods. This can then lead students to appreciate how methodological changes have helped improve the index, even in the situation where updating the basket more frequently is not feasible.

Students sometimes ask why the CPI is not constructed in the same manner as chain-weight price indexes from the National Income Accounts. The answers, of course, are the CPI's monthly as compared to the National Income Accounts' quarterly production

schedule and the need for the CPI to be final and not subject to revision (for the non-seasonally adjusted index). Textbooks could discuss this issue by highlighting the chain-weight CPI now being provided by BLS and pointing out how it is subject to revision.

But, my main point is that by having some understanding of the basic methods of constructing the CPI—lower level vs. upper level components, weighting, etc.—students are more able to understand the difficulties of measuring the cost of living on a monthly basis (and on a limited budget!).

Perhaps the biggest payoff from educating students more completely about methodologies of statistics is that this may help engender popular support for official statistics functions of government. After all, these students will soon be taxpayers! Thus, I believe that we need to do more with regard to how textbooks explain statistical methodology.

Let me turn now to the second area I've identified where we need to do more. Namely coming up with ways to better facilitate access to official data for undergraduate courses.

Lots of data are readily available today—as I've noted, textbooks have made very thorough use of data by including charts, tables, case studies, etc. But what about providing direct access to the data for students and instructors?

Individual agency web sites are comprehensive and easily accessible, and free of charge! The main problem, however, is that each site uses a different interface, creating a significant learning curve for students and instructors, particularly when all that is needed is a relatively limited account of data.

For example, this spring I assigned my macroeconomics class the task of creating time-series charts of the four main NBER business cycle indicators. To complete the assignment, students had to visit four agency web sites, each of which uses a different interface and each of which requires some time learning how to navigate the site and ultimately download the data. Perhaps textbook publishers could provide internet interfaces that are continually updated with the most frequently used data for access by instructors teaching from their books.

This is what has happened, of course, to meet the needs of business users. The private sector has responded with companies providing data in organized and easily accessible on-line formats—companies such as Haver Analytics, Global Insight, Dismal Economist, etc.—but their products generally are too expensive for classroom use.

Some centralized sites do serve as a clearinghouse for current economic releases and indicators, for example, STAT USA's "State of the Nation," provided by the Department of Commerce. While such sites are very useful for accessing the latest data releases and information on other economic events, these sites are not helpful for locating historical time series—for instance, when a student needs a time series on, say, the price index for consumer durable goods. To remedy this shortcoming, I suggest that textbook

publishers, authors, and editors work together with providers of official statistics to explore ways of making data more easily available for instructors and students.

In closing, let me reiterate that, in my view, textbooks are doing a great job presenting data in charts, tables, case studies, etc. The textbooks of today integrate data far more effectively than those of just a few of decades ago. Where textbooks need to improve is in their treatment of statistical methodologies. The evolving methods used by providers of statistics have not been well adapted to by producers of textbooks. Authors need to explain in more detail the methodologies of major statistical concepts. Finally, going beyond textbooks alone, I see a pressing need to centralize and improve access to data for students and instructors. With your help, I believe we can make progress on this agenda.