Appendix 4.2

Alternative Measures of Prices

Producer Price Index (monthly since April 1947)

The Producer Price Index (PPI) measures average changes in prices received by domestic producers for their output. Most of the information used in calculating producer price indexes is obtained through the systematic sampling of industries. In the mining and manufacturing sectors, price information from virtually every industry is captured. By contrast, although PPI coverage of the service sector of the economy is substantial (more than 70 percent), it remains incomplete. The PPI program also includes data that track other sectors of the economy: agriculture, fishing, forestry, utilities (natural gas and electricity), and construction. (Source: Producer Prices, Bureau of Labor Statistics Handbook, Chapter 14.)

Consumer Price Index (monthly since January 1947)

The CPI is a measure of price change across a set of goods and services purchased by urban consumers and is calculated with the use of a combination of geometric and arithmetic means that can capture some degree of consumer substitution limited to goods and services within item groups. It is a measure of the average change over time in the prices paid by urban consumers for a constant-quality market basket of goods and services—that is, a sample of goods and services that consumers purchase for day-to-day living. Produced monthly, the CPI weights the price of each item in the market basket on the basis of the amount of spending reported by a sample of families and individuals.

The CPI has two primary inputs: prices and expenditure weights. Data on prices are collected from the BLS Commodities and Services (C&S) Survey and Housing Survey. The second primary input into the CPI, the expenditure weights, is based on Consumer Expenditure (CE) survey data collected by the U.S. Census Bureau for BLS. The CE survey identifies the dollar amount households spend on a broad range of goods and services. About 14,000 1-week diaries and 28,000 quarterly interviews are collected from the current CE survey sample each year. Once price and expenditure data are collected, price indexes can be calculated with the use of price index formulas.

The CPI covers a wide variety of items that all urban consumers purchase, but—because most individuals concentrate spending on a relatively small fraction of the total number of items available in the market—it contains items that a given individual does not purchase. The CPI must represent a composite consumer, and it does not necessarily represent the price-change experience of any one individual, household, or family. Similarly, the CPI may not be applicable to all questions about price movements for all population groups. (Source: Consumer Price Index, Bureau of Labor Statistics Handbook, Chapter 17.)

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Personal Consumption Expenditures Deflator (monthly since January 1959)

The CPI measures the change in prices paid by urban consumers for a market basket of consumer goods and services; it is primarily used as an economic indicator and as a means of adjusting current-period data for inflation. The personal consumption expenditures deflator (PCED) measures the change in prices paid for goods and services by the personal sector in the U.S. national income and product accounts; it is primarily used for macroeconomic analysis and forecasting.

The CPI and the PCED price index are based on different price index-number formulas.
The relative weights assigned to comparable item prices in the CPI and in the PCED differ because these weights are based on different data sources. The relative weights used in the CPI are based on the Consumer Expenditure Survey, a household survey conducted for the BLS by the Census Bureau. The relative weights used in the PCED are based primarily on business surveys, including those used to compute the PPI.

The CPI measures the out-of-pocket expenditures of all urban households, while the PCED measures the goods and services purchased by individuals and non-profit institutions within the framework of the National Income and Products Accounts. As such, there are items in the CPI that can be viewed as out-of-scope for the PCED, and there are items in the PCED that can be viewed as out-of-scope for the CPI.

For example, medical care services included in the CPI consist only of those services directly purchased by consumers. On the other hand, medical care services in the PCED include those services directly purchased by consumers and those services paid for on behalf of consumers—for example, medical care services paid for by employers through employer-provided health insurance and medical care services paid for by governments through programs such as Medicare and Medicaid. (Source: "A Reconciliation between the Consumer Price Index and the Personal Consumption Expenditures Price Index," Bureau of Labor Statistics, September 2007, and "Comparing the Consumer Price Index with the gross domestic product price index and gross domestic product implicit price deflator," Bureau of Labor Statistics, March 2016.)

GDP Implicit Price Deflator (quarterly since Q1-1947)

The GDP price index, like the CPI, measures price change for consumer goods and services, but also measures price change for goods and services purchased by businesses, governments, and foreigners. However, unlike the CPI, the GDP price index does not measure price change for imports.

The GDP implicit price deflator deflates the current nominal-dollar value of GDP by the chained-dollar value of GDP. The chained-dollar value is derived by updating a base-period dollar value amount by the change in the GDP quantity index, which in turn is derived with the use of a Fisher ideal index formula that aggregates from component GDP quantity indexes. Once the component quantity indexes

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are calculated, the GDP quantity index can be derived and the GDP Implicit price deflator calculated by dividing nominal GDP by real GDP. The change in the GDP implicit price deflator is roughly equal to the change in the GDP price index.

The GDP implicit price deflator has risen at a systematically lower rate than the CPI-U over time (2% annually for the GDP price index and implicit price deflator, versus 2.4% annually for the CPI-U), in part because the CPI-U employs a Laspeyres aggregation while the GDP implicit price deflator employs a Fisher ideal aggregation. (Source: "Comparing the Consumer Price Index with the gross domestic product price index and gross domestic product implicit price deflator," Bureau of Labor Statistics, March 2016.)