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Minding Your Ps and Qs: Going from Micro to Macro in Measuring Prices and Quantities

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Key macro indicators such as output, productivity and inflation are based on a complex system of collection from different samples and different levels of aggregation across multiple statistical agencies. The Census Bureau collects nominal sales, the Bureau of Labor Statistics collects prices, and the Bureau of Economic Analysis constructs nominal and real GDP using these and other data sources. The price and quantity data are integrated at a high level of aggregation (product and industry classes). A similar mismatch of price and nominal variables pervades the productivity data, which use industry-level producer price indexes as deflators. This paper explores alternative methods for re-engineering key national output and price indices using transactions-level data. Such re-engineering offers the promise of greatly improved macroeconomic data along many dimensions. First, price and quantity would be based on the same observations. Second, the granularity of data could be greatly increased on many dimensions. Third, time series could be constructed at a higher frequency and on a more timely basis. Fourth, the use of transactions-level data opens the door to new methods for tracking product turnover and other sources of product quality change that may be biasing the key national indicators. Implementing such a new architecture for measuring economic activity and price change poses considerable challenges. This paper explores these challenges, along with a re-engineered approach's implications for the biases in the traditional approaches to measuring output growth, productivity growth, and inflation.

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