Economy Watch

Output growth data that the economy generates months earlier than GDP

The financial world is ever more impatient for economic statistics, and nowhere is this thirst felt more keenly than in the reporting of gross domestic product (GDP). Pressure on the Bureau of Economic Analysis (BEA) to accelerate the release of its GDP calculations tends to divert the Bureau's efforts from other useful statistics, and results in initial estimates that end up being significantly revised in months.

Among those who just can't wait is the Federal Reserve, which maintains an internal shadow BEA to estimate real GDP growth before it is officially announced. That's not enough for the private sector either, and with that in mind the Atlanta Fed has introduced "GDP Now." This free statistical service averages expert opinions about current real GDP growth from prominent forecasters, and posts on the internet a new growth forecast a couple of times a week. To take a recent example of the way these opinions wobble, on July 3 the second-quarter real GDP growth estimate was 3.0 percent, up from 2.7 percent three days earlier. Then, on July 7 it was revised back to 2.7 percent again. The latest figure is 2.5.[1]

How much would the nation be willing to spend if it could measure the growth of its market economy eight months earlier than BEA can based on GDP? No doubt a great deal of money. This report is a reminder that this has been possible for the US economy all along, using a statistic known as "gross output," but the opportunity has been missed. Perhaps business-cycle analysts have been blinded by over-reliance on economic doctrine and convention. Since at least World War II, the federal government has held only the "final" output of the economy worthy of attention, as opposed to the total effort that the market economy makes.

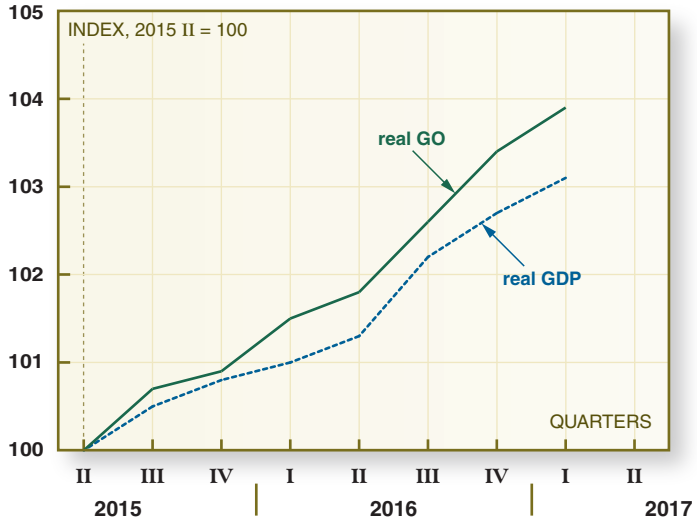
GDP is only the last link in a long chain of transactions that stretches from raw materials and human skills to goods and services in their final form. Official efforts to monitor the economy's growth are concentrated at the wrong end of the chain.

Alternative ways to avoid waiting for GDP. When economists can't wait for reliable economic data, there are at least two alternative approaches to fall back on. The familiar solution is to monitor leading indicators of GDP growth such as stock-market price performance, consumer sentiment, surveys of purchasing manager experience and opinion, and so forth. Another powerful indicator that is even more divorced from physical connection with the economy is the structure of credit spreads in the investment-grade corporate bond market.

Figure One

Quarterly Real Growth of Two Measures of US Gross Output

over the past two years



Data: Seasonally-adjusted quarterly chain indices of gross domestic product and the gross output of all industries (National Income and Product Accounts, Bureau of Economic Analysis).

1. See "GDPNow," Federal Reserve Bank of Atlanta, at https://www.frbatlanta.org/cqer/research/gdpnow.aspx.

This indicator has a history of nearly a hundred years, during which it has developed an excellent record of mapping movements in real GDP up to at least a year in advance.[2]

Data that measure the economy only indirectly are occasionally derided as "soft" because they measure expectations or confidence rather than what has actually happened.[3] Such condescension collides with the fact that many of them have proven predictive power, especially in a turning point, when the information they convey would be of maximum significance. A mere extrapolation of recent GDP growth trends cannot cope with turning points at all. Advocates of "hard preferred to soft" also neglect to mention that even finally revised GDP data (if there were such a thing) would still be an approximation. That being so, it's entirely possible that some proxy for GDP could provide an assessment of economic growth that is just as informative as GDP itself.

This question is particularly salient right now. Leading indicators such as consumer sentiment and credit spreads suggest that a major pickup in US economic growth is underway despite a disappointing first quarter reading of 1.4 percent per annum annualized in real GDP (originally estimated at 0.7).[4] An alternative measure of the growth of the US economy could be a useful double check — especially one that draws directly on actual output data rather than leading indicators or professional forecasts. Even more useful, an ability to infer output growth several months earlier than GDP itself does would be of great social value.

This report proposes another solution to the GDP impatience problem that is capable of this. We follow up on earlier publications[5] to explore further the properties of a measure of US economic activity that is more comprehensive than GDP: a statistic with the uninformative moniker of "gross output" (GO) or "gross output — all industries." Like GDP, it has a multi-decade history, but it has long been neglected by macroeconomists — and, therefore, the BEA. We conclude that it deserves far more attention than it gets, both in the US and overseas, where gross output histories have become available for a large number of countries.[6]

Comparing GO with GDP. The difference between gross domestic product and gross output is not signified by their vague names. It becomes much clearer if we were to refer to GDP, more accurately, as gross domestic *final* output, and to GO as gross *total* output. The essential distinction arises from decisions made by the authorities about what economic activity should be counted and what should not. The market economy consists of a myriad of transactions, and its vitality is measured by the total volume of these transactions — the number of dollars that changes hands in market activity. GDP is just a fraction of this (55-60 percent according to published data) — including those transactions in which the purchaser is a final user or consumer, but excluding those in which the purchaser is an intermediate producer.

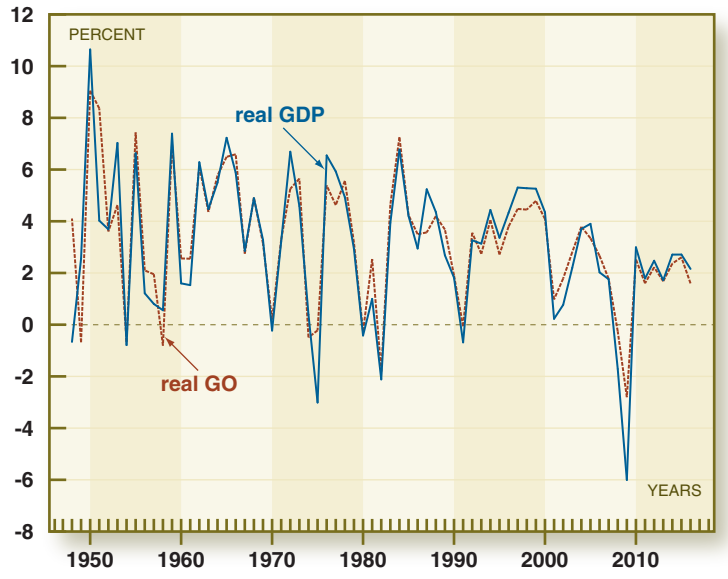
GO is a measure of the total economy, giving recognition to the many earlier transactions that must take place in the chain of value added before the final user or consumer is involved. In a nutshell, as Chapman University economist Mark Skousen has pointed out, GO represents the top-line performance of the US economy while GDP represents the bottom line.[7] Figure One compares the real growth of GDP and GO in recent quarters, providing divergent impressions of the economy's performance over the past year or so.

While final output (GDP) has been growing even more slowly than in

Figure Two

Growth Rates of Total and Final Gross Output

calendar-year totals of deflated data, from 1947



Data: Bureau of Economic Analysis.

2. "How to tell if the economy is slowing," *Economy Watch*, HCWE & Co., April 19, 2007.
3. "Eyes bigger than their wallets: Consumers and firms think the economy is booming. Most forecasters disagree," *The Economist*, April 8, 2017, 23-24.
4. See "Interest rates await the economy's pickup," *Interest-Rate Outlook*, HCWE & Co., May 26, 2017.
5. See "Alternative data to track the economy and better explain capital-market prices," *Economy Watch*, HCWE & Co., November 3, 2015.
6. Mark Gertsen, "Economic Roundaboutness and Interest Rate Divergence: A panel study of 28 OECD countries over the years 2000-2014," Master's Thesis in international economics and business, University of Groningen, submitted June 15, 2017.
7. Mark Skousen, "Beyond GDP: Get Ready for a New Way to Measure the Economy," *Forbes Magazine*, December 16, 2013; At http://www.forbes.com/sites/real-spin/2013/11/29/beyond-gdp-get-ready-for-a-new-way-to-measure-the-economy/.

recent years, the growth of total (GO) accelerated to an annual rate of nearly 3 percent by the end of 2016. Skousen's index of real business-to-business transactions grew at a rate of 5.8 percent annualized in the fourth quarter.[8] This is puzzling because, historically, GDP and GO have moved in very close parallel — as illustrated in Figure Two.

The correlation between annual percentage changes is extremely significant statistically. In terms of nominal USD it is +0.91; in real (chain quantity index) terms it is +0.89. There are, however, systematic behavioral differences between GO and GDP. Cumulatively, GO has grown more slowly, as the US business sector has become more vertically integrated, diminishing the "marketization" or "roundaboutness" of the economy. From 1947 through 2016, GO has grown at a deflated compound average rate of 3.01 percent compared with 3.17 percent for GDP. At the same time, the annual growth of GO has been more volatile than that of GDP, with a standard deviation of 2.78%pts compared with 2.40%pts.

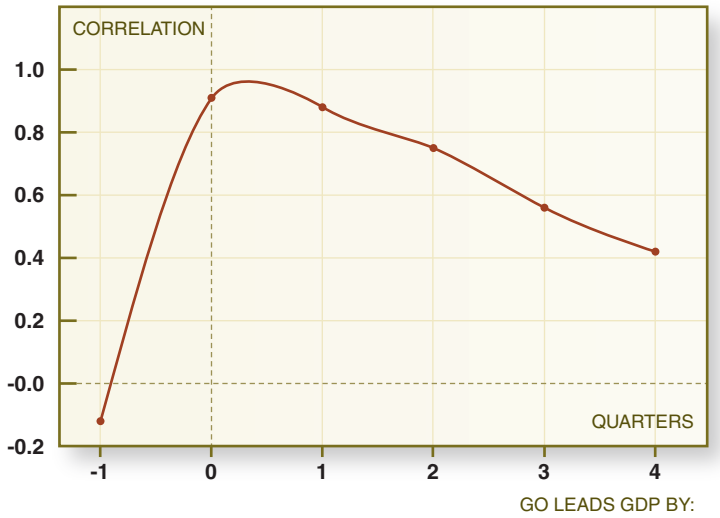
The lag between intermediate and final gross output. Perhaps the most important way in which GO and GDP differ lies in their timing. Earlier stages in the chain of production and distribution necessarily must take place and generate data earlier than the final stage that characterizes GDP. There are many complex ways to measure the average time lag, but here we are content with a very simple method: comparing correlations between the growth rates of contemporaneous calendar-year and non-contemporaneous fiscal-year data. For this purpose, we need quarterly GDP data that are not adjusted for seasonal variation, which limits our history to 2008.[9]

The correlation between GDP and GO one quarter in advance is about the same as the contemporaneous correlation, while correlations at greater temporal distances are lower. This suggests an average lead time of about half a quarter, an estimate corroborated by least squares calculations, which produce an estimate of 44 days (six weeks). The skewed shape of the correlation curve in Figure Three tells us that there is no tendency whatever for GDP to anticipate GO, but that GO anticipates

Figure Three

The Lag Between Total and Final Gross Output

fiscal- and calendar-year totals of nominal data, 1947-2008

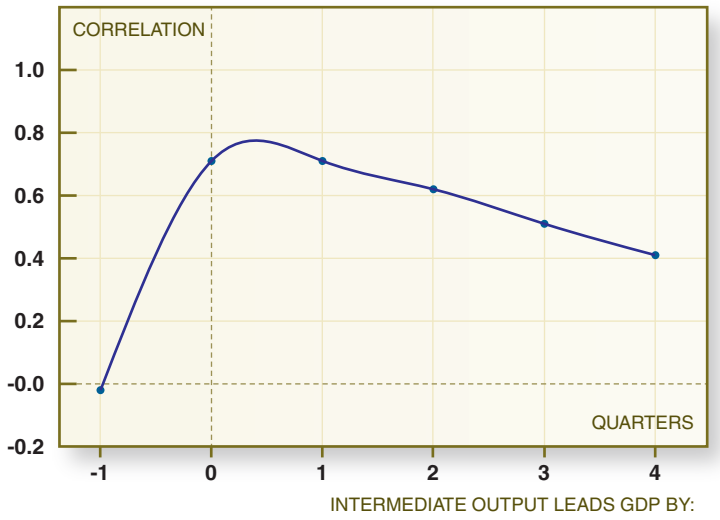


Data: Annual totals of gross output, together with fiscal- and calendar-year totals of gross domestic product, aggregated from quarterly totals unadjusted for seasonal variation (Bureau of Economic Analysis).

Figure Four

The Lag Between Intermediate and Final US Gross Product

fiscal- and calendar-year data, in nominal USD, from 1947-2008



Data: As for Figure Three, together with annual totals of gross intermediate output (GO minus GDP).

8. "Gross output and B2B index advance sharply after election," *Forecasts and Strategies*, press release, April 21, 2017.

9. The process of seasonal adjustment carried out by the BEA and other federal agencies involves moving averages of quarterly data, resulting in the transfer of information from any quarter to neighboring quarters. Seasonally-adjusted data might therefore mis-state the time lags in our correlations to an unknown degree. Unfortunately the BEA has not published the unadjusted data for the years following 2008, and we have omitted these years in Figures Three and Four. Distortions could also result from the fact that GDP and GO have slightly different deflators. For that reason we have refrained from calculating the time lag on a deflated basis.

GDP to a diminishing extent several quarters into the future.

This test can be carried a major step further. Total output is the sum of final output and intermediate output. If total output leads final output by several weeks, it should follow that intermediate output leads final output by a longer period of time. Figure Four therefore repeats the calculations in Figure Three, using GO minus GDP in place of GO. The skewness of the correlation curve makes it difficult to infer the average lead time from this chart. But least squares calculations produce an estimate of 82 days, or about 12 weeks.

For the immediate future, our conclusion is that the healthier growth rates implied by intermediate and total gross output in recent quarters are probably not an aberration, but a signal of higher GDP growth as yet unreported.

Investment conclusions. Estimates of the US economy's total market output deserve far more attention than they get. A company's performance is always evaluated using data from both the bottom line and top line of its income statement (at a minimum). Similarly the economy's performance should be evaluated from both its bottom line (final output as measured by GDP, gross domestic product) and its top line (total output as measured by what is called GO, gross output). The latter includes all stages of the supply chain of production from unharvested raw materials to final consumption and investment goods; it includes intermediate transactions that cancel out when final output is calculated.

The use of these broader measures of the economy's output would make possible earlier reporting of the productive performance of the economy, assuming that resources could be reallocated as needed within the Bureau of Economic Analysis. GO is a leading indicator of GDP, with an average lead time of about six weeks. Intermediate output (GO minus GDP) is an even earlier indicator, with an average lead time of nearly twelve weeks.

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