

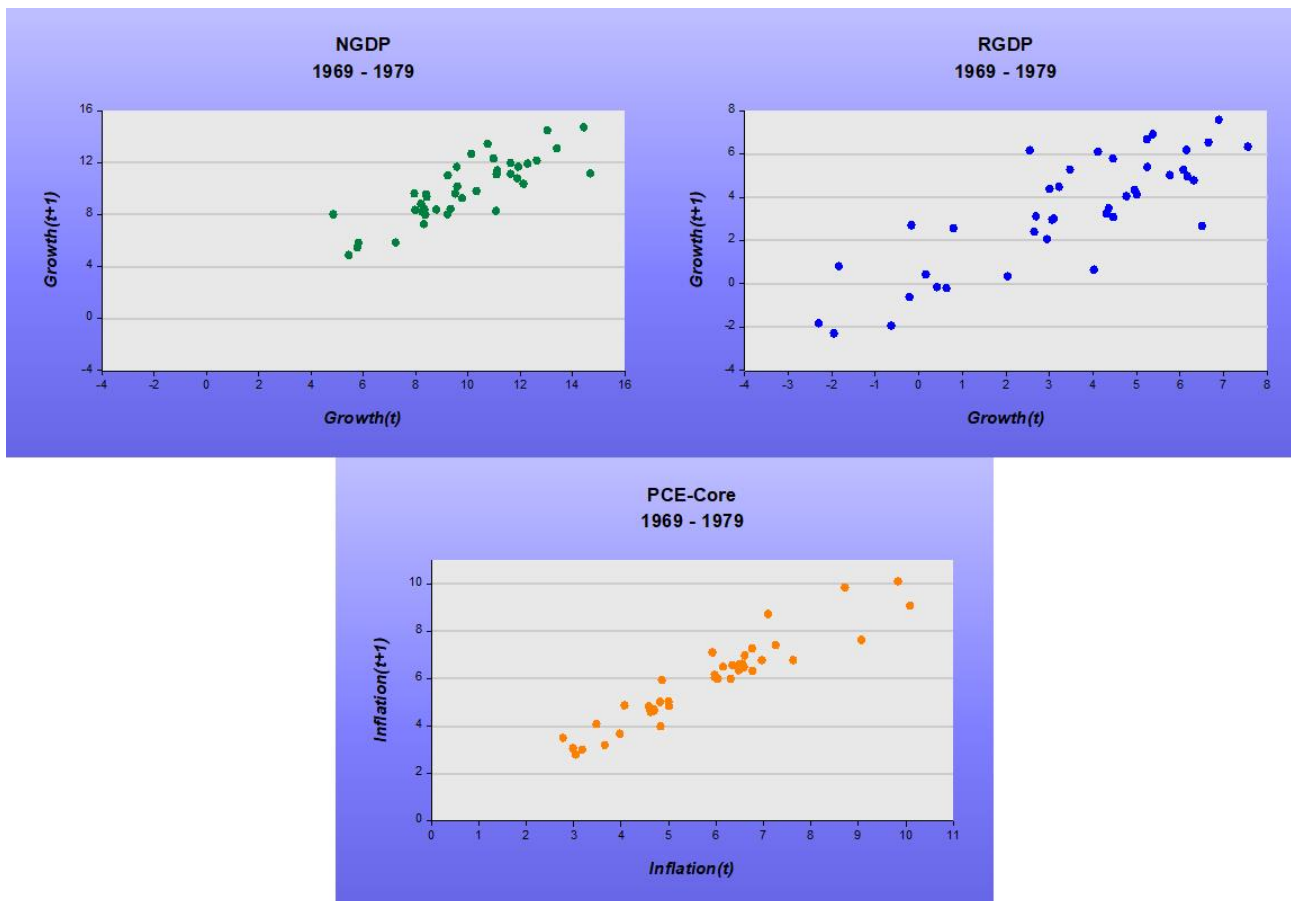
Are there “variability trade-offs”?

[John Taylor](#) put it succinctly:

Several years ago, in an effort to more clearly delineate the short-run versus the long-run trade-off, I estimated a different type of trade-off between inflation and output (Taylor 1979).

Rather than a long-run trade-off between the **levels** of inflation and output, I defined and estimated a **long-run trade-off between the variability of inflation and of output**. Because of this trade-off, **efforts to keep the inflation rate too stable would result in larger fluctuations in real GDP and unemployment. Conversely, efforts to smooth out the business cycle too much would result in a more volatile inflation rate.**

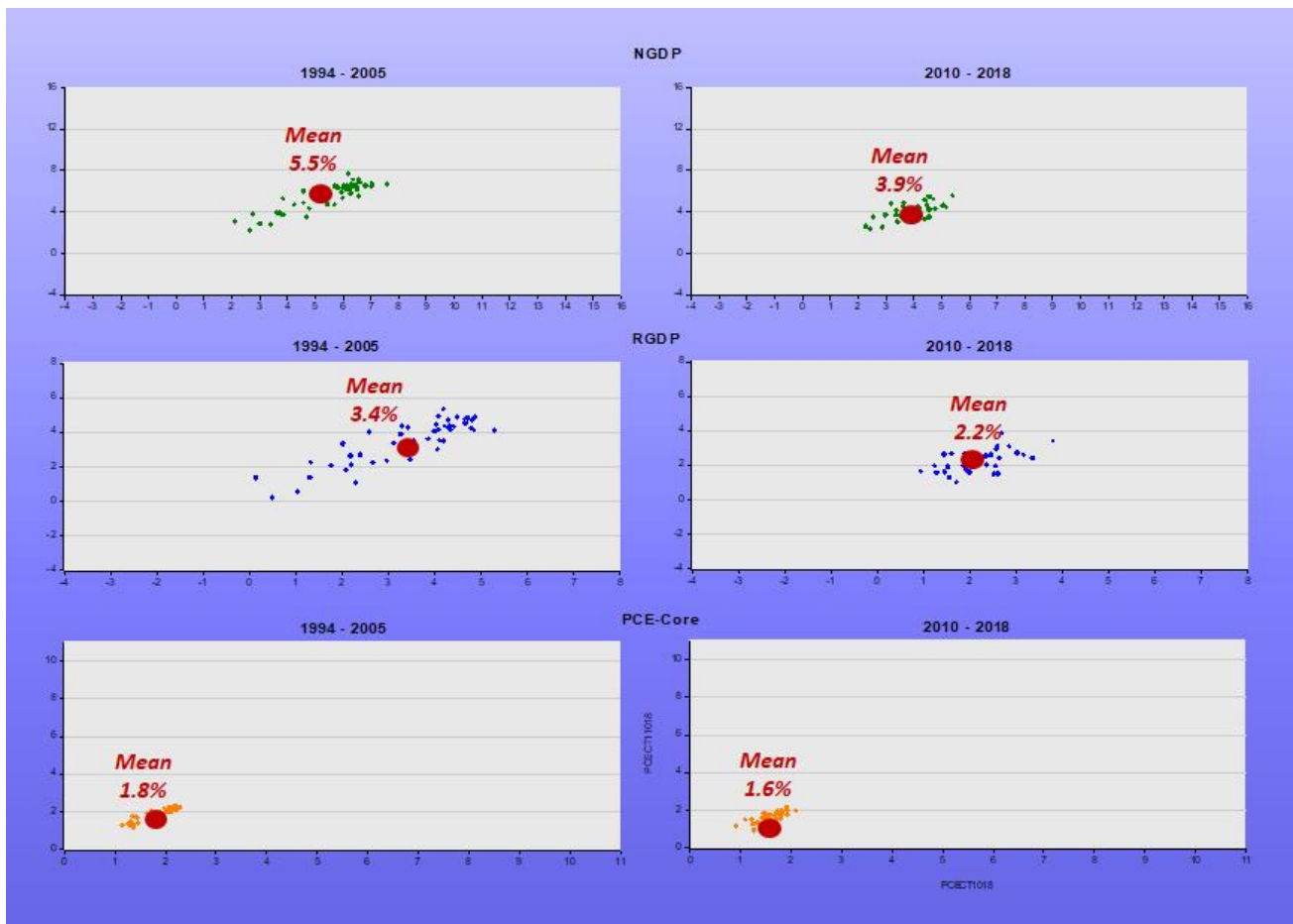
What does the data say? My “control group”, which defines the “variability space”, is the Great Inflation of the 1970s. The chart illustrates the variability (volatility) of Nominal GDP (NGDP) Growth, Real GDP (RGDP) Growth and Inflation (the PCE Core measure).



The next charts insert, in the “control space”, the corresponding volatilities of growth rates for my “test periods”. The second leg of the “Great Moderation” (1994 – 2005), and the post “Great Recession” (2010 – 2018). The general conclusion is that “volatility trade-offs” do not appear to exist. More nominal stability (lower NGDP growth volatility) is consistent with both lower output growth and inflation volatilities.

During the “Great Moderation”, NGDP growth volatility experienced a major decrease. The volatility of real growth followed suit, while the reduction in inflation volatility was “out of this world”.

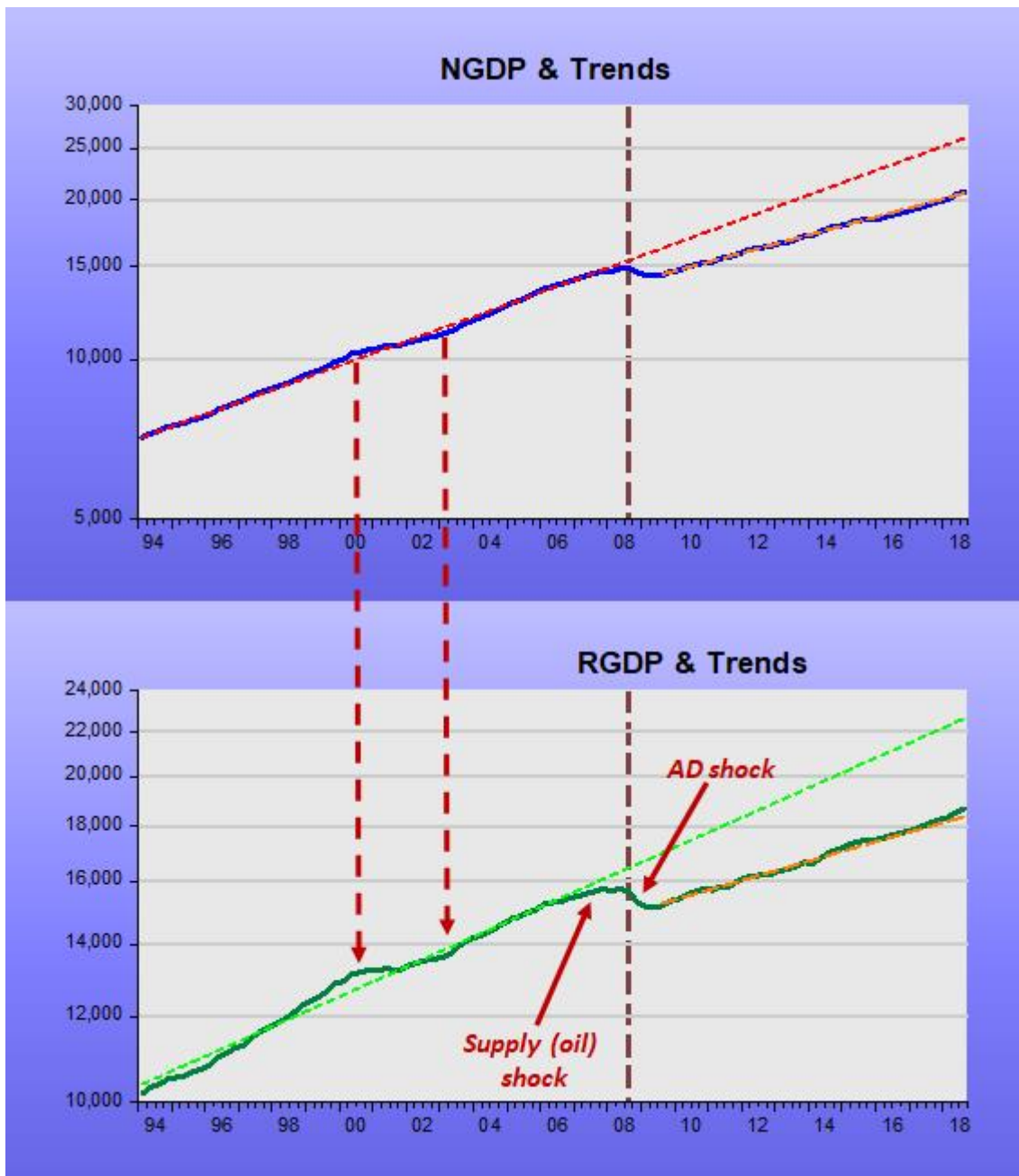
Post “Great Recession”, NGDP growth volatility was further reduced, followed by a reduction in real growth volatility. Note, however, that inflation volatility did not noticeably change.



My first takeaway is that low inflation and low inflation volatility is compatible with variations in the degree of nominal NGDP volatility. This is perhaps associated with central bank credibility of maintaining low & stable inflation that was operative for the whole 1994 – 2018 sample.

I have indicated the average growth rates in the charts. Note the significant differences in the average growth rates for NGDP and for RGDP in the two samples. This, however, is not an implication of reduced volatility.

I'm led, therefore, to examine the level behavior of the variables. These are depicted in the set of charts below.



The first “shocking” observation is to see that, contrary to what happened in history, particularly after major downturns like the “Great Depression” or after the deep 1981-82 recession, this time around, there was no **recovery**. After the downturn of 2008-09, the economy went straight into the “expansion phase”, skipping the “recovery phase”.

During 1994-05, the Fed committed a few mistakes, allowing NGDP to diverge from trend, as shown in the chart. This is responsible for the larger NGDP volatility shown in the growth volatility charts. Note also that during the first part of the 2005-08 oil shock, NGDP remained on trend.

In the case of a supply shock, inflation rises and real growth

falls. If NGDP growth remains stable, it will minimize the variances of output and inflation. When the oil shock hit again with force in 2007-08, headline inflation rose significantly above 2% (but not core inflation, which only ticked above 2% for a few quarters). The Fed reacted, and in doing so caused the greatest negative aggregate demand shock since 1937!

Over the past eight years, the Fed has managed to keep NGDP evolving along a stable, but lower than before, growth path. RGDP growth and inflation have remained stable. In a sense, then, the Fed is doing a good job, although it deceives itself by saying “the economy is in a good place” (or “strong”).

The Fed could be enjoying a stable economy at a higher **level** of activity. By keeping the economy depressed, it has **chosen** not to do so.

In addition, the Fed remains afraid of imaginary dangers of “too low” unemployment (or “too high” output growth) for inflation. Recent financial markets reaction to FOMC “deeds & thoughts” is not a good omen.

The observations so far, lead me to add to what [S. Chaterjee](#), writing at the Philly Fed Review in 2002, concludes:

In particular, Taylor argued that policymakers face a tradeoff between the variability of inflation and the variability of real output. Unlike the Phillips curve, the Taylor curve displays a tradeoff consistent with mainstream economic theory.

Taylor’s development and elucidation of this variability-based tradeoff is clearly an important advance in monetary policy thought. Still, the Taylor curve **does not resolve the question of which monetary policy rule to adopt**. That decision requires some understanding of how the welfare of working households is affected by the different combinations (of variability of inflation and real output) on the Taylor curve, an understanding that, at present, is lacking. We hope that future research will fill in this gap in our knowledge.

It appears that the question of “**which monetary policy rule to**

adopt” has a clear answer: The Fed should adopt an NGD Level Target rule!
