

## **Silicon Valley: productivity and inflation**

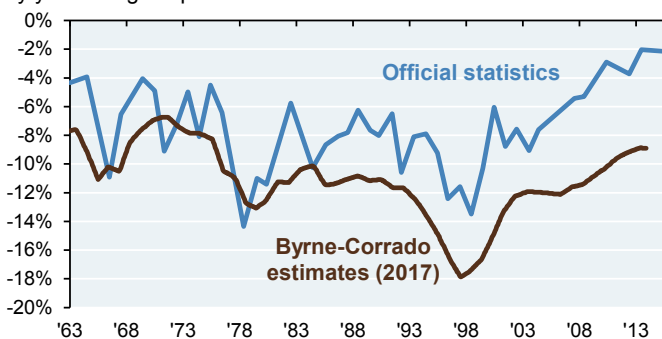
I am generally cautious about grand macroeconomic pronouncements from people that buy \$400-\$700 Wi-Fi enabled juicing machines<sup>5</sup>. However, some people in Silicon Valley have been complaining to me for years that official data do not capture the productivity benefits of their products and services, and for the first time, there's evidence that they might be right.

There's an unsolved mystery in central bank circles: "where did all the inflation go"? There are many theories (deflationary shock from financial crisis, impact of Chinese exports, decline in unionization, globalization of labor markets) and all of them play a part. But there's another one to consider as well: the deflationary impact from the ICT sector (Information, Communication and Technologies). In a paper that came out this year, Federal Reserve economists dove into the debate on whether US productivity is mis-measured. Until recently, most economists (including those at the Fed) felt the answer was "no".

**For the first time that I'm aware of, there's evidence that the tech sector has had a greater productivity and deflationary impact than what is seen in official data.** The arguments are complex, and rely on quality-adjusted price indices applied to a variety of new technologies. The paper's authors walked us through the primary reasons for their revised estimates (see box). They concluded that ICT prices have been mis-measured, and are in reality much lower than official data suggest. As a result, the sector is making greater contributions to productivity growth than previously believed. This could be part of the "missing inflation" puzzle given the ICT sector's multiplier effect on other sectors of the economy. If so, the ICT sector may continue to provide a deflationary pulse in the years ahead, giving the Fed (on the margin) a little more time to unwind its balance sheet.

### **ICT price deflation may be larger than previously thought**

y/y % change in price



Source: Byrne and Corrado, "ICT Prices and ICT Services: What do they tell us about Productivity and Technology?". 2017.

Reasons for lower revised ICT inflation estimates:

- Better estimates of efficiency improvements from hard-to-quantify advancements in operating systems, open-source software, cloud computing, storage and computing capacity
- More industry subsets included, such as cloud computing and systems design services (14 in alternative measure vs 7 in official data)
- New software price index including not just application software, but also systems/OS software for desktops, portable devices, networks and enterprises
- More accurate and broader industry pricing data

<sup>5</sup> "Juicero, Start-Up With a \$700 Juicer and Top Investors, Shuts Down", NYT, September 1, 2017

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