The Digital Economy, Bit By Bit, Is Driving The U.S. Economy.

**Our focus today:** The Digital economy is becoming a bigger and bigger driver of U.S. growth.

**Why it matters:** With technology increasingly driving capex, retail sales, and even employment, GDP will grow faster than it otherwise would, and at the same time keep inflation lower, longer. (This could drive the Fed nuts, i.e., low inflation for the “right” reason -- stronger productivity growth.)

**Our conclusions:**

- Digital is just 9% of GDP, but it’s contributed 32% of GDP growth over the past 14 years. And with tech now the biggest component of U.S. capex, and quickly growing its shares of retail sales and employment, overall eco activity could surprise on the high side.

- The “tech drives stocks” story is well-known, but the “tech drives the economy” story is very underappreciated. We’d argue the former is because of the latter. Indeed, the U.S. has the most tech companies in the world, helping explain the outperformance of the U.S. stock market.
The Digital Economy Is Growing Much Faster Than Overall GDP.

Since 2010, the Digital economy’s average growth rate has been nearly triple that of the overall economy – 6.6% vs. 2.3%. And in 2018 (latest data available), Digital also rose 6.6%.

What is the Digital economy? According to the BEA, it’s “the Internet and related information and communications technologies.” And as we highlight in this report, the Digital economy has been an important driver of capex and employment, both of which are helping boost potential GDP growth (productivity + labor force growth).
The Digital Economy alone represents 9.0% of the total U.S. economy -- the 4th largest industry share of GDP (2018). Moreover, the Digital Economy’s share of GDP has been consistently growing, adding over 1.7 ppts to its share since 2006. That trend will likely continue, as capex/employment/retail sales growth in the Digital space continues to outpace that of the overall economy.
Digital Is Almost 1/3 Of Total GDP Growth.

While the Digital economy is just 9% of nominal GDP, it’s accounted for 32% of GDP growth since 2006, led by digital services. 2018’s real GDP would have been closer to 2%, versus its actual 2.9%, without Digital’s strength. And during the 2008-2009 recession, the Digital economy did not even contract. What about the Covid recession? Digital obviously supported growth -- look at e-commerce sales, and software.

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Components Of The Digital Economy

Digital Economy Real Value Added Contribution To Growth 2018 0.58 Pct. Points

Source: BEA
Don’t Underestimate Digital’s Impact ... Particularly During The Covid Crisis.

In 2018 (latest data available), the digital economy accounted for 0.58 ppt of GDP growth -- about 20% of overall GDP growth (which was 2.9%). The biggest driver of the Digital economy that year was digital services (e.g., cloud-based software, websites, streaming music, games, and e-books). The second biggest driver was software. Here in 2020, obviously e-commerce will be big. Bit by bit, Digital supports overall growth, helping explain the rapid recovery from the Covid crisis.
What Is The Digital Economy?

- Bureau Of Economic Analysis Definition

E-commerce, or the remote sale of goods and services over computer networks.

% of Digital Economy

E-Commerce (25%)

Tech Hardware (10%)

Software (14%)

Other Digital Paid Svcs (47%)

Cloud Services (4%)

Monitors
Computers
Scanners
Semiconductors
Audio & Visual Eqp. . .

Application Software Publishing
Game Software Publishing
Software Tech Support
Own-Account Software. . .

Website Hosting
Data Processing Svc.

Priced digital services, or those services related to computing and communication and that are performed for a fee charged to the consumer.

Source: BEA
Tech Drives The Economy, Not Just The Stock Market.

Over the past 8 years, tech has driven capex, industrial production, retail sales and employment. It is because tech drives the economy, that it also drives the stock market.
Most Capex Is Now “New Economy”.

For the first time in history, New Economy Capex comprised more than 50% of total capex, in 2Q 2020. We expect its share to keep growing.
Defining “New Economy” Capex.

“New Economy” capex consists of R&D, software, and tech eqp -- each about 15% of total capex (cumulatively 50%). Software and R&D have been gaining share for 40 years. Tech eqp gained share through the mid-1990s, but has now lost some, to both software and R&D. “New Economy” capex gaining share increases the odds that productivity growth, which had started to reaccelerate the last expansion, continues this expansion, i.e., it is an important driver of productivity growth.
Did You Know **Software Is Capex In GDP?**
It Will Keep Growing, With Cloud Revenues.

Tech eqp capex in 2019 weakened significantly, in part due to efficiencies in cloud computing power. But software capex remained strong, and in 2Q of 2019 its level exceeded tech eqp capex for the first time ($426b vs. $396b). And as cloud adoption picks up, software capex will keep growing. And in recessionary 2Q 2020, tech eqp capex reaccelerated both q/q and y/y.

Note: this captures the revenues of cloud operators

**U.S. Real Capex**
Y/Y% 2020:2Q

Software
2020:2Q: 6.1%

Tech Eqp
2020:2Q: 1.1%

Increased remote working, as a result of the Covid crisis, could be a major boost to capex over the next few quarters ... often an underappreciated support for overall eco growth.

➢ “Zoom Video Communications said that it plans to hire 500 software engineers for research and development locations in Phoenix and Pittsburgh over the next two years. WP, May 15, 2020.

➢ “Global weekly downloads of business apps like [Microsoft’s] Teams on smartphones surged from around 33.7m in early October to 80m in mid-April, according to data tracker App Annie.” WJS, June 6, 2020.
Tech Capex Has Driven The Capex Cycle.

Tech capex growth (software, and eqp) clearly grew faster than overall capex the last expansion -- averaging a strong 8% y/y -- not as fast as the 1990s, but stronger than the 2002-2007 expansion. And as tech becomes a bigger and bigger component of capex, overall capex growth is likely to shift up.

Over the last 5 years, tech-related jobs have increased 3% y/y, almost double employment ex-tech. And since the start of the last expansion, tech-related jobs have increased a very strong 39%, versus just 8% for employment ex-tech. The last time tech jobs outperformed, was the 1990s.

In the 2002-2007 expansion, tech-related employment growth was sub-par, both in absolute terms and relative to total employment. In contrast, the 2010-2019 expansion, tech-related employment outperformed, in line with the 1990s.

* Includes: Computer Systems Design and Related Services; Software Publishers; Data Processing, Hosting, and Related Services; Computer and Electronic Products Manufacturing; Other Technical Consulting Services; Electronic Shopping and Electronic Auctions; Internet Publishing and Broadcasting, and Web Search; Graphic Design Services; Biotechnology Research; Batteries; and Computer and Office Machine Repair
Changing Of The Guard Picks Up Speed.

The Covid shutdown/work from home environment accelerated e-commerce’s cannibalization of brick and mortar retailing.
The U.S. Is the Most Popular Home For Tech Companies.

The U.S. is the global tech company leader, with more than twice as many public firms than #2, China. The U.S. also has the highest density of tech companies (tech companies as a percentage of total companies), according to Bloomberg’s 2019 Innovation Index. Indeed, this helps explain why the U.S. stock market has outperformed the world.

*Part of Bloomberg’s 2019 Innovation Index. Companies selected are those in industries such as aerospace and defense, biotechnology, large pharmaceutical, hardware, software, semiconductors, Internet software and services, and renewable energy.*
This Technology-Led Capex Cycle Is Boosting Productivity Growth.

The pre-Covid’s strong capex cycle, paced by technology, led to a sustained shift up in capital stock growth -- for the first time since the 1990s. That decade’s capital stock growth led to an upshift in productivity growth, which started to unfold in 2017. We believe capex this expansion, again led by tech, will continue to boost productivity growth.
Growing capital stock also helps create a broader job market. Look at the (pre-Covid) rising trends in the employment diffusion index, and the prime age labor force participation rate.

During the 2002-2007 expansion, capital stock growth deteriorated, and so did the employment diffusion index, as well as the prime age LFPR. In contrast, the 2010-2019 expansion looks much more like the 1990s. We expect those trends to reemerge this expansion.
Innovation Creates Jobs: Blacksmiths Versus Auto Workers ... 1900-1950.

Although there is a concern that technology-related employment will displace other jobs (e-commerce vs. general merchandise), history has shown that creative destruction can generate an employment surge in those new industries.

For example, in 1900, there were 220k blacksmiths, and 0 auto mfg workers. By 1930, blacksmiths were down to 136k, while auto mfg workers totaled 170k. By 1950, there were 6 times more auto workers than blacksmiths. This is a great example of “Creative Destruction” at work.
Technological Innovation (Disruption?!?) Is Ongoing.

U.S. Payroll Employment
5 Yr. % A.R. 2019: 1.7%

1903: First Airplane Built by Wright Bros
1908: First Mass-Produced Car (Model T)
1915: First Army Tank Produced
1925: Color TV Invented
1926: Movie w/Soundtrack Invented
1929: Great Depression
1935: Radar Invented
1939: Nuclear Fission Discovered
1942: Jet Aircraft First Flight
1947: Transistor Invented
1956: Optical Fiber Invented
1958: Silicon Chip Invented
1959: Plain Paper Photocopier Xerox 914 Introduced
1969: First Message Sent via ARPANET (Internet)
1969: USA Lands on the Moon
1973: Personal Computer invented by Xerox PARC
1976: Apple I Computer
1979: Personal Computers hit $1000
1981: GE First Sells Industrial Robots
1982: First Credit Card Reader
1984: IBM PS/2
1985: PC becomes personal
1989: Motorola Introduced the First Flip Cell Phone
1992: First Commercial Cell Phone
1994: Internet becomes commercial
1997: First Blog
2003: First iPhone
2013: 3D Printing Becomes Commercial
2019: 5G Rollout Ramps Up
2020: Pandemic

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