THE OUTLOOK FOR PRODUCTIVITY

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Labor productivity is currently increasing at the fastest pace since 2009. I am cautiously optimistic that this pace can actually improve over the next 12 months, bestowing important benefits to the US economy. Compared with an annual growth rate of 2.5% at the end of 2020, my forecast assumes productivity growth of 3.5% at the end of this year, decelerating to a still very impressive 2.5% rate at the end of 2022. If so, the next two calendar years could witness the fastest growth in labor productivity in decades.

Summary and Major Conclusions:

- Productivity gauges the relationship between the output of goods and services and the inputs of productive resources used to produce them. Output per hour worked has increased at a compound annual rate of 2.1% since 1950.
- However, the very long-term average is misleading because of the tendency of productivity to follow distinct alternating periods of strength and weakness over time. For example, labor productivity increased at a 3.0% annual rate from 1950 to 1965 and then slowed sharply to only 1.4% from 1965 to 1982.
- Productivity was extremely sluggish during the decade ending in 2019, with an average annual growth rate of only 1.1%. This period was one of the worst decades for productivity in American history.
- There are tentative signs of improvement: The growth rate over the past four quarters has been nearly 2.5%. However, it would be premature to extrapolate this trend into the future because of current distortions within the economy.
- History reveals a strong positive correlation between output per hour and business capital investment, with a time lag of two years. Numerous studies show that capital formation is the critical driver of productivity.
- Another critical factor is corporate restructuring and reorganization. Prompted by the pandemic and steep declines in revenue, companies have adopted new business models that strive to maximize efficiencies through automation and capital deepening in the production process.
- Other factors include investment in infrastructure, improvement in education and job training, increased entrepreneurship, new business formation, and increased investment in research and development.
- A sustained period of rapid productivity growth would result in an increase in economic prosperity. There is no metric in macroeconomics that is more critical for prosperity than productivity.
- Strong growth in labor productivity enhances the potential growth rate of an economy. It also increases the potential duration of an expansion cycle by enabling aggregate demand to increase without physical limitations from supply bottlenecks.
- The ultimate source of rising per capita real wages is rapid growth in productivity. Workers enjoy rising real wage increases as compensation for their contribution to faster growth in aggregate output.

- Productivity prevents higher wages from translating into a higher rate of inflation by constraining unit labor costs. As an example, a rapid 5% increase in worker compensation is equivalent to only to a 2% growth in unit labor costs when combined with 3% growth in output per hour.

- Rapid growth in productivity allows domestic companies to become more competitive in world trade because of an enhanced cost advantage. Business profit margins tend to rise in the short term when selling prices are increasing at a faster pace relative to unit labor costs.

- Compared with a current growth rate of 2.5% at the end of 2020, my forecast assumes productivity growth of 3.5% this year, decelerating to a still very impressive 2.5% in 2022. However, the outlook beyond 2022 is highly uncertain.

- Productivity is the critical variable in the outlook for economic growth over the next three to five years. A sustained rise in productivity growth to its long-term average of 2% could be a game changer and augment living standards for all income groups.

- Higher worker productivity would be consistent with faster economic growth without a cyclical rise in inflation. The equity market would perform better as company earnings reach a higher peak and as the expected erosion in equity valuations takes place at a slower pace.

The concept of productivity is one of the most significant in the realm of macroeconomics because of its role with respect to inflation, real wages, and business profit margins. More than anything else, ***economic prosperity*** is heavily dependent upon rapid and sustained growth in productivity. This week's *Economic Perspective* provides answers to questions pertaining to current labor productivity trends, along with key implications for financial markets.

HOW DO ECONOMISTS DEFINE PRODUCTIVITY?

Often referred to as output per hour, productivity involves the relationship between the output of goods and services and the inputs of productive resources employed to produce them. The most common measures of productivity are *labor productivity* and *total factor productivity*. The latter is difficult to calculate because of the intangible nature of some of its inputs. The most commonly used measure is labor productivity.

WHAT IS THE LONG-TERM HISTORICAL GROWTH IN PRODUCTIVITY?

Output per hour worked has increased at a compound annual rate of 2.1% since 1950. However, this one data point is misleading because of *the tendency of productivity to follow distinct intermediate-term sub-trends over time*. In fact, the long-term secular trend beginning in 1950 exhibits an *alternating pattern* of very rapid and very slow productivity that tends to persist for prolonged periods. For example, labor productivity increased at a 3.0% annual rate from 1950 to 1965 and then slowed sharply to only 1.4% from 1965 to 1982. Output per hour accelerated again from 1982 to 2003, posting a compound annual growth rate of 2.5%.

WHAT WAS THE PERFORMANCE OF THE PAST DECADE?

Productivity was extremely sluggish during the decade ending in 2020, with an average annual growth rate of only 1.1%. *This period was one of the worst decades for productivity in American history*. However, there are tentative signs of improvement: The growth rate over the past four quarters has been nearly 2.5%. It would be premature to extrapolate this trend into the future because of current distortions within the economy. That said, I am cautiously optimistic that the US economy may be entering a sustained period of faster productivity growth.

WHAT ARE THE FACTORS THAT COULD TRIGGER A REVIVAL IN PRODUCTIVITY?

The most important factor would be a sustained expansion in ***business investment in equipment and software***. *History reveals a strong positive correlation between output per hour and business capital investment, with a time lag of two years*. *Numerous academic studies support the thesis that **capital formation** is the critical driver of productivity*.

A strong business investment cycle could emerge over the next several years because of three factors:

1. Strong growth in aggregate spending that raises business confidence and willingness to make long-term investments.

2. Very strong growth in corporate earnings and cash flow.

3. Remarkable technical innovation currently underway in the digital economy: Technological advances involving automation, artificial intelligence, and cloud computing are expanding at a rapid pace and should allow the business sector to operate more efficiently.

Another critical factor could be *corporate restructuring and reorganization*. Prompted by the pandemic and steep declines in revenue, companies have been adopting new business models that strive to optimize output by increasing ***automation and capital deepening*** in the production process. The ultimate result could be a ***virtuous cycle*** involving business profits, capital spending, and productivity, unfolding as follows: Rising profitability leads to strong growth in capital formation, which boosts productivity and profits, resulting in more capital investment, and increased productivity.

ARE THERE OTHER FORCES AT WORK?

There are other significant factors that are somewhat less impactful. These include investment in hard and soft infrastructure, improvement in education and job training, increased entrepreneurship and new business formation, and increased investment in research and development.

The outlook for infrastructure spending is promising. President Biden's proposed American Jobs Plan calls for $2.2 trillion for investment in roads, bridges, ports, broadband, and the water and power complex. If passed, this legislation would contribute to an increase in productivity and competitiveness and a reduction in business costs. In the private sector, companies are engaging in additional R&D, and new business formation in 2020 was the fastest in decades.

HOW WOULD AN EXTENDED PERIOD OF FASTER GROWTH IN PRODUCTIVITY BENEFIT THE ECONOMY?

A sustained period of rapid inflation would result in an increase in economic prosperity, typically defined as income per capita. There is no metric in macroeconomics that is more critical for prosperity than productivity. The specific benefits are as follows:

- **Faster GDP Growth:** Strong growth in labor productivity enhances the potential growth rate of an economy. It also increases the potential duration of a business cycle expansion by enabling aggregate demand to increase without physical limitations to constrain output resulting from supply bottlenecks.

- **Real Wages:** The ultimate source of rising per capita real wages is rapid growth in productivity. In theory, workers are compensated by real wage increases for their role in expanding output at a faster pace.

- **Low Inflation:** Productivity prevents higher wages from translating into a higher rate of inflation by constraining ***unit labor costs***. As an example, a rapid 5% increase in labor compensation would equate to only 2% growth in unit labor costs when combined with 3% growth in output per hour. *There is a very high statistical correlation between inflation and unit labor costs*.

- **High Profit Margins:** In principle, business profit margins rise in the short term when selling prices are increasing at a faster pace relative to unit labor costs.

- **Competitive Advantage:** Rapid growth in productivity allows domestic companies to become more competitive in world trade because of an enhanced cost advantage.

WHAT IS YOUR FORECAST FOR US LABOR PRODUCTIVITY?

Labor productivity is currently increasing at the fastest pace since 2009. I am cautiously optimistic that this pace can actually improve over the next 12 months, bestowing important benefits to the US economy. Compared with an annual growth rate of 2.5% at the end of 2020, my forecast assumes productivity growth of 3.5% at the end of this year, decelerating to a still very impressive 2.5% rate at the end of 2022. If so, the next two calendar years could witness the fastest growth in labor productivity in decades. However, the outlook beyond 2022 is highly uncertain, especially if the rate of economic growth slows sharply in 2023 and 2024, as I am now assuming.

INVESTMENT IMPLICATIONS

The long-term sustainable growth potential of the economy is defined by two discrete factors: (1) Labor force growth; and (2) Labor productivity. My assumption of the long-term growth potential of the US economy to produce goods and services is 2%, comprised of 0.3% growth in the labor force and 1.7% growth in labor productivity. Labor force growth is basically fixed and determined by demographic factors; the wild card in the equation is productivity. Immigration reform could also lift labor force growth by 0.2%, resulting in a long-term potential growth rate of 2.2%.

The critical variable in the outlook for economic growth over the next three to five years involves productivity. Instead of 1.7%, a sustained rise in productivity growth to its long-term average of 2% could be a game changer. It would allow spending, investment, and employment to increase without triggering a rise in inflation and could extend the duration of the business expansion. The equity market would perform better as company earnings reach a higher peak and as the erosion in equity valuations takes place at a slower pace.

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NASDAQ: is an American stock exchange at One Liberty Plaza in New York City. It is ranked second on the list of stock exchanges by market capitalization of shares traded, behind the New York Stock.

Russell 2000 Index: is a small-cap stock market index of the smallest 2,000 stocks in the Russell 3000 Index. It was started by the Frank Russell Company in 1984. The index is maintained by FTSE Russell, a subsidiary of the London Stock Exchange Group.

Russell 3000 Growth Index: is a market capitalization-weighted index based on the Russell 3000 index. The Russell 3000 Growth Index includes companies that display signs of above-average growth. The index is used to provide a gauge of the performance of growth stocks in the United States.

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S&P 500® Index: Measures the performance of 500 widely held stocks in US equity market. Standard and Poor's chooses member companies for the index based on market size, liquidity and industry group representation. Included are the stocks of industrial, financial, utility, and transportation companies. Since mid-1989, this composition has been more flexible and the number of issues in each sector has varied. It is market capitalization-weighted.

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