

Potential Deflationary Effects of AI

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How to cite this paper: Burdekin, R. C. K. (2026). Potential Deflationary Effects of AI. *Modern Economy*, 17, 670-675. <https://doi.org/10.4236/me.2026.175035>

Received: February 4, 2026

Accepted: May 23, 2026

Published: May 26, 2026

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Abstract

Even though the marginal impact of AI productivity gains is deflationary, an overall downward impact on prices would require the Fed to fail to undertake an offsetting monetary expansion. This policy offset explains why, in contrast to earlier episodes, the 1990s productivity gains did not induce deflation. A potentially novel factor today is that, if labor displacement becomes the dominant trend under AI, we could see a sustained joint increase in both unemployment *and* output. This might, in turn, prompt even more expansionary Fed policy—with concomitant risks for inflation rather than deflation.

Keywords

Deflation, AI, Monetary Policy

We are being afflicted with... technological unemployment. This means unemployment due to our discovery of means of economising the use of labour outrunning the pace at which we can find new uses for labour.

(Keynes, 1930)

AI agents replace or displace a range of professional and service occupations. Autonomous vehicles and robotics automate many manufacturing and transportation jobs... AI-centric start-ups with radically new business models displace firms that are unable to adapt, and layoffs soar, leading to widespread unemployment in the short run and declines in labor force participation over time, as a large share of the population is essentially unemployable.

(Barr, 2026)

1. Introduction

The premise that technological advances can put downward pressure on aggregate prices is nothing new. Although not quite up to the recent AI advances, the deflations of the late nineteenth century have been widely linked to supply-side shifts

and productivity advances. The 1870-1900 period has been termed the “Second Industrial Revolution,” featuring the development of electric light and power, the telephone, and the internal combustion engine that made automobiles possible. Notwithstanding the disastrous experience under deflation in the Great Depression of the 1930s, [Bordo and Redish \(2004\)](#) suggest that there is such a thing as “good deflation.” This refers to a situation where aggregate supply is advancing faster than aggregate demand, allowing growth in output to occur in conjunction with falling prices. The real-world price declines still appear to be linked to money growth, however, rather than simply being a product of productivity gains.

[Bordo and Redish \(2004\)](#) find convincing evidence of supply-side shocks driving output in late nineteenth-century Canada and the United States, but cannot say the same for price movements¹. Money supply shocks remain the main determinant of prices (with Bordo and Redish also finding that monetary shocks significantly impact the trajectory of output in Canada over the 1871-1913 period). Similarly, [Friedman \(1992\)](#) attributes the late nineteenth-century deflations in the United Kingdom and the United States to monetary factors. The key issue here was the growing scarcity of gold. Only after the mid-1890s was this shortage alleviated by new gold discoveries and the invention of the cyanide process that allowed more gold to be extracted from existing mineral deposits. In the interim, limited gold availability put downward pressure on the money supply and prices alike under the Classical gold standard.

The 1990s were another time of rapid technological change, with internet stocks leading the Nasdaq boom that extended until April 2000. Positive productivity shocks failed to be associated with any deflationary outcome reflected in falling aggregate prices, however. Increases in aggregate supply were outweighed by increases in aggregate demand as the Federal Reserve under Alan Greenspan followed policies aiming to maintain inflation around 2%. Greenspan’s emphasis on keeping rates steady even as unemployment fell reflected his belief that “outstanding productivity performance was keeping a lid on inflation” ([Blinder & Reis, 2005: p. 59](#)). The premise that an internet-driven productivity boom would keep inflation low did not survive the Nasdaq bubble, however. Fears of an overheating economy led the Greenspan Fed to hike rates at the end of the 1990s. Incoming Fed chair Kevin Warsh’s use of this historical analogy to justify rate cuts in 2026 has to be qualified by not only the prior 1990s hiking denouement but also the additional pressures arising from historically large budget deficits and the energy price shock associated with the Iran conflict—leading to skepticism both inside and outside the Fed ([Timiraos, 2026](#)).

This ability to adjust monetary policy to offset any downward pressure on prices nonetheless stands in stark contrast to the gold standard era of the nineteenth century, when neither the United States nor Canada even had a central bank. The lesson from both episodes is that, even though the marginal impact of

¹[Saxonhouse \(2005\)](#) points to technological shocks also playing a significant role in Japan’s post-1992 deflation.

productivity shocks and technological advancement is indeed deflationary, the overall impact on the price level depends on monetary policy. Temporary deflation remains a very real possibility due to such short-run factors as velocity shocks, credit contraction, or policy lags. For example, the sharp drop in velocity with the onset of the pandemic pushed the rate of inflation down to zero in 2020. The Fed warded off deflation at that time by offsetting the velocity drop through expanding the money supply at the most rapid rate since the Second World War (Burdekin, 2023). By the same token, sustained deflation under AI advancement in the United States today can only prevail under central bank inaction. The ensuing sections examine the role played by productivity gains, prospective monetary policy reactions to employment effects of AI, and conclusions regarding the likelihood of an overall deflationary outcome.

2. Productivity Gains and Deflation: Some Simple Monetary Arithmetic

The impact of supply-driven output expansion can be illustrated in terms of the equation of exchange. If we multiply the money stock (M) by the number of times each dollar is spent (velocity of money, V), this must equal the total spending in that same economy. This total spending is measured as nominal GDP, comprising the price level (P) multiplied by the real output produced (Y). If M and V are held constant, then any increase in Y must be offset by an equal reduction in P . The logic behind this is that if the same amount of dollars is being used to buy goods, any rise in quantity must be offset by a reduction in price:

$$\overline{MV} = \overset{\downarrow}{P} \overset{\uparrow}{Y} \quad (1)$$

More goods are now being supplied on the market owing to rising productivity. In order to sell more goods when the money available to purchase them is unchanged, the price must drop to re-equilibrate supply and demand. This explains why productivity enhancements are deflationary, *ceteris paribus*.

The overall consequences for prices clearly also depend on M and V , however. In the late nineteenth century deflations, M was falling. This did not reflect policy intent but rather the confines of the gold standard. Scarcity of gold meant that, for currencies linked to gold, greater purchasing power for gold could be achieved only via a decline in the prices of goods and services. Moreover, once deflation sets in, consumers will tend to postpone non-essential consumption as they wait to buy goods at cheaper expected future prices. As money holdings go up, the rate of spending of the money holdings, or velocity (V), goes down. This will only exaggerate the existing deflationary pressures arising from any rising Y and falling M .

The most important lesson from the late nineteenth-century experience is not the deflation itself but rather how this deflation was reversed. The monetary explanation for this turnaround lies in the invention of the cyanide process, coupled with new gold discoveries in South Africa, that fueled renewed expansion in the world's gold supply (Friedman, 1992). In the modern era, with money supply no longer shackled to the availability of gold, supply-side productivity expansions

will only be deflationary if the central bank allows them to be deflationary. That, in a nutshell, is why the internet boom of the 1990s, in contrast to the experience of a century earlier, did not give rise to deflation. In the United States, the Alan Greenspan Fed raised money growth to offset any deflationary effect. Simply put, the rise in M offsets the rise in Y :

$$\hat{M} \bar{V} = \bar{P} \hat{Y} \quad (2)$$

In practice, if the Fed is aiming for 2% inflation rather than zero inflation, the money supply growth rate should be set above the sustainable growth rate of output. If executed perfectly and with velocity constant, this will have P rising at 2% and M rising at a rate 2% above that of Y . If V is not constant, the money growth rate can be further adjusted to offset it. This is best illustrated by the Fed's reaction to the dramatic drop in V in the second quarter of 2020 (Burdekin, 2023).

3. Monetary Policy and Employment Effects of AI

The Fed's price stability goal, in practice, has involved a longstanding commitment to keeping inflation around a target 2% rate. This leaves it highly unlikely that the Fed would fail to act if AI-driven productivity gains put downward pressure on prices. Rather, as illustrated via the equation of exchange, it should be expected that the Fed would undertake expansionary policy to offset this impact. This is consistent with Fed reactions to the internet based-productivity gains of the 1990s. A key difference with today's AI boom relates to the labor market implications, however. The productivity gains associated with the internet boosted firm labor demand, in turn accounting for not just higher output but also higher real wages and employment. Even if AI produces magnified positive effects on output, it is less clear that it will be positive for employment.

Large layoffs announced by a series of big tech firms, starting with the 40% job cuts announced by Block at the end of February 2026, are reminiscent of the "technological unemployment" envisaged by Keynes (1930) nearly a century ago. This is not only in keeping with Fed Governor Barr's "rapid growth" AI scenario but also the multi-year trend identified by Ozkan and Sullivan (2025), who show that occupations with higher AI exposure faced proportionately larger unemployment rate increases over the 2022 to 2025 period. Wang and Wong (2026) shed light on the prospective impact of AI using a search model that explicitly incorporates generative AI. Wang and Wong (2026: p. 2) point to the risk that "sizable employment losses occur despite productivity gains and expanded job creation." Although the actual speed and extent of AI deployment remain uncertain, a more productive workforce does not necessarily imply a bigger workforce in this new setting.

The Fed has a dual mandate obliging it to focus not just on price stability but also on high employment. Any weakening of employment levels in the face of AI penetration would almost certainly lead to further expansionary policy and further reductions in interest rate targets beyond what was implied by any pre-existing downward pressure on prices. This, in turn, makes an overall deflationary environment still more unlikely. Insofar as AI progression moves increasingly from

software to hardware, as reflected in the type of humanoid robot advances being seen in China, the risk of employment displacement will likely increase over time. Expansionary policy would not be able to counter such a trend in the long run because printing more money cannot reverse the real effects of supply-side changes—even though it can effectively offset the nominal consequences for the price level. The risk in this scenario would be on the inflation side rather than on the deflation side.

4. Is a Deflationary Outcome Impossible?

The nineteenth-century experience alerts us to the possibility of deflation in the absence of a sufficiently vigorous monetary policy reaction. The lack of response at that time was due not only to the constraints of the gold standard but also to the absence of a central bank in both Canada and the United States. The Fed was not founded until 1913, and the Bank of Canada dates only from 1935. Having a central bank with the capacity to offset deflation does not guarantee success, of course. The Fed's failure to adequately react to the downward pressure on prices in the aftermath of October 1929 Wall Street Crash allowed the money supply to shrink by a third between 1930 and 1933 (Friedman & Schwartz, 1963).

The contractionary spiral that unfolded over the 1930s offered ample proof that, once started, deflation is extremely hard to stop. If consumers delay purchases, this will lead to a further reduction in aggregate demand, putting further downward pressure on prices and suggesting that deflation could be at least partially self-sustaining. There is also the potential threat of Fisher's (1933) debt-deflation mechanism, whereby deflation adds to real debt burdens, in turn triggering bankruptcies and further declines in economic activity. Such outcomes will, in practice, also be conditioned on such factors as the velocity of money, the formation of inflation expectations, and financial frictions. Nevertheless, the risk remains that a policy mistake allowing deflation to get underway could unleash a downward spiral.

5. Conclusion

The marginal impact of AI productivity gains is deflationary. However, an overall deflationary outcome could occur only if the Fed allowed it to happen. Assuming continued pursuit of the price stability objective, the most likely scenario is that any downward pressure on prices would be offset by monetary expansion, as in the 1990s case. The biggest danger, and biggest unknown, concerns the implications for employment. If labor displacement becomes the dominant trend, we could see an ongoing combination of unemployment and output rising together. This could, in turn, prompt even more expansionary Fed policy – leaving inflation risks far outweighing deflation risks overall.

Acknowledgements

The author thanks Tom Willett, Yong Kim and an anonymous reviewer for helpful comments.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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