

# THE WALL STREET JOURNAL.

This copy is for your personal, non-commercial use only. To order presentation-ready copies for distribution to your colleagues, clients or customers visit <https://www.djreprints.com>.

<https://www.wsj.com/articles/the-high-cost-of-impeding-automation-11571958240>

JOURNAL REPORTS: TECHNOLOGY

## The High Cost of Impeding Automation

History offers plenty of examples of what happens when we slow innovation because of job fears

*By Carl Benedikt Frey*

Oct. 24, 2019 7:04 pm ET

Listen to political debates these days, and when it comes to the economy, it doesn't take long to identify the enemy: It's the robots. In speech after speech, politicians are both tapping into—and feeding—the growing fear that automation is out to take away jobs. And something has to be done to stop them.

For many politicians, that “something” involves raising the price of automation, perhaps by taxing each robot or demanding that companies find jobs elsewhere for workers displaced by automation.

Politically, the temptation isn't hard to understand: A recent Pew Research survey shows that 85% of Americans are in favor of policies to restrict the rise of robots beyond hazardous work. And perhaps more important, there is compelling evidence that factory automation swung three key Rust Belt states—Michigan, Wisconsin and Pennsylvania—in favor of Donald Trump in the 2016 election.

### High price

Yet history tells us that policies aimed at restricting or slowing automation come with a steep price tag. It is important to remember that the acceleration in economic growth that followed the Industrial Revolution, which first took off in England around 1750, was caused by the steady adoption of automation technologies that allowed us to produce more with fewer people. Before 1750, per capita income in the world doubled every

---

JOURNAL REPORT

---

- [Read more at WSJ.com/techreport](#)

---

MORE IN TECHNOLOGY

---

- [New Disinformation Tactics](#)
- [AI in the Classroom](#)
- [The Home Wireless Business Heats Up](#)
- [Will Streaming Doom Game Consoles?](#)

---

6,000 years. Thereafter, it has doubled every 50 years.

History also tells us that we shouldn't take continued technological progress as a given. One explanation for why economic growth was stagnant for millennia is that the world was caught in a technology trap, in which labor-replacing technology was consistently and vigorously resisted for fear of its destabilizing force. For most of history, the politics of progress were such that the ruling classes had little to gain and much to lose from the introduction of labor-replacing technology. They rightly feared that angry workers might rebel against the government.

Could countries in the industrial West experience a return of the technology trap in the 21st century? While it might seem unlikely, it certainly looks more likely than it did a few years ago. Proposals to tax robots to slow the pace of automation now feature in the public debate on both sides of the Atlantic. And unlike the situation in the days of the Industrial Revolution, workers in the developed world today have more political power than the Luddites did.

## Long before the Luddites

History offers no shortage of examples of governments trying—and succeeding—to hinder automation for the sake of workers. As far back as the first century, Emperor Vespasian, who ruled Rome in A.D. 69-79, refused to adopt machinery for transporting columns to the Capitoline Hill due to employment concerns. Skip ahead many centuries, and in 1551, Britain banned the gig mill, which saved considerable amounts of labor.

Elsewhere in Europe resistance was just as fierce. Many cities banned automatic looms in the 17th century. Why? Where they were put to use, like in the Netherlands city of Leiden, riots followed. The ruling elites feared that workers would challenge their power and privileges. To them, the price of progress was too high to pay.

Over the long run, however, countries and empires that failed to leverage automation technologies fell behind. Consider the divergent development paths of India and Japan. In 1900, productivity and wages in Indian and Japanese textile factories were similar. By the 1930s, Japan had significantly increased the number of machines per worker to surpass England as the world's leading exporter of textiles, while the mechanization of the Indian textile industry failed to keep pace under the tariff protection of the British Raj. Because of its surplus-labor economy, Japanese companies could easily suppress worker resistance. Indian workers, in

contrast, had much more bargaining power and simply refused to run more machines.



Of course, the short-term consequence for those who lose out to automation can be devastating.  
PHOTO: RYAN JOHNSON

In similar fashion, one reason China failed to industrialize in the 19th century is the long persistence of Chinese craft guilds (*gongsuo*), which had unconstrained control over their craft. And they had little interest in mechanization. In 1876, when an attempt was made to launch a steam cotton-mill company in Shanghai, the guilds' opposition was so fierce that local officials refused to support the companies. And in 1886, sewing machines were smashed in Hong Kong by native workers over employment concerns.

### Siding with inventors

British governments were the first to side with inventors rather than rioting workers, which might also explain why Britain was the first country to industrialize. In 1769, the destruction of machinery was made punishable by death.

Unlike in China, where the craft guilds remained a strong political force throughout the 19th century, the political clout of the guilds in Britain deteriorated for various reasons—in part because the external threat from other nations gradually became greater than the threat from below. Consequently, Parliament consistently ruled against spinners, combers and shearers who petitioned against the introduction of various machines.

The British government's view on people's smashing of machines was made explicit in a resolution passed after the Lancashire riots of 1779, which read as follows: "The sole cause of great riots was the new machines employed in cotton manufacture; the country notwithstanding has greatly benefited from their erection [and] destroying them in this country would only be the means of transferring them to another...to the detriment of the trade of Britain." The ruling elites were naturally well aware that their military strength greatly depended on their economic muscle.

This is not to suggest that resistance to automation technologies in Britain ended in the 18th century. In the early 19th century, the Luddites and other groups did what they could to stop automation, but they lacked the political power to succeed.

Meanwhile, things unfolded very differently on the other side of the English Channel. As Parisian crowds stormed the Bastille in 1789, woolen workers in the manufacturing suburb of Saint-Sever destroyed the machines that had been installed there. A long series of similar incidents followed. But unlike in Britain, French industrialists and inventors could not put much faith in the willingness of the government to protect their interests. During the revolutionary era, French governments feared that rebelling craftsmen would exacerbate the general state of unrest in the country, which undermined incentives to invest in machines.

---

Of course, the short-term consequence for those who lose out to automation can be devastating. As one leading scholar of the British Industrial Revolution, the late David Landes, put it, “If mechanization opened new vistas of comfort and prosperity for all men, it also destroyed the livelihood of some and left others to vegetate in the backwaters of the stream of progress.”

The “victims of the Industrial Revolution were numbered in the hundreds of thousands or even millions,” Prof. Landes wrote.

### **Falling wages**

More recently, in the U.S., men with no more than a high-school diploma, who would have flocked into the factories before the rise of the robots, have seen falling real wages and rising joblessness since the manufacturing employment peak in 1979. Automation technologies are largely to blame. In a recent study, MIT economists Daron Acemoglu and Pascual Restrepo found that each multipurpose robot has replaced about 3.3 jobs in the U.S. economy and reduced real wages.

The losers to automation have good reasons to want to block advanced robotics and artificial intelligence, which threaten their jobs and incomes, even if future generations benefit.

The economist Wassily Leontief once joked that, “If horses could have joined the Democratic Party and voted, what happened on farms might have been different.” Indeed, the main difference today is that working people

(unlike the Luddites) have political rights. And as we have seen, many Americans favor restrictions on automation technologies, and politicians are tapping into their concerns.

However, the way forward is not to impose restrictions on automation, which has created enormous wealth over the centuries. Instead, governments should try to compensate the losers to technological change and help people shift into better jobs to create acceptance for automation.

Fail to do that, allowing resistance to fester and grow, and history offers a sobering lesson.

*Dr. Frey is Oxford Martin Citi Fellow at the Oxford Martin School at Oxford University and author of "The Technology Trap: Capital, Labor, and Power in the Age of Automation." Email him at [reports@wsj.com](mailto:reports@wsj.com).*

---

#### SHARE YOUR THOUGHTS

---

*What advancements in technology would you like to see and which ones would you not want to see encouraged? Join the conversation below.*

---

- 
- **College Rankings**
  - **College Rankings Highlights**
  - **Energy**
  - **Funds/ETFs**
  - **Health Care**
  - **Leadership**
  - **Retirement**
  - **Small Business**
  - **Technology**
  - **Wealth Management**

Copyright © 2019 Dow Jones & Company, Inc. All Rights Reserved

This copy is for your personal, non-commercial use only. To order presentation-ready copies for distribution to your colleagues, clients or customers visit <https://www.djreprints.com>.