

## The Real Reason for Disappearing Jobs Isn't Trade — It's Robots

Donald Trump got elected in part by appealing to blue-collar America, blaming the loss of U.S. jobs on immigration and bad trade deals with China, and pledging to improve the situation.

He largely ignored one key issue: automation.

"They are not talking about technology, robots and automation and factories, but that is a big part of it," says Martin Ford, the author of the *New York Times* bestselling novel *Rise of the Robots: Technology and the Threat of a Jobless Future*, in a phone conversation with CNBC.

"Trump and his supporters are talking about trade, they are talking about immigration. Actually, I think technology is at least as important, maybe more important," says Ford.

### Technological change disrupts labor markets

Although conventional wisdom holds that manufacturing in the United States is in decline, in fact it's been growing steadily.

The production of manufactured goods in the U.S. has been "on a steady and long-term growth path" as measured in inflation-adjusted dollars in recent decades, according to a report on the evolution of the sector from Ball State University. "The notion that manufacturing in the United States is in decline is factually incorrect," the report states. Even through the Great Recession, manufacturing grew in the U.S. From 2006 to 2013, manufacturing grew by 17.6 percent, or at roughly 2.2 percent per year.

But, even as manufacturing production has grown, employment in the sector "has largely stagnated," the Ball State report says. That is due to increases in productivity of each worker thanks to technology.

The period from 2000–2010 saw the largest losses in employment in manufacturing in the history of the U.S., the report says. It notes: "Had we kept 2000-levels of productivity and applied them to 2010-levels of production, we would have required 20.9 million manufacturing workers. Instead, we employed only 12.1 million."

As machines get better, in other words, factories require fewer workers.

"We are already seeing the impact of technology on the job market and that is something that is going to get worse," says Ford.

*"The notion that manufacturing in the United States is in decline is factually incorrect."*

— Ball State University: *The Myth and The Reality of Manufacturing in America*

One 2013 study written by Oxford University's Carl Frey and Michael Osborne estimates that 47 percent of the U.S. jobs could be replaced by robots and automated technology in the next 10 to 20 years. And a 2016 analysis from the World Bank estimated that roughly two-thirds of all jobs in developing nations around the globe are susceptible to replacement by automation.

While new technologies have always eliminated some jobs while creating others, that transition takes time.

"Technological change disrupts labor markets and can hurt individuals whose skills are substituted by technology, because they often do not have

the skills required in many of the new jobs," according to the World Bank report on the digital state of the world. "Even for those who stay within the same occupations, jobs will be transformed, requiring modern skills. The speed of these changes appears to be accelerating, intensifying creative destruction and the pace of labor market changes."

Currently, factory and office jobs are being phased out, and other low-skilled jobs, like those at WalMart and McDonald's, may also soon be at risk, says Ford.

For example, San Francisco-based robotics company Momentum Machines has built a robot that can make a hamburger from scratch. No human labor required. The technology is more sanitary and faster than human cooks are, and the product is fresher, the company claims on its Angel List page.

"Within 10 to 15 to 20 years we are probably going to have a visible problem in terms of the problem technology is having on the job market," says Ford. "There are many people who think it could be sooner than that because technology is accelerating in terms of machine learning and robotics."

### It's easier to blame people than to blame progress

A politician rarely loses by identifying an easy and concrete enemy to blame. But a politician can lose, and look like a Luddite, by railing against progress.

"It's much easier for people to blame other people, whether it's a worker in China or an immigrant, than it is to understand an intangible force, which is technology," says Ford.

### A solution may require a crisis in the U.S.

As globalization and robotics replace low-skilled jobs, momentum has begun to build around the idea of a universal basic income. With a universal basic income, every resident, whether unemployed or a business tycoon, receives standard, regular payments from the government.

While some, including Silicon Valley entrepreneur and futurist Elon Musk, see a universal basic income as an inevitability, the notion isn't one that most people in the U.S. feel comfortable with.

"I don't expect it to happen smoothly. I expect that, especially here in the United States, it's going to happen when we have a crisis. We will have a big problem first and then, when people realize what's happening, then at that point it would happen," says Ford.

Trump's unexpected election is an indication that the crisis of instability is "closer than we thought," says Ford. Still, the adoption of a universal basic income in the U.S. is probably years away, if it's possible at all.

"I think guaranteed income would be a good deal, a good idea. If not, people will try to halt technology, right, which would be a bad thing, because progress has got many positive signs to it, too," says Ford. "Historically it has made us much better off.

"Whether we are going to be rational and get that basic income, that's hard to say."

UNEMPLOYMENT	Region				Percentage Point Change	
		October 2015	September 2016	October 2016	1 month	12 months
		San José–Sunnyvale MSA	4.1%	3.8%	3.9%	+ 0.1%
San Francisco MD	3.4%	3.2%	3.2%	0.0%	- 0.2%	
California	5.8%	5.3%	5.3%	0.0%	- 0.5%	
United States	4.8%	4.8%	4.7%	- 0.1%	- 0.1%	

INDUSTRY EMPLOYMENT	Sector — October 2016				Percentage Change (Combined Region)	
		San Jose MSA (October 2016)	San Francisco MD (October 2016)	Combined Region (October 2016)	1 month	12 months
		<b>Total Nonfarm</b>	<b>1,093,800</b>	<b>1,099,300</b>	<b>2,193,100</b>	<b>+ 0.7%</b>
Construction	48,900	46,000	94,900	- 0.6%	+ 7.4%	
Manufacturing	161,400	35,300	196,700	- 0.4%	- 1.1%	
Retail Trade	87,900	83,200	171,100	+ 1.3%	+ 1.2%	
Information	80,200	61,000	141,200	+ 0.1%	+ 2.2%	
Professional & Business Services	235,400	279,200	514,600	0.0%	+ 5.1%	
Educational Services	47,200	30,900	78,100	+ 5.8%	+ 4.4%	
Health Care & Social Assistance	121,400	107,900	229,300	+ 0.8%	+ 4.9%	
Leisure & Hospitality	100,300	142,600	242,900	+ 1.2%	+ 2.8%	
Government	95,300	128,000	223,300	+ 2.2%	+ 1.7%	

NOTE: San José MSA (San José–Sunnyvale–Santa Clara Metropolitan Statistical Area) = Santa Clara and San Benito Counties  
 San Francisco MD (San Francisco–Redwood City–South San Francisco Metropolitan Division) = San Mateo and San Francisco Counties

Source: California Employment Development Department, LMID

LABOR FORCE & ANNUAL CHANGE	Labor Force by NOVA Jurisdiction — Santa Clara County (partial) + San Mateo County (complete)									
	Labor Force			Unemployment			Unemployment Rate			
	October 2015	October 2016	Change	October 2015	October 2016	Change	October 2015	October 2016	Change	
• San Mateo County	445,900	457,800	+ 2.7%	14,600	14,200	- 2.7%	3.3%	3.1%	- 0.2	
• Santa Clara County	1,023,800	1,058,600	+ 3.4%	41,100	40,400	- 1.7%	4.0%	3.8%	- 0.2	
– Cupertino	29,600	30,700	+ 3.7%	1,000	900	- 10.0%	3.2%	3.1%	- 0.1	
– Los Altos	14,400	14,900	+ 3.5%	400	400	0.0%	2.6%	2.5%	- 0.1	
– Milpitas	39,100	40,500	+ 3.6%	1,500	1,500	0.0%	3.8%	3.6%	- 0.2	
– Mountain View	49,900	51,700	+ 3.6%	1,500	1,500	0.0%	3.1%	2.9%	- 0.2	
– Palo Alto	35,500	36,700	+ 3.4%	1,000	1,000	0.0%	2.7%	2.6%	- 0.1	
– Santa Clara	67,200	69,500	+ 3.4%	2,400	2,400	0.0%	3.6%	3.4%	- 0.2	
– Sunnyvale	85,600	88,600	+ 3.5%	3,100	3,000	- 3.2%	3.6%	3.4%	- 0.2	
<b>NOVA Region</b>	<b>767,200</b>	<b>790,400</b>	<b>+ 3.0%</b>	<b>25,500</b>	<b>24,900</b>	<b>- 2.4%</b>	<b>3.3%</b>	<b>3.1%</b>	<b>- 0.2</b>	

NOTE: NOVA Region consists of seven cities in Northern Santa Clara County and the entirety of San Mateo County

Source: California Employment Development Department, LMID

REGIONAL LAYOFF ACTIVITY	October 2016 Events			WARN SUMMARY	
	Company	Location	# Affected	Events YTD <sup>†</sup> :	33
	Diana Fruit Co.	Santa Clara	38	Individuals Affected YTD:	2,108
FireEye	Milpitas	80	Individuals Previous YTD <sup>‡</sup> :	2,005	
Hewlett-Packard Enterprise	Sunnyvale	105			
Solar City	San Mateo	108			
SunEdison, Inc	Belmont	15			
Virgin American, Inc	Burlingame	225			
Western Digital	Milpitas	108			
	<b>Total</b>	<b>679</b>			

WARN SUMMARY

Events YTD<sup>†</sup>: 33  
 Individuals Affected YTD: 2,108  
 Individuals Previous YTD<sup>‡</sup>: 2,005

\* **WARN: Worker Adjustment and Retraining Notification** (notice of mass layoff or closure)  
<sup>†</sup> **YTD: Year to Date** (Program year: July 1–June 30)  
<sup>‡</sup> **Previous YTD:** No data available for San Mateo County, FY2014/15; avoid direct comparisons with YTD numbers

NOTE: Layoff data are preliminary and should be considered an estimate of monthly regional activity

Source: NOVA's internal Rapid Response database