



How Internet Creates More Jobs than It Destroys: The Example of Ecommerce

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SUMMARY

- People are scared about the effects of technology on their jobs and incomes.
- Given the history of the past twenty years, it's not unreasonable to be worried.
- But the surprising example of ecommerce in the United States suggests that application of technology to the physical industries can produce **good-paying jobs** and **reduce inequality**

The Good Scenario:

In the early 20th century, the arrival of the assembly line led to;

- Higher factory productivity
- Lower prices for consumers
- More demand for industrial goods
- More factory jobs
- Higher pay for workers
- Less inequality



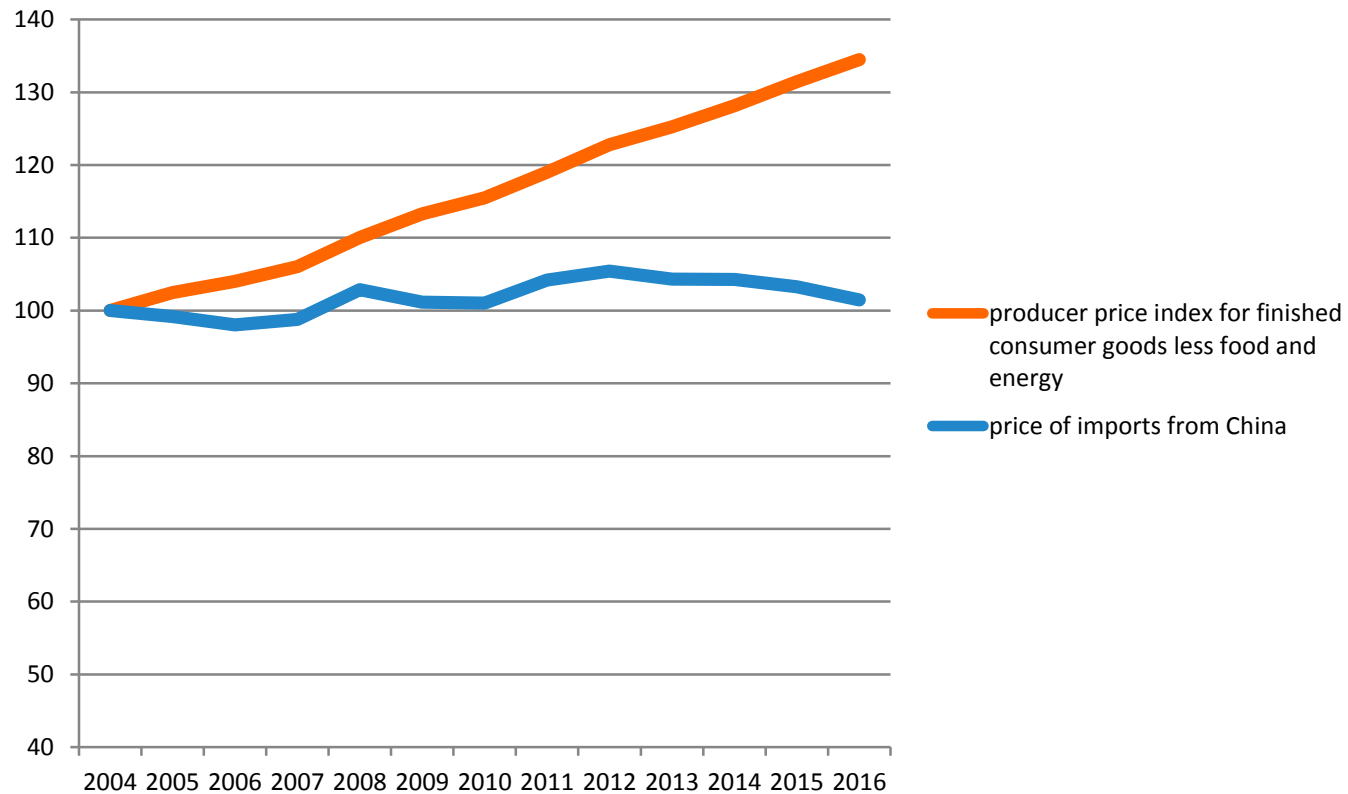
US Steel Gary Works, 1973. National Archives

The Bad Scenario

In the late 20th century and early 21st century, US factory workers were hit by a combination of automation and globalization. That led to:

- Higher labor productivity in manufacturing
- Very little increase in total factor productivity in most manufacturing industries
- Rising prices relative to Chinese imports
- Fewer factory jobs
- Stagnant or falling real wages in manufacturing
- Increased inequality

Price of Domestic Produced Consumer Goods Has Continued to Rise



What about retail??

When information
technology is applied to
retail and goods
distribution, do we see
the good scenario or the
bad scenario?

Ecommerce consists of two parts

1. The website
2. The fulfillment center to deliver goods to customers quickly.

Fulfillment centers are different than conventional warehouses

- Conventional warehouses receive bulk shipments from manufacturers and importers, send out bulk shipments to stores. Returns handled by separate companies. Little IT investment, few workers
- Fulfillment centers receive large and small batch shipments from manufacturers and importers, send out small shipments to consumers, receive returns from consumers. Much more complicated, IT intensive, many workers, more skills needed.

TABLE 1: Change in ecommerce and brick-and-mortar retail jobs since 2007

	CHANGE, DEC 07 - JUNE 17	CHANGE, DEC 07 - JUNE 17
	EMPLOYEES (THOUSANDS)	FTE EMPLOYEES*** (3-MONTH MOVING AVERAGE, THOUSANDS)
BRICK-AND-MORTAR RETAIL*	159	-140
ECOMMERCE JOBS**	405	401
WAREHOUSE (FULFILLMENT CENTERS)	273	274
ELECTRONIC SHOPPING	133	126
BRICK-AND-MORTAR + ECOMMERCE	564	261

*Brick-and-mortar retail is equal to retail minus nonstore retail.

**Warehouse and electronic shopping jobs as reported by BLS, before recategorization

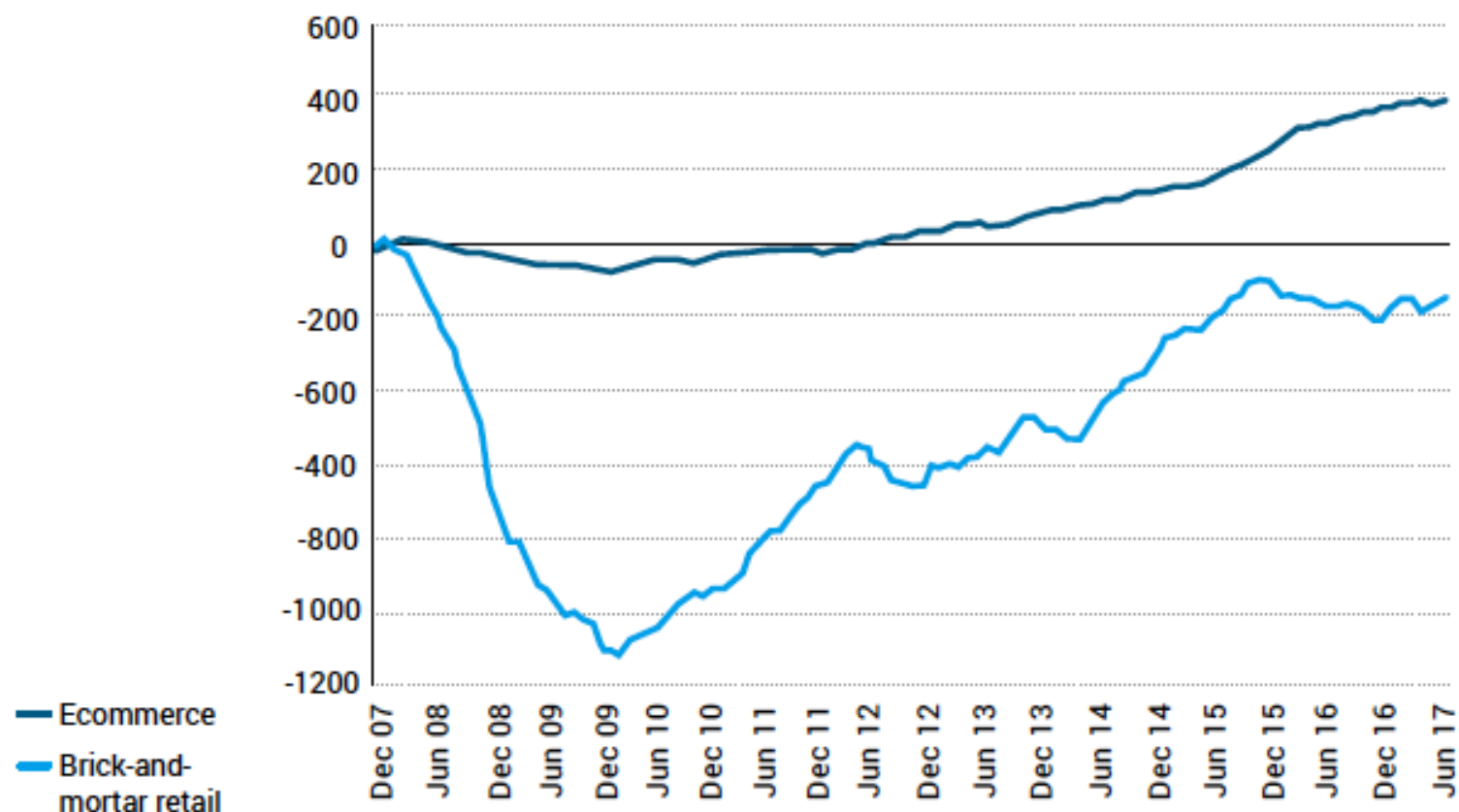
***Assumes 40-hour week.

Source: BLS, PPI

Change in Full time equivalent workers, three month average, July 2016-July 2017

	Percent	Thousands
Brick-and-mortar retail	-0.2%	-22
Ecommerce (electronic shopping plus fulfillment centers)	4.2%	54
Trucking	2.7%	60

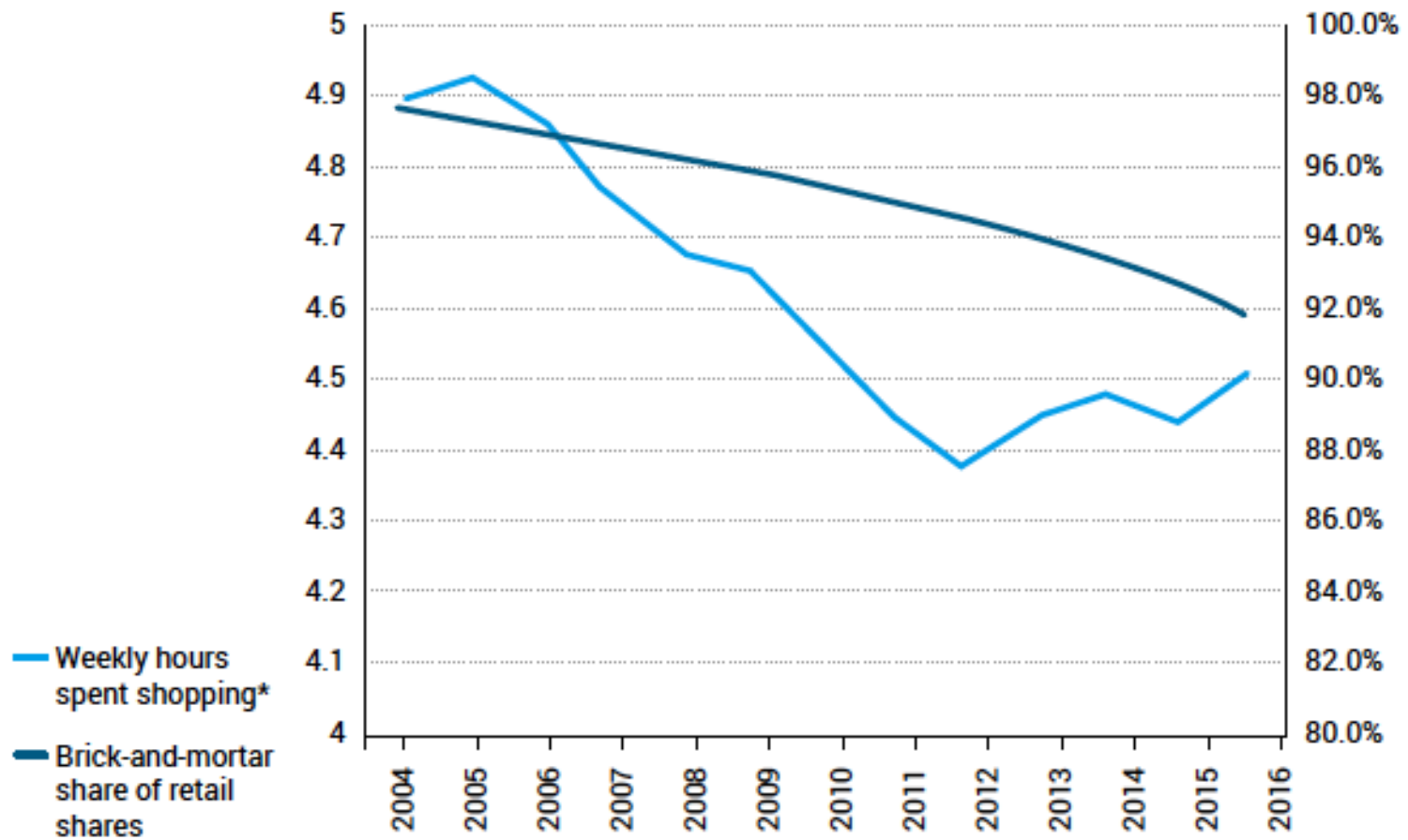
FIGURE 3: Ecommerce vs Brick-and-Mortar Retail
(change since December 2007, thousands of FTE jobs)*



*Three-month moving average. Assumes 40-hour work weeks.

Source: BLS, PPI

FIGURE 4: How Ecommerce Affects Household Shopping Hours



*Two-year moving average. Shopping for consumer goods plus travel related to shopping.
Source: Census Bureau, Bureau of Labor Statistics

TABLE 3: Change in Paid and Unpaid Hours in Distribution, 2007-2016: Retail, Wholesale, Transportation and Warehousing (millions of hours)

	PAID	UNPAID
BRICK-AND-MORTAR RETAIL TRADE	-6.0	
NONSTORE RETAIL (INCLUDING ELECTRONIC SHOPPING)	+4.2	
WAREHOUSING AND STORAGE	+10.5	
WHOLESALE TRADE	-1.6	
TRUCKING	+3.1	
ALL OTHER TRANSPORTATION AND WAREHOUSING	+5.2	
HOUSEHOLD SHOPPING		-64
TOTAL	+15.4	-64
RETAIL AND WAREHOUSING (BRICK-AND-MORTAR RETAIL PLUS ECOMMERCE)	+8.7	

Source: BLS, PPI

We estimate that wages in fulfillment centers are on average

31%

higher than wages in brick-and-mortar retail in the same area.

Ecommerce is a powerful machine for reducing inequality.

What about European ecommerce jobs?

Here's what we know so far. From 2008 to 2015, both Germany and the United Kingdom—the main location of Amazon fulfillment centers in Europe--show huge jumps in reported employment in the main ecommerce industries, "retail sales via Internet and mail-order" and "warehousing and storage."

However, I don't want to report the data until I finish analyzing it. Because ecommerce is a new industry, I need to make sure that jobs are being correctly categorized.

Based on third party sources, Amazon has roughly 50 fulfillment centers in Europe, with roughly 20 more planned. Based on experience with US, I would expect considerable building of non-Amazon fulfillment centers as well.

To summarize: Ecommerce increases productivity:

- Some gain goes to workers, in the form of more jobs and higher wages
- Some gain goes to the ecommerce companies, in the form of higher profits.
- Some gain goes to consumers, in terms of saving time in shopping (0.25 hours per week) and rapid delivery.
- Reported economy-wide productivity is undermeasured (0.2 percentage points annually).

Small manufacturers also benefit from the network of fulfillment centers

- Conventional distribution network favors bulk shipments from large manufacturers and bulk shipments to large retailers—cheaper to handle
- Ecommerce fulfillment centers are able to efficiently handle small-batch shipments and ship individual items.
- Small local manufacturers now can efficiently ship to individual consumers.

Ecommerce fulfillment centers may lead to revival of local small-batch and custom manufacturing.

Short response times and rapid delivery to consumers are sustainable competitive advantage against foreign manufacturers

Already seeing examples of customizable furniture makers moving production back to the US.

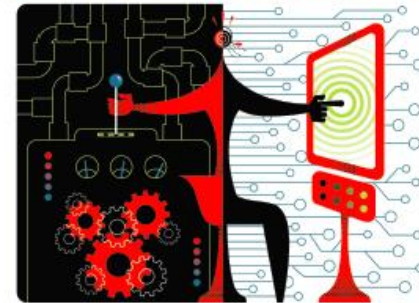
The example of ecommerce offers hope that the next round of applying technology to the physical industries may create good jobs and reduce inequality.

How Ecommerce Creates Jobs and Reduces Income Inequality

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