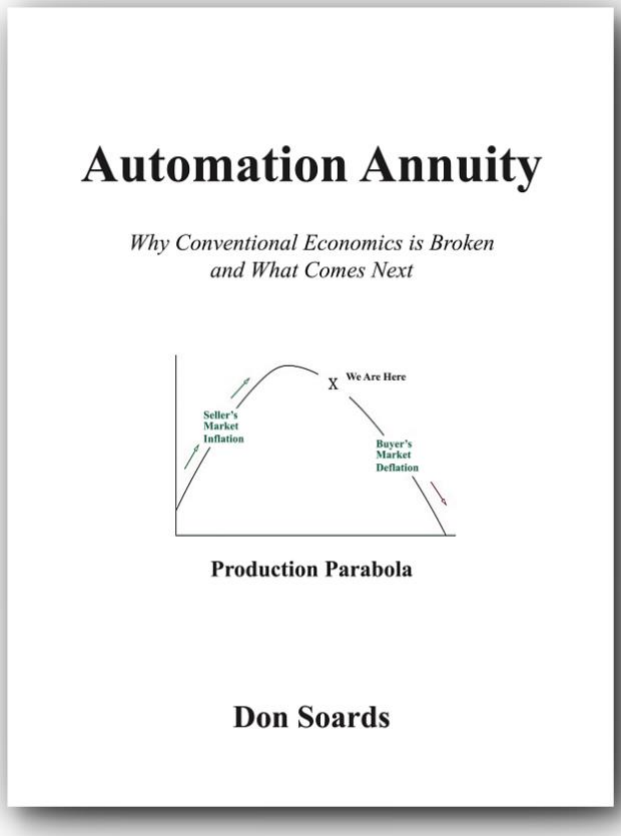

Automation is replacing wages faster than consumers replace lost purchasing power. Automation Annuity explains why conventional economics is failing and proposes a new way to restore demand and prosperity without taxes or government debt.

Automation Annuity:
Why Conventional Economics is Broken and What Comes Next
By Don Soards

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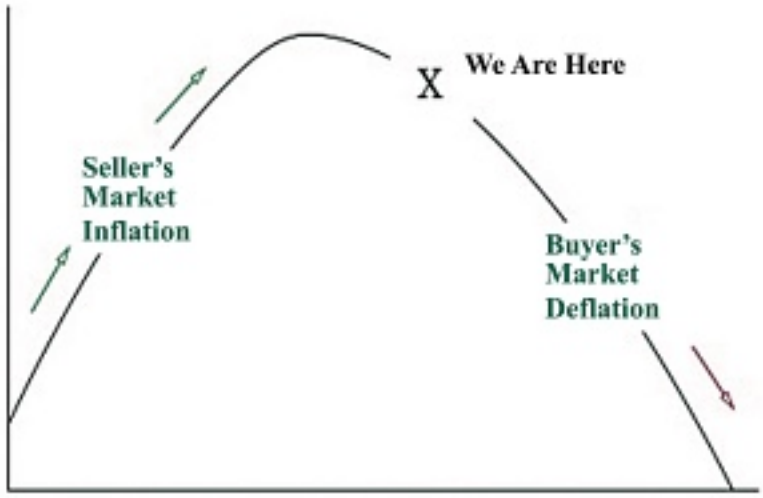
Automation Annuity

Why Conventional Economics is Broken and What Comes Next



Production Parabola

Don Soards

Print ISBN: 978-1-961268-92-0
Ebook ISBN: 979-8-88532-711-4

Published by BookLocker.com, Inc., Trenton, Georgia.

BookLocker.com, Inc.
2026

First Edition

Library of Congress Cataloging in Publication Data
Soards, Don
Automation Annuity: Why Conventional Economics is Broken and What Comes Next by Don Soards
Library of Congress Control Number: 2026920850

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AUTOMATION ANNUITY

Why Conventional Economics is Broken and What Comes Next

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Chapter 1

Our Economic Prospects Are Worse Than You Think

A Growing Sense That Something Is Wrong

Most Americans know something is wrong.

Young adults are postponing marriage. Fewer are having children. Home ownership is slipping out of reach. Credit card balances keep rising. Student debt keeps growing. Many people feel they are working harder than ever but somehow falling behind.

We hear phrases like “affordability crisis,” “income inequality,” and “living paycheck to paycheck.” We know these problems exist. What most people do not realize is how many of these problems are connected.

This book is about that connection.

The Promise of Technology

For most of my life, I believed what many Americans believed. If technology improved, life would improve. If machines became more productive, everyone would benefit. If our nation produced more goods and services, prosperity would naturally spread throughout society.

That was a reasonable expectation.

For nearly two centuries, it was largely true.

Then something changed.

Around the year 2000, many of our economic indicators began moving in the wrong direction. National debt exploded. Home ownership became more difficult. Marriage rates fell. Birth rates fell. Labor's share of income declined. Young adults became less optimistic about their future.

Yet during the same period, technology continued improving at an astonishing pace.

Computers became more powerful.

Robots became more capable.

Artificial intelligence emerged.

Productivity continued advancing.

If technology was improving so rapidly, why were so many people struggling?

A Question Worth Asking

That question eventually led me to a conclusion that surprised me.

The problem is not that we are producing too little.

The problem is that we are producing too much for the amount of consumer income available to buy it.

That idea sounds strange at first because we have been taught to think of scarcity as the primary economic problem. Throughout most of modern history, scarcity was the problem.

Today, abundance is increasingly becoming the problem.

This book argues that the relationship between workers and machines has changed. The same machines that once made us more prosperous are now reducing the wages needed to purchase what those machines produce.

That is why one simple question has become so important:

“Who do these corporations think is going to buy their stuff after they lay us all off?”

Warning Sign #1: The Struggling Worker

Many Americans sense that the system is becoming less responsive to ordinary citizens.

Consider the minimum wage.

The United States is one of the wealthiest nations in history. Yet many workers struggle to maintain a middle-class standard of living. Whether one favors raising the minimum wage or not, the issue points to a deeper concern.

Why are so many working Americans falling behind despite living in an age of extraordinary technological progress?

Warning Sign #2: Political Influence

A widely discussed study concluded that average Americans have far less influence on major legislation than most people assume.

Whether one agrees with every detail of the study is less important than the growing perception behind it.

Many citizens believe that powerful donors, corporations, and organized interests have far greater influence than ordinary voters.

When people feel unheard, confidence in institutions declines.

Warning Sign #3: The Shrinking Middle Class

For decades, wealth has become increasingly concentrated.

Meanwhile, the economic position of the middle class has weakened.

Home ownership is more difficult.

Debt is higher.

Financial security feels more fragile.

Many Americans sense that the ladder of upward mobility has become steeper than it once was.

Warning Sign #4: The American Dream Becomes Harder

Many readers remember a time when a single paycheck could support a family.

A house.

A car.

Children.

A vacation.

Retirement.

The American Dream was never guaranteed, but it was attainable for millions of ordinary families.

Today, many young adults view those same goals as increasingly difficult to achieve.

Warning Sign #5: The Debt Explosion

At the beginning of this century, the United States carried approximately five trillion dollars in national debt.

Today the figure is many times higher.

This happened during one of the greatest periods of technological advancement in human history.

Technology should make us richer.

Technology should lower costs.

Technology should improve efficiency.

Why then has debt grown so dramatically?

The Missing Piece

Most economists focus on production.

How do we produce more?

How do we become more efficient?

How do we lower costs?

These are important questions.

But there is another question that receives far less attention.

Who is going to buy all this production?

Businesses need customers.

Customers need income.

Income comes primarily from jobs.

What happens when machines perform an increasing share of the work?

That question leads directly to the concept that changed my understanding of economics.

Looking Ahead

In the next chapter, I will introduce the Production Parabola.

It is a simple framework that helps explain why so many industrialized nations are experiencing rising debt, declining fertility, wage pressure, and economic frustration despite unprecedented technological progress.

The situation is serious.

But it is not hopeless.

In fact, the solution may be simpler than most people imagine.

Chapter 2

What is the Production Parabola?

My Dad told me that things seldom stay the same. They are either getting better and better or worse and worse. From 1800 to 2000, the American middle-class economy was getting better and better. We are now on the declining side of the parabola. Since 2000, it has gotten worse and worse. This concept can be described as a parabola. There are two choices: getting worse and worse with status quo Seller's Market economic policy, or adopt the Automation Annuity from the Buyer's Market side of the Production Parabola and get better and better. This book explains the Buyer's Market economics and the Automation Annuity solution that will be the "tide that lifts all boats."

1. *To produce, we need production capacity and one other thing. What is the other item?*
   Answer: We need someone to buy the product. If we don't have enough customers to purchase our entire product, our company will accumulate unsold inventory and may go out of business.

2. *Where do customers currently get their money?*
   Answer: From jobs. Not everyone has a job, but most money comes from jobs either directly or indirectly. When two people get married, bills are more likely to be paid if at least one of them has a job. Even if someone inherited money, that just means that someone back in the past had a good-paying job and made enough to leave some for future generations. Lottery winners get their winnings from a pool funded by people with jobs.

3. *What happens to production when about half of the labor force loses their jobs to machines?*
   Answer: Production drops. When too many customers lose their paychecks, product buying decreases. So, corporations are forced to lower production to avoid unsold inventory.

Production requires *demand* and *production capacity*.

If humans don't spend money on a product (lack of *consumer demand)*, businesses will quit making it. We get almost all our money by working for it. The amount of buying power (*consumer demand*) is the fraction of the labor force employed. We will use "H" to represent this fraction.

If production capacity is inadequate, insufficient quantity will result. Production capacity is work that humans and machines can do. Production capacity has the human component "H" (the same group of people who have jobs) and the machine component "EM" (machine efficiency "E" multiplied by the fraction of machines "M").

Production = demand x production capacity

$$P = H \times (H + EM)$$

Demand and production capacity <u>do not</u> have a "which came first, the chicken or egg" relationship. Instead, production capacity follows demand, just as "form follows function." One example of form following

function is the form of our buildings, with roofs (production capacity) to satisfy the function (demand) of keeping the rain off our heads.

Production capacity is created by entrepreneurs to optimize their personal profits based on estimates of future demand.

Consumer Perspective: The consumer perspective of Production equals Demand multiplied by Production Capacity can be illustrated by considering your favorite hamburger drive-up restaurant. Let's use $7.00 for the price of a burger. You drive up to the restaurant (production capacity), wait for a loudspeaker employee to ask, "May I help you?", order one burger, drive to the window, pay $7 (demand), receive one burger, and drive off with your hamburger (production). In this case, the production (one hamburger) is equal to the demand of $7 times the production capacity of one burger/$7. This is shown algebraically as:

$$P = D \times PC$$

1 hamburger (Production) = $7 (demand) x burger/$7 (production capacity)

Instead of dollars, we could use the time spent by a wage earner to earn the seven dollars. For example, if you make $14 per hour, you would need to work one-half hour to pay for the burger. Instead of using work hours as a unit to describe the cost of one burger, we could use your work year. The cost of that burger would be a tiny fraction of your work year. If we wanted to find out the cost of all the goods and services you buy during a year, we could add up all the dollar costs of each item, or we could just refer to that cost as one year of your labor (minus savings, which get spent in the following years anyway).

To assess the annual United States national demand available to buy goods and services, we sum up all the full-time work years worked in one year. The number of full-time work years by the United States employees is equal to the number of full-time employees in the labor force times the percent of those employees who have a job. We can therefore express our annual national demand in labor force units as a percent of the labor force with jobs. We shall use "H" to represent the fraction of humans in our labor force with full-time jobs. Our national demand in annual labor-force units is "H," the fraction of full-time workers with jobs. (Note: Part-time employment is converted to full-time equivalent jobs. Ten employees working half-time are converted to five full-time employees when using "H.")

Entrepreneur Perspective: The entrepreneur perspective is that work is either done by humans or machines. In order to maximize profits, the entrepreneur configures his or her new business (production capacity) to produce goods and services as cheaply as possible. The entrepreneur is in a price war with other competitors producing similar products. If other competitors can produce significantly cheaper, customers will buy from the opponents, and the entrepreneur will go broke.

The efficiency of machines can be compared to humans by a factor we shall term "E," which is the ratio of machine output to one human worker. For example, in 1800, at the start of the Industrial Revolution, approximately 70% of Americans were engaged in agriculture. With the invention of the farm tractor and other agricultural machinery, about 2% of the United States population is needed to produce our food in the 21st century. The machine ratio "E" is 70%/2% = 35 for the agricultural sector of our economy. During the past two centuries, many farm/ranch workers have left the agricultural sector to enter the manufacturing and service sectors.

I have used an "E" value of 20. In the appendix for "Progress Dollars from the Production Parabola", I show a sensitivity analysis that demonstrates that E values of 10, 20, 50, and 100 give similar results and suggest the same course of action needed for our economic well-being.

Since machines are much more productive than human workers, the entrepreneur is forced to replace human workers with machines whenever possible, just to keep up with competing businesses. As machines get better and cheaper, the pressure to automate human worker jobs becomes more intense. Employing humans requires paying overtime, annual leave, sick leave, maternity leave, holiday pay, employer contributions to social security, minimum wage increases, general wage increases due to inflation, breaks, 401(k) matching contributions, and retirement plan matching contributions. Other entrepreneur expenses include employee parking and workflow disruptions when employees can't attend work due to inclement weather, illness, personal business, or a death in the family. Employee complaints can also be emotionally taxing. Employee theft is a major problem in many businesses. Robots and other machines do not have these costly and distracting problems.

We will use the term "M" to represent the fraction of human work taken over by machines (expressed in the same units as H). The equation for production capacity can now be expressed as the sum of work done by people (H) plus the work done by machines (EM). Production capacity = H + EM

The equation:

Production = Demand × Production Capacity; now becomes, $P = H \times (H + EM)$.

A table for a machine efficiency of E = 20 (this is for machines that produce a rate of 20 human workers) follows.

The most important concept to notice in this table is that total national production rises as employment goes from 100% to slightly above 50%, then starts dropping when employment goes below that level. Other useful concepts are that the rising section is labeled "seller's market" (too many dollars chasing too few goods), and the falling sector is labeled "buyer's market" (too few dollars chasing too many goods). The ***buyer's market dilemma*** was explained to me by a student I was privileged to tutor as "Who do these corporations think is going to buy their stuff after they lay us all off?"

To help understand the equation in table format, here are some examples. We start off with all humans (100%) and no machines (0%). This would be at the start of the Industrial Revolution in 1800. The term "H" for humans in decimal format is "1.0," and the term "M" for machines is "0.0". Production "P" equals demand H (the fraction of humans with a job back then) times the production capacity of 1.0 (all work being done by humans) plus 0.0 for having no heavy equipment. Production P = 1 x 1 = 1 National Labor Force Years of Production.

On the second line of the table, the machines have advanced to handle 10% of the work, while humans handle 90%. The production becomes P = H x (H + EM) = 0.9 x (0.9 + 20 x 0.1) = 0.9 x (0.9 + 2.0) = 0.9 x 2.9 = 2.61 National Labor Force Years of Production. Having machines do a small fraction of our work increased our national output to 261%!

The top of the Production Parabola is computed with 50.63% of humans working and the rest of the work done by machines. This results in 5.2555 National Labor Force Years of Production. The top of the Production Parabola is our goal. That is where each country creates the most wealth for its citizens.

However, what follows next is what they did not teach us in our old Seller's Market economic books. We were always led to believe that more production capacity (machine work) would lead to more wealth for the general population. That assumption no longer holds.

Consider the condition in which only 40% of the people are working. The total productivity *drops* to 4.96 (down from its peak)!

There is a second factor that lowers national demand besides having fewer people with jobs. That factor is **wage suppression**. When workers are laid off in one area, they move to another in search of employment. That creates an oversupply in the new area. Too many new workers in that second area gives employers the opportunity to hire those workers at lower wages, and that lowers total demand. In aggregate, this process suppresses wages. The deeper we descend into the Buyer's Market, the greater this factor becomes.

P = H x (H+EM)

For a machine efficiency of 20 x human labor, we get the following table:

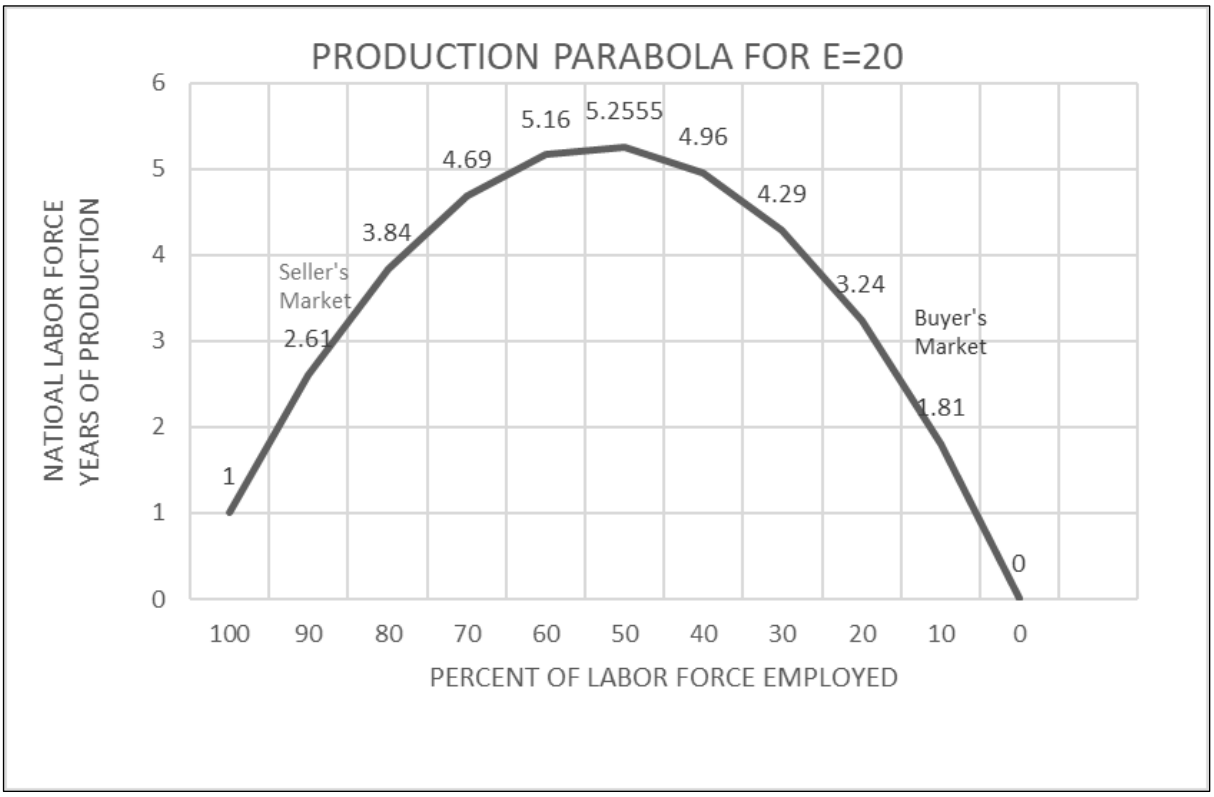
Humans Working (percent)	***Machines (percent)***	***Demand "H"***	***Production Capacity "H+EM"***	***Production P = H(H+EM) E = 20***	
100	*0*	**1.0**	*1.0*	*1.0*	Seller's Market
90	*10*	**0.9**	*2.9*	*2.61*	Seller's Market
80	20	**0.8**	*4.8*	3.84	Seller's Market
70	30	**0.7**	*6.7*	4.69	Seller's Market
60	40	0.6	8.6	5.16	Seller's Market
50.63	49.37	0.5063	10.3803	5.2555	Maximum Production
50	50	0.5	10.5	5.25	Buyer's Market
40	60	*0.4*	**12.4**	4.96	Buyer's Market
30	70	*0.3*	**14.3**	4.29	Buyer's Market
20	80	*0.2*	**16.2**	3.24	Buyer's Market
10	90	*0.1*	**18.1**	1.81	Buyer's Market
0	100	*0*	**20**	0	Buyer's Market

Bold numbers indicate high demand and high production capacity.

Italicized numbers indicate low demand and low production capacity.

In our high employment (high demand periods), technology improves the production capacity, and the multiple of high demand and advancing technology enhances our standard of living (higher production). After reaching peak production, technology keeps improving our production capacity, but the multiple of stronger technology multiplied by weaker demand (lower employment) gives us lower production and a lower standard of living. Oops!

Here is a graph of the Production Parabola and machine efficiency of 20 times human labor, P = H x (H + 20xM)



The Seller's market side of the production parabola has high demand and low production capacity.

The Buyer's market side shows technology increasing production capacity but lowering demand so much that consumers can't purchase all we could make. Production has to be cut back to avoid unsold merchandise. Production cuts usually mean laying off workers, which further lowers consumer demand.

Advantage of Living in a Buyer's Market using Progress Dollars to make up wages lost to automation

Entering the buyer's market is good because we can now **distribute an Automation Annuity to every adult US citizen from a non-taxpayer pot of money (Progress Dollars) to increase demand enough to offset wages lost to automation**. As our technology grows, the Automation Annuity grows over time.

Summary

Technological progress increased human production since the dawn of human history. Then machines began replacing so many workers that we could no longer buy all we could make. Businesses downsized or closed. This was to be expected in our Production Parabola system.

Fortunately, we can avoid descending into the deflationary Buyer's Market by replacing wages lost to automation. The Automation Annuity is not a political subsidy; it is a system-required stabilizer to keep us at the top of the Production Parabola.

All industrial nations need to employ the Automation Annuity.

Author Biography

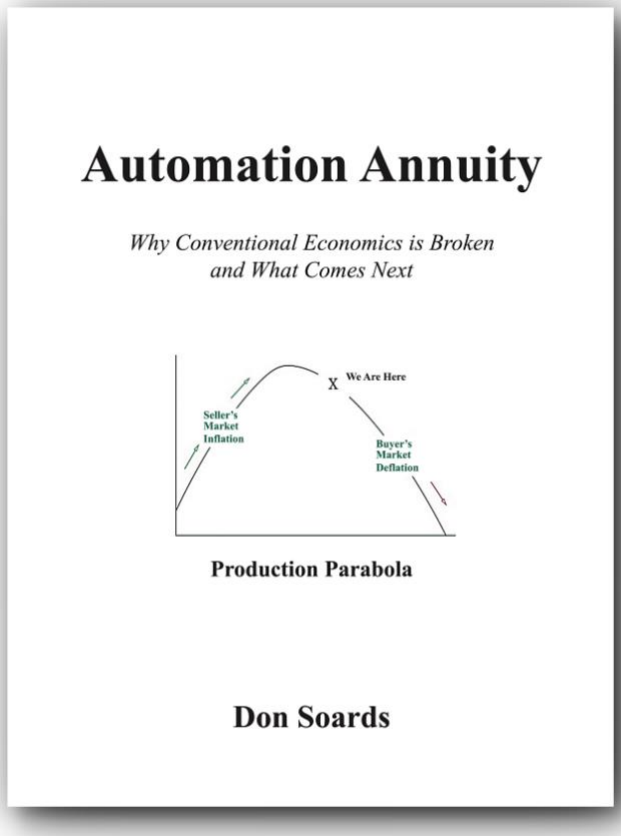
Don Soards is a retired civil engineer whose work focuses on the economic consequences of automation and technological progress.

He spent more than thirty years with the U.S. Army Corps of Engineers, including service as Chief of Emergency Management and Inspection of Completed Works Programs for the Albuquerque District. After retirement, he spent six years tutoring college mathematics, physics, and economics.

Approaching economics as an engineer and problem solver, Don became interested in a central question: Why are many industrialized nations experiencing rising debt, declining affordability, wage suppression, falling birth rates, and increasing economic insecurity despite unprecedented advances in technology?

His research led to the development of the Production Parabola, a framework that examines the relationship between automation, employment, consumer demand, and national production. Through his writing, he explores practical ways in which societies can benefit from automation while maintaining prosperity, economic stability, and opportunities for future generations.

Don lives in New Mexico, where he continues to research economics and public policy.



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