

The Science of Economics

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1. The nature of the business cycle

A cycle is a pattern that repeats either exactly or approximately over time. Market economies have experienced what are called "business" or "trade" cycles. Business conditions, including total output, employment, and profits, experience booms, times of growth and prosperity, and busts, times of decline and depressed conditions. When charted over time, the variables resemble a sine wave, the top half of a circle followed by the bottom half.

There are various names for the phases of the cycle. The bottom is called a depression or trough. It is followed by an upswing, called an expansion. The first part of the upswing is a recovery, and the second part, if it is steeply rising, is called a boom. The top is called a peak. If the following decline is very steep, it is a crash (the economy crashes). The downswing is called a recession (to recede means to go back or down).

Since this cycle resembles a sine wave, going up and then down, with a curved top and bottom, it has some interesting mathematical properties. Wait a minute! Don't roll your eyes! I will try to make the math as simple as possible. Math, after all, is just logic written in a different language. As a logical person, you can follow the math if it is presented gradually and clearly.

If you draw a straight line on paper, it has a slope. Suppose it is a line drawn diagonally to the right, starting at the lower left and going to the upper right. The slope tells us how steeply the line is rising. It is calculated by making two points on the line and then drawing a horizontal line from the bottom point towards the right and from the top line down until it meets the horizontal line. (If this is new to you, try it with paper and pencil.) Now measure the length of the vertical line and the horizontal line (from their meeting point to the diagonal line). Then divide the vertical line by the horizontal line. This number is the slope. If it equals one, the line has a 45 degree angle. If the slope is bigger than one, the diagonal line is steep; if less than one, the line has a low slope.

If a line is not straight, then the slope changes along the line. The slope can be seen by drawing a straight line at a point which is tangent to it, which means that if you come to the line from the perpendicular to it, you are also coming perpendicularly to the line, perpendicular meaning at right angles.

Now here is the punch line of this little mathematical excursion. Lets start at a depression. The slope of the cycle is zero - in the small neighborhood of the bottom, it is nearly a horizontal line. That's because the economy is no longer declining but also not yet arisen. When the economy recovers, the cycle is headed diagonally upward, and the slope becomes positive. As the cycle line continues upward, the slope becomes steeper and steeper as the recover gets faster and faster.

But somewhere along the expansion, the line stops getting steeper and becomes less steep. It still slopes up, but the tangent line, the slope, becomes shallower and shallower until at the peak, it is horizontal again, growth having slowed to a halt. That point where the slope changed from increasing in steepness to decreasing in steepness is called the "inflection point."

Which is a very important point! Because even though during the recovery, all variables are headed up - output, employment, profits, are still increasing vigorously - the change in the slope means that from now on, the rate of increase will slow down. The steepness will decrease. The expansion is already doomed just when things look best! As Henry George (1879, p. 542) stated, in a different context, "When the sun passes the meridian, it can be told only by the way the short shadows fall; for the heat of the day yet increases."

Do you see the importance of the slope? The puzzling thing about business cycles is why an economy that is doing so great comes to a screeching halt and then declines. But if the slope has started to decrease already during the boom, we can see that the reason the economy peaked out is that the change in slope turned negative already during the boom at the point of inflection.

Now we need to answer the question: why did the slope change? Why can't the economy just keep going up and up and up, or at least stay at a peak, forever?

2. Theories of business cycles.

Economists, puzzled by depressions, have come up with many different "theories" or explanations for them. They can be divided into two types: real and financial.

- A real theory means that real factors such as changes in supply or demand are the causes.
- Financial factors mean that the cause is a change in the amount of money or prices.

It is generally agreed that most of these "theories" or hypotheses have not explained cycles very well.

We will not delve into all these hypotheses, but concentrate on two which fit the facts better than the others. One is financial and the other emphasizes real factors. When we put the two together, we get a full explanation of business cycles and how to stop them.

The **real-factor theory** was first discovered by Henry George, who recognized the key role played by real estate in bringing a boom to a halt.¹

1. The following on George's theory of business cycles is derived from Foldvary (1991).

George (1879) noted that depressions were preceded by booms accompanied by land speculation, "followed by symptoms of checked production" (p. 268). The major barrier to production becomes the high cost of land and rent, in effect "a lockout of labor and capital by landowners" (p. 270). Speculative land costs demand a part of future output in the present. George's theory attempted to resolve the paradox of idle labor and capital in the depths of a

depression. The reason the market was not clearing was that labor and capital were cut off from the necessary natural opportunities offered by land.

Writing after the depression of the 1870s, George pointed to the example of the railroads, the construction of which had been accompanied by widespread speculation that "ran up land values in every direction... Lots on the outskirts of San Francisco rose hundreds and thousands per cent, and farming land was taken up and held for high prices" (p. 276). As the transcontinental railroad approached completion, instead of bringing prosperity, a depression began. The rapid construction of railroads itself was a result of land grants by the federal government to spur on a national rail network. The train of events that contributed to the depression of the 1870s was therefore not a pure market process but induced to a great extent by the shock of infrastructure subsidies by government, capitalized into land values which then increased via speculation to heights which choked off enterprise.

To examine George's theory, let's start at the depression or trough. Due to low demand and high vacancies due to bankruptcies and cutbacks, commercial rent and land prices are at rock bottom. The downward spiral has ended, as most fragile and badly-invested ventures have already gone bankrupt. Now the stronger enterprises start expanding again, helped by low prices of labor, real estate, and interest rates. While demand rises (demand curves shift to the right), prices during the recovery are usually steady, since there is a large supply of idle resources.

As the expansion progresses, an upward spiral is set in motion, since greater employment implies greater spending, stimulating more enterprise. Now vacancies in real estate become low, and prices and rents start rising. A boom in the construction of buildings begins, stimulating the demand for land. The recovery becomes a boom. The rate of increase, or slope, of the upswing is at its maximum. Speculators now enter the market, since they anticipate higher future prices for real estate. They drive the price of land even higher. Much of the real estate construction is also speculative, as builders expect their land value to rise and contribute to profits.

But now enterprises find that the price of real estate is higher than that warranted for present-day use, since it reflects future expectations. "The invisible barrier but for which buildings would rise and the city would spread, is the high price of land, a price that increases the more certainly it is seen that a growing population needs the land" (George, 1883, p. 126). Adam Smith's invisible hand is blocked by George's invisible barrier. There are of course other increasing costs, such as interest rates, raw materials, and labor, but speculation is an especially powerful price-increasing force for land.

Enterprises slow down their expanding. We have reached the inflection point. Even though enterprises are still expanding rapidly, the rate of expansion has slowed down due to the too-high price of real estate. Contributing to the slow-down are higher prices for labor and other inputs as well, but these have not increased nearly as much, because only with land does an increase in demand fall fully on an increase in price - because the supply of land in a given area cannot be expanded, unlike other inputs!

The slowdown in real-estate construction spreads to other industries, as, for example, less furniture is ordered and less steel and lumber is demanded. Industries producing such capital

goods, which expanded rapidly, now contract. Workers laid off or working fewer hours spend less. The rate of increase in the economy slows even more, until the slope becomes horizontal - growth has halted. The economy is at its peak, but is now headed for a fall! Because the growth rate has been decreasing, and now turns negative.

When investors realize growth has stopped, many will want to unload stocks, and a crash in the stock market often heralds the coming depression. But that's only the beginning, and only a symptom of the problem, not the originating cause, although the loss of stock value contributes to the decline, since those who have lost their financial wealth will no longer spend money on large items.

The recession feeds on itself, as lower output leads to lower income and to lower spending, which reduces output even more. Real estate prices have remained at a plateau even though vacancies have increased, because the owners don't wish to sell below peak prices. *This phenomenon repeats itself each cycle!* But eventually, increasing bankruptcies result in lower rentals for landlords, and some of those with negative cash flows must sell. Prices now start tumbling down. Many landlords go broke, not being able to pay their mortgages. In many cases, the debts of real-estate owners are greater than the value of their properties. Loans are not being repaid, and banks are losing great amounts of money. Many banks fail.

After the crash, bankruptcies and cutbacks slow down, and the rate of decrease becomes less steep. This is the second inflection point, where the economy is still shrinking, but the change in the rate of growth has become positive - the decreases become less steep. The economy is receding, headed towards a trough. In the depression, many resources, especially labor and real estate, are idle, and prices are low. But the decrease has ended - growth is flat again, and the change in the rate is positive as old and new businesses take advantage of low prices to expand again.

But this is only half the story. We need to go further into the second half, involving the financial sector. As stated by Friedrich Hayek (1933, p. 90), "Although there is no doubt that all nonmonetary Trade Cycle theories tacitly assume that the production of capital goods has been made possible by the creation of new credit, ... no one has yet proved that this circumstance should form the exclusive basis of the explanation." The real estate that was bought by enterprises and speculators during the boom was gotten using borrowed money. We need to see what was happening with the banking system.

One scenario described by the Austrian school of economics, especially by Friedrich Hayek (1933), starts with the injection of money into the economy by the banking system, especially nowadays by a central bank. During a depression, it is common for central banks such as the U.S. Federal Reserve System to increase the money supply to stimulate growth and bring about a quicker recovery. The money supply might also be increased to accommodate a real-estate boom. Whatever the cause, the extra money has the same temporary effect as extra savings. With more loanable funds, interest rates drop, or they do not rise as much as they normally would during a recovery.

Enterprises producing higher-order capital goods, used by other industries, are especially sensitive to interest rates, since their investments need to be very long term. These firms borrow money to expand. But this is a phony expansion, since the low interest rate is artificial and temporary. As prices rise due to the expanded money, either the money supply must stop its artificial increase, or else the inflation will accelerate as people anticipate ever higher prices and react by increasing prices and wages even more. The decrease in money expansion creates "tight" credit, and interest rates increase, bringing to a halt the expansion of interest-sensitive firms, including especially real-estate construction.

Without the money injection, interest rates would rise anyway due to increased demand for loans for real-estate speculation. So the monetary factor and rise in interest rates work together with the rise in land prices to increase the costs of new investments and lower their returns. Both these cause bring about the inflection point during the boom, when the rate of increase slows. Thus it is that during the height of the boom, the economy is already doomed. The cause of the bust is the previous boom.

3. Eliminating the business cycle

Business cycles are economically wasteful and cause misery to those thrown out of work. Millions of lives are disrupted. Moreover, during a phony boom, resources are diverted to projects that turn out to be wasted - such as shopping centers that stand half vacant for years. It is recognized by governments at least that recessions are unpopular, but they attempt to treat only the symptoms and effects of the cycle, such as "stimulating" the economy, a stimulus that can be ill timed and only offer temporary artificial relieve, often hurting the economy later.

If indeed the major causes of the cycles are the real-estate speculative booms and the artificial increases in the money supply, the remedy is to stop both events. The artificial increase in money supply can be halted permanently by implementing free banking. Without a central bank and a national currency imposed on the economy, inflation of the money supply beyond the growth of the economy is no longer feasible, since there is no longer a monopoly of the money supply, as discussed in Chapter 11.

This leaves us with the real-estate boom. But land gets its value from future rents, speculators anticipating increased rent. When most or all this rent is collected by the government or by communities, it knocks the legs out of land speculation, because all the future gain is collected away. Real estate prices and rents then only reflect current use, not expected future uses. The absence of land speculation also reduces the demand for loans, so interest rates are not so high. With both interest rates and real estate prices determined by current enterprise, the expansion does not develop into an unsustainable boom.

The remedy, then, for business cycles consists of CCR - the community collection of rent - and free banking. Free banking will dampen the cycles somewhat, but both together will eliminate the major cycles. Shorter minor cycles can still arise, but they will not produce the massive unemployment and bankruptcies that have plagued the U.S. and Europe since 1800. In a pure

market economy, growth can still be uneven as technology develops new products in spurts, but the world-wide massive cycles will become history. Eliminate the cause, and the effect will vanish.