ELLIOTT PRECHTER
EWAVESFlash
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MONEY IS NOT WEALTH

Note: *This issue begins with a departure from normal EWAVES topics. Pages 7+ are EWAVES specific. Subsequent issues will likely feature the first screenshots of the next EWAVES version. Progress updates are available weekly at ewaves.com/audio. QA now delivers additional content via its YouTube and Facebook pages.*

Money is not wealth. For those who believe it is, the obvious question to ask is: If you're stuck on Gilligan's island, would you rather have a million dollars, or a million cans of beans? Obviously, you'd have to go with beans. Beans are real wealth—money is not.

What exactly is money? Money is an abstraction, a human invention that exists only in the imaginations of participants in a particular economic system. With the exception of certain kinds of commodity money, it is not valuable in and of itself. Whether it's sea shells, US dollars, Bitcoins, or cigarettes, money is used as an accounting metric to represent an individual's *relative* capacity (relative to the accounting metrics of other market participants) to command real wealth within an economic system. As Rick Falkvinge, the leader of the Swedish Pirate Party put it, "money is a number in a database."[1]

Trekkies introducing Gilligan to Bitcoin

The value of money is always relative to the goods and services available. If we consider a hypothetical mini-economy composed of exactly ten millionaires, we could replace each individual's bank account with a mere 10 cents. After the replacement, the goods and services available and each individual's wealth would be unchanged.

Money alone is a zero-sum game. The more one person has, the less someone else has, period. A monetary loss of your neighbor is someone else's relative monetary gain. Economics, fortunately, is not zero sum, because it concerns itself not just with money, but with the real wealth of society: orange juice, eggs, cars, whoopie cushions, and so forth. If we separate the concept of money from real wealth, basic economic principles become far easier to understand. Let's try it.

Mininomics

I have found during much of my engineering work that when something is difficult to understand, simplifying it first is a great way to gain insight. You can then add in complexity later. During EWAVES development, I'll often begin the creation of complex algorithms by first making simpler versions with specific assumptions. The learning I gain from solving the simpler problem makes the solution for a more complex, broader problem easier to imagine and build.

In this vein, let's build the simplest possible economics simulator. In order to do this, we only need three nouns: people, money, and what we're going to call real wealth units (W). Ws represent all of the real wealth in our simulation. They are a proxy for cows, milk, factories, and so forth. To keep it as simple as possible: Just like the currency units ($), the wealth units don't degrade over time, are perfectly fungible and perfectly divisible. Ws allow us to think symbolically about economic issues without the messiness of real world question like "what if the cheese goes bad?"

Real Wealth Unit

The Setup

Let's begin our simulation with three participants: Tom, Dick and Jane. Each participant starts with $1 and 1 real wealth unit (W). The supply of money is thus $3 and the supply of wealth is 3W. Since all money represents all wealth, Ws are objectively priced at $1 each.

Let's define the *net worth* of each individual as the sum of their dollars plus the number of dollars they could potentially trade their Ws for; let's define the *net wealth* of each individual as the sum of their Ws plus the number of Ws they could potentially trade their dollars for. Therefore, the initial net worth of each participant is $2 and the net wealth of each is 2W.

Note that their net wealths are 2W in spite of the fact that it's impossible for each person to physically possess 2W. That's okay, because a net wealth of 2W simply means that individual has the *potential* to end up with 2W after trading with a neighbor. Net wealth is a useful measurement to represent both the direct and indirect access to Ws that the various participants have. For the economy as a whole, however, all participants in the aggregate can access only the total number of Ws. In tabular form, our economy begins life looking like the following:

	$	W	N($)	N(W)
Tom	1	1	2	2
Dick	1	1	2	2
Jane	1	1	2	2
Economy	3	3	1W=1$	

$=Dollars, W=real wealth units, N($)=net worth, N(W)=net wealth

Trade

Now imagine our participants start trading with one another. For the purposes of simplicity, we will stipulate that the only possible trades are a W for $1, or a $1 for a W. Therefore, no matter how much trading they do, each person always ends up in one of the three states: (1) **1W & $1** (2) **$2** or (3) **2W**. Let's assume that Jane trades her W for one of Dick's dollars, leaving the economy in the following state:

	$	W	N($)	N(W)
Tom	1	1	2	2
Dick	1	1	2	2
Jane	1	1	2	2
Economy	3	3	1W=1$	

Before Trade

	$	W	N($)	N(W)
Tom	1	1	2	2
Dick	0	2	2	2
Jane	2	0	2	2
Economy	3	3	1W=1$	

→ *After Trade between Dick and Jane*

In our example, nobody's net worth N($) or net wealth N(W) varies from trade, but in the real world, of course, trade has many benefits. For example, Jane may prefer factory equipment while Tom prefers Batman figurines. For the purposes of our ultra-simplified economy, however, let's keep Ws fungible by continuing to assume they're identical. In this case, trade is a wealth-neutral activity that serves only to reconfigure an economy. Whether trading is used to *facilitate* productive or consumptive activity is what really matters, but we'll treat those as separate activities later.

Theft

Eventually, Dick gets frustrated and decides to punch Tom in the gut and steal a dollar from him. Now Dick has a net wealth of 3W, leaving Tom with a net wealth of 1W. Dick is now rich, but the manner in which he became rich (theft) is a transfer of net wealth. It leaves Tom poorer and leaves the economy as a whole with the exact same 3W as before.

	$	W	N($)	N(W)
Tom	1	1	2	2
Dick	0	2	2	2
Jane	2	0	2	2
Economy	3	3	1W=1$	

Before Theft

	$	W	N($)	N(W)
Tom	0	1	1	1
Dick	1	2	3	3
Jane	2	0	2	1
Economy	3	3	1W=1$	

→ *After Theft of $1 from Tom by Dick*

Production

At this point, Tom is depressed because he is the poorest member of the economy. But, Tom is inventive, and decides to do something that nobody else has thought of before. He works hard to produce 3 new wealth units (i.e. he raises new cows, builds a new factory, etc.).

If you look only at Tom, the end result of production appears similar to theft: after all, just like Dick, Tom now has a higher net wealth than he did before. But the more widespread economic effects are *completely* different, as you can see:

	$	W	N($)	N(W)
Tom	0	1	1	1
Dick	1	2	3	3
Jane	2	0	2	2
Economy	3	3	1W=1$	

Before Production

	$	W	N($)	N(W)
Tom	0	4	2	4
Dick	1	2	2	4
Jane	2	0	2	4
Economy	3	6	2W=1$	

→ *After Production of 3W by Tom*

What has happened? If you focus on the W-related numbers—especially each individual's net wealth—the *real* effects of production are easy to see. Tom's production increased his own net wealth by exactly the three wealth units he created, and as a side effect, Dick and Jane's net wealths also increased, even though they didn't do anything!

This side effect occurred because the new Ws that Tom produced raised the total number of Ws in our economy from 3 to 6, meaning that they're now objectively priced at 50 cents each instead of $1. Since now $1 = 2W, Tom has effectively doubled the value of Dick and Jane's dollar holdings. Tom's act of production shows us that economics is definitely *not* a zero sum game.

If you focus on the money instead of the wealth, however, the effects of production are much harder to understand. Post production, Tom naturally has higher net worth, but somehow Dick has a smaller net worth than before. But Dick didn't *really* get poorer (he did quite the opposite)—he only appears poorer if you equate money with wealth. Remember, money is zero sum: Dick's net worth N($) only indicates his *relative* wealth as compared to other net worths. What really matters is that Dick's net wealth N(W) increased. After all, Ws represent everything from clothing to food, but you can't eat a dollar (or at least not without a lot of condiments).

This is not to say that money doesn't matter, just that its sole purpose is to manage the division of wealth, not to be the wealth itself. In this case, the role that the monetary units play after production is when it comes to the distribution of the newly produced wealth units: they go disproportionately towards those who hold more dollars. Jane benefitted more from the production than Dick precisely because she kept more of her assets in dollars rather than wealth units. In this sense, money acts as a share in the economy, since it represents not a fixed amount of wealth, but rather a relative share of the total (and potentially varying) wealth in the economy.

Consumption

Eventually Dick decides to consume two wealth units. The effects of consumption are the exact opposite of production: Dick reduces his own wealth by two Ws, in turn reducing the total supply of Ws to from 6 to 4. This causes W prices to rise from 50 cents to 75 cents.

Although Dick did not steal from anyone (this time), his consumption indirectly causes Jane to become poorer as her dollars, or share in the economy, declined in value. Meanwhile, Tom's Ws are still the same old Ws as they were before, so he is not affected.

	$	W	N($)	N(W)
Tom	0	4	2	4
Dick	1	2	2	4
Jane	2	0	2	4
Economy	3	6	2W=1$	

Before Consumption

	$	W	N($)	N(W)
Tom	0	4	3	4
Dick	1	0	1	1.33
Jane	2	0	2	2.66
Economy	3	4	4W=3$	

→ *After Consumption of 2W by Dick*

Inflation

Dick is unhappy. He is now the poorest of the bunch, and his hand still hurts from punching Tom. He could produce more W like Tom did, but that requires too much effort. So instead, he decides to use his artistic talent to fabricate 5 new dollars for himself. The creation of new money is called *inflation*.

	$	W	N($)	N(W)
Tom	0	4	3	4
Dick	1	0	1	1.33
Jane	2	0	2	2.66
Economy	3	4	4W=3$	

Before Inflation

	$	W	N($)	N(W)
Tom	0	4	8	4
Dick	6	0	6	3
Jane	2	0	2	1
Economy	8	4	1W=2$	

→ *After $5 Inflation by Dick*

The new dollars increase the price of W from $0.75 to $2. Dick's net worth more than doubles, and Tom's net worth also increases. But again, focusing on money masks what's really going on. By looking at net wealth instead, it's clear that all that really occurred was a transfer of 1.66 W from Jane to Dick, leaving Tom's Ws unchanged. The result of inflation is no different than if Dick had instead stolen W directly from Jane. This should not be surprising, since money is a zero sum game: Dick's new money represents new shares in the economy without a corresponding increase in wealth, therefore decreasing the value of other shares.

An alternative way to understand what has occurred would be to normalize the monetary units after inflation so that they match the pre-inflation levels (i.e. multiply the post-inflation prices by $3 / $8 = 0.375). This makes it easier to see that if Dick hadn't fabricated any money (leaving the money supply alone at $3) and instead stolen $1.25 directly from Jane, the end result would be exactly the same: He would have $2.25 in total and leave Jane with 75 cents, which both represent the same ratios of the total money supply as in the inflationary scenario. The below table displays the inflationary scenario alongside the theft scenario, so it becomes easier to see how they're identical:

	$	W	N($)	N(W)
Tom	0	4	8	4
Dick	6	0	6	3
Jane	2	0	2	1
Economy	8	4	1W=2$	

→ *After $5 Inflation by Dick*

	$	W	N($)	N(W)
Tom	0	4	3	4
Dick	2.25	0	2.25	3
Jane	0.75	0	0.75	1
Economy	3	4	4W=3$	

Alternative scenario: $1.25 theft from Jane by Dick

Deflation

Jane is about to get even more unlucky. One day a fire burns up her remaining $2. The destruction of money is called *deflation*. Just as in production, W prices fall, but unlike production, no new wealth is actually created. Deflation, just like inflation, is merely an indirect transfer of wealth, in this case from Jane to Dick.

When money is destroyed, the number of monetary units (representing shares of the economy) decreases, but the wealth (W) remains unchanged. Therefore, the value of remaining money increases, and W prices fall. Falling prices causes Tom's net worth to fall, but of course his net wealth remains the same since all his wealth is held directly as Ws, which are always invariant to changes in the monetary system.

	$	W	N($)	N(W)
Tom	0	4	8	4
Dick	6	0	6	3
Jane	2	0	2	1
Economy	8	4	1W=2$	

Before Deflation

	$	W	N($)	N(W)
Tom	0	4	6	4
Dick	6	0	6	4
Jane				
Economy	6	4	1W=1.5$	

→ *After $2 Deflation by Jane*

Summary

A sarcastic interpretation of our little simulation would be to say that Tom is the capitalist while Dick is the banking system. Jane, meanwhile, is probably going to vote Dick for President, who promises to repeatedly steal from Tom if elected. She clearly does not understand the impact of Dick's inflationary actions, although it has been understood by some people for centuries:

"If the American people ever allow private banks to control the issue of their currency, first by inflation, then by deflation, the banks and corporations that will grow up around them will deprive the people of all property until their children wake up homeless on the continent their Fathers conquered."

—Thomas Jefferson

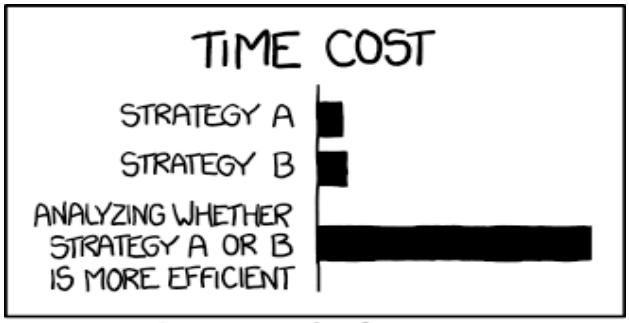
Our mininomics story reveals the following economic truths: Monetary shenanigans, whether inflation or deflation, only serve to transfer wealth around, but cannot create it; consumption destroys wealth; trade is essential but trade alone has limited benefits; production is the only mechanism by which wealth is created.

We can make our simulation much more complex by including credit instruments, but the essential take-away is the same. An even easier way to verify we're on the right track, however, is do the exact opposite: simplify it even more. By eliminating money and reducing the number of participants in our economy to just one, the virtue of production becomes even more obvious: A farmer stuck alone on a desert island that raises more cattle than he eats will become wealthier; one that eats more cattle than he raises will become poorer; one that steals cattle gets nowhere (in this case, because there is no-one to steal from). This simple fact scales from the individual level all the way up to entire nations.

How to Grow an Economy

Economic growth is best defined as increased production, which can be effected by an increase in the efficiency of an economic system. In mathematical terms, efficiency is the second derivative of wealth. A rise in efficiency causes a rise in production per unit time. On a macro scale, the more efficient a society is, the greater its wealth will be.

Increasing economic efficiency isn't a straightforward task. While market forces push economies towards greater efficiency, markets are still just competitive selection mechanisms. They are invaluable in that they are brilliant macro engineers, but they cannot design the companies themselves. That still requires the ingenuity of human beings, which is why entrepreneurship, innovation and technology are so important.



XKCD

The best way to increase a company's efficiency is through imagination. If you can come up with some new ideas, they just might make you more competitive. But there is one particular idea that rules them all. The ultimate, the biggest and the most badass form of efficiency humankind has dared to imagine is *automation*.

To be continued.

TRANSCRIPT: ELLIOTT PRECHTER INTERVIEW WITH ALEXANDRA LIENHARD

For Elliott Wave TV on November 18, 2015

Alex: Hi! I'm Alexandra Lienhard with Elliott Wave TV. Today I'm talking with Elliott Prechter, lead developer on the EWAVES project. Let's start with the basics, Elliott. First of all, can you tell us what EWAVES is?

Elliott: Sure. EWAVES is our Elliott wave analysis software. Initially we designed it as a kind of Elliott wave laboratory, where for the first time ever, the Elliott Wave Principle could be precisely specified and researched. It has since evolved to become fully automated. It provides wave labelings for any financial market on any time frame and gives precise alerts when important junctures occur.

Alex: Naturally I understand why the wave principle is so important, but for new viewers can you explain why you use Elliott wave analysis instead of studying economic and corporate fundamentals?

Elliott: Elliott waves in the stock market track the changes in social mood that precede changes in the so-called fundamentals. So just studying the fundamentals themselves is like looking in the rear-view mirror: it tells you the past but it doesn't tell you where you're going.

Alex: Right, that's the whole basis of Socionomic Theory: mood precedes action, rather than the other

way around. What makes you unique though among Socionomists and Elliott wave practitioners is that you're trying to computerize it. What attracts you to using computers, rather than humans, for your analysis?

Elliott: Computers perform analysis without any subjective human traits. They don't fear going against the crowd; they don't get tired; they don't suffer moods or biases. And a computer will only change its opinion when new data suggests an objective reason to do so.

If you've read "Prechter's Perspective," then you know that discipline is the single most important component for successful trading. Well, computers have perfect discipline.

The trick, of course, is getting the computer able to do the kind of analysis that humans can do. That's the hard part.

Alex: A lot of guys on Wall Street are using computers these days for all the reasons you've mentioned. You know, there are the quantitative or "quant" guys, who use math to build market models. Is what you're doing similar?

Elliott: No, mainly because they don't use Elliott waves. They analyze lots of data but lack an underlying theory. So they assume causality, or at least consistency, where it may not exist. That's why their approaches tend to burn out when market conditions change. A great example is LTCM, which I've written about before. We think burnout is inevitable for quants because they don't get that Elliott waves are the only unchanging aspect of the markets.

Alex: So why don't quants use Elliott waves?

Elliott: The whole quant philosophy focuses on numbers – *quantities* – such as specific timeframes or price movements of a specific size in an attempt to "quantify" the market. But the market is a robust fractal, and robust fractals don't adhere to quantities.

So EWAVES is different. It's aimed at recognizing fuzzy forms. It identifies Elliott waves based on forms rather than quantities.

Alex: So you guys aren't quants.

Elliott: Yes, exactly. I mean, just think about how much individual Elliott waves differ from one another. Like trees or snowflakes, no two are exactly alike. But each wave pattern has a particular "look" to it, and that's what we're trying to capture. What we don't care about are the usual quantitative metrics like X-day relative strength, X% moves in the market, and so-forth.

To do this right involves a lot of things that are different from from what the quant guys are doing. We're still compiling a full list, but one of the biggest differences is that our model is scale invariant. In other words, a duck is a duck, no matter if it's the size of a pea or a mountain. Or in Elliott wave terms, small waves are analyzed exactly the same as large waves, which makes perfect sense since the market is a fractal.

Humans are naturally good at identifying abstract forms but computers are generally not. But with EWAVES' approach, we're looking to change that.

Alex: That sounds very different from what other people are doing. So where exactly are you in the process of building EWAVES?

Elliott: We have a beta release out now, which is version 1.1. We're working on a lot of improvements for version 1.2 and ultimately a 2.0 release, where we'll exit beta.

Alex: In the meantime, how can people use EWAVES to help them navigate the financial markets?

Elliott: The beta version powers our Flash Services, which provide specific buy and sell recommendations on over 20 markets, including stop placement and full follow through until the recommendation is closed. So it's a unique service in that it provides end-to-end hand-holding for our subscribers.

Alex: OK, so whether people want to wait until your version 2.0 or start using the beta version now, could you let us know where can people go to learn more about EWAVES and the Flash Services?

Elliott: Sure. We publish a quarterly newsletter called *EWAVES Flash*. It's open-access, so anyone can read it at no charge. To check it out go to www.ewaves.com.

Alex: Thank you, Elliott.

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CITATIONS

[1]Bitcoin's Deflationary Economy Not A Problem In Itself. (n.d.). Retrieved March 16, 2016, from http://falkvinge.net/2011/08/21/bitcoins-deflationary-economy-not-a-problem-in-itself/