The Oil Drum
DISCUSSIONS ABOUT ENERGY AND OUR FUTURE

Financial Collapse and Energy - Something Other than a NINJA Problem

Posted by Gail the Actuary on May 27, 2009 - 10:26am
Topic: Economics/Finance
Tags: financial collapse, peak oil, pedro prieto, subprime lending [list all tags]

This is a guest post by Pedro Prieto from Madrid, Spain. He is the head of ASPO-Spain and organized the ASPO 7 conference in Barcelona last year. See also follow up post, regarding inflation adjustment to parameters.

When the economy started to fade last year, many attributed the cause to subprime lending.

Others put together very successful, hilarious stories, explaining that the ultimate reason for this financial crisis was the NINJA policies of banks (credits granted to people with No Jobs, No Income and No Assets). Many of these stories were uploaded to Youtube.

Neither subprime lending, nor NINJA policies, nor any financial media is able to explain why banks around the world, which had been for decades very cautious in granting a credit without solid collateral, suddenly started to grant loans to insolvent people; or why the strict financial regulatory and supervisory entities started to look the other way.

This is an attempt to offer a different perspective.

Barter/Countertrade

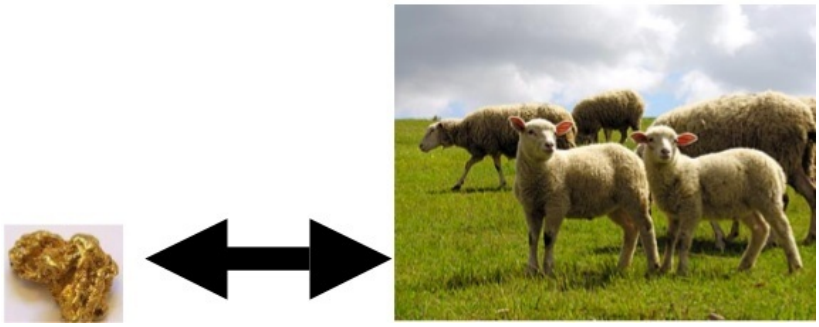
In the beginning, the world used barter or countertrade. Countertrade was based on equivalent human effort (labor), which, in fact, corresponded to easily measurable equivalent energy expenses.

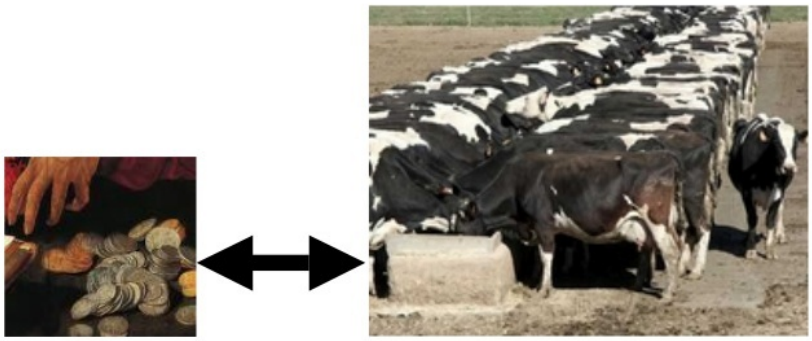
For example, if a chair maker needed six working hours to make one chair and a farmer, producing eggs to fill a basket, also needed six hours of work, then a chair could be reasonably be exchanged for a basket of of eggs. This approach was immediate, rational, and simple. But the procedure limited the exchange in goods and measurable services, especially those involving large volumes, complex transactions or distant operations.

Gold as a Mediation Device

Gold was introduced to solve the problems of the earlier systems. Its natural scarcity represented many hours of human equivalent effort in piece that was small in weight and volume.

It was ductile and malleable; it could be coined; it was difficult to alter, easily divisible and transportable. Gold very much eased the paths of commerce.





However, gold still represented, in principle, a measurable form of condensed human equivalent effort (energy) in the commercial exchanges.

Paper Money

Marco Polo took paper money from China, where it was invented, to Europe and then to the world.

It represented, with an authoritative signature, a given amount of gold deposited by a bearer, in a well known and secure deposit, that the faithful depositary was obliged to immediately return to the bearer upon presentation of the paper money.

And this gold, in its turn, continued to represent goods or measurable services, in human equivalent effort (embedded energy, in a sense). And it proved for many centuries to be more effective than gold.

Despite the early existence of paper money, the physical and monetary world still had a close relationship. This was the case in spite of specific abuses and partial system bankruptcies due to regional wars or collapses.

Nixon unilaterally broke the Bretton Woods agreement in 1971.

Bretton Woods was the last global attempt to fix gold as the standard for exchange of goods and of measurable services. The agreement was reached late in 1944, after some developed countries had abused the printing of money without the necessary physical backing or equivalent reserves.

In 1971, the US$ became the world reference for valuing all human activities.

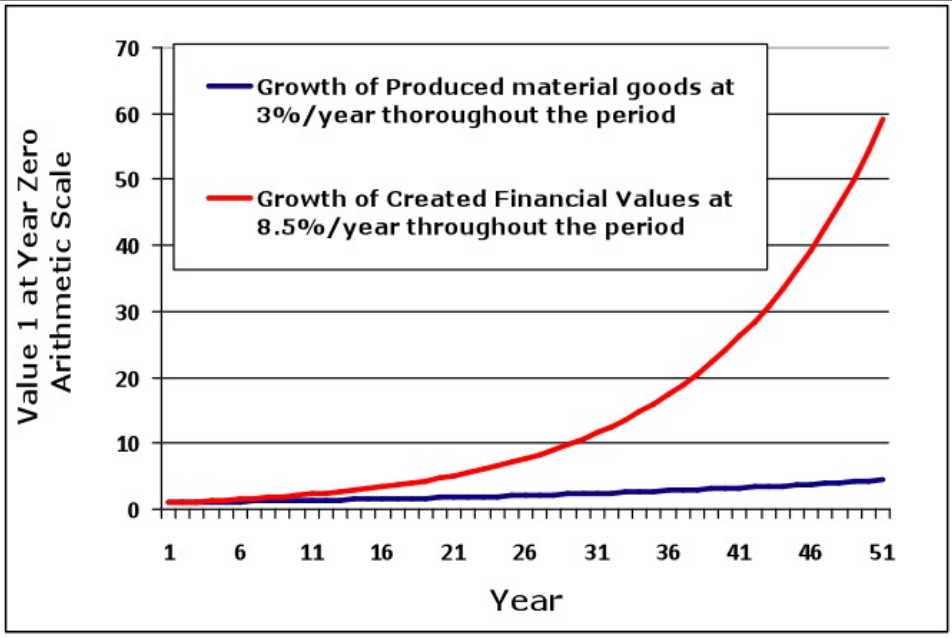
It was at this point that a real growing divorce between the physical world, represented by equivalent human effort (energy, in the final analysis), concentrated in gold in the reserves of each country. It gave way to a new form of paper money, where the authoritative signature committing an amount did not necessarily correspond to equivalent real goods or measurable services.

We should ask ourselves why this growing drift between the physical goods and measurable services has been working until now.

Professor Albert Bartlett summarized the reason very well: *"The greatest shortcoming of the **human race** is our inability to understand the exponential function."*

A Mathematical Model

Let us represent mathematically two different types of growth. If we assume, for instance, that goods and measurable, physical-related services grow at 3% per year through a given period of time (i.e. 50 years) and financial services grow at 8.5% per year, we have the following graph:



Graph 1. Mathematical models of growth

Interest Paid by Banks: a Religious Touch

The so-called "religions of the Book" originally were opposed to lending money with interest. This opposition represented clear recognition that interest based on credit is the main agent forcing the world toward continuous growth, faster than natural trends.

The official position of the Catholic Church until end of the 18th century could be summarized in the phrase enunciated by Thomas Aquinas: *Pecunia pecuniam parere non potest*.--–Money cannot give birth to money. One of the sins severely punished by the Inquisition was usury--and in those days, they considered usury what today would be considered a very low interest rate.

About 800,000 Jews were expelled from Spain in 1492. Inasmuch as they could not become owners of property, they specialized in trade and banking services. Some of them were in control of lending and were therefore tolerated-–after all, they were not Christians, and sometimes having somebody to ask for money to advance a payment for a given enterprise was initially useful. According to the Torah, Jews can lend money with interest to gentiles, but without interest to other Jews. They also understood the impact of the debtor of having to pay interest.

For Muslims, bank interest is theoretically forbidden by the Koran, although some of them-–especially those called by the Western countries "conservative Muslims" and clearly not the "radical" or "fundamentalist" Muslims--have also managed, in the new globalized world, to evade from the norm with artful financial devices.

However, even the Catholics finally managed to get away from this doctrine and even dared to make subtle changes in the 2,000 years old prayer, so that they moved from the traditional Our Father, asking Him to forgive their own debts and those of others, by praying:

> Pater noster, qui es in caelis:
> ....
> et dimitte nobis debita nostra,

> Sicut et nos dimittimus debitoribus nostris;
> ..

Instead of that wording, there was much more flexibility for operating in the financial markets without remorse with the following wording:

> Our Father, Who art in heaven,
> ...
> And forgive us our trespasses,
> as we forgive those who trespass against us.
> ...

A Euclidean Model for Diverging Worlds

Equivalences between rectangle triangles have been understood for thousands of years. A clay cuneiform tablet found at Tell Harmal, close to Baghdad (Iraq), from the Old Babylonian period (1,800 BCE) depicted a theorem, similar to one of Euclid, but 1,500 years earlier, on rectangle triangles equivalences.

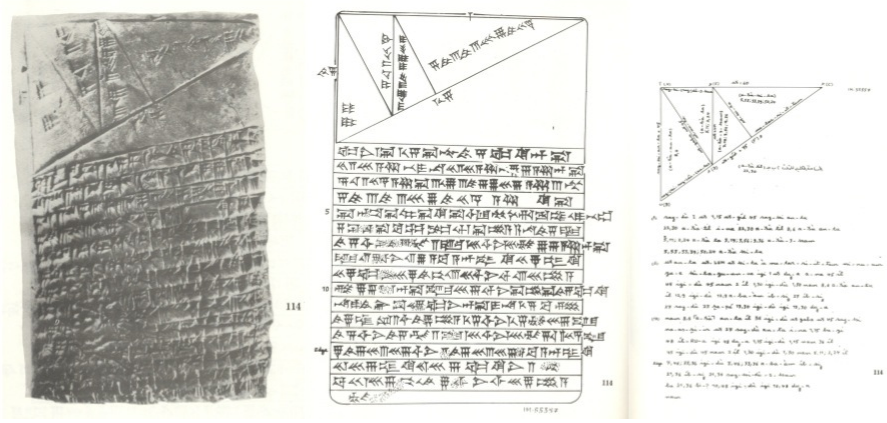
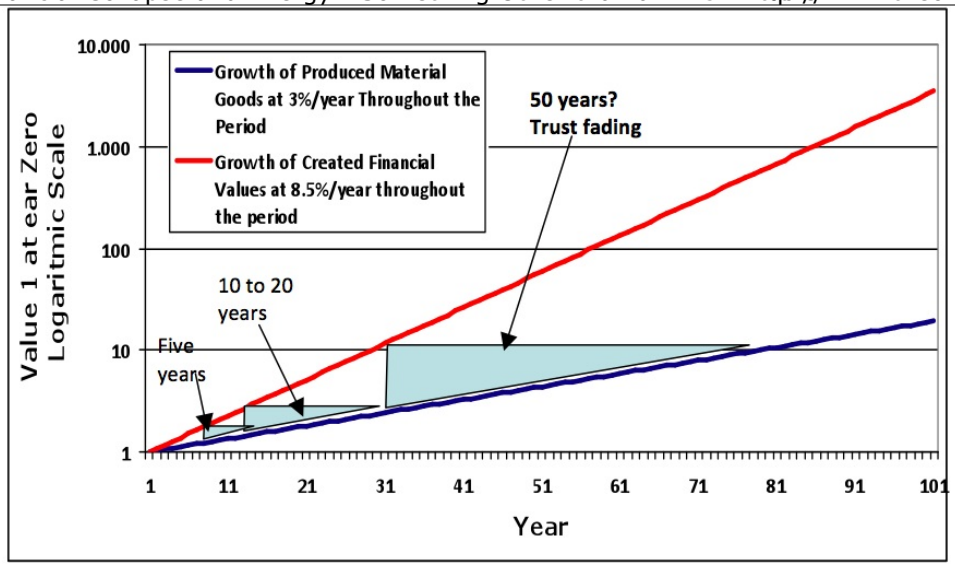


Figure 1. Treasures of the Iraq Museum. Dr. Farah Basmachi. Ministry of Information. Directorate General of Antiquities. Iraq. Baghdad Museum (at least in 1980)

Therefore, if credit is the amount of money, or equivalent, that somebody takes from and owes to a physical person or legal entity, the creditor has the right to get it back (with interest--–more money--) in a given period. And if interest is the obligation, deferred in time, to return more money--–i.e. equivalent goods and/or measurable services--that is human equivalent effort--than those originally taken, the Euclidean model suggests that financial money needs more time, every time, in order for the financial model to match the physical reality that it should theoretically correspond to.



Graph 2. Diverging growth rates as values change through time. (Y axis uses log values)

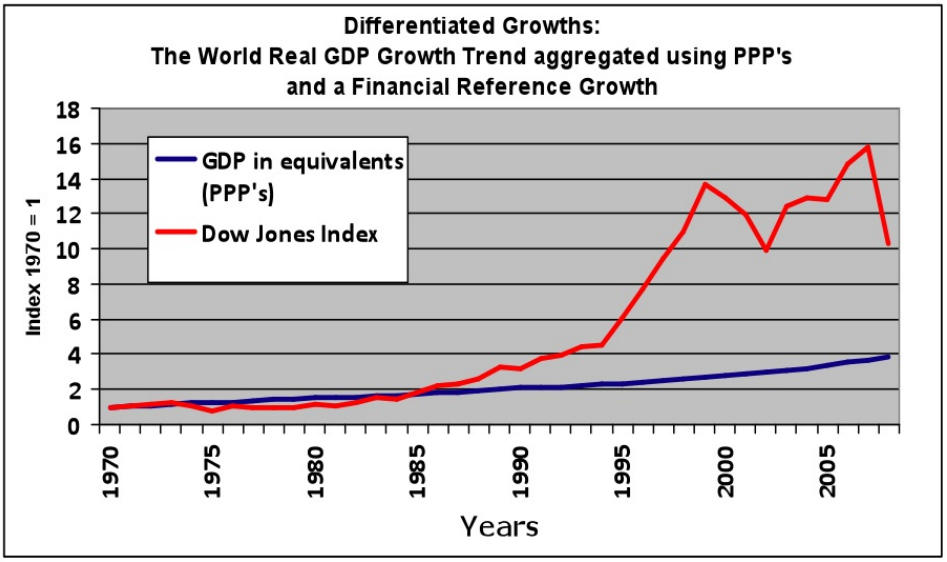
Therefore, amortization periods necessarily need to get longer over time, starting from a given base. As the physical world is finite, the financial representation of money or monetary values cannot, at a given moment, match physical goods--nor even at a reasonable future moment, deferring the relationship in time. Neither can they match reasonable human effort, or energy efforts translated into equivalent physical goods at the disposal of the holder of the paper money.

Myopic Visions of the World

Even if GDP is an inaccurate measure of the goods which have been produced and services which have been rendered (the bomb business or an increase in traffic accidents is good for GDP, for example), it is still a tool of neoclassic economists that is theoretically an index related to the production of tangible goods and measurable services. And it shows that the divergence between physical and financial growth is becoming more and more evident over time.

I cannot accurately quote Noam Chomsky here, but I recall him saying something like, "Probably nine out of each ten circulating $ in financial markets does not correspond to the physical exchange of goods or the measurable trade of services."

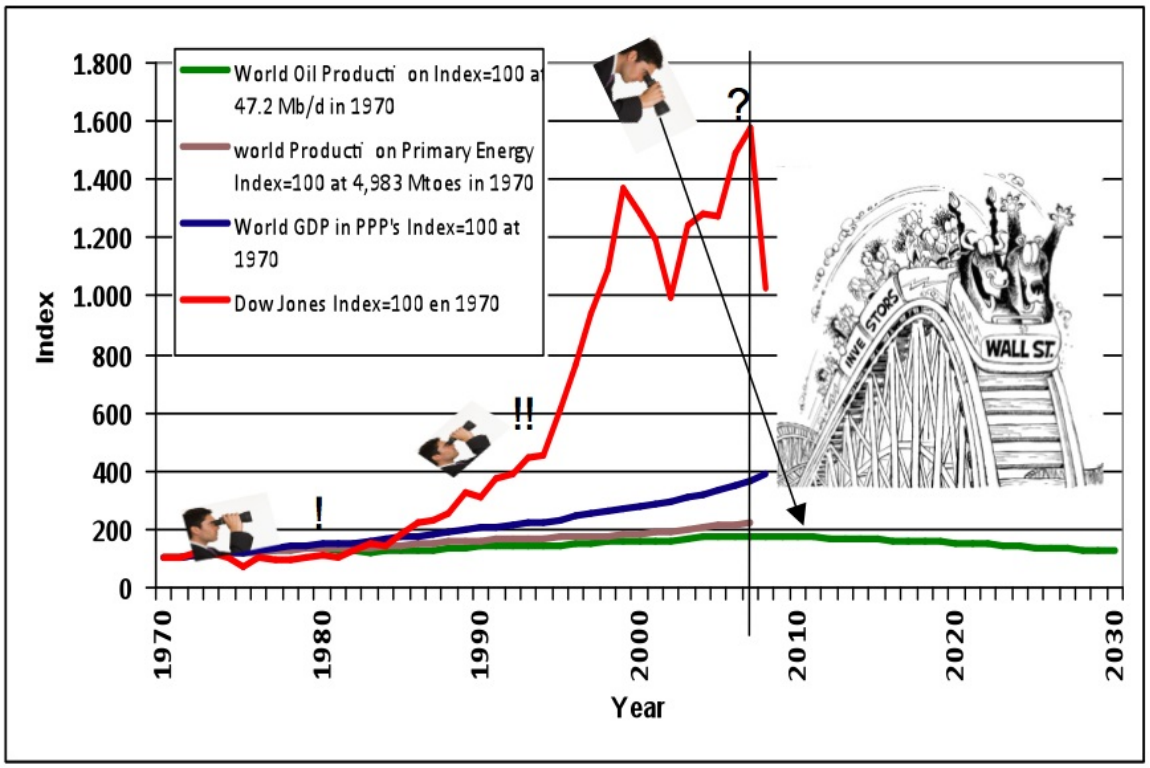
In the next chart, we can see the effects of the diverging financial and physical worlds over time.



Graph 3. World GDP and Dow Jones Index for the period 1970-2007.

Sources: http://images.google.es/imgres?imgurl=http://photos.mongabay.com/07/SPMo... for the world GDP growth and http://www.nyse.tv/dow-jones-industrial-average-history-djia.htm for the Dow _Jones Index

Now, let us add some other variables starting in 1970, such as the world oil production and trends in total primary energy production, and trends in wold GDP in Purchasing Power Parity, setting 1970 production equal to a base value of 100:



Graph 4. World GDP, Dow Jones Index, primary energy consumption and world oil production in the period 1970-2007 and projections of world oil production until 2030. Sources: Ibid and ASPO data base November 2008. Base = 100 at 1970

So, everyone was happy believing in the spiral of infinite growth. However, if money is to represent an equivalence to physical reality, we have been lying to ourselves for quite a number of years.

Then, why has the growing gap between the monetary world and the physical world apparently worked so well during the last several decades of robust growth? There are probably several reasons: Faith in infinite growth; the progressive lengthening of amortization periods for principal and interest; and the charging of the future to the wasteful present.

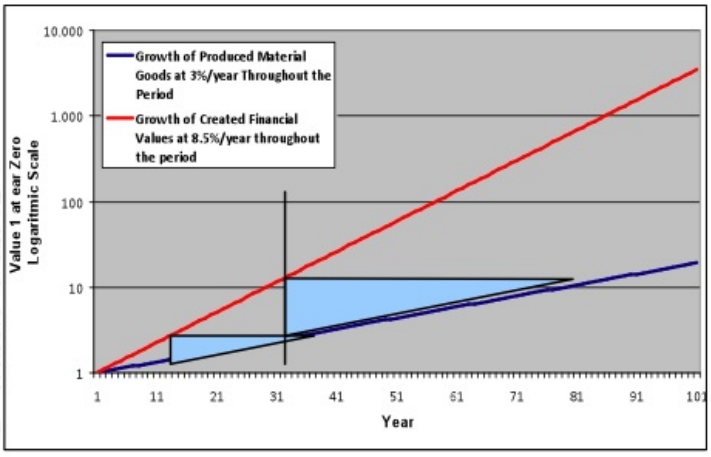
Therefore, the system works as long as owners of paper money (courtesans and gregarious people in the kingdom) are made to believe by the swindler tailors of the Emperor's New Clothes of Hans Christian Andersen, that the looking-glass clothes, light as a cobweb, were magnificent; they are made to believe that their accumulated financial wealth as per the red line of the above graphs may be exchanged any time by the blue line of physical goods or services.

The system also works when the owners of financial assets see financial models indicating that they will recover physical world equivalent assets some years later, as long as material goods also keep growing, even if the material goods are growing at a lower rate and the recovery periods keep extending.

And it also works well, if all the community bearing financial or monetary values, as per the red line do not SIMULTANEOUSLY attempt to "materialize" all this money, at a given moment, into physical goods or measurable services, resulting in a need for goods and services beyond the level that actually exists as per the blue line at a given point in time.

Gregarious Behaviour

But the system may collapse if somebody, spontaneously, shouts for the first time, as the child did with the Emperor: "But he has nothing on!", and then all run at the same time to "materialize" the red line financial values with the blue line physical goods and measurable services at a given moment, as we have recently seen in our world.



That is why the swindler tailors, most of the leaders and financial advisors, specialists and experts, working for the real financial powers, keep asking for the people to trust and believe in the system. Perhaps there is only a need to make some small adjustments in re-weaving the clothes, but the fabric is as beautiful as the ever-growing free market is not negotiable.

That is why these courtesans always address the herd and tell them the same thing that Don Vito Corleone said to his protégées: this perfect market system works based on trust and belief.

But the child has already shouted. And we know that the king and his whole court will walk, anyway, with still greater dignity in the middle of the financial and industrial production chaos, until they end the procession, as if the king were properly dressed.

And they leave us diving head first for a hard landing, from the heights of the red financial line, to the bumpy slope, slide or cliff blue landing strip, paved by and always directly linked to declining energy production.