

SUMMARY

Graph 1's Detrended² Credit-to-GDP ratio vs GDP reveals an *unstable* feedback system unleashed on August 15th, 1971 via financial leverage

The cyclical behaviors of the exponential IRR functions shown on the chart seem unrelated to each other until we use predator-prey dynamics³ to probe for interdependence. We find they are tracing an *unstable* feedback system, better known in economics as Minsky's Long Cycle Model⁴ of Debt vs Capital, where principal + interest (Credit to GDP in blue) traces Predator size, while capital + income (GDP in red) traces Prey size. Coincidentally, just glancing at the chart explains why Greenspan and all subsequent G7 central bankers began their barely-disguised, rate-cutting race after 1985. Yet, lower rates can't stop the system's leverage from spiking, when central banks, via QE, swap impaired-loans for fresh sovereign debt, after every financial crisis.

In sum, the chart's extraordinary fit to Minsky's Long Cycle model suggests that on August 15th, 1971, the world's Advanced Economies unleashed a destructive feedback system that is now approaching its final stage. Reaching this conclusion, however, requires using a methodology we reserve for the analysis of non-human ecosystems. For when it comes to human economic interactions, rather than nonlinear math, we apply politically-motivated doctrines, posing as science. A reality that leads to a few more observations:

OPINION NOTE: So-called "Top-Down (TD) Controlled⁵" Resource Competition Dynamics (RCD) systems, like the above, rarely happen in nature⁶. Yet, as Minsky and other researchers³ attested, 'Ponzi' TD dynamics is recursive in our species. Below, I venture a few -unsupported- thoughts on Why Homo Sapiens (HS) RCD truly is different from nature's:

Due to Abstract Thinking, the primary driver for HS survival over its short era on earth is Cultural Dominance, not Genetic Evolution

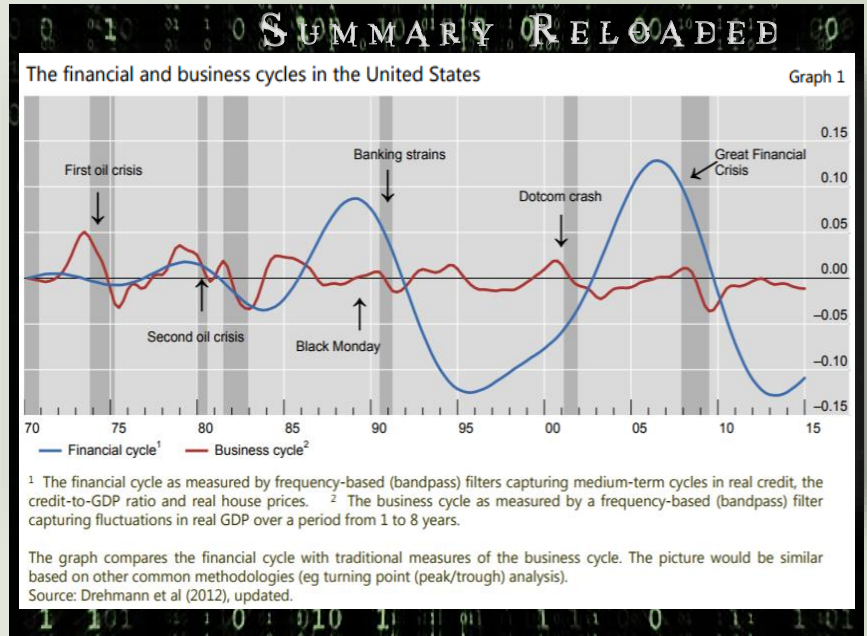
It is safe to assume that over eons, contemporary survivors eventually achieve some degree of Information Symmetry (IS).

As HS RCD hinges on Information-Resources (IR), IR owners and their offspring aim to curb IS expansion. Yet, as they acquire, transmit, accrue and deploy IR over time, IS grows to critical mass among contemporaries and their TD cycle inevitably collapses

A Bottom-Up-Controlled (BU) system restarts the cycle. Yet, as soon as newly dominant IR owners arise, a new TD cycle begins

Oswaldo Lairet

CIO SISTEMIC RISK AVERSE FUNDS



What separates science from non-science is the margin for interpretation¹

Though Economics introduced many appealing concepts since Adam Smith's original theories, static assumptions can only randomly describe the nonlinear nature of human interaction. Yet, two decades into the 21st-century, we keep applying grossly inadequate arithmetic recipes to manage our global resources, despite knowing, for instance, that a pair of simple ODEs developed in the 1920s trace the High vs Low Exponential IRR patterns that govern Financial vs Business cycles. Hence, instead of advancing Economics to serve billions of people, we have enabled it to become every snake-charmer's quintessential magic wand (aside from its mandatory 64,000 crayon-case of Misleading Indicators²).

Curiously, submitting Economics to scientific rigor could save the lives of millions...

As the real dynamics governing Economics become obvious to everyone, illusionists like those presently devastating Venezuela, Argentina or Brazil (*When I wrote the original version in 2015, all three were in the bottom 10%*) would be rapidly recognized. Even G7 central-bank intentions become instantly transparent: For instance, on the BIS chart above, notice that since the 70s, the US financial and business cycles have traced the predator-prey dynamics³ pattern of unstable focus (a system that keeps moving away from equilibrium after any initial shock), better known today as Minsky's "Long Cycle."⁴

The good news is human economics follows natural laws common to all living creatures, and we already know how some of them work⁵

The bad news is Minsky's "Long Cycle tracks top-down controlled,⁶ predator-prey dynamics. Hence, as unlimited bailouts by central banks/governments make unlimited predation possible, the predator-prey ratio escalates exponentially until it collapses at full tilt (The *Minsky Moment*). While extremely rare in nature, Arditi-Ginzburg's paper describes the process succinctly: "For very efficient predators, the only possible outcome is the complete extinction of the system: the predators die out after exhausting the prey." Fortunately, in the case of Debt vs Capital, predator size collapse only means that as excess-debt collapses, excess asset-prices dissolve and a brand-new cycle begins, where prey size (GDP) grows initially unchallenged (bottom-up controlled), as happens in nature.

¹ There must be a hundred better definitions, unless one favors perceptual relevance
² *Statistics require detrending*, as data providers tend to pick modes (nominal, percent change, indexed, sum, average, etc.) or parameters (price, time, relevant unit) that back their assertions, yet might be statistically irrelevant or mathematically meaningless
³ The *Lotka-Volterra* (1925-26) ordinary differential equations were originally employed to study predator-prey dynamics in fish populations after WWI
⁴ Minsky's "Long Cycle" is typified in the BIS chart by the US financial cycle's pattern of greater amplitude waves (characteristic of unstable feedback systems) that forms over decades, as the proportion of Debt to GDP rises exponentially with each oscillation
⁵ "*Predator-prey dynamics*" equations have been applied in economic theory, since at least 1967, when Richard Goodwin used Kolmogorov's version. Their application to Minsky's Long Cycle was first proven by Asada in the late 90s, then Keen and others
⁶ See details in Arditi-Ginzburg's 1989 ("*ratio dependent*") version of Lotka-Volterra's predator-prey dynamics