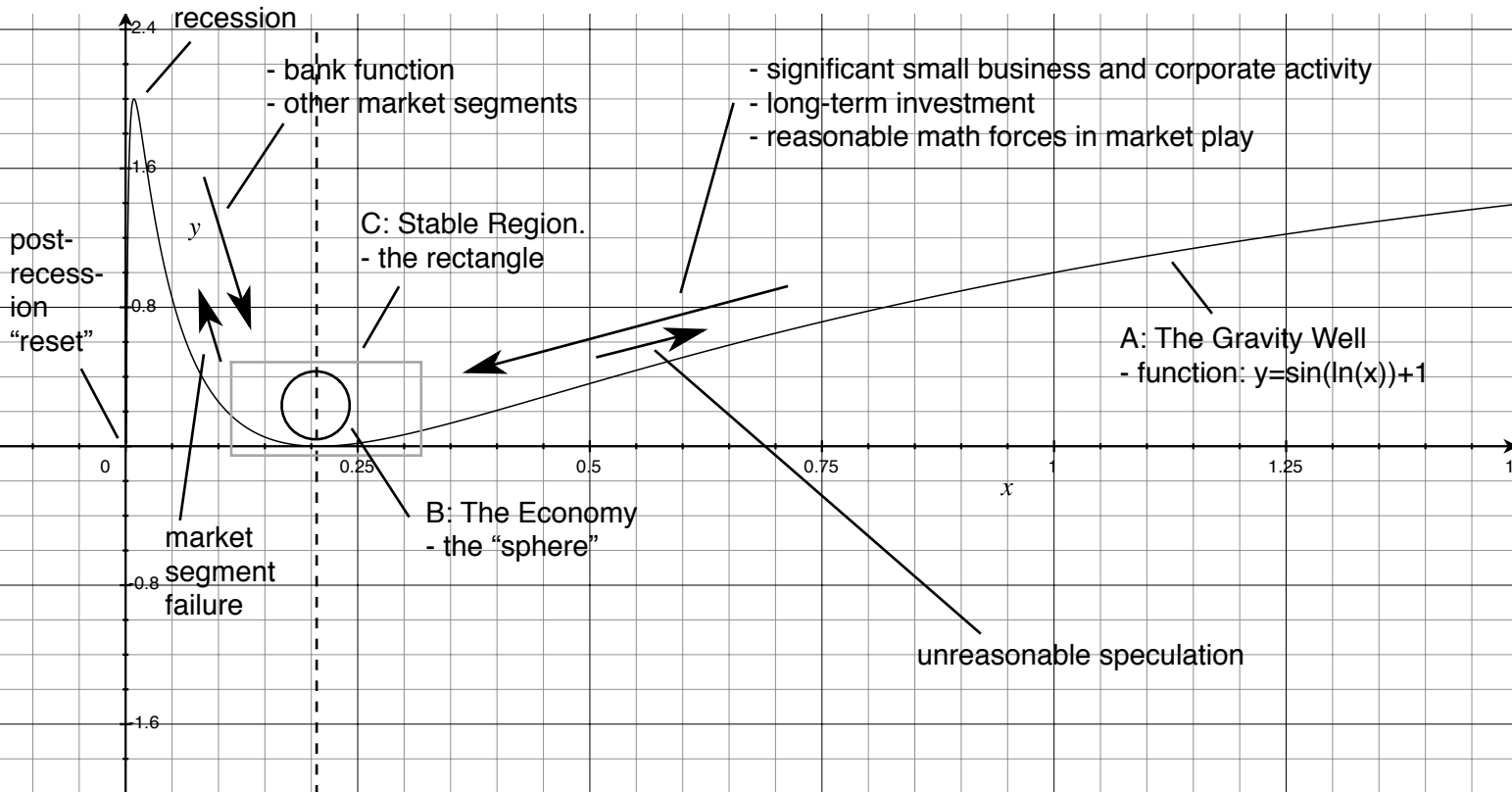


# THE FREE MARKET RECONFIGURED FOR NATURAL FORM GRAVITY WELL

Kevin A. Sensenig / 2014-07-09 / Draft Visualization / v1.03

This is a conceptual idea of the “gravity well”, defined mathematically. Note the dividing line (dashed line) wherein to its left, + equals instability (maybe due to market failure), and to the right, + equals the idea of infinite growth (beyond population), and this latter may also be a source of instability (this should be studied). But the economy’s micro and macro economic function would gravitate toward equilibrium (zero at the dashed line; that is,  $y$  is the force down, and once the economy is within the well, it very much tends to stay there). Various forces or directions are indicated, as potential factors in the function of this well (and these are examples).  $x$  is the position along the gravity well. Things are placed here around the function  $y=\sin(\ln(x))+1$ .

I indicate some ideas on how various types of entities and activity would function. That is, the types of routine free market activity in the US would be retained but in some ways cast and related with some different ideas. The length of the arrows indicates relative strength or force or influence or impact.



## A: The Gravity Well

The curve  $y=\sin(\ln(x))+1$  does not describe economic activity, except that it does describe the gravity well activity and gravity well result of economic activity. The curve describes the gravity well. The economy B is “nestled within” the gravity well A by the forces of *routine* economic activity — which is 1 result of routine economic activity. That is, the economy is self-sustaining.

## B: The Economy

- overall economic activity
- micro and macro markets
- unpacks to actual economic activity

B: Here Sphere B is at the natural “equilibrium” place of the Gravity Well; that is, of the gravity well result of *overall* economic activity, The Economy.

continued next page...

## Comments

Again, this is a conceptual graph in mathematical form. I would suggest that others can work out a formal system involving this graph its premise of the “gravity well” toward equilibrium as being key.

The economy B would tend to be active at the stable region C, at the bottom of the well, difficult to displace.

The economy B would unpack to other functions and descriptions that describe specific and broad economic activity. Such mathematical and other descriptions would describe micro and macro economic activity. The economy B would include many markets and layers, entities and types of entities.

There may be a way to reconfigure various entities such that they are still very much recognizable as free market, yet reflect the “centering” natural function in interdependence.

There might be a way to reconfigure the banks, money supply, some stock market principles; and maybe relations of these to the the business layers; and how much impact successful and durable micro-economic activity has on the macro-economy (toward equilibrium). It is very important to note that this would be leaving much or most of small business and corporate structures and function in place. It would enhance bank and stock market function, introducing ideas of natural centering and correction.

I think it's important to suspect that speculation and this idea of the ideal of open-ended economic growth may be factors of instability. Economic equilibrium, with market forces and economic growth and retraction within its context, should be a driving premise. Parallels are economic stability and resiliency.

Complex fragile dependencies should be re-factored using a different entity structure. Entity as entity should be retained; why fragile dependencies with far-reaching effects (rather than a natural ability to isolate failure or problematic outcomes and correct) is not well-understood given the stable nature of the idea “entity” I'm not sure (I have in mind 2008, global, at least for many significant economies).

Rather than a set of failure judgments at a set of large or types of entities crashing large level-bands of success (say small businesses across America), these successful small businesses should be separate in function; and likely the banks would correct mistakes made in various market segments, being factored differently. Banks themselves would be enhanced with a slightly different configuration, or connection, to the rest of corporate and small business America, with maybe their (the banks') role being somewhat redefined (perhaps even more *naturally* creative and dynamic; ironically, more resilient).

Motion among areas of smooth function should be studied. As indicated, near equilibrium (within or near the stable region C) is much day to day market activity, markets and their submarkets and micro markets — regions of stability. These would also have a centering function, toward equilibrium within the “gravity well”.

Cycles, regions of chaos and attractors, growth then equilibrium can be studied.

I don't know if this is say the definitive graph, this  $\sin(\ln(x))+1$ . But the premise I think can be worked with; and maybe this curve can be taken up and other cycles and math functions and entity relationships can find their natural place around it. Dunno.

## Comments (continued)

Neither the gravity well nor nested in a gravity well means that things in the economy are static — at all. Remember, the Sphere B unpacks to much economic activity. The gravity well is 1 result of this economic activity, a smooth function toward equilibrium (not static).

$y$  = force downward at any given position in the gravity well for the economy. Instability is the force up, counteracted by stability equilibrium forces down (and again this is 1 result of the economic activity in the economy, as a self-sustaining economy).

The  $y$  axis actually specifies “force downward”; it takes significant destabilizing activity to “escape” the gravity well to the left, or to roll upward to the right. In the US in private free market, this is natural expression expression akin to gravity. Note that this gravity well effect is not the result of a lot of government activity or pressure and so forth. The economy is self-sustaining. There is a role for structure, and whatever the government does to set that up, in clearly defined ways (and in the US, the roles of the state governments and the federal government are distinguished, or should be).

I formulated this idea of the gravity well from in part a study we did in undergraduate nuclear physics, on the binding forces within the nucleus of an atom, and the gravity well that the proton approaching a nucleus would encounter: first, repulsion from the electromagnetic forces, then the far strong binding force of the nuclear force proton-proton. I also was struck by the shape then, a short while ago, of the  $\sin(\ln(x))$  function, and how it resembled roughly this nucleus-proton gravity well, not in shape, but as a gravity well.

I put together the first draft of this document in June 2014.

## Some rationale and qualifications

The qualifications.

I want to emphasize again that much or most of private free market small business and corporate structure and activity would be left the same as it is, in the US. In fact, one could look to this already existing resilience, structure, and function for insight as to how to map this or that to support and work with it (the existing private free market small business and corporate structure and activity).

The rationale.

Right now there exist...

- fragile international dependencies (rather than self-correcting, they forward and amplify problems)
- in the US, recession every 5 years on average for 150 years. This is very unreasonable.
  - cyclical should reflect routine, stabilizing economic function macro and micro. These should be areas of interest and fascinating study.
  - this means less liberty, as people are forced to escape failure during a recession, rather than continue in routine function, able to consider this or that in their lives (including interesting economic activity itself).
- segments of the market crashing others
- cycles of boom and bust
- inflation evaporates savings to zero
  - this also puts pressure on the individual or company to invest rather than to save, and since investment is often speculative (rather than durable investment), these funds otherwise put in savings are at risk.

## Notes

Note that it may be that with this gravity well, if the economy does escape the well to the left, it may be possible that the economy “resets” with a new gravity well; that is, there is pain in the meantime until the problematic force away from equilibrium is recognized and corrected for. But these should be very rare; and they may be able to be seen from a distance, so that the market segment of failure can be factored out as not being like the rest of the routine day to day private free market economic activity, and corrected for in advance — “time as a distance”. This may happen within the private free markets; or in extreme cases, the federal or state governments may see and describe action. I hope this makes sense, and can be modeled.

Note that much of the economic activity in the US may already have the net result of gravity well; thus, configuration of a few key entity types and some different connections among some of these entities and the layers in the markets may be directly and straightforwardly all that is required.

It seems that the following need to be considered:

- stable long-term activity in the stock market as the basis (with micro markets and mathematical speculation within that). Note that a re-factored money supply strategy would likely inherently take care of this; the stock market could remain defined as it is.
- money supply (both to the banks and the individual, to factor out the layers a bit differently).
- I'll describe maybe what this money supply re-factor could do, later, in more detail.
- maybe a new layer to bank responsibility, and bank-corporate-individual-Fed reconfigured just a bit.

I strongly feel that in the free market (and in pretty much any human activity), activity starts with the individual and then also the group or corporation. Another way to put this is the the center starts with the entity, and action or activity results. (China's Marxism may put this in a different context but with the same real understanding, that the center starts with the individual or entity, and action or activity results. I'd like to research this sometime.)

The gravity well idea may be another example of where mathematics is manifest in the universe. Other examples are electronics, Kepler's Laws, and the Schrodinger equation. That is, the universe is to some degree mathematics made real.

China's interpretation of Marxism may also be able to draw from the gravity well theme.