

# Financial Regulation and Entropy Economics

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Free market theory treats an economy like a self-correcting gyroscope. An economy however, like an engine, needs careful regulation. To abhor economic regulation implies a willful ignorance of science, which serves only the interests of the most reckless financiers.

No broad economic theory explains our recent financial collapse. Many do wonder about the role of financial regulation, however. We propose a revision called "entropy economics" to address financial regulation from a scientific perspective.

Economics since Adam Smith in the 18th Century developed from Isaac Newton's 17th Century laws of motion. Newton's laws describe the frictionless, perpetual motion of planets in orbit. The Newtonian, "Every action has an equal and opposite reaction", appears in free-market economics as the "law of supply and demand". Reassured by a guaranteed, natural and universal trend toward balance, individuals in a "free market" feel free to act as they please, and expect an "invisible hand" to safeguard society.

There is no such trend toward universal balance, however; the universe is everywhere expanding asymmetrically and irreversibly toward a final "heat death". The free market "invisible hand" is like a religious statue on the dashboard of an auto that occupants believe may protect them from the laws of physics.

Thermodynamics is the 19th Century science of heat and fuel that explains nature more completely, and forms a better basis for a scientific economics than can Newton's laws. Thermodynamics describes heat flowing across a temperature gradient from hot to cold, toward an average, equilibrium temperature. As it flows, heat can accomplish work (like powering a car). Some of this heat energy may be recycled, but heat flow always produces a waste exhaust product called "increasing entropy". Increasing entropy describes the approach to equilibrium, from which there is no return.

Virtually everything that happens uses, and therefore uses up fuel; increasing entropy is thus a sign of something, of anything happening. Nothing can happen without increasing entropy! Because no other quantity in nature must always overall increase; increasing entropy is the one-way "arrow of time".

Functional economics requires that profit and money supply overall increase. Therefore, these must behave mathematically like increasing entropy. (Of course, while entropy cannot reduce overall, an economy can deflate.)

Here is our revision. Many consider profit as economic fuel. If profit is thermo-economic entropy, then profit is a sign of healthy economic activity, but cannot be a goal in itself.

The conclusion: profit does not fuel the production of value. The production of value "recycles" profit. The thermoeconomic function of business is like that of a farm, to recycle profit as though it were manure. Combining profit with new energy, materials, and ideas, businesses generate new value, which reduces local, economic entropy, and regulates economic growth.

Many financiers prefer to generate profits from profits without investment in producing new value. These toxic, "no-value profits" do not harness labor and energy, and so create nothing new of value. Instead, they produce dangerous financial bubbles.

Today, algorithmic super-computation empowers speedy insider-traders to create bubbles of short-term profit for themselves, while creating risk for everyone else. When will these gamblers' bubbles burst all over us? At least in Las Vegas, we may reliably calculate the odds.

Extraordinary, collective action limited the recent catastrophe. Let us act now to prevent another such battering, rather than wait to react to it. New regulations must promote the production of goods and services, and signify the value-creating, entrepreneur-innovator with profit. More important, new regulations must inhibit financial adventurism by severely taxing unpredictable, bubble-forming, non-value profits.

Adam Smith wrote this about financial regulation:

"To restrain private people... from receiving in payment the promissory notes of a banker... when they themselves are willing to receive them; or, to restrain a banker from issuing such notes..... may, no doubt, be considered ... a violation of natural liberty. But ...exercising the natural liberty of a few individuals, which might endanger the security of the whole society, are, and ought to be, restrained by the laws of all governments; of the most free, as well as of the most despotal".

Society regulates when competition fails to balance, and has done so at least since the Sherman Anti-trust Act of 1890. Periods of careful regulation have enjoyed balanced budgets, steady profits, and sustainable growth.

Alas, our recent "credit crunch" was no "perfect storm", but just an inevitable, major storm. We might better compare our financial defenses to the levees around New Orleans that Army engineers knew had a 25% chance to fail at any time. Defeating coherent regulatory change will only permit a truly final, perfect storm.

*Is regulation socialism or communism?* Is playing baseball and football with umpires and referees socialistic? One cannot plan a baseball game, but one can umpire it. The more violent the sport, the more regulation it needs to be successful – like football, hockey, or boxing compared to bowling. Economics is a blood sport.