

Lonergan Economics and FreeBank
Enabling Lonergan's Economics as a Stable Evolutionary Strategy
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Abstract

Implementing Lonergan's rules of crossover flows, namely establishing equilibrium between the basic circuit and the surplus circuit, has proved problematic since the inception of the idea. FreeBank is a blockchain based currency system designed to balance these two macroeconomic circuits as an evolutionary stable strategy. This is accomplished by using the complimentary Nash equilibria at the microeconomic level. The FreeBank system is fully decentralized and 'trustless', meaning no central authority is required to enforce any rules or issue currency. Using FreeBank, the rules of the basic circuit and the surplus circuit operate as natural law, being the optimal expression of game theory. Contracting parties accrue maximal return (as motivated by self-interest) when implementing these laws. Economic stability and high productivity are a sustainable outcome within this context, because crossover flows at the macroeconomic level are balanced.

Background & Analysis

Lonergan's analysis of money circulation revealed a pair of crossover flows between the basic circuit and the surplus circuit. He recognized these two crossover flows must balance to sustain the pure cycle and prevent a distortionary trade cycle from emerging¹. An operable mechanism to balance these two crossover circuits is all important and heretofore evidently impractical. However the economic stakes of not implementing balance are very high! Lonergan compared an economy to a living organism, and described the consequence of allowing the two crossover flows to become unbalanced:

CWL2i 74

"To violate this organic interconnection is to simply smash the organism, to create the paradoxical situations of starvation in the midst of plenty, of workers eager to work and capable of finding none, of investors looking for opportunities to invest and being given no outlet, and of everyone's inability to do what he wishes to do being the cause of everyone's inability to remedy the situation. Such is disorganization."

¹ Michael Shute, *Lonergan's Discovery of the Science of Economics* (Toronto: University of Toronto Press, 2010), Chapter 4

Game Theory

Loneragan is describing the real life consequences of the surplus circuit accumulating too much money because of an imbalance in the crossover flows. A practical example of such an event might be a corporation deciding to reduce costs and accumulate additional savings by laying off workers. If only one corporation behaves this way then the macroeconomic impact on consumer demand is negligible. However, if many corporations try to increase surplus by laying off workers, the net affect is to 'smash the organism'

Expressed as a game theory payoff matrix, a short-term run between two players might be depicted as follows:

		Player II	
		Accumulate surplus	Maintain balance
Player I	Accumulate surplus	2/2	4/0
	Maintain balance	0/4	2/2

In this matrix, both players would choose to accumulate surplus since every business understands the urgency to stay competitive. This is clearly a Nash equilibrium where both players choose to accumulate. Unfortunately, this causes an imbalance in the crossover flows and, as Lonergan has pointed out, creates a distortinary trade cycle.

Here is the same dynamic expressed as an evolutionary game where there is a population of accumulators and a population of balancers.

	Accumulator	Balancer
Accumulator	-2/-2	4/0
Balancer	0/4	2/2

As an evolutionary strategy, this dynamic does not permit individual members of an economy to voluntarily cooperate to maintain balance since it is vulnerable to invasion by a business seeking to accumulate surplus. This results in everyone eventually choosing to be an accumulator at which point there is economic failure. This is the cause of the business cycle (trade cycle). It is not an evolutionarily stable strategy.

Efforts to understand the dynamics governing this balance of crossover flows in hope of developing policy that counters the present-day unstable character of the economy has not produced any clear solutions. In "Lonergan's Discovery of the Science of Economics", page 173 Michael Shute said:

Lonergan's concern is not the amount of money but the constancy of its value. To answer this we need to determine what the correlations are between the velocity and accelerator rhythms of production and the corresponding rhythms of income and expenditure. The set of correlation that emerge constitute a pattern of laws for economic activity. This is precisely what Lonergan attempted to do in his account of the structure of the exchange process. However, 'to work out in detail the conditions under which this must be done, and to prescribe the rules that must be observed in doing it, is a vast task.' (CWL2I 105)

The FreeBank Innovation

It is at this point – the desire for an emergent set of correlations, that FreeBank offers an innovative solution. Rather than attempt to develop (public) policy to counter the affect of an unstable evolutionary strategy, FreeBank uses technology to change the nature of the game being played at the microeconomic scale such that the net affect of everyone playing this alternate game is to create an evolutionarily stable strategy of cooperation on the macroeconomic scale. We propose that the equilibrium of crossover flows Lonergan sought to prescribe with rules can instead be digitally expressed as an evolutionary stable strategy.

This stable strategy is brought into being using blockchain technology to create a money system where choosing to cooperate to maintain the constant value of money provides the highest payoff according to game theory. This strategy is a Nash equilibrium. The net affect of a population of individuals at the microeconomic scale participating in such a Nash equilibrium—cooperatively maintaining a constant value for money—is to express Lonergan's long sought after equilibrium crossover flows as an evolutionary stable strategy at the macroeconomic scale. FreeBank expresses Lonergan's equilibrium in precisely this way.

In the FreeBank model, the 'pitcher' in Lonergan's Baseball Diamond diagram is removed. Recall that the pitcher regulated the money supply; in place of a centralized money source, FreeBank permits individuals to freely 'print' their own money. In affect, each individual maintains their own private currency, separate from all others. With FreeBank, two transacting parties are able to quickly analyze each other's money supply and automatically negotiate an exchange rate. In this context, an individual who willfully prints more money than merited will see the market value of their goods and services go down as their exchange rate declines. Likewise, an individual whose goods and services are undervalued will see their exchange rate appreciate.

On a macroeconomic level, a non-constant value of money (inflationary currency for example) is an indication of a distortionary trade cycle negatively impacting the economy. However, on a microeconomic level an unstable value of money increases an individual's risk of trusting the valuation assigned to a good or service. Therefore, from a game theory perspective, cooperating with a transacting partner to maintain a constant mutual exchange rate is the strategy with the highest payoff, because it minimizes risk.

Money is simply a system of public bookkeeping

In adopting this strategy, the only time money is created or destroyed is under the specific conditions when two transacting parties are cooperating to maintain their currencies at par with one another. This reflects Lonergan's insistence that "What is needed is a frank avowal that money is simply a system of public bookkeeping" (CWL2I 104) Enhancing the accuracy of this 'bookkeeping' requires each party to cooperatively choose an exchange rate that maintains money at a constant value.

Redefining Basic and Surplus Circuits as Microeconomic Variables

FreeBank enables each party to negotiate exchanges both autonomously and automatically by using a basic and surplus circuit. Where Lonergan's circuits are macroeconomic in scope, FreeBank redefines these circuits in microeconomic terms. In FreeBank the basic circuit is a cyclical flow of money. We are not concerned with how money is used after it leaves an individual's account, but it is important to understand whether or not the money can be expected to recirculate back to the same individual. If a money circuit does in fact recirculate money back to the same individual it is classified as basic.

The surplus circuit is composed of all acyclical transactions too and from an individual's account. This includes money spent which never recirculates back to the individual who spent it, together with money received by the individual from sources that will never see the money return. The surplus circuit therefore is a pseudo circuit.

It is this surplus circuit which must be balanced in equilibrium in order to maintain a stable currency. The sum of acyclical outlays must equal the sum of acyclical income in the long run. This is accomplished by evaluating the velocity and acceleration of an account's acyclical balances and then making micro-adjustments to exchange rates as needed.

In Conclusion

FreeBank solves the problem of maintaining crossover equilibrium by using natural market forces supported by blockchain technology. A full analysis of the feedback mechanisms in these two circuits is beyond the scope of this paper, for a more complete technical overview of FreeBank, download the white paper at www.freebank.co.

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