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**Title: Proposed new metric: the Perpetual Debt Level**

**Abstract**

It is my contention that a critical metric in economics is missing. I call it the Perpetual Debt Level. This is the amount of bank credit money in circulation that is *not* available on time nor free of any other debt, to extinguish the debt to a bank that created it. This creates a borrow from Peter to pay Paul and vice versa Perpetual Debt situation in which the amount of the principal involved can never shrink, and the timing of its delivery can never slow down without causing mathematically inevitable defaults. Therefore, to avoid such defaults, it is, in practice, necessary to maintain growth of the money supply at all times. (1) I further claim that there is no escape from this destructive arithmetic problem within the concept of money as a quantity of a thing-in-itself, and especially within the current practice of money created as a debt-of-itself. The only remedy is radical, a total transformation of our concept of money.

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## Proposed new metric: the perpetual debt level

by Paul Grignon, the creator of the animated movies, the *Money as Debt Trilogy*.

### Money as a thing-in-itself

Imagine that money-as-a-thing-in-itself in any form, say a gold coin, enters circulation by being borrowed from a professional lender. It is now a debt-of-itself with a set date for repayment. The gold coin circulates through any number of buy/sell transactions. Eventually, it is acquired by a second professional lender and is lent out a second time. This is what I call “twice-lent” principal. The coin circulates through any number of buy/sell transactions until acquired by the first borrower and repaid to the first lender.

Now imagine that, due to income disparity, almost all such gold coins have been borrowed into circulation. Therefore, none can be substituted as all are already committed to their own debt. Some gold coins may have been lent serially more than once. Therefore, as long as the debts remain payable only in money-as-a-thing-in-itself, the first lender must re-lend the full amount of the original money-as-a-thing-in-itself; otherwise, the subsequent money-as-a-thing-in-itself debts will be unpayable. Thus is created a Perpetual Debt, two or more loans mutually dependent on the same principal; we have to borrow from Peter to pay Paul and vice versa *forever* to avoid default. And the amount and timing of every loan must meet the conditions of all the other loans dependent on the same principal. Any decrease in the principal amount or any slowdown in delivery will result in mathematically inevitable defaults.

If this very simple model were valid for the real world, it follows that any reduction in the supply of money in circulation, for any reason, would result in mathematically inevitable defaults. Borrowers would lose their collateral through an actual shortage of principal in existence, not by any fault of their own. Taken further, banks and businesses would fail. To prevent mathematically inevitable defaults, every increase in the supply of money would have to be permanent and thus the need for constant growth of the money supply would be locked in. It is my contention that Perpetual Debt alone, arising as a consequence of money being a thing-in-itself is sufficient to explain why we have, in the real world, a relentless and ultimately self-defeating economic growth imperative accompanied by frequent disastrous debt crises whenever money-creation slows down.

### The “impossible interest” fallacy

Notice that interest plays no part in the situation demonstrated. There are many who claim that interest (I) is the mathematical impossibility at the root of system instability because  $P$  (principal)  $<$   $(P + I)$  for any positive value of  $I$ . They ask: how is  $(P + I)$  to be paid if only  $P$  exists? (2) Strangely, most people have difficulty comprehending that money *flows*, despite it flowing through their hands every day. One dollar paid  $N$  times can pay  $\$N$  of interest debt because interest is not extinguished when paid. The imaginary shortage is created by misapplying the equation,  $P < (P + I)$  which is only correct as the *summation* of a loan, the total paid upon completion. The truth is that any amount of interest can be paid from  $P$  alone. The lender spends it, it circulates, the borrower earns it and pays it again, over and over, potentially ad infinitum. Even in the absence of this assumption that all interest is spent by lenders, the money due as interest payments each

month is just a tiny fraction of all the money in existence. Therefore, to claim there is a *mathematical* shortage of money in existence to pay interest is not only incorrect, it is logically absurd. Any functional shortage of money experienced by borrowers is caused entirely by a *lack of opportunity to earn it*.

Working on this level of understanding is the next fallacy, the assumption that all interest monies *are* ultimately spent by the lender and available to be earned by the borrowers in the free market to extinguish all debts. This assumption fails to account for the fact that P can be lent  $n$  times as existing money, and can, for an indefinite period of time, be unavailable to the general circulation except as a further loan of the same principal. Unlike interest which can be spent, lent or invested, principal is lent, by definition. And, most importantly, one dollar of principal pays off only *one* dollar of principal debt. Once there are two or more debts of the same money-as-a-thing-in-itself, the principal involved cannot decrease without causing a default. It is quite puzzling to me that so much focus is directed upon an easily disproved imaginary mathematical problem with interest, while there is no recognition at all of the very real shortage of principal that results from re-lending principal that is already a debt-of-itself;  $P < nP$  of debt for any value of  $n > 1$ .

Interest is a portion of principal that has been charged for bank services and then spent, lent or invested by the banks. It is the way banks charge for their services and the risk of underwriting borrowers. This method is admittedly open to challenge, but not because P being less than  $(P + I)$  creates a shortage of P equal to I. Arguments applied to principal in general apply equally to any portion of principal that was briefly used as an interest payment. Therefore, for the purposes of simplified modeling, I always assume that *all* interest earned by lenders is spent and available to be repeatedly earned and paid again by the borrower within any single loan cycle. Stock is multiplied by flow. Thus each *single* loan cycle is assumed to be self-sufficient in terms of both principal *and* interest.

### **Interest unpaid grows to infinity**

The other aspect of interest, so often cited as the root cause of system instability and the growth imperative, is that if a debt is left unpaid, the interest compounds and the debt can grow to infinity,  $P < (P + \infty)$ . (3) This is a serious problem for governments (and all of us) because Ponzi scheme sovereign debt financing is allowed to go much too far. However, for the ordinary borrower, if the debt doesn't get paid, it gets defaulted on within months. Infinity is never approached.

### **Compound interest is also twice-lent money**

Compound interest is also twice-lent money. New interest is charged when no new principal has been supplied. Therefore, it must be original principal being re-lent. Thus the real problem is caused by twice-lent principal, not interest itself. Which is the root cause? The potential of  $P < (P + \infty)$  only arises when interest is charged and payments are insufficient. The  $P < nP$  instability arises in the absence of interest and with all debts being paid in full. Therefore, I submit that  $P < nP$  is the root of the growth imperative and system instability, while not denying the problems that compound interest creates.

### **Money is created as debt**

To establish my argument, I will belabor the reader with the following example of how money is created. The borrower promises the bank \$100,000 plus interest over time. No time has elapsed so the current value is just \$100,000. The bank reciprocates with a positive account balance of \$100,000 on demand. Asset equals liability. The bank's books balance. The borrower has \$100,000 of new bank credit to spend. Unless the borrower demands cash, no existing money is needed to do this. Once spent, the \$100,000 of new bank credit returns to the bank as the seller's deposit. The numbers just move from the borrower's account to the seller's account. The bank's promise of \$100,000 of legal tender on demand is lent back to the bank and redemption in legal tender is indefinitely deferred. I have used a single bank model because, in the real world, all banks do the same thing and if each were to get its proportionate share of the new deposits created, their debts to each other would zero out. Therefore, the *true source* and *continuing nature* of this new money is a specific borrower's contract to pay it back to a specific bank at specific times and *extinguish it*.

This is not taken into account by economics when it treats money as a neutral medium of exchange, the supply of which is indirectly controlled by the central bank. In a recent report to the IMF, the deposit multiplier model has been described as a "myth". (4) And the description of the banking system in this report is entirely congruent with the explanations in my movies and on my website. Clearly omitted, however, is any recognition of the secondary lenders in the world, and thus any concept of  $P < nP$ .

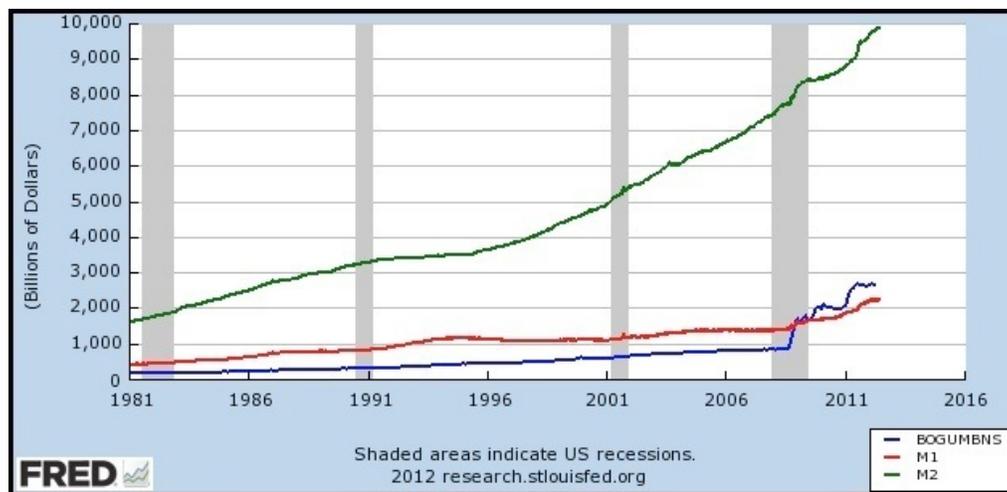
In my first movie (Money as Debt, 2006) I summed up our money system with this single statement: "Banks can create as much money as we can borrow". This is literally true if "we" includes us as both private borrowers and national taxpayers, and "banks" includes the central bank. Money is created by the hypothecation of a particular borrower's future productivity. It is, in fact, a debt to society, because someone in society provides the "consideration" in the contract, not the bank. Someone in society gives the borrower real value, specific real goods and or services in exchange for the new bank credit money created, and subsequently to each successive spender. The borrower will presumably deliver value to society, earn an income and repay the bank. Bank credit therefore, has a designated life cycle and a necessary destination. The stable functioning of the system *depends* on the borrowers actually having the opportunity to provide the promised productivity to society and earn back the bank credit money that was created for them. In addition, this opportunity must be provided within the timetable agreed to for the loan.

### **Savings**

This essential requirement for system stability is in direct contradiction to our concept of the banking system, which encourages savings, the accumulation of bank credit ad infinitum. Conventional economics, which disregards the debt origin of money, views savings as assets, a store of wealth like wheat in a silo. But savings are, in reality, someone's debt, *a scheduled promise to extinguish this money*. Savings held indefinitely are a de-stabilizing interruption of the credit cycle. If we fully recognize the debt origin of money, savings that are not available to be earned on time by the borrowers that created that money create Perpetual Debt. All is well when debt is growing, but when the

supply of new bank credit slows down, for any reason, it can set off a hidden bomb of mathematically-induced defaults.

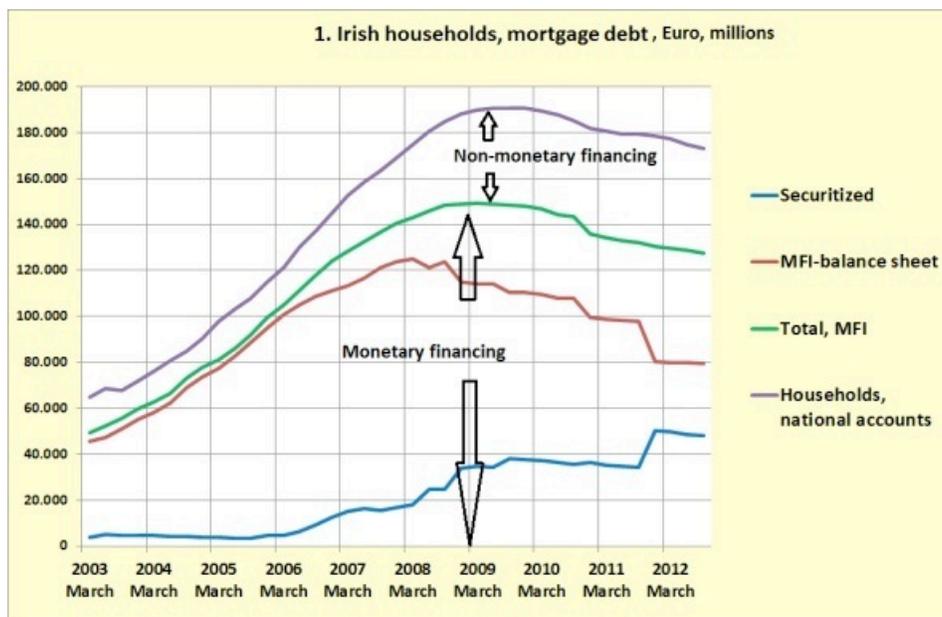
It must be noted that all bank credit money is “twice-lent” by design of the system, because the only way to store bank credit created as a loan *from* a bank is to lend it back *to* a bank as a deposit. And, in a free market, the owner of “money” is free to lend it again and again, as existing money, indefinitely. This is often held to be the economic goal of our lives, to accumulate so much money we can live off the interest. There is no recognition that the system’s stability depends on that bank credit being available to the general circulation as earnings, not secondary borrowing. Given that secondary lenders of existing money must have money in excess of their own spending needs, it follows that Perpetual Debt would increase with income disparity. In addition, real-world savers and secondary lenders are likely to roll at least some of their interest income into new lending principal thus *increasing* Perpetual Debt and system instability.



### The lending of existing money

It is secondary lending itself that is the root cause of monetary system instability. If money has been created as aggregate borrower debt, then the only place the aggregate borrower can get it back to extinguish the debt without creating another one, is to have the aggregate depositor *spend* it. While it is not possible to predict that any given deposit will be saved or spent in the next moment, any disproportionate increase of (M2-M1) (savings deposits) relative to M1 (checkable deposits and cash) indicates an increase in mutual dependence of  $n$  loans on the successful recycling of the same debt-created principal. In the chart above, each recession (shaded area) is preceded by several years of relatively flat or shrinking M1 while M2 continues to climb. At the right end of this chart, the potential total of money not available on time to be earned by the borrowers who created it is about 8 Trillion dollars, making the apparent potential Perpetual Debt almost 80% of the total money supply (5). However, this chart does not tell us how many times any cash, checkable deposit or savings deposit may have already been lent serially *before* arriving at its current location. Thus the chart gives us no indication of how many existing money debts might depend on the same debt-created principal, and thus no idea of the magnitude of defaults any shortfall in new money creation might cause.

Existing money loans are just money-creation debt-money lent again. In the chart below, “non-monetary financing” is principal that was first created as “monetary financing”. After being lent as existing money, it is now simultaneously owed to two lenders, and thus creates a March 2012 Perpetual Debt of about 44 Billion Euros. (Note that the Perpetual Debt was steady at 20 Billion Euros from 2003-2007 and then more than doubled by 2009) But this is still not the whole story. Money spent through both types of financing can be *lent again*. This information the chart does *not* show. Detailed information distinguishing money-creation debt from *all* existing-money debt would be needed for the whole economy in order to establish a rough estimate of the overall Perpetual Debt Level. Given the often secret nature of private existing-money debt, a fully accurate estimate is seemingly *impossible*.



source: Merijn Knibbe

### Banks buy equities

To keep things simple, I have assumed to this point that all bank credit is created as a loan, and is, therefore, committed to its own extinguishment and not available to extinguish Perpetual Debt. However, this is not the full picture. Banks can write checks against themselves to buy equity investments like stocks and real estate. (6) As with loans, the value of the equity balances the liability used to buy it and the banks' liabilities are lent back to the banks as deposits and indefinitely deferred. All is well for the bank as long as the value of the equity exceeds or equals the corresponding liability on the bank's books. The equity can be sold to eliminate the liability if need be. Money spent on equity is not due back on a rigid timetable like money created as a loan. The expectation of return is invested in the equity and becomes elastic and uncertain. Thus bank credit created to buy equity is theoretically available to be earned by borrowers and make up for a shortage of bank credit created as loans. However, when the demand for new loans is shrinking, the value of equities is often shrinking too. And devalued equities can turn into red ink on the banks' books just as bad loans can. As well, money created by a bank to

buy equity can subsequently be lent again  $n$  times as existing money. It takes only *one* such lender to interrupt the flow back to the original money-creation borrower, be it a massive money market fund or kindly Uncle Bob.

### **Growth or collapse**

In this model, no problem arises as long as there is sufficient exponential growth of bank credit. However, in the absence of adequate money-creation *loan* growth, mathematically inevitable defaults can only really be avoided by banks creating new bank credit to buy *equity* that is ultimately spent on *wages*. But lack of loan growth generally accompanies lack of consumer demand and thus a lack of demand for both investment and labor. Therefore, there is no adequate business incentive to make up the shortfall.

This leaves the problem to government for whom the only imaginable cure is a bailout to rescue the banks' balance sheets and some form of stimulus that puts the taxpayer further in debt in an attempt to mobilize labor and demand in order to "get back to growth" according to Keynesian principles. This approach completely ignores the long term issue that perpetual exponential growth cannot be sustained on a finite planet. And, in the near term, by digging a deeper hole for the taxpayer requiring cutbacks in government services and higher taxes, while simultaneously creating the potential for damaging inflation, the whole exercise can easily be self-defeating. To get out of a hole, one should not dig oneself even deeper into it. But in a system wherein money is *created* as debt, there is no other choice except default and/or debt forgiveness.

Using the concept of the Perpetual Debt Level, we can logically predict that whenever bank credit moves from supporting production and full employment to secondary lending or gambling, the Perpetual Debt Level will rise and the economy will become more vulnerable to massive mathematically-induced defaults, government intervention, a huge increase in national debt, and the self-reinforcing spiral into economic, political and social collapse.

### **The other concept of money**

To fit within the context of this conference, I have proposed a new metric that I genuinely believe should be measured. However, my own assessment is that measuring it will only prove that the fundamental  $P < nP$  problem is not only the cause of money system instability, it is insoluble within the concept of money as a thing-in-itself in a free market economy. To maintain this money system as a single self-sufficient loan cycle would require the establishment of a single world bank as the sole source of credit. Any ongoing professional lending of existing money, with interest or not, would have to be outlawed. However, if we open our eyes and see beyond the tunnel vision of the current system, a much more acceptable solution becomes obvious. Quite clearly, if debts are payable in goods and or services, the mathematical dilemmas described in this paper disappear like awakening from a bad dream.

Money doesn't need to be a thing-in-itself, whether that be cowrie shells, gold, silver, fiat cash or money-as-a-debt-of-itself bank credit. The concept of money as a thing-in-itself was necessary when we had no other technology to transfer value over distance other

than to transfer physical objects generally accepted for high value, like precious metal coins. Another fundamental form of money has existed since written history began. It is barter credits, money redeemable for products and services from specific suppliers. This is not “value in the thing itself” money. This is “promises of something specific from someone specific” money. The crucial conceptual difference is that barter credit money is *defined in value* by the specific portion of real world *abundance* it promises, rather than the *scarcity* of the medium of exchange itself. In the ancient past, promises spent by a farmer were redeemable in the farmer’s grain stored in the local temple granary. Promises of any other local goods or services could be denominated in grain units.

### **Velocity**

Economists refer to the ‘velocity’ of money, a term imperfectly borrowed from physics. In physics, velocity includes both speed and a specified *direction*. But no direction is specified to the movements of bank credit money in the current money system. Specifically, there is no inherent mechanism that directs the money created as a loan back to the borrower that created it. In fact, our whole culture mistakenly thinks the ultimate good is to prevent that from happening by building up savings as if savings were an asset like a store of wheat. In fact savings are just a debt-of-money and an interruption of the credit cycle. The successful completion of credit cycles, and therefore the stability of the system, is left to the so-called free market, where “greed is good” and the unlimited accumulation of money is considered “success”. The well-being of the borrower and bank that created that money as an expectation of the borrower being able to earn it back, is the last thing on anyone’s mind.

By contrast, barter credit money *does* have a vector of direction. Barter credit is payable exclusively in the specific goods and services of a specific supplier, within a *limited time*. Barter credit money has true velocity, a defined destination and turnover speed that, by design, ensures the successful completion of every credit cycle, leaving no legacy of debt.

### **Evolutionary change**

Money would no longer be a thing-in-itself or a debt-of-itself. Instead, money would be a measuring unit of value for the real things we want to buy with it. My third movie, Money as Debt III - Evolution Beyond Money (2011) explores the possibilities that open up when we change our concept of money in this way. Not only is business-to-business barter growing rapidly, a recent report to the City of London bankers clearly recommends “capacity credit”, as they call it, as the “liquidity” of the future. (7)

Excerpt: “*Multilateral reciprocal trade seems widespread, though comprehensive data is sparse. According to the International Reciprocal Trade Association (IRTA), one of the industry trade bodies, some 700 retail barter exchanges exist as of 2009/10, most located in North and Latin America (IRTA, 2010). Regularly quoted figures state that countertrade accounts for 20% or more of world trade, involving some 90 countries and accounting for US\$100 to US\$150 billion (Platt, 1992; Carter, 1997)*”

My simple design is founded on using the aforementioned business-to-business barter credits as money in *general circulation*. (8) The result is a self-balancing counter-cyclical

system in which no debts accumulate to future generations, no one need lose any equity they have paid for, balance-of-trade is enforced automatically on everyone including government, and self-interest in the financial sector aligns unavoidably with the general good of consumers and producers. And, of course, several new metrics would be needed.

### **About the author**

Paul Grignon is a professional artist, writer and moviemaker with a partial university education in physics and chemistry. The author has extensive experience explaining to a general audience environmental and political issues as diverse as energy return on energy invested, municipal zoning bylaws, and the science of sea island groundwater. His 14 years of self-directed study of the monetary system have resulted in the popular Money as Debt Trilogy, animated cartoons that have been viewed by tens of millions of people worldwide, in 24 languages.

### **References**

1. "I know of no severe depression in any country or any time that was not accompanied by a sharp decline in the stock of money and equally of no sharp decline in the stock of money that was not accompanied by a severe depression." Milton Friedman, Chapter 3, *Capitalism and Freedom*, 1962.  
[http://books.cat-v.org/economics/capitalism-and-freedom/chapter\\_03](http://books.cat-v.org/economics/capitalism-and-freedom/chapter_03).
2. Charles Eisenstein, author of the book, *Sacred Economics*, repeats the "impossible interest" story.  
<http://sacred-economics.com/sacred-economics-chapter-6-the-economics-of-usury/>.
3. "Therefore, to the extent to which the loan models herein have been analyzed, instability is identified for any of the cases where either part of the principal loan or the interest on that amount cannot be paid whatever the reason, in which case the debt will continue to grow towards infinity." *Formal Stability Analysis of Common Lending Practices and Consequences of Chronic Currency Devaluation* Sergio Dominguez and Marc Gauvin 21/05/200  
[http://bibocurrency.org/spanish/Formal%20Stability%20Analysis%20and%20experiment%20\(final\)%20rev%203.4.pdf](http://bibocurrency.org/spanish/Formal%20Stability%20Analysis%20and%20experiment%20(final)%20rev%203.4.pdf).
4. *IMF Working Paper, The Chicago Plan Revisited*, Jaromir Benes and Michael Kumhof, pg. 11 <http://www.imf.org/external/pubs/ft/wp/2012/wp12202.pdf>
5. <http://research.stlouisfed.org/fred2/data/M1.txt> and [M2.txt](http://research.stlouisfed.org/fred2/data/M2.txt)
6. *Modern Money Mechanics by the Federal Reserve Bank of Chicago*, pg.8  
Expansion through Bank Investments.  
[http://en.wikisource.org/wiki/File:Modern\\_Money\\_Mechanics.pdf](http://en.wikisource.org/wiki/File:Modern_Money_Mechanics.pdf)
7. *Capacity Trade and Credit: Emerging Architectures for Commerce and Money*  
<http://www.cityoflondon.gov.uk/business/economic-research-and-information/research-publications/Documents/research-2012/Capacity%20Trading%20Update%20Report.pdf>  
C\_RS\_CapacityTradeandCreditSummaryFindings\_web.pdf.
8. *Monetary innovations for eco-friendly production and economic stability*, Peter Earl  
<http://rwer.wordpress.com/2011/12/09/monetary-innovations-for-eco-friendly-production-and-economic-stability/> starting at the 14<sup>th</sup> paragraph.