



Money Creation Mechanism Produces Unbridled Debt: Pseudo Relationship between Production of Goods and Services and the Production of Money

Mete Gündoğan ¹, B. Gültekin Çetiner ²

Abstract

Systemic approach requires processes to be analysed in a unified whole. Once context boundary of a system is identified, remainings are expected to be in a balanced cycle hence satisfying user requirements. A bottom-up view reveals that many products constitute a project. Many projects constitute a business. Many businesses constitute an industry. Many industries may constitute a socio economic system. From a top-down approach, a socio economic system is an integrated and unified system. One part of it is dealing with the production of goods and services and counter part of it is dealing with the production of money. Production of goods and services is a well-studied and well-defined scope. On the other hand, production of money is having many ambiguities to be studied. Having the concept of reciprocity in mind, production of money is creating significant problems that cannot be underestimated. Initial scarcity of money is resulting in a continuous debt scheme. That can be identified as Debt Based Monetary System (DBMS) which is behaving irrespective of the production of goods and services. This article is explaining the fabricated scarcity of money and how that is covered by the DBMS. Thus this situation let the reason of existence of money be away of production of goods and services.

Keywords: Debt Based Monetary System, Systems Engineering, Fractional Reserve System, Fractional Reserve Banking

Introduction

Systems engineering is an important discipline to create a unified whole that is called the system of systems. It brings together in some way of a number of independent enterprises or businesses. Current problems of environmental, political, cultural, social, economic, technological and psychological issues are multi faceted problems facing humanity. Systems engineering approach gives a good basis to handle these problems in a unified whole.

Within this context, there are two ways of approaches to handle problems i.e. mechanistic approach and systems approach. In a mechanistic approach, the idea is to decompose parts to more basic components then reassemble them and hence explain how things worked. In a system approach, on the other hand, the behaviour or properties of the containing whole is firstly explained. Then the behaviour of the thing to be explained in terms of its roles and functions is explained within its containing whole. The containing whole in some way is greater than the sum of its parts.

One of the systems engineering model is the five layer model [1]. The first layer is product/subsystem engineering. This is to make artifacts, products or goods and services which is also at the core of all systems. The systematisation starts with some problem and ends with a proven solution to the problem. The solution proves the symptoms of the problem to be neutralised and as well as to be effective, compatible with and adapted to its environment [2].

The second layer is the project systems engineering which is related to the corporate wealth creation. This

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again starts with some problem and conceives solution options which are traded against the criteria as effectiveness, reliability, affordability and so on. The unified whole system i.e. product and process, may be partitioned into manageable parts. Then each part may be separately developed before being brought together. The model contains subsystem design which would be a layer 1 activity and customers' and users' requirements as well.

The third layer is the business/enterprise systems engineering that is to create industrial wealth. Many businesses make an industry. At this level, there are two integrated views. One is to design the process that is to be used to design, develop, create, test, integrate and prove the whole solution system. The second is to design the project that is done in conjunction with project management and takes into account business factors and the business environment in which the work is to be done.

The fourth layer is the industrial systems engineering which is about the national wealth creation. This layer models and characterises the nesting of the various layers of systems engineering. It also includes end users, suppliers and markets as well. The industrial systems engineering are not seen as having a life cycle. Because they are able to recreate themselves using the financial return on sales to undertake research, identify, design and make innovative new products and continually replace and update their equipment and facilities. In this respect, they are similar to biological organism like the human body.

The fifth layer is the socio-economic systems engineering that is related to government regulations and control. This is also including legal and political influences. For instance, the former USSR developed five year economic plans. In contrast, free market economies do not plan ahead in that manner. It is soundly based on financial motivation.

From this perspective, money which is created, circulated and accumulated in a country is the solely financial base of the fifth layer systems engineering i.e. socio-economic systems engineering. There should be some reasonable relationship between the two parts, namely amount of money and amount of production.

Natural Economic Cycle (NEC)

It is essential to know, at this step, the nature of manufacturing/production and its economic and social significance. Production is to transform raw materials and ideas into marketable goods and services which are known as economic goods and services. Economic goods and services cannot be obtained without expenditures. Expenditures can be made with money. In other terms, production is to transform raw materials into goods to transfer money from a set of holders to another.

In developed countries, manufacturing industries may be viewed as the backbone of the nation's economy where the real wealth is created. It has been estimated that in such a country on average about a quarter of the population is involved in some form of manufacturing activity, and the rest of the population benefits from the products (Harrington, 1984) [3]. According to 2013 Turkish Statistics Institution [4], in Turkey, manufacturing industries (agriculture, hunting, forestry, fishing, mining, quarrying, manufacturing, and construction) generate approximately 28.6 percent of the nation's wealth and employ 49.1 percent of the working population. Remaining 50.9 percent of the working population is in the service industries. Interestingly, the jobs of half of those employed in non-manufacturing sectors depend on the close links that exist between service systems and the manufacturing industries.

The strength of production determines the strength and scale of socio-economic systems engineering. With this respect, it is not surprising for over two centuries many studies have stressed the importance of production especially manufacturing. Many people attempted to evaluate effects of manufacturing on the nation's macroeconomy. However, it is surprising that very few people from the production area are working on the financial counterpart of the production that is money and its creation and accumulation.

The socio-economic systems engineering of a country requires us to study the unified whole system in two parts. Producing goods and services on one part and producing money on the other. This concept can be depicted as Natural Economic Cycle (NEC) in the Figure 1 as shown below [5].

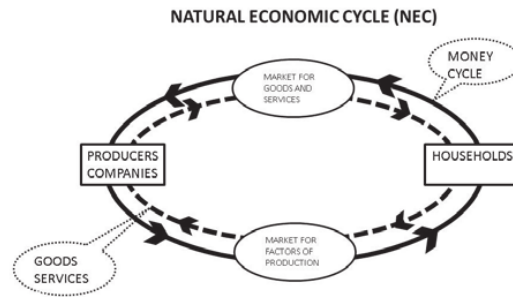


Figure 1. Natural Economic Cycle (NEC)

The most essential thing in the NEC is the production of goods and services. Existence of money is to support the production cycle of goods and services. The production part of the NEC is well-studied. Various methods of optimisations are employed to reduce costs and to maximise profits. But, how the other part of the NEC is worked and how money is created is kept beyond the scope of production studies. In fact, it is too important to leave it to economists only [6]. With the help of systems engineering approach, money creation can be studied from a different and unconventional perspective. Here, we avoid using common financial jargon i.e. terms and definitions. We rather used general terms and definitions to work out the systematic deficiencies of the money creation mechanism.

Requirement of Purchasing Power

The internal significance factors of manufacturing are continued employment, quality of life, and the creation and preservation of skills. The external factors of manufacturing are national defence, and the nation's position and strength in world affairs.

Interestingly, an industrial system is expected to create more and more employment. But on the other hand, we are optimising any industrial system with the object of cost minimisation and profit maximisation. That means we are studying to obtain a given output with a minimum of employment. In the same way, we are continuing to study in the area of energy and technology to replace human power. Similarly, great majority of people who are engaged in industry want goods. But those who owns industrial establishments want simply money.

Money creation has nothing to do with the industrial system but represents the effective demand upon the goods and services produced. Now, as explained by Douglas [7], money distributed in the production of goods and services consists of wages and salaries i.e. labour costs. Since labour costs are not the only cost of production, then we can say it is less than prices. Then,

$$\frac{\text{Costs}}{\text{Prices}} < 1 \quad (1)$$

If wages (labour costs) are reduced by an amount of x , the ratio of purchasing power to prices is lessened,

$$\frac{\text{Costs}-x}{\text{Prices}-x} < \frac{\text{Costs}}{\text{Prices}} \quad (2)$$

Lessening the labour costs reduces the population's ability to buy goods and services produced. Although we are expected to minimise costs to maximise profit.

In general, we can divide all production payments in two groups. Payments made to individuals as wages, salaries, dividends etc. can be denoted as A . Other payments as raw materials, repayment of bank loans and



other non-personal costs can be denoted as B. Prices in this case should be,

$$Prices \geq A + B \quad (3)$$

Therefore, A will never cover the A+B which are Prices. There should then be some intermediate producer to cover the deficiency in the Equation (3). This is currently covered by an unjust mechanism which will be explained in the next section.

If delivering goods and services is the objective of the industrial systems then rate of flow of purchasing power should be equal to the rate of generation of prices. There is a gap between these two rates. This gap is filled in by the Debt Based Monetary System (DBMS) which is issuing purchasing power in the form of loans [8]. In other words, the system is increasingly mortgaging the future in order to sell the goods and services existing at present.

In fact, the true cost of a given programme of production is the consumption of all production over an equivalent period of time.

Let us denote P for production, C for consumption and M for money distributed for a given programme of production. Then,

$$M \times \frac{\int_{T_1}^{T_2} \frac{dC}{dt} dt}{\int_{T_1}^{T_2} \frac{dP}{dt} dt} = M \times \frac{\text{Mean consumption rate for selected period}}{\text{Mean production rate for selected period}} \quad (4)$$

The real cost of a programme of production is not the money cost, but considerably less than the money cost [7]. How to fill in the difference is not studied well because of the current monetary system which is creating purchasing power out of nothing.

Debt Based Monetary System

Banks are creating money out of nothing. The deficiency between the cost of production and the power to buy produced goods and services is closed by banking system with the power of creating money. That power is not given to the banking mechanism but de facto assumed by them. Whenever a bank loans a credit that creates a deposit. Whenever that loan is paid back the the deposit is destroyed. This can be explained mathematically as follows [7],

Let Deposits = D
 Loans = L
 Cash in hand = C
 Capital = K

Then Assets = L+C
 Liabilities = D+K

So that

$$L+C = D+K$$

Differentiating with respect to time, we have,

$$\frac{dL}{dt} + \frac{dC}{dt} = \frac{dD}{dt} + \frac{dK}{dt}$$

Capital K is constant and assume we have cash to be kept fixed then,



$$\frac{dK}{dt} = 0 \text{ and } \frac{dC}{dt} = 0$$

Hence

$$\frac{dL}{dt} = \frac{dD}{dt} \quad (5)$$

This shows us the rate of increase or decrease of loans is equal to the rate of increase or decrease of deposits. How is that implemented in the modern mechanism of money creation is shown in Figure 2 below.

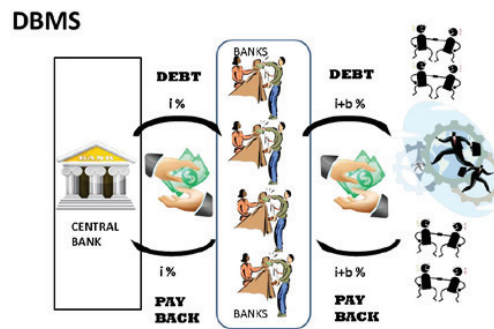


Figure 2. Money Creation Mechanism of The DBMS

Parliaments pass a decree indicating that the money created by the central bank is the only legal tender to be used in the country. Central Banks then create money based on empirical and theoretical estimations. The money is given to banks with interest rate i . Banks sell that money with a reasonable profit $(i+b)$ to people for production or consumption. People pay money (credit) back to bank with an interest $(i+b)$ on due date. Bank pays money back to central bank with an interest i .

Furthermore, if we take a closer look at the mechanism, we see it drifts the system to an unstoppable chaos. Now, suppose the system is at the state of nature and first lot of money M created is lent to a bunch of banks with an interest rate i for a maturity date T . Suppose, the central bank will not create any more money until the date $T+1$. Then how the banks will pay their debts back to central bank with interest rate i ? This is not possible because the total amount of money in the system is M and the total amount of money the central bank is demanding is $M+M*i\%$. M is always less than $M+M*i\%$.

$$M < M(1 + i)$$

Therefore, banks will compulsorily ask more money to pay their debts and will naturally get deeper into debt. Additionally, the compound interest embedded into money creation process makes the growth of debts in an exponential manner. This is a deathly recursive mechanism drifting all of the system into a chaos.

As understood from the Figure 2 and its explanation, money comes to existence (created) as a debt. The whole mechanism is based on that debt. This is why the system is to be called as a Debt Based Monetary System.

From this mechanism, one can think that the whole money is created by central bank with an interest rate i and then is distributed by banks with an interest rate $(i+b)$. In Turkey, for instance, the amount of money created by the central bank is approx. 80 billion Turkish Lira [9]. On the other hand, if we look at the total money sold by banks, either as consumption or production credit, is about 1060 billion Turkish Lira [10].

Now, we have a good question to be answered here. If the central bank is creating 80 billion TL, how come the banks are giving 1060 billion TL money to their customers? Who creates the remaining 980 billion TL (as much as 12 fold of 80) money and how? Who gives the authority to create such amount of money as 980



billion TL to the banks?

In order to understand how that money is created we should look at the Fractional Reserve System (FRS) [11,12]. This is the term used for modern banking system practiced in almost all countries today. Figure 3 depicts the FRS mechanism shown below.

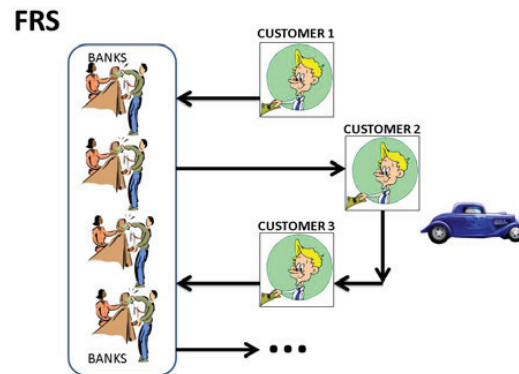


Figure 3. Money Creation Mechanism of The FRS

As shown in Figure 3, suppose, a bank Customer-1 brought to a bank a banknote (money) to deposit. Bank gives a receipt for the money. S/he then leaves the bank confident that s/he can spend her/his money in the marketplace with security. Suppose next that Customer-2 comes to the bank because s/he wants to purchase Customer-3's car and s/he is short of money. S/he would like borrow a certain amount of money. The bank finds her/him credit-worthy and, therefore, lends her/him the money asked. Customer-2 pays the money to Customer-3 and then Customer-3 becomes the bank's second depositor, leaving his money to the bank. The bank gives her/him a receipt and customer-3 leaves also the bank confident that s/he, too, can spend her/his money in the marketplace with security.

What is now the bank's position? The bank has one amount of money deposited in the bank and have issued two receipts against it. What is the collateral? By issuing two claims against the same amount of money, the bank would also have misled the marketplace into believing that one more amount of money exists than actually exists. This practice of banks can go on as much as they want. They can create as much money as they want with a stroke of a pen i.e. giving credit! Do they have the right of creating new ownership out of nothing? With the current FRS mechanism, de facto, yes [13].

This mechanism of money lending makes money appear to reproduce itself. But money does not reproduce itself, nor can it. Bankers are also aware of the risks they are taking. From time to time, depositors at particular banks became worried about whether there was sufficient amount of money available to meet their claims and went to those banks to remove their deposits. If too many arrived at the same time the bank could not honour them all and the business of that bank was disrupted. Depositors who had not succeeded in withdrawing their deposits before the disruption lost their deposits and the owners of the banks lost their own investments.

The FRS mechanism motors on relentlessly, increasing simultaneously both the money supply and the burden of debt. In the DBMS, each new claim represents a new debt. As the number of claims grew, so too did the amount of personal, business and government debt.

Citizens elect a parliament. The parliament charges central bank with the responsibility of creating and maintaining a stock of money for their use. The government then licenses banks to lend money created for them. With the FRS practice, banks create more money out of nothing with a stroke of a pen. One of the most



curious aspects of this arrangement is that the banks do not pay a cent piece by way of royalty or license fee to the government for the use of the money which they create for the government and then use for themselves. To say the least, this is not a commercial arrangement. Worse of all, when the government needs to spend more money on citizens behalf than it has raised in taxes, instead of creating it as citizens have authorised them to do and which would have a one-off cost but no further running costs, it borrows money from the pool created by the banking system. Then citizens have to pay both the one-off cost and the running cost of annual interest on it. This is neither a commercial nor a reasonable arrangement and to be studied in a unified whole from a systems engineering perspective to fix it.

Conclusion

In production of goods and services, there is a lack of purchasing power. It has also shown that the amount of purchasing power is less than the amount of money representing goods and services produced. The deficiency between these two terms is overfilled in by the DBMS. In the industry, every manufacturer has to buy raw materials. On the other hand in banking business, bankers receive the raw material for creating money every time a customer deposits money. As is understood that under the DBMS with FRS, the government is a minor player in money creation process.

Worse, if the government had itself printed hundreds of billions of liras that the banks produced, it could have paid off the entire national debt. Nor would it have had to pay tens of billions of interest yearly. We could now have the finest infrastructure, the finest public transportation system, the finest national health facilities, the finest education facilities, and the finest energy supply that can be obtained. Nor can there be equality of opportunity according to merit under the DBMS. A person with a sound idea and not assets finds it extremely difficult to get his idea financed. A person, on the other hand, with an unsound idea and assets will have little difficulty getting his idea financed.

Furthermore, DBMS together with FRS has not compatible with the production of goods and services in a unified whole. At the layer-5 systems engineering view, national stock of money should have been in some relation with the production of goods and services. But in fact, it is the other way round. Money reproduces itself out of nothing but owns goods and services. DBMS together with FRS represents the largest redistribution of wealth by bankers. Through this mechanism, bankers exercise a power which is not given to them by the people.

Certainly, modern economy cannot function without some kind of medium of exchange which must be created by human beings. At the moment, society uses the FRS expansion method to create money. Money is increased in numbers but decreases as purchasing power to buy goods and services produced. The investment of the funds means the reappearance of the same sum of money in a fresh set of prices. That means, a fresh set of price values is created without the creation of fresh purchasing power. These processes are at the core of the problem. The mechanism creates more money out of nothing and reduces the power to produce goods and services produced. At the same time, the money demands interest. We are then in a vicious circle. The production system requires purchasing power. The DBMS_FRS creates money which results in a further requirements of purchasing power. This is continuously increasing the amount of debt and becoming never ending circle. This problem should be fixed in the money creation mechanism by answering three questions following. First of all, who owns (should own) the money that we are using? Secondly, who decides (should decide) how much money is to be created? Lastly, who decides (should decide) the level of debt burden on the government?

References

- [1] Hitchins, D.K. 2007. *Systems Engineering: A 21st Century Systems Methodology*, Wiley.
- [2] Gundogan, M. 1996. *System Analysis and Design Methods for Computer Integrated Manufacturing*, Proceeding of the UMTIK 96, Ankara, Turkey, September 13.
- [3] Wu, B. 1994. *Manufacturing Systems Design and Analysis*, 2nd Edition, Chapman & Hall.
- [4] www.tuik.gov.tr



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- [5] Gundogan, M. Cetiner, B.G. 2014. Debt Based Monetary System. Joint Symposium on IMSS'14 and CIE'44. www.imss14-cie44.org 14-16 October 2014. Istanbul Turkey.
- [6] Gundogan, M. 1997. Refah Toplumu, Vadi Yayınları.
- [7] Douglas, C.H. 1979, The Monopoly of Credit, 4th Edition, Bloomfield Books, England.
- [8] Gundogan, M. 2002. *Borca Dayalı Para Sistemi Türkiye'nin Sosyo-Ekonomik Analizi*, Keşif Yayınları.
- [9] www.tcmb.gov.tr para verileri.
- [10] www.tbb.org.tr kredi verileri.
- [11] Dornbusch, R. Fischer, S. Startz, R. 2008. *Macroeconomics, 10th Edition*, McGraw-Hill International Edition.
- [12] Cachanosky, N. 2014. Hayek's Rule, NGDP Targeting and the Productivity Norm: Theory and Application, *Journal of Stock and Forex Trading*, 3:121.
- [13] Thoren, T.R. and Warner, R.F. 1994, The Truth in Money Book, 4th Edition, Truth in Money Publication.