

DOES SYSTEMIC PROPERTY CAUSE THE CONTINUING ACCUMULATION OF SEVERE DEBT IN DEVELOPED ECONOMIES?

Sri Lanka Journal of
Economic Research
Volume 9(2) March 2022
SLJER 09.02.02: pp. 21-42
Sri Lanka Forum of
University Economists
DOI: <http://doi.org/10.4038/sljer.v9i2.161>

H Senanayake

W Wimalaratana

K David



Abstract

Even developed economies experience continuing severe debt problems. Debt crises were an old phenomenon, but since the global financial crisis of 2008, economists began to pay renewed interest on the subject. Recent studies show that unsustainable financial conditions that exist may be the decisive macroeconomic challenge in the 21st century. Unsustainable financial conditions mean nothing other than the overwhelming debt and debt relations. In this paper, the authors question whether there could be an inherent fundamental systemic cause that leads to creating unsustainable debt bubbles when the basic economic activity of supply and demand takes place. Upon making a scientific inquiry on the said problem, by employing deductive methodology, this paper finds out that there exists an ‘unavoidable inherent systemic contradiction’ in the economic system that leads to creating unsustainable debt growth. Understanding this unique behaviour of any money-based exchange economic system (not limited to capitalism) is essential to device new macroeconomic policy tools bringing stability to the global economy.

Keywords: *Core debt, Unsustainable debt bubbles, Systemic debt crises, Inherent systemic contradiction*

H Senanayake (Corresponding Author)

Department of Economics, University of Colombo, Sri Lanka.

Email: hemasenayake@yahoo.com, Tel: +1 646 266 2537

 <https://orcid.org/0000-0001-9182-9444>

W Wimalaratana

Department of Economics, University of Colombo, Sri Lanka.

Email: wimala10@gmail.com

K David

Hong Kong University of Science and Technology, Hong Kong.

Email: eeakdavi@gmail.com

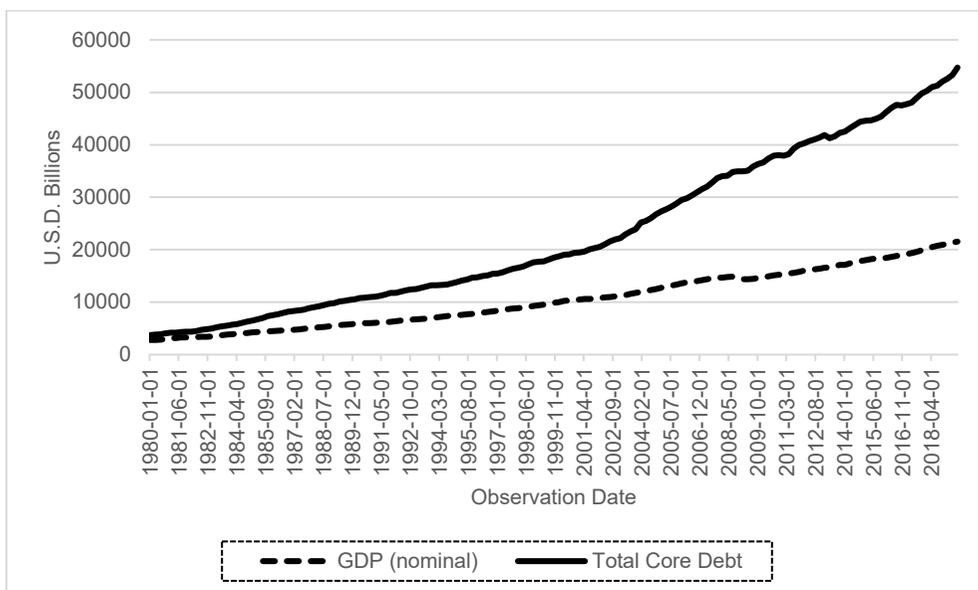


INTRODUCTION

Lawrence Summers (2014, 2016) who is an American economist, and a former treasury secretary of USA says “Secular Stagnation – a prolonged period in which satisfactory growth can only be achieved by unsustainable financial conditions.” In other words, this means that significant growth cannot be achieved without creating unsustainable financial conditions.

The development of the economy does not bring any significant promise for the enhanced wellbeing of global citizens, even if developed economies create unsustainable financial conditions causing overwhelming debt, creating debt bubbles which lead to financial crises frequently. Ever-increasing accumulation of total debt in developed economies such as the United States, Europe & Japan etc. is being considered as a recent phenomenon. For example, Japan’s total debt to GDP is 378.3% at the end of 2019 before the Covid-19 pandemic hit. At the end of the same year, total debt to GDP of the United States and China were 253.3% and 262.9% respectively. For comparison, Argentina’s total debt to GDP was 117.7% at the end of the same year¹. Interestingly developed major economies which do not have significant sovereign debt problems, experience overwhelming debt in their economies. The historical growth of total debt of the United States in relation to the GDP is shown in Figure 1 below (all data from FRED and compiled by authors).

Figure 1: GDP Vs. Total Core Debt, USA



Source: Compiled by authors

¹ The year 2019 is taken to avoid the increase of debt due to Covid-19 pandemic. All data from Bank of International Settlement (BIS).

The above chart shows that total core debt which consists of public debt, total consumer liability, and total credit issued to nonfinancial businesses, grows faster (exponentially) than GDP. Then a question arises as to why this is happening so. In general, many economists grappled with this question of increasing debt and debt-related crises before, and they have developed various debt and financial crises hypotheses and theories. To have a comprehensive understanding of debt crisis hypotheses and theories it is noteworthy to mention Wicksell's (1898, 1906) financial crisis model, Hayek's (1929) financial crisis theory, Keynes's (1936) view on economic crises, Fisher's (1933, 1935) economic crisis model, Warburton's (1966) financial crisis model, Friedman, and Schwartz's (1971) view on economic crises, Minsky's (1982, 1992) financial instability hypothesis, behavioural economists' view of financial crises [Shiller, (2003, 2015) and McDonald, (2009)], Bernanke's (2005, 2015) global savings glut hypothesis, Summers's (2014, 2016) secular stagnation hypothesis. Additionally, many leading economists have researched extensively about systemic debt/financial crises even though they did not build their own crisis models. In this regard Crotty (2009, 2012, 2017), Krugman (2012), Stiglitz (2010, 2012), Toporoswski (2010), Jarrow et al. (2007), and Hellwig, and Lorenzoui, (2009) have contributed immensely.

What is common in all these hypotheses or theories is that they presume that the economic system is fine but due to some erroneous policy applications or error in some other factor or due to human biases in decision making, overwhelming debt takes place. For example, the first financial crisis theory of Wicksell (1898) finds fault in the central bank for lowering the rate of interest than the natural rate of interest creating a cumulative expansion and subsequently increasing the rate of interest than the natural rate creating a cumulative contraction resulting to trigger a financial crisis. This explanation shows that Wicksell finds that the central bank's policy application in determining interest is in error and it causes the crisis. Similarly, the latest (newest) debt crisis hypothesis namely the "secular stagnation hypothesis" of Summers (2014, 2016) finds the cause for a crisis in developed economies in a few variables including the zero-bound interest rate and low inflation. Again, this insists that the economic system is fine but monetary and fiscal policy applications are wrong. Likewise, none of the prior mainstream crisis theories presume a fundamental systemic contradiction in the capitalist exchange economic system when the supply and demand are met. This is natural from the fact that neoclassical economics dominates the mainstream theoretical economics to date except for Keynesian intervention.

Neoclassical economists argue that the market economy makes the highest well-being of all parties involved in the economy. It is assumed that market forces guarantee the equilibrium even though there are fluctuations. Under this presumption, they consider that the economic system is fine. However, Keynesians argue that markets are not perfect hence the government has a role to play in strengthening the regulatory framework to prevent market failures.

Subject to the intervention of government, the capitalist economic system is fine, Keynesians argue. Since these two schools of economic thought dominate the mainstream theoretical economics, it is comprehensible that none of the prior mainstream debt-crisis theories presume a fundamental systemic contradiction in the capitalist exchange economy when the supply and demand are met.

The same idea, but at a much more epistemological level, Keynes (1936) points out that, "... if orthodox economics is at fault, the error is to be found not in the superstructure, which has been erected with great care for logical consistency, but in a lack of clearness and of generality in the premises."

However, while being humble and showing indebtedness to predecessor giants, no researcher should abstain from questioning the very foundation of the superstructure if there is a compelling reason to question so. This paper finds out that orthodox economics presumes that the capitalist economic system is fine. This is especially true when comes to the analysis of debt and financial crises because as mentioned above none of the prior and existing debt and financial crisis theories presume that the economic system is "not fine." But, if the system is "not fine" and has an inherent systemic contradiction, the superstructure, which has been erected with great care for logical consistency presuming that the economic system is fine, is at fault.

Thus, this paper questions the very foundation of the "superstructure" erected by presuming the system is fine. Having questioned so, it is envisaged by this paper to find out whether the economic system is not fine having a systemic contradiction that causes the continuing accumulation of systemic debt. However, this questioning will not compel economists to rethink critically of their basic assumption, if this paper does not prove that the system is not fine. This burden of proof does not fall on the shoulders of those economists who begin their analyses by assuming that the system is fine. Therefore, the authors of this paper undertaking to prove that there is a systemic contradiction in the economy formulate the following hypothesis for analysis.

Hypothesis

There is an 'unavoidable inherent systemic contradiction' (or systemic property) in the macro-economic system, which contradiction necessitates to create a component of debt that can never be paid back under the normal functionality of the economy in all three phases of economic activity defined as economic growth, stagnation, and recession resulting in creating unsustainable debt bubbles.

This hypothesis expresses a possible cause for continuing accumulation of debt in the economy. The closest three hypotheses to the above hypothesis that exist in economic literature are (1) financial instability hypothesis of Minsky (1982, 1992), (2) secular stagnation hypothesis of Summers (2014, 2016), and (3) behavioural economists' hypothesis of financial crises [Shiller, (2003, 2015), and McDonald, (2009)].

But none of these three hypotheses presume the existence of unavoidable systemic contradiction in the macroeconomic system that leads to creating unsustainable debt bubbles. The reason Minsky identifies for the overwhelming debt bubbles is the speculative activities of entrepreneurs and activities of speculative actors in the financial industry, but such behaviour is the nature of the capitalist economy he argues. He does not see any systemic cause. Similarly, even though Summers (2016) identifies that mature capitalist economies cannot achieve significant economic growth without creating unsustainable bubbles, he saw the problem lies mainly in “near zero-bound interest rate” and “low inflation” and hence Summers (2016) identifies the cause for a crisis in a few economic variables but does not presume any systemic contradiction. Similarly, behavioural economists’ financial crisis theory (Shiller, 2003) finds the cause in irrational human behaviour in making decisions which behaviour will last forever, and hence periodic crises are unavoidable in a capitalist economy. Behavioural economists’ crisis hypothesis pivots just around financial markets and does not see any systemic reason other than biases of human behaviour when making irrational decisions regarding investments.

Contrary to all above views, the hypothesis mentioned above in this paper discusses a systemic property (contradiction) that does not relate to any speculative activity or any monetary or economic policy variables and any human biases or behaviour, but it relates to a systemic contradiction when the economy performs its fundamental economic activity in an exchange economy. According to the hypothesis, when this basic economic activity occurs, it always creates a component of debt that can never be paid back, then, it is common sense that unpaid debt should accumulate in the system leading to unsustainable debt bubbles. Therefore, the proof of hypothesis involves proving the existence of contradiction which leads to the accumulation of heavy debt. This paper is dedicated to proving this hypothesis.

METHODOLOGY

According to Aristotle, there are two fundamental methods of gaining knowledge: deduction and induction. In scientific deduction, the starting point consists of an unrestrictedly true law that will be used to find the answer to a singular case. Aristotle argues: “Given the universal validity of the premises in the argument, the conclusion can be drawn with absolute certainty” (Dooremalen et al, 2010). Induction, on the other hand, grasps the results of an observation (data) on an occurrence to advance a universal law.

In scientific inquiry, neither method of reasoning is superior to the other. Trochim (2006)² referring to the two broad methods of reasoning, argues that arguments based on

² Trochim William M. is a Professor of Cornell University, who wrote “The Research Methods Knowledge Base” which is a comprehensive web-based textbook that addresses all of the topics in a typical introductory undergraduate or graduate course in social research methods.

experience or observation are best expressed inductively, while arguments based on laws, rules, or other widely accepted principles are best expressed deductively.

In mathematics, deductive-axiomatic method works well. Given the universal validity (or the acceptance) of the axioms used in the argument, a conclusion can be drawn with an absolute certainty. Keynes (1936) being a mathematician himself finds that deductive method of reasoning just works fine in postulating many macroeconomic postulates. He insists that economic theory is not always arising from empiricism. Consider the following example.

- Statement 1: An entrepreneur can sell his produce either to a consumer or another entrepreneur. The sum of total proceeds of all entrepreneurs is the supply-realized.
- Statement 2: What is sold by an entrepreneur must be bought by a consumer or another entrepreneur and hence, the sum of what is bought is the demand-realized.
- Conclusion: Supply-realized = Demand-realized (Realized supply equals realized demand).

Here, given the validity of the two premises, the conclusion drawn is true. Like in axiomatic mathematics, deductive reasoning in economics as pointed out by the example above, should work well. Hence, the method of choice in the analysis of this paper is deductive methodology.

ANALYSIS

As mentioned in the methodological section above, the deductive method of reasoning will be used in proving the said hypothesis. Usually, deductive analyses begin with axioms. In the field of economics, there are certain axioms. "All production is to ultimately satisfy a consumer (Keynes, 1936)." This is an axiom in economics. This analysis can begin with it. So, there can be an economic system in which the producer sells his produce directly to the consumer as all products in this system ultimately satisfy the consumer. But this is not the economic system that exists today. It is a complex one. In the present system, an entrepreneur sells his finished output to a consumer or to another entrepreneur who produces things to ultimately satisfy a consumer. This kind of system is defined as an unintegrated economic system. In an unintegrated economic system, during any period (e.g., one year), entrepreneurs will sell the finished output to consumers or other entrepreneurs for a certain sum which we will designate as A . This was how Maynard Keynes began his analysis in the General Theory. Therefore, in this analysis too, some of Keynes's notations would be retained even though the analytical method is different. Accordingly, a total sum of sales or proceeds on the given period would be $\sum A$. This is an unambiguous bookkeeping quantity.

This analysis will begin with a simpler form of the unintegrated economic system and gradually will incorporate the roles of other activities such as investments and investments made in stocks and derivative markets that are found in more complex advanced economies like the United States economy.

Since the entrepreneur sells a certain part of the finished output to other entrepreneurs, the amount sold to other entrepreneurs is designated as A_1 . Accordingly, total sales made to other entrepreneurs will be $\sum A_1$ which too is an unambiguous bookkeeping quantity.

An entrepreneur will also have spent a certain sum, designated as A_2 , in purchasing output from other entrepreneurs. This includes all costs expended on raw materials, utility, machinery, etc., except the cost of labour employed by the entrepreneur. Accordingly, the total cost of purchasing output from other entrepreneurs or total input cost except labour will be $\sum A_2$, and this too is an unambiguous bookkeeping quantity.

Since the entrepreneur spends a certain sum on employing labour, let the cost of labour be designated as L , which includes the cost of labour of all kinds, including any remuneration paid to the entrepreneur for his or her consumption. Accordingly, the total cost of labour would be $\sum L$. Therefore, the capital (or money) expended by the entrepreneur is the sum of input cost and the cost of labour which is A_2+L . It follows that the total capital used up in any given period of time would be $\sum A_2 + \sum L$.

When entrepreneurs undertake to spend $\sum A_2 + \sum L$, they also expect to receive total income or proceeds amounting to the value of $\sum A$ as pointed out above. Since they expect a higher income than the capital used, an equation can be written as follows.

$$\sum A > \sum A_2 + \sum L$$

For convenience, ignoring the sign of “ \sum ”, the above equation can be written as follows.

$$A > A_2 + L \dots\dots\dots (1)$$

At this juncture, a definition of consumption is necessary. Consumption is what is sold to consumers. It is observed previously that an entrepreneur will sell the finished output to another entrepreneur or a consumer. Therefore, consumption can be defined as what is not sold to other entrepreneurs out of total sales. This means consumption equals $A - A_1$, where A is total proceeds of the entrepreneur and A_1 is the amount sold to other entrepreneurs. Accordingly, it follows that the total consumption in any given period would be $\sum A - \sum A_1$.

Regarding the definition of consumption, Keynes argues that this is common sense. He further pointed out that “it is not an easy task to differentiate consumer purchaser and investor purchaser.” But this difficulty can be overcome when the consumption is defined as $(\sum A - \sum A_1)$ where $\sum A$ is total sales, and $\sum A_1$ is total sales made by one entrepreneur to another. When we omit “ \sum ” we can write consumption as $(A-A_1)$ ” (Keynes, 1936).

Keynes's argument is logical and hence consumption is defined as $(A - A_1)$.

Now, from the equation (1) above it is observed that, $A > A_2 + L$.

Then, it can be written that, $A - A_2 > L$.

$$\text{Then; } (A - A_2) - L > 0 \dots\dots\dots (2)$$

Also, it has been observed that both A_1 and A_2 are unambiguous bookkeeping quantities. In fact, when one entrepreneur is considered, both A_1 and A_2 are in his books, but when summed up separately both quantities must be equal because A_1 of the entrepreneur X is posted in the books of the entrepreneur Y as A_2 and vice versa.

Therefore, $\sum A_1 = \sum A_2$; when the sign of "Σ" is omitted, $A_1 = A_2$.

From the equation (2) above, it is observed that, $(A - A_2) - L > 0$.

Since $A_1 = A_2$, the equation (2) can be rewritten using A_1 instead of A_2 . So that,

$$(A - A_1) - L > 0 \dots\dots\dots (3)$$

In the above equation $(A - A_1)$ is the consumption and from the standpoint of income, L is the total income of labour. Then, the above equation (3) shows that the value of what is sold to consumers for consumption or realized consumer sales is greater than the debt free money income made available to consumers by all enterprises because $(A - A_1)$ is the consumption and "L" is consumption money made available by all entrepreneurial activity or consumer income. This means there is a gap between the actual consumption and the debt free money which has been allocated by the economic system for consumption. This is a *systemic gap* (or systemic property) that exists at consumption level. But this gap is always filled because $A - A_1$ is the 'realized consumption' or the consumption done no matter what the consumer income (L) is. This means that the realized consumption (demand) is always equal to the realized supply of consumables (supply).

This again means that the consumer expenditure must be equal to the value of consumption or realized consumable supply. How does this happen, while having a lessor income (L) than the value of consumption $(A - A_1)$? This is where the present practice of Fractional Reserve Banking system (see Appendix for details) which is the basis for present 'elastic money system' plays a huge role. The continuing analysis will explain this dilemma of spending more money while having lessor income (L).

In the real world, some people save part of their income. Savings can be channelled to investors to increase investments or savings may be used to issue credits to consumers for the use of consumption. Also, savings may be invested in the stock market or may be used to issue new credits for the purchase of stocks (so-called margin credit). The above scenarios are incorporated into the analysis one by one and finally take all the scenarios together to understand how the complex economic system works.

Now, consider that some people saved part of the money and that saving is issued as consumer credit and let savings be designated as “S” and the credit issued as “C.” Since the consumption done is $(A - A_1)$, the money expended on consumption must equal to the value of consumption. Hence, an equation can be written as follows.

$(A - A_1) = L - S + C$, where $(A - A_1)$ is the realized value of consumption and $(L - S + C)$ is the sum expended on consumption.

$$\text{So, } (A - A_1) = L - S + C \dots\dots\dots (4)$$

This equation (4) is a provisional one (but it does not mean that the flowing logic is inaccurate).

Then, from equation (4) following equation can be derived.

$$(A - A_1) - L = C - S \dots\dots\dots (5)$$

Previously, from equation (3), it has been observed that $(A - A_1) - L$ is greater than zero. Therefore, the left side of the above equation (5) must be greater than zero and so should be the right side of the equation. Hence, it can be written as follows.

$$C - S > 0.$$

$$\text{Then, } C > S \dots\dots\dots (6)$$

So, incorporating the relationship between C and S as shown in the equation (6), the said provisional equation (4) must be rewritten as follows for accuracy.

$$(A - A_1) = L - S + C \text{ when } C > S \dots\dots\dots (7)$$

$$A = A_1 + L - S + C \text{ when } C > S \dots\dots\dots (8)$$

In the above equations, A is what is sold by all entrepreneurs. Hence, A is the realized supply. Then, what is sold should be demanded and bought, a quantity defined as realized demand that must always be equal to realized supply. This equilibrium between realized supply and realized demand always take place in the economy no matter whether the economy is in a growth phase or stagnation or recession.

Now, interestingly the above equation (8) explains that the equilibrium between realized supply and realized demand takes place by creating a component of credit (debt) than savings.

It is pertinent here to discuss how credit is issued more than savings. Usually, banking institutions are considered as intermediaries who provide funds to those who want to borrow either for investment or consumption from money not used at present by savers. So, in simple theory banks cannot issue credit more than incoming deposits (savings). However, modern core banking practice is different because “designated commercial

banks” can issue more credit than incoming deposits while creating something known as “credit money” during the credit issuing process and this banking system is called “Fractional Reserve Banking System.” However, only a certain kind of bank defined as “designated commercial banks” can participate in the Fractional Reserve banking system (refer to Appendix for more details).

If the economic equilibrium between realized supply and realized demand is always met by creating a component of debt (credit) than savings, whatever the subsequent repercussion is, the economic system requires a banking system that can create more credit than savings. This requirement can only be met by the fractional reserve banking system.

However, it is common sense that any expenditure incurred by consumers above their disposable income cum savings means that they literally live beyond their monetary means. But equations (7) & (8) show that such behaviour is required or unavoidable by the present monetary arrangement in the contemporary capitalist system.

If consumer credit, over and above savings is not issued then, there are another few possibilities to bring the realized-demand-and realized-supply into equilibrium. One possibility is to use savings to increase investment. From the economic literature, we know that Keynes has argued that savings must be equal to investment so as to ensure that entrepreneurs get back what they expect from consumers, but he also insisted that investment must not produce products for immediate consumption to ensure that entrepreneurs get back what they expect from consumers. The accuracy of these two important assertions of Keynes will also be investigated in the continuing analysis.

Now, let the credit issued to investors or credit issued to increase investment in any given period of time be designated as ΔI . From the equation (7) we know,

$$(A - A_1) = L - S + C \text{ when } C > S.$$

Therefore, if any increment of ΔI is going to put the system into equilibrium then a new equation can be written as follows.

$$(A - A_1) = L - S + \Delta I \text{ when } \Delta I > S, \text{ Since } C > S$$

So, $\Delta I > S$ at equilibrium.

This means that the economic system must increase investment more than savings to bring the system into equilibrium. In other words, if consumer credit, over and above savings is not issued as shown previously, then, one other possibility is to use savings to issue more investment credit than savings. This deductive determination can be compared with Keynes’s view which says that savings must be equal to investment but what is found here is that the investment must be more than savings at the system’s equilibrium between realized-supply (A) and realized-demand. Further, this equilibrium takes place when the quantity defined as consumption ($A - A_1$) in the given period of time is not increased by

the increased investment in the same period. This deductive determination is in line with Keynes's second observation which says that an investment must not produce products for immediate consumption to ensure that entrepreneurs get back what they expect from consumers.

These two determinations are directly deduced from axiomatic mathematical deduction. This determination as pointed out above partly upholds Keynes's observation that the equilibrium takes place or entrepreneurs will get back what they expect to get back (the quantity A), if an increment in investment does not produce commodities for "immediate consumption." But this is only partly true because it disproves that, entrepreneurs will get back what they expect from consumers if savings are invested subjected to the said condition – and on the contrary, what has been proved is that the system will be in equilibrium only if the increment in investment exceeds total savings and when this increased investment does not produce commodities for immediate consumption.

In the above, it has been proven that the economic system must increase investment more than savings at the system's equilibrium between realized supply and realized demand. This can only happen if the banking system issues more investor credits than savings. Again, this requirement can be met only by a banking system that issues more credits than incoming deposits (savings), as in the case of the fractional reserve banking system.

Now, if savings are not issued as consumer credit or as investment credit then savings can be used to issue credit to investors to be invested in buying stocks and derivatives from the financial market. As a result of the increase in stock prices, investors get profit which is their income for consumption. Therefore, let the increment in investment in the stock market be designated as ΔFi .

Similarly, if increasing investments in the stock market bring the system to equilibrium then ΔFi must be at least equal to the variable C. Since C is greater than S (savings) then ΔFi must be greater than S when equilibrium takes place. Hence, ΔFi cannot be greater than S, if only savings are invested in the stock market. Therefore, if, ΔFi brings the system into equilibrium the banking system must create more credit than savings (deposits) for the investment in stocks which means,

$$\Delta Fi > S.$$

Now, consider all these possibilities together as they all occur simultaneously in the contemporary unintegrated economic system.

From equation (8) we have: $A = A_1 + L - S + C$ when $C > S$.

Since consumer credit issuance, increment in investment credit and the credit issued for the purchase of stocks take place simultaneously in the given period, the above variables would not remain the same; the value of consumption credit, the value of investment credit and the value of credit issued by speculative investors in the stock and the derivative market will change.

Hence, when all activities take place, it can be assumed that C_1 = consumer credit including public debt, ΔI_1 = increment of investment in the real sector, ΔF_i_1 = increment of investment in the stock market. Hence, it is conceivable that variables C , ΔI and ΔF_i are not respectively equal to C_1 , ΔI_1 and ΔF_i_1 .

Now, from equation (7) we have: $(A - A_1) = L - S + C$ when $C > S$.

Therefore, a new equation can be written as follows.

$$(A - A_1) = L - S + C_1 + \Delta I_1 + \Delta F_i_1, \text{ when } (C_1 + \Delta I_1 + \Delta F_i_1) > S \dots\dots\dots (9)$$

$$A = A_1 + L - S + C_1 + \Delta I_1 + \Delta F_i_1, \text{ when } (C_1 + \Delta I_1 + \Delta F_i_1) > S \dots\dots\dots (10)$$

What does the above equation (10) imply? It shows that the realized supply is achieved always only when the disposable income cum credit (debt) created exceeding savings either in the consumption debt regime, or investment debt regime, or in margin debt regime or all sectors together. Further, the quantity “A” in the above equation is what is sold, which is by definition is the realized supply.

What is sold must be demanded and bought. What is bought can be defined as realized demand and must be equal to realized supply. Accordingly, realized supply and realized demand must always be in equilibrium. Since equation (10) above shows that realized-supply is always achieved by creating a component of debt exceeding savings either in the consumption debt regime, or investment debt regime, or in margin debt regime or all sectors together, it can be logically concluded that the equilibrium between realized-supply and realized-demand always met by creating a component of debt exceeding savings either in the consumption debt regime, or investment debt regime, or in margin debt regime or all sectors together. This again means that this equilibrium between realized supply and realized demand is always met but the system creates more debt than savings no matter whether they appear as total debt to government (public debt), debt to households or as debt to the non-financial corporate sector, or debt to financial market operatives. (Note: The present Fractional Reserve Banking system supports this requirement).

Further, it can be concluded that there exists a systemic gap between the realized supply and realized demand which is required to be filled by creating a component of debt exceeding the system’s savings and this is unavoidable.

Then, it is clear that the necessity to expend more than the system’s income (disposable income cum savings) arises from an unavoidable fundamental systemic gap that exists when the equilibrium between the realized supply and realized demand is met. Hence, this ‘gap’ is defined as the “Economic System Gap.”

This systemic gap always exists in all three phases of economic activity which are typified as economic growth, stagnation, and recession because equation (10) is true for all economic phases.

Accordingly, from the above analysis, it has now been proved that the hypothesis which says that there is an inherent systemic contradiction (or systemic property) in the macro-economic system, necessitates creating of a component of debt that can never be paid back under the normal functionality of the economy in all three phases of economic activity defined as economic growth, stagnation, and recession, resulting in creating unsustainable debt bubbles in economies, is true.

Here, it is worthy to mention that from a neoclassical point of view, macro models need microeconomic foundations. But a system could possess an emergent property, that cannot be explained by the behaviour of individual elements or agents of the system. A simple example is salt. Regular salt is a chemical system (compound), it is formed by the combination of Sodium (Na) and Chloride (Cl) but none of these elements has a salty taste. But the system (salt) displays an emergent property (salty taste) that are not possessed by any of the individual elements. Similarly, if the economic system possesses an emergent property, then it cannot be explained by the behaviour of individual economic agents on which the micro-foundations are based upon. Findings of this analysis show that in the economic system, there is a phenomenon relating to the accumulation of unsustainable debt, which cannot be explained using micro-foundations. Additionally, it is important to note that there is no known policy to deflate systemic debt as of now. The findings of this research will perhaps initiate a thorough policy discussion on this subject.

CONCLUSION

There is a very basic equilibrium in the economic system. It is the equilibrium between the realized supply and realized demand. By definition, what is sold by all entrepreneurs is the realized supply (the quantity 'A' in the preceding analysis). Since nothing can be sold without demand and active buying what is bought is the realized demand. Since what is sold must be bought, there will always be a perfect equilibrium between realized supply and realized demand. This equilibrium between realized supply and realized demand is always met but by creating a component of debt exceeding savings either in the consumption debt regime, or investment debt regime, or in margin debt regime or all sectors together. In other words, the system expends a certain amount of money beyond the system's income that can never be paid back. This is a systemic necessity and the Fractional Reserve Banking system facilitate the process. Any money that can never be paid back should accumulate creating overwhelming debt in the economy in the long run. Accordingly, it is found out that the economic system has an unavoidable inherent systemic property (contradiction) that causes severe debt accumulation. It also finds out that the economic system is not fine as it has an inherent systemic contradiction.

REFERENCES

- Bernanke Ben S. (2005). The Global Saving Glut and the U.S. Current Account Deficit, Federal Reserve Board.
- Bernanke Ben S. (2015). Why are interest rates so low, part 3: The Global Savings Glut, Brookings Institute.
- Crotty J. (2009). Structural causes of the global financial crisis: a critical assessment of the 'new financial architecture', *Cambridge Journal of Economics* 2009, 33, 563–580.
- Crotty, J.R. (2012). The Great Austerity War: What Caused the US Deficit Crisis and Who should Pay to Fix it?, *Cambridge Journal of Economics* 36(1): 79–104.
- Crotty J. (2017). *Capitalism, Macroeconomics and Reality – Understanding Globalization, Financialization, Competition and Crisis*, Edward Elgar Publishing, USA, U.K.
- Dooremalen, H., & Borsboom, D. (2010). *Metaphors in psychological conceptualization and explanation*, Information Age Publishing, Charlotte, USA. Retrieved from Google Scholar.
- Douglas, C. H., (1931). The Monopoly of Credit, <https://www.socred.org/images/douglas-archives/MonopolyOfCredit.pdf>.
- Fisher, I. (1933). The Debt-Deflation Theory of Great Depressions, *Econometrica*, Vol. 1, No. 4 (Oct. 1933), pp. 337-357: <http://www.jstor.org/stable/1907327>.
- Fisher, I. (1935). 100% Money: Designed to keep checking banks 100% liquid; to prevent inflation and deflation; largely to cure or prevent depressions; and to wipe out much of the National Debt, New York: The Adelphi Company.
- Fisher, I. (1936). 100% Money and the Public Debt, *Economic Forum*, Spring Number, April-June 1936, 406-420.
- Friedman, M., Schwartz, A.J. (1971). *A Monetary History of the United States, 1867-1960*, Princeton University Press, Princeton.
- Gray, J., (1948). *Lectures on Nature and Use of Money*, BiblioLife, LLC.
- Hayek, F.A. (1929). *Monetary Theory and the Trade Cycle*, Mises Institute, <https://mises.org/library/monetary-theory-and-trade-cycle-0>.

- Hellwig, C. & Lorenzoui, G. (2009). Bubbles and Self-enforcing Debt, *Econometrica*, 94, Vol. 77, No. 4 (July, 2009).
- Ingham G. (2004). *The Nature of Money*, Polity Press, Cambridge, U.K.
- Jarrow, R.A, Protter, P., Shimbo, K. (2007). *Asset Price Bubbles in Complete Markets*, Part of the Applied and Numerical Harmonic Analysis book series, Birkhäuser Boston.
- Keynes, J.M. (1936). *The General Theory of Employment, Interest and Money*, First Harbinger Edition, U.S.A., (1964).
- Krugman, P. (2012). *End This Depression Now*, W.W. Norton & Company Inc., New York.
- MacDonald, I. A., (2009). *The Global Financial Crisis and Behavioral Economics*, *Economic Papers*, Vol. 28, No. 3, 249–254, The Economic Society of Australia.
- Marx, K., (1894). *Capital: Volume III*, 1981 Edition, Penguin Books.
- Mill, J. S., (1948). *Principles of Political Economy*, Theophania Publishing.
- Minsky, H.P. (1982). *Can “It” Happen Again? Essays on Instability and Finance*, M.E. Sharpe, New York.
- Minsky, H.P. (1992). *The Financial Instability Hypothesis*, Levy Economics Institute Working Paper No. 74, Levy Economics Institute. USA.
- Paul, R., (2009). *End the Fed*, Grand Central Publishing, New York.
- Shiller R. (2003). From Efficient Markets theory to behavioral finance, *Journal of Economic Perspectives* 17, pp. 83-104.
- Shiller, R. J., (2015). *Irrational Exuberance*, Third Edition, Princeton University Press, Princeton, New Jersey.
- Stiglitz, J. E., (2010). *Free Fall*, W.W. Norton & Company, New York.
- Stiglitz, J. E., (2012). *The Price of Inequality*, London: Penguin Books.
- Summers, L. H., (2014). U.S. Economic Prospects: Secular Stagnation, Hysteresis, and the Zero Lower Bound, *Business Economics*, vol.49, 2014, pp. 65–73.
- Summers, L. H., (2016). *The Age of Secular Stagnation: What It Is and What to Do About it*, *Foreign Affairs*, vol. 95, No.2, March/April 2016.

Toporowski J. (2010). *Why the World Economy Needs a Financial Crash and Other Critical Essays on Finance and Financial Economics*, Anthem Press: New York.

Trochim, W.M.K. (2006). Research methods knowledge base, Retrieved from ResearchGate.

Warburton, C., (1966). *Depression, Inflation, and Monetary Policy; Selected Papers, 1945-1953*, Kessinger Publishing, LLC, 2010.

Wicksell, K. (1898). *Interest and Prices*, Sentry Press, New York, 1936.

Wicksell, K. (1906). *Lectures on Political Economy*, Routledge, London, 1935.

Yamaguchi, K. (2011). *Workings of A Public Money System of Open economies – Modeling the American Monetary Act, (Revised Version)*, <http://monetary.org/wp-content/uploads/2011/11/DesignOpenMacro.pdf>

APPENDIX

Fractional Reserve Banking System

Fractional Reserve Banking system is a banking system that could create more credit (debt) than incoming deposits. It is the core banking system in practice as of now in almost all countries. There is another banking system known as Full Reserve Banking which cannot create more credit than incoming deposits, but this system is not in use even though many economists suggest a transition to Full Reserve system from Fractional Reserve system with a view to prevent debt crises. Specially, Fisher's (1936) proposal which later became known as "Chicago Plan", and recently Yamaguchi's (2011) plan for "A Public Money System of Open economies – Modeling the American Monetary Act", insist the transition to Full Reserve system from Fractional Reserve system.

Why it requires to have a critical understanding of the Fractional Reserve system in this research paper? It is because, this paper finds out that the present system of economy creates more debt than savings when the realized-supply and realized-demand equilibrium is met. And this credit creation is unavoidable systemic requirement. If it is the case, then there should be a banking system that is capable of catering to such systemic need and then it is required to retain that system to ensure economic growth whatever the later repercussions (continuing accumulation of severe debt) could be. Therefore, it is understandable that any reform of banking system must be evaluated under the light of new macroeconomic findings of this research. Therefore, it is important to understand the competing views of the said two banking systems. The purpose of this Appendix is to critically understand the concept of Fractional Reserve Banking system.

According to the written history, the confusion on this subject continues since 1848 until to date at the time of writing this paper in 2021/2022. In 1848 two books were published putting exact opposite point of views on the subject. One book was John Gray's (1948) "Lectures on the Nature and Use of Money." The other one was "Principals of Political Economy" authored by John Stuart Mill (1848). John Gray held the view that banks have some "magical power" in creating credit virtually 'out of nothing.' On the contrary, Mill in his book argued that "Credit has a great but not, as many people seem to suppose, a magical power; it cannot make something out of nothing ... It seems strange that there should be any need to point out that credit, being only permission to use the capital of another person, the means of production cannot be increased by it, but only transferred ... The same sum cannot be used as capital by both the owner and also by the person to whom it is lent." (Mill, 1848).

Karl Marx (1894) took the view that banks are financial intermediaries between savers and borrowers and hence banks don't create money: "A bank represents on the one hand the centralization of money capital, of the lenders, and on the other hand the centralization of the borrowers. It makes its profit in general by borrowing at lower rates than those at which it lends" (Capital: Volume III, p. 528)

Major Douglas (1931), like John Gray, rejected outright the views of Mill and Marx on credit. He claimed that bank loans are the issue of money just like the issue of notes by the Bank of England and that, by making loans, “a bank acquires securities for nothing”, and that “it is absolutely correct to say that . . . new money has been created by a stroke of the banker’s pen.” (The Monopoly of Credit, 1931 pp. 15 and 17)

Even though there is continuing confusion about banking operations, what is certain is that credit and debt growth cannot be understood without logical comprehension of the core banking operation in the contemporary economic system. This understanding is essential, even though it is not a part of this research, in order to undertake a proper discussion under the light of findings of this research about financial/ debt crash theories, solutions suggested or about possible future solutions.

As mentioned above basically, there are two banking systems; one is fractional reserve banking, and the other is Full Reserve Banking System. In fact, which system a country need?

In a democratic society, people have the capability to choose one system over the other. For an example, after the Great Recession of 2008-09, there was a considerable socio-political movement to end the Fractional Reserve System together with the Federal Reserve (the U.S. version of Central Bank). “Today there is a growing social movement, even a political movement, dedicated to ending the Fed.” (Paul, 2009). If this movement become a mass movement, then possibly through a democratic process, the United States would have ended the Fractional Reserve Banking system. The question of choosing a money system is very important because modern civilization is based on monetary system and bad monetary system can destroy civilizations. Choosing a proper banking system is purely a technical one not a political question that can be resolved democratically if the society is not enlightened on the matter.

Is there a consensual basis to resolve this important question of choosing a money system? All economists agree that there are certain things call macroeconomic fundamentals. If macroeconomic fundamentals demand a certain monetary system, then there is no option other than choosing that system. If the macroeconomic fundamentals do not demand a particular monetary system, then the choice is purely political. This is a good basis to resolve this question. Findings of this paper, sheds some light into resolving this important question.

The monetary system that is being practiced today globally, is fractional reserve banking. But a prominent group of American economists who drafted the American Monetary Reform Act suggest doing away with fractional reserve system by establishing full reserve banking system. This proposal has been drafted in accordance with the Chicago Plan submitted by Irving Fisher (1936).

The distinct difference of these two-banking system is that under the fractional reserve system designated commercial banks can create more credit out of a fairly small incoming

deposit, for an example if the incoming deposit is \$100 the bank can loan out \$900 or so under the existing rules of fractional reserve system while in the full reserve system the bank can lend only what it has.

If the macroeconomic fundamentals demand a banking system that can create more credit from a fairly small incoming deposit, then it is required retaining the fractional reserve system but if the macroeconomic fundamentals do not demand a system that could create more credit out of a little savings, then full reserve system would be best because that system is more stable than the fractional reserve system.

The question of modern banking system which is the fractional reserve banking system is still unresolved for many. It is found out and some scholars argue that in many universities that teach this subject is not accurate. For an example, the quote below is a passage in regard to the fractional reserve system explained in the book of “The Nature of Money” of Ingham (2004).

“Assuming that a bank operates with 10% Fractional Reserve, for every £100 deposited (liabilities), it is able to advance loans (assets) of pound 90. As it is spent, this monetized debt appears in bank accounts elsewhere in the system. In turn, further deposits are created against which these other banks may extend loans - in the first instance, a loan of pound 81 (pound 90 minus pound 9 (10% of the Fractional Reserve) = pound 81). Eventually the initial deposit of \$100 could produce 900 of new money in the form of loans” (Ingham, 2004).

Similarly, another example of different perspective on the same subject is worth looking at. Ben Bernanke made the following remark, in 2002 before he became the Chairman of Federal Reserve in 2006, addressing the National Economic Club in Washington.

“The US government has a technology called a printing press (or today it's electronic equivalent) that allows it produce as many US dollars as it wishes at essentially no cost. By increasing the number of US dollars in circulation or even by credible threatening to do so, US government can also reduce the value of a dollar in terms of goods and services, which is equivalent to raising the prices in dollars of those goods and services. We conclude that, under a paper money system, a determined government can always generate higher spending and hence positive inflation.” (Quoted from “End the Fed, 2009).

It can be easily found out that the above quote does not accurately explain how the money stock in the economic system is increased because without any involvement by the government, the stock of money in circulation can be increased simply by the act of lending by commercial banks and in fact the creation of money by banks is the main mechanism of increasing the money stock in circulation when the fractional reserve banking system is in practice. When Bernanke presents the said view, the core banking system of the U.S. was fractional reserve system.

Given the above stark differences of opinions of explaining the fractional reserve system and increasing money stock in the economy, a thorough review is warranted. Sometimes difficult phenomena could be best explained through stories. As such following story is useful in understanding the two forms of monetary systems.

It is believed that in the middle centuries, goldsmiths started the practice of so call fractional reserve system. In those days people deposited part of their gold with goldsmith for safekeeping. The goldsmith then issued a note to the depositor mentioning the number of coins deposited with him. The goldsmith returned any person's gold upon surrendering his note. Sometimes he charged a small fee for his service.

When people wanted to borrow, they too came to goldsmith. Goldsmith had deposits of others' gold and knowing that everybody would not withdraw all the gold coins deposited at any one time he could lend gold from the deposits in his custody. Accordingly, the maximum he could loan out was the deposits he had. However, he had to keep a fraction of the deposits as a precautionary measure to return to any depositor whenever a depositor came to withdraw his or her deposit. With his past experience, he gradually understood that at remotest possibility only ten percent of deposited golds coins were withdrawn at any given time. The balance ninety percent could be loan out safely. Taking this into consideration, the goldsmith could lend only ninety gold coins, if he had to lend in gold at any given time. This system is very similar to Full Reserve Banking system under which banks only perform the job of intermediary.

Since the note issued by goldsmith against deposit was honoured by goldsmith, sometimes people used the notes to settle their payments among themselves. Now the goldsmith understood that people would not withdraw their gold at any one time, and his notes were considered as money - the gold - in executing transactions among people. Given this understanding he decided to issue a note when people came to borrow gold to pay their debt or make payment to another since the note was exchangeable for gold when it was presented to the Goldsmith. People liked it. It was easy to carry and handle too. Goldsmith's note was just a piece of paper, and he could create any amount of them. So, he could lend any amount to borrowers in the form of notes, however there were certain limits. Look at the following example to understand these limits and the process.

In this example, people deposited 100 gold coins with Goldsmith. He issued 100 notes certifying the deposits. Then, when borrows came to borrow goldsmith, he did not issue gold to borrowers, instead he issued a note because the note was honoured by goldsmith when it was presented to him by the borrower or any other person. In this arrangement, he was not required to lend gold, so he kept the total deposit of 100 gold coins. From his past experience he knew that only 10% of noteholders could possibly come to withdraw gold at any one time. Since he had 100 coins in his custody which should be equal to 10% of total notes issued, he can calculate how many notes he could put into the circulation. Since he should issue 100 notes to depositors of gold coins and if he issued another 900

notes to borrowers, now there would be 1000 notes in circulation out of which only 10% of notes would return to the goldsmith by holders of notes to withdraw gold. Ten percent of 1000 is equal to 100. This means if 1000 notes were in circulation the goldsmith has to have actual gold coins amounting to 100 only. Since he did not lend any coins, the goldsmith had 100 gold coins in his custody, and he could honour withdrawals without any problem. In fact, he lent money he did not have and during the act of lending he created a kind of 'virtual' money. The total system depended on the trust people kept on the goldsmith.

The notes issued by the goldsmith to borrowers were indistinguishable from the notes he issued to depositors. Now there are additional 900 notes in circulation, which means the money supply has increased. Those notes are money substitute, and new money is created by the act of lending or creating credit. Hence, some scholars call this new money as "credit money."

However, if a lot of people come to withdraw gold, the goldsmith cannot honour them. This means the Fractional Reserve Banking system is an inherently bankrupt system. (This fact was evidenced by the virtual failure of all big banks in the American system in the crisis of 2008). Therefore, the goldsmith has to do a balancing act on daily basis in order to ensure that the notes he received be honoured. The same thing happens today among commercial banks. Goldsmith's system of money creation is very similar to modern fractional reserve system even though nowadays it is done mostly electronically and via bank accounts. The above is a powerful story which simplifies the workings of fractional reserve system.

This explanation of fractional reserve banking system is different than the explanation submitted by Ingham (2004) in which he explained that a bank receiving \$100 can lend only \$90 keeping a \$10 as reserve when it operates at 10% cash reserve margin even though the whole banking system increase money stock by \$900 at the end. Until 1931, fractional reserve system was not understood properly. Therefore, British parliament appointed a Committee on Finance and Industry in 1931 to study and report on this subject. The report of this committee is known as McMillan Committee Report -1931. This committee paid an attention to resolve the question of Fractional Reserve Banking. The relevant landmark quote in full is as follows:

"It is not unnatural to think of the deposits of a bank as being created by the public through the deposit of cash representing either savings or amounts which are not for the time being required to meet expenditure. But the bulk of deposits arise out of the actions of the banks themselves, for by granting loans, allowing money to be drawn on an overdraft or purchasing securities a bank creates a credit in its books, which is equivalent of a deposit. A simple illustration, in which it will be convenient to assume that all banking is concentrated in one bank, will make this clear. Let us suppose that a customer has paid into the bank £ 1000 in cash and that is judged from experience that only the equivalent

of 10% of the bank deposit need to be held actually in cash to meet the demand of customers; then the £1000 cash received will probably support deposits amounting to £ 10,000. Suppose that the bank then grants alone of £ 900 it will open a credit of £ 900 for its customer. And when the customer draws a check for £ 900 upon the credit so opened, that check will, on our hypothesis, be paid into the account of another of the bank's customers. The bank now holds both the original deposit of £ 1000 and £ 900 paid in by the second customer. Deposits thus have increased to £ 1900, and the bank holds against its liabilities to pay out this sum (a) the original £ 1000 of cash deposit and (b) the obligation of a customer to pay the loan of £ 900. The same results follow if the bank, instead of lending £ 900 to a customer, purchases an investment of that amount. The check which it draws upon itself in payment for investment is paid into the seller's bank account and creates a deposit of that amount in his name. The bank in this latter case holds against its total liability for £ 1900 (a) the original deposit of £ 1000 of cash and (b) the investment it has purchased. The bank can carry on the process of lending, or purchasing investments, until such times as the credit created or in investment purchased, representing nine times the amount of the original deposit of £ 1000 in cash. (Page 34, McMillan Committee Report, 1931, British Parliament).

With the above explanation of Fractional Reserve Banking system appeared in McMillan Committee Report of 1931, the controversy existed so far was faded away and this interpretation began to appear in textbooks, thereafter.

Accordingly. it can be concluded that Fractional Reserve Banking is a system that can create more credit out of a small incoming deposit. Why is this kind of banking system needed? New findings of this research provide a convincing answer.