

The coming revolution in political economy: money creation, Mankiw and misguided macroeconomics

Tim Di Muzio and Leonie Noble [University of Wollongong, NSW, Australia]

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It is reputed that the German theoretical physicist and Nobel Prize winner Max Planck once said that: “a new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die”.¹ Whether this is a completely accurate assessment of scientific affairs can be debated, but what cannot is the fact that disciplines cling on to old beliefs as though they are steadfast and timeless truths. These “truths” are taken for granted and passed down from generation to generation unless they are sufficiently challenged with new and convincing evidence that demonstrates that things are indeed otherwise. Our aim in this article is to challenge one of the principal received truths in the field of Economics: the way that new money is created. We also aim to go further and argue that a proper understanding of how new money is created has such devastating consequences that it heralds no less than a coming revolution in how we understand political economy and future possibilities. Our main argument is that the received truth of the fractional reserve theory or “money multiplier” model taught in most economics textbooks cannot explain the expansion of the money supply by logic, simple math and by basic bank accounting practices. To demonstrate our argument we will rely on Mankiw’s *Macroeconomics* and his chapter explaining to students how new money is created. We use Professor Mankiw’s textbook because of its widespread use as an introductory text to macroeconomics. Our second argument is that the vast majority of new money is actually created by banks when they make loans. This has long been argued by heterodox economists who call this form of money creation “endogenous money”. However, while other scholars have addressed the inaccuracy of the “money multiplier” model based on statements made by central bankers, there has been no demonstration of how the “money multiplier” model itself is logically and mathematically false.² To complicate matters, much of the heterodox literature that theorizes endogenous money has largely failed to develop a comprehensive critique of why commercial banks issuing new money as loans might be extremely detrimental to any political community and very favourable to a minority of dominant bank owners (but see Hudson, 2015; Huber and Robertson, 2000; Huber, 2014).³ In

¹ Apple, Sam (2016) “An Old Idea Revived: Starve Cancer to Death” *New York Times*, May 12.

² Keen’s *Debunking Economics* (2011: 306-314) provides an exposition of the limitations of neoclassical economics. While Keen addresses the myth of the “money multiplier” model he focuses on the available evidence which suggests that money is not created in this manner. This article will further explore the myth of the “money multiplier” model by systematically exploring the flaws within the model itself which make it an impractical, improbable and mathematically inaccurate method for expanding the money supply. Positive Money, a UK based not-for-profit research organization also disavows the money multiplier model as a myth. However, like Keen, they also base their critique on statements largely made by central bankers. This is of course admirable, but in this article we prefer to follow the math and accounting practices rather than rely solely on qualitative statements made by central bankers, however important these may be. <http://positivemoney.org/how-money-works/advanced/the-money-%20multiplier-and-other-myths-about-banking/> (Accessed 14/10/2016).

³ We have not had the chance to read Joseph Huber’s (2016) *Sovereign Money: Beyond Reserve Banking*. (Basingstoke: Palgrave Macmillan), which was in press when we were writing this article. See also the debate on endogenous money in the *Review of Keynesian Economics*, Volume 2, Issue 3, 2014. Though there are precursors, the idea of endogenous money in the post-Keynesian tradition can be traced back to Basil Moore (1979) and is commonly held by heterodox post-Keynesians. But this

order to provide evidence for these arguments, we have organized this article in the following way. First, we provide a brief historical overview of how the money supply started to expand in England before moving on to discuss the two main theories of new money creation. Second, we focus closely on the arguments made by Mankiw as he explains the “money multiplier effect”. We will demonstrate that it is incorrect on three levels: 1) by logic; 2) by simple math; and 3) by accounting standards. In the third section of this article, we will discuss how new money actually enters an economy and the leading consequences this act has for our political economies. But before we proceed, however, a few definitional issues must be addressed. First, while there are many possible definitions for the term “money” our understanding of money is that it is an abstract claim on society and natural resources measured in a unit of account (e.g. dollars, euros) and generally accepted for payment (see Ingham, 2004: 47-56). Second, while money can be represented by physical objects (e.g. notes, coins, cattle) and even takes the form of ownership claims over income-generating assets (e.g. stocks and bonds), we should not confuse the material representations of money with the concept of money itself. Last, while there are some national differences in how the money supply is counted, the money supply is typically subdivided based on a scale of liquidity – from most liquid (e.g. physical notes and coins) to less liquid (e.g. time deposits). With these definitional issues addressed, we can now turn to our political economy of money creation.

Historical overview and theories of money creation

Despite the fact that the goal of capitalists is to accumulate evermore money, the classical political economists largely took the analysis of money for granted.⁴ To be sure, from Adam Smith to Karl Marx, we can certainly find passages on money but two things are of general note. First, the classical political economists as well as Karl Marx thought gold and silver were “real” money. In other words, money was understood as “commodity money” and therefore to expand the money supply meant finding new mines, plundering it from others, or selling goods or services on the world market to obtain it from others who possessed it. Indeed, a considerable portion of the history of slavery and colonial violence can be traced back to the elite concern for acquiring gold and silver (Di Muzio and Robbins, 2016; Graeber, 2012; Kwarteng, 2014; Vilar, 1986). Second, because gold and silver were thought to be money, the classics failed to understand the scale or level of credit creation that began with the institutionalization of the Bank of England in 1694. Many argue that the Bank of England was inspired by the Bank of Amsterdam and the success of Dutch finance. But this is not the case. While the Bank of Amsterdam did make loans from time to time, its primary function was to maintain the quality of the paper notes in circulation that represented coin. Moreover, the bank was owned by the city, not private social forces as came to be the case with the Bank of England (Wennerlind, 2011: 69; Vilar, 1986: 206; Zarlenga, 2002: 238ff). Whereas the notes issued by the Bank of Amsterdam mostly reflected the exact value of gold and silver in the city’s vault, the Bank of England expanded the English money supply by extending paper notes as credit (Desan, 2014: 311ff).

literature is overwhelming concerned with system description in an effort to *better model* the economy whereas we, as critical political economists, are concerned with a radical critique of the way money is produced to *better society* (see also Di Muzio and Robbins, 2017).

⁴ We do not deal with the origins of coined money which stretches back to King Croesus in Lydia minting the first standardized coins of electrum (a gold and silver alloy) in the 6th century BCE. It should also be mentioned here that there is no historical evidence for money emerging from barter or the double coincidence of wants as neoclassical theory holds (see Di Muzio and Robbins, 2017: 44-6 for a summary of the literature).

The Bank of England's largest customer was the Crown in Parliament who used the initial loan of £1,200,000 to finance war with France. Indeed, the main reason why the Royal Charter was granted to the Bank of England's 1509 investors was to provide the finance for organized violence against a dynastic rival (Davies, 2002: 261). The slave trade, colonization and continuous wars in the next two centuries lead to a mounting and unpayable "national" debt that solidified the Bank's role as the government's permanent debt manager. But the investors in the Bank of England did not only profit from war and debt, they also benefited from the interest received on loans to individuals and companies. As Wennerlind underscores, the Bank of England's notes became "Europe's first widely circulating credit currency" (2011: 109). Theoretically, however, the issued notes remained tethered to a metallic hoard of silver, and later only gold from 1861 (Davies, 2002: 315). No one knows for certain how much metal coin backed up the notes in circulation at any one time. In one study, Rubini argued that the Bank of England had a shifting reserve of silver for all notes in circulation of about 2.8 percent to 14.2 percent (1970: 696). Another study by Wennerlind argued that the founder of the Bank, William Paterson, proposed that 15 to 20 percent in silver for all notes outstanding would suffice to assure sufficient confidence in the Bank of England (2011: 128).⁵ This ambiguity and the fact that the Bank of England was privileged by the government, likely helped the Bank gain confidence among the users of its notes. As long as citizens thought they could eventually cash in their notes for silver/gold coins, faith in this system of money creation could continue (Kim, 2011). This uncertainty need not delay us, for what is definite is that the notes in circulation were of a far higher value than the actual metallic hoard at the Bank. To sum up this brief history of the world's first widely circulating credit currency we can argue that new money was created as loans to customers – primarily to the British Crown in Parliament and primarily to finance an apparatus of international violence and Empire.

By the early 19th century, the British politician, Samson Ricardo, realized the absurdity of granting private social forces the power to create money:

"It is evident therefore that if the Government itself were to be the sole issuer of paper money instead of borrowing it of the bank, the only difference would be with respect to interest: the Bank would no longer receive interest and the government would no longer pay it...It is said that Government could not with safety be entrusted with the power of issuing paper money – that it would most certainly abuse it... I propose to place this trust in the hands of three Commissioners" (Ricardo, 1838: 50).

Ricardo's proposal that the public take control of new money creation was ignored. In the 1844 Bank Charter Act, the Bank of England was given the exclusive right to issue banknotes in London. Country banks that were already issuing notes could continue to do so provided they were outside London (by a 65 mile radius) and backed their notes with some kind of credible security. Under this Act, the Bank of England was also divided into two distinct units, the Issue Department and the Banking Department. Davies highlights this important provision of the Act:

"The Issue Department was to receive from the Banking Department some £14 million of government securities to back its fiduciary issue of notes, any

⁵ To be historically accurate, the Bank of Sweden was the first bank of issue rather than a mere depository institution. It was created in 1661 (Zarlenga, 2002: 288).

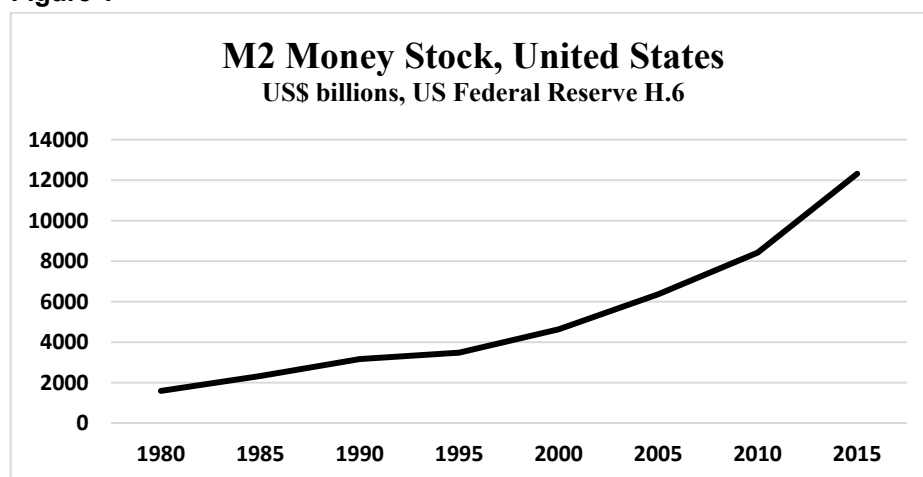
issue above that [was] to be fully backed by gold and silver, the latter not to exceed one quarter of the gold” (2002: 315).

Thus, while the Bank of England had the exclusive right to issue banknotes in London, its ability to create new money *appeared to be* circumscribed by the new laws. Existing banks outside of London were also *seemingly* bounded in their ability to create money. However, while official note issuance was restricted, this did not stop the Bank of England and other provincial banks from merely recording new loans on their balance sheets and issuing cheques to borrowers (Davies, 2002: 317). In other words, the bankers found a convenient way around the legislation and continued to expand the money supply regardless of gold reserves which were never publically known anyway. This changed the nature of banking in Britain and as we shall discuss, its legacy largely remains with us today. With this in mind, we now move to examine two theories of money creation: the heavily taught fractional reserve theory known popularly as the money multiplier model and the underappreciated credit creation theory.

Money, the multiplier and Mankiw

In modern society, money is vital for survival and social reproduction. Yet, if money is so central to the daily lives of billions of people around the world, why don't we understand more about it? If we asked anyone where milk comes from, we would invariably get a correct answer from the vast majority of people: a cow, a goat or any other mammal. But when we ask people where money comes from or how new money is created, the answers are considerably varied and typically none of them are correct. Money is crucial to our contemporary civilization and the expansion of the money supply is constant and therefore we should have a convincing explanation for its growth. For example, consider Figure 1, which plots the growth of the money supply in the United States.⁶

Figure 1



⁶ According to the Federal Reserve, “M2 is defined as M1 plus savings deposits, small-denomination time deposits (those issued in amounts of less than \$100,000), and retail money market mutual fund shares.” M1 consists of “the sum of currency held by the public and transaction deposits at depository institutions (which are financial institutions that obtain their funds mainly through deposits from the public, such as commercial banks, savings and loan associations, savings banks, and credit unions).” https://www.federalreserve.gov/faqs/money_12845.htm (Accessed 10/1/2017)

Over the 35 year period illustrated in this figure, the money supply expanded by 674 percent. Similar charts can be constructed for the money supplies of most other states, suggesting that the money supply for most countries has increased over time. But how did this happen? Why is there no *accurate* general or popular knowledge about how new money is created or, put in another way, how the money supply grows? Why does there appear to be so much mystery and lack of knowledge surrounding the issue of money? One of the main reasons may simply be the division of labor both within and outside of the banking industry and the simple fact that people just take the current system as self-evident, natural and inevitable. Håring (2014) provides an additional answer in arguing that one of the reasons for the lack of knowledge is the fact that Economics textbooks teach a completely erroneous model of money creation. This error simply gets passed down from generation to generation without critical scrutiny.

Here we will examine the “money multiplier” theory which is outlined in N. Gregory Mankiw’s popular textbook, *Macroeconomics* (2009) and taught in the vast majority of introductory courses to Economics. Importantly, Mankiw claims that banks are lending out existing deposits and that the banking system creates new money as money passes from bank to bank in the form of deposits and loans. We will demonstrate that this claim is mathematically and logically inaccurate.

Mankiw begins his narrative with a depositor entering a bank with money. The money is deposited into an account and we are told that the bank must keep a fraction of this money as a “reserve”. This reserve remains in the account to allow for any withdrawals the depositor is likely to make. We are told that the bank has an incentive to loan out the portion of money not held in reserve to generate its own income stream through interest, fines and fees. To demonstrate this fractional reserve/money multiplier system, Mankiw sketches a balance sheet for what he calls Firstbank. Below we reproduce this balance sheet which assumes an initial deposit of \$1000 and a 20 percent reserve ratio. The bank must retain \$200 (20 percent of \$1000) as a reserve, and will loan out the remaining \$800:

Firstbank balance sheet

Assets		Liabilities	
Reserves	\$200	Deposits	\$1000
Loans	\$800		

The books appear to balance and the narrative appears sound. Mankiw tells us that a fresh \$800 has been created by this loan but, *very importantly*, that the original depositor still has a demand deposit for \$1000. Supposedly the money supply is now \$1800. Mankiw then introduces an additional bank to demonstrate how new money creation continues to build on the back of the original loan. He sets up a situation where the \$800 loaned from Firstbank ends up in Secondbank via a deposit.⁷ Below we reproduce Secondbank’s balance sheet:

Secondbank balance sheet

Assets		Liabilities	
Reserves	\$160	Deposits	\$800
Loans	\$640		

⁷ For example, if the initial loan was used to make a purchase in a store, and the storeowner then deposited that money into their own bank account.

Once again, the books appear to balance and we are told that 20 percent of the deposit is held in reserve, and \$640 in new money is loaned out and added to the money supply. So in this example, with the initial \$1000 deposit, and the new money from Firstbank and Secondbank, there would now be a total money supply of \$2440. To demonstrate this money multiplier process one more time, Mankiw adds an additional bank and assumes that the newly created loan of \$640 gets deposited there. There, once again, 20 percent of the deposit is held as a reserve, and the remainder is loaned out.

Thirdbank balance sheet

Assets		Liabilities	
Reserves	\$128	Deposits	\$640
Loans	\$512		

Mankiw tells us that this process continues until the reserve/loan ratio means that no further loans can be extended. In this example, the initial \$1000 deposit will result in the addition of a fresh \$4000 to the money supply, bringing the total money supply up to \$5000.⁸ While a bit convoluted and an odd way to create money, everything appears to make sense if we do not pay close attention. But if we do pay close attention, the model is fallacious on two counts.

The first issue is with the basic principle of double entry bookkeeping. Every accountant knows that every financial transaction has equal and opposite effects in at minimum two separate accounts. Based on this principle, Mankiw cannot record the loan (a financial transaction) as an asset without simultaneously recording the exact amount as a liability on the right side of the balance sheet. Not to do so violates the iron laws of double entry bookkeeping, making Mankiw’s example erroneous (Gleeson-White, 2011: 93).

The second key issue with the money multiplier theory is that it is based on unsound math. If, as Mankiw claims, the bank lends out the portion of its deposits that it is not required to keep in reserve, then it is acting as a financial intermediary and is not in fact expanding the money supply at all: *it simply redistributes existing money*. In accordance with Mankiw’s argument that the banks loan out fractions of its deposits (in this instance 80 percent, as 20 percent is kept as reserves), the accurate balance sheet operation should resemble this:

Firstbank

Initial Deposit \$1000			
Assets		Liabilities	
Reserves	\$200	Deposits	\$200
Loans	\$800	Credit	\$800

What Mankiw fails to do in his example, which he must do if he is to remain consistent with the logic of the multiplier model and basic accounting standards, is subtract the loan from the depositor’s account. It is not possible that the depositor can still have \$1000 remaining in their account if \$800 of that money has been loaned to someone else. In double entry bookkeeping, the money cannot be in two places at once; it cannot be in both the depositor’s account and be loaned out simultaneously. Therefore, the \$800 loan should be subtracted

⁸ Mankiw’s claim that this \$1000 can increase the money supply to \$5000 is calculated by adding together the initial deposit and the sum of all of the loans which are generated from this initial deposit.

from the depositor's account (as it has been removed and loaned to someone else) and the depositor's account should decrease to \$200.

Now let us imagine the person who took the loan from Firstbank deposits the money in Secondbank. This means that Firstbank no longer has the liability for the \$800 and its balance sheet would resemble the following:

Firstbank

Deposit \$1000			
Assets		Liabilities	
Reserves	\$200	Deposits	\$200
Loans	\$800	Credit	\$0

After this transaction, the total money in the money supply is still \$1000. \$200 is sitting in Firstbank as a reserve, and \$800 has just been deposited in Secondbank.

Of this \$800, Secondbank must hold \$160 as a reserve and can make a loan of \$640. Once again, this means that \$640 is subtracted from the Secondbank's liabilities as it is deposited in Thirdbank. After this second transaction, Firstbank's balance sheet remains the same as above, and Secondbank's balance sheet should like this:

Secondbank

Deposit \$800			
Assets		Liabilities	
Reserves	\$160	Deposits	\$160
Loans	\$640	Credit	\$0

Again, we see that the money supply still totals \$1000. Firstbank holds a reserve of \$200, Secondbank holds a reserve of \$160, and Thirdbank has just received a deposit of \$640. It is clear to see, if we follow the logic of the money multiplier as well as proper accounting standards, that this system does not and cannot account for an expansion of the money supply. If we take the above examples as representing the entire economy, it is evident that the theory explains the redistribution of money, but there is always only the initial \$1000 remaining in the economy. Put simply, rather than expand the money supply, the multiplier model merely demonstrates that portions of the initial \$1000 gets transferred from person to person and bank to bank.

Let's look at another example starting with an initial deposit of \$100 and a ten percent reserve ratio. The table below follows Mankiw's method of calculation, and it appears to demonstrate that after eight transactions the banking system will have actually created \$469.53279 worth of additional or new money out of the initial deposit of \$100.⁹

⁹ This is calculated with the same method used in Mankiw's example of the \$1000 deposit resulting in the creation of a new \$4000 – all loans generated through the initial deposit are added together to ascertain "new money" in the supply, and the addition of the initial deposit determines the total money supply.

Initial Deposit \$100	
Loans	Reserves
\$90	\$10
\$81	\$9
\$72.9	\$8.1
\$65.61	\$7.29
\$59.049	\$6.561
\$53.1441	\$5.9049
\$47.82969	\$5.31441
New Money created	\$469.53279
Total Money Supply	\$569.53279

But this is in fact not the case. Recall that Mankiw and other money multiplier adherents make the claim that *deposits are actually loaned out*. If this is the case, then the fraction of the deposit which is loaned out must be subtracted from the balance sheet as it is no longer held by the bank. In the table below, we highlight the money that must be subtracted on the balance sheet each time a loan is given by a bank and put money which remains in the money supply in bold.

	Deposits and Reserves	Money redistributed as Loans
Deposit 1	100	90
Reserve left of deposit 1	10	
Deposit 2	90	81
Reserve left of deposit 2	9	
Deposit 3	81	72.9
Reserve left of deposit 3	8.1	
Deposit 4	72.9	65.61
Reserve left of deposit 4	7.29	
Deposit 5	65.61	59.049
Reserve left of deposit 5	6.561	
Deposit 6	59.049	53.1441
Reserve left of deposit 6	5.9049	
Deposit 7	53.1441	47.8297
Reserve left of deposit 7	5.31441	
Deposit 8	47.82969	
Total money in supply (Reserves + final deposit)		\$100

So by logic, basic accounting standards and simple math, the money multiplier model can in no way explain the *expansion* of the money supply. In the example above, there is only ever \$100 in the economy until the \$100 appears in reserves and there is no money left in the economy. Put simply, the way in which the money multiplier model is laid out actually explains the *diminution* of money and its eventual disappearance from the economy as it is held by banks as reserves. Here we have to remember that there is a key distinction to be made between claiming that the money supply expands versus the argument that the same money can be used more than once. The multiplier model shows the latter, not the former, and is therefore empirically false as an explanation for Figure 1 above.

The fact that the money multiplier is a myth was also confirmed by an empirical test performed by Professor Richard Werner (2014) at a German bank when he took out a loan of €200,000 and was allowed to observe the balance sheet operations. In no way were the accounting procedures similar to what we would expect if fractional reserve banking was indeed a real world practice. Rather, it provided evidence to support the credit creation theory of money expansion which we will discuss momentarily.

In addition to the factual inaccuracies and empirical evidence against the money multiplier model, the theory is also illogical. Firstly, if banks do indeed loan out other people's money, then how would they know which accounts to take money from in order to issue the loans they want to make? If a fractional reserve must be retained in each deposit account, how could banks keep track of account balances and ensure that their loans represented a specific portion of their total deposits? The mathematical difficulties associated with this model would be further complicated by the fluctuations caused by the constant transactions of the account holders themselves. Gone are the days when a person would have one bank account which they would deposit their savings into and would withdraw cash once or twice a week for daily living. These days, most people have several bank accounts which are constantly fluctuating as people access their accounts electronically several times each day. Electronic transfers, paying bills online, using digital debit to make purchases in stores or online – these practices all contribute to continuous fluctuations in our bank balances. It is near impossible to imagine how banks could perform all of the necessary calculations to ensure that there was always a fractional reserve available for each account of each account holder. Secondly, many people live paycheck to paycheck with very little savings and when savings do occur they are largely placed with pension and mutual funds to make higher returns than the meager interest banks pay on deposits. For example, in the United States, currently the world's largest economy by GDP, the savings rate as of 2016 was a mere 5.5% of total disposable income.¹⁰ Thirdly, if banks were reliant on deposits to create loans, we would see far more competition between banks to attract deposits. Marketing and advertising campaigns to attract deposits would be ubiquitous and sustained with generous interest rate offers to encourage customers to save. Instead, daily experience teaches us the exact opposite: banks are far more interested in marketing and advertising their credit facilities – from mortgages to credit cards – than they are in encouraging new depositors or their existing customers to save. Finally, since the multiplier model assumes banks are borrowing other peoples' money, and therefore this money must be subtracted on the liability side of the balance sheet, bank balances would fluctuate wildly on a day to day basis. Anyone with a saving or checking account knows this does not happen. Moreover, if this truly was daily

¹⁰ Personal Savings Rate <https://fred.stlouisfed.org/series/PSAVERT> (9/2/2016). Calculated as the ratio of savings to disposable personal income.

banking practice, there would be widespread panic amongst the population as people come to realize that a significant portion of the money they deposited and need on a daily basis is missing.

Finally, even if somehow adherents of the multiplier model could surmount these critiques, the process they describe would be an incredibly cumbersome method to create new money. If money was created in this way – by loaning out a percentage of deposits while not subtracting the amount from the bank’s liabilities – the banking system would have no justifiable credibility. As previously discussed, in Britain of the 1800s, the moneyed population was satisfied with accepting notes in lieu of gold/silver because they believed they could exchange their notes for gold and silver if they wished. Similarly, people today are happy to leave their money in banks because they believe they can withdraw it if they wish. Imagine the panic and economic repercussions if the population discovered they could only access 20 percent¹¹ of their money because the bank had loaned out the rest. If the money multiplier theory was accurate, it would be creating liquidity based on the bizarre assumption that people will only ever want to access 20 percent of their funds. They would essentially be instigating a game of musical chairs where players keep joining, but there remains only 1 chair for when the music stops. With the money multiplier discredited, we have considerable reason to focus on the real world of banking practice. For this, we turn to the credit creation theory of money.

Commercial banks and credit creation

According to Werner’s research, credit creation theory was prevalent in the late 19th century and the first two decades of the 20th century (2014: 2). Though a number of scholars and practitioners held this view, the work of the Scottish economist Henry Dunning Macleod stands out. Unlike most of his contemporaries Macleod is viewed as offering at least the outlines of a monetary theory of credit whereby loans make deposits rather than deposits enabling banks to make loans. An excerpt from his *The Theory of Credit* (1893) bears this out:

“Thus we see that the very essence and nature of a Bank and a Banker is to create and issue Credit payable on demand: and this credit is intended to Circulate and perform all the functions of Money. A Bank is, therefore, not an office for ‘borrowing’ and ‘lending’ Money: but it is a Manufactory of Credit: as Mr. Cazenove well said, it is the Banking Credits which are the Loanable Capital: and as Bishop Berkeley said ‘a Bank is a goldmine’” (Macleod, 1893: 594).

Despite this advance in realizing that loans make deposits, thereby expanding a bank’s balance sheet and the money supply, Macleod’s work was largely ignored by mainstream economists. According to Schumpeter the neglect of Macleod’s work was because he failed to put his ideas in a “professionally acceptable form” (1986: 1081). Thus a great advance was lost and mainstream Economics and Finance textbooks came to teach two incorrect versions of money creation and the role of banks: the money multiplier model (fractional reserve banking) and financial intermediation (banks merely take in deposits and lend those deposits out to borrowers).

¹¹ Or whatever the reserve requirement may be.

After over a century of treating money as a “neutral veil” and largely unimportant in economic models, a small resurgence of interest in the credit creation theory is gaining headway (Bell, 2000; 2001; Graziani, 2014; Häring, 2013; Huber, 2014; Ingham, 1999; 2000; 2004; Kennedy, 1995; Lau and Smithin, 2002; McLeay et al., 2014; Mosler, 1997-8; Peacock, 2003-4; Rowbotham, 1998; Ryan-Collins et al., 2014; Werner, 2014a; 2014b; Wolf, 2014; Wray, 2004; Wray, 2015; Zarlenga, 2002).¹² The basic argument put forward by credit creation theory is that individual banks do indeed have the tremendous power to issue new money when they make loans to customers. Here it is important to note that most modern money is digital money that are numbers on computer screens rather than physical cash like notes and coins. For example, in the UK, notes and coins only make up 3 percent of the money supply, while *commercial bank money* registered on computers makes up the remaining 97 percent (McLeay et al., 2014: 2). A statement from the Bank of England leaves little doubt that new money is created by commercial banks:

“Commercial banks create money, in the form of bank deposits, by making new loans. When a bank makes a loan, for example to someone taking out a mortgage to buy a house, it does not typically do so by giving them thousands of pounds worth of banknotes. Instead, it credits their bank account with a bank deposit of the size of the mortgage. At that moment, new money is created” (McLeay, 2014: 3).

The accounting identities on the balance sheet look as follows (Werner, 2014b):

Anybank

Assets		Liabilities	
Loans	\$1000	Credit to Client A	\$1000

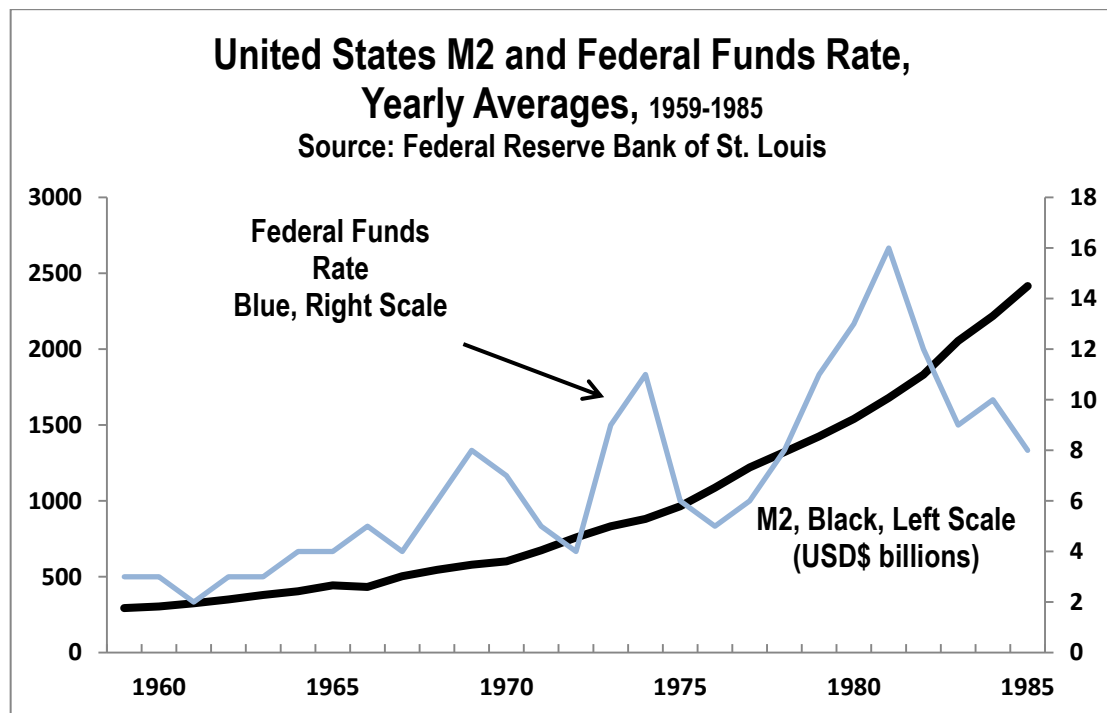
So as new loans are made, the balance sheet of a bank expands. It records the loan contract as an asset bearing interest and records a liability of \$1000 to Client A in the example above. When the debt is repaid, the money ceases to circulate in the economy. What this means is that the vast majority of all new money entering the economy is issued as debt bearing interest. However, the banks do not create the interest when they create the loan, so there is always more debt in the system than there is the ability to repay (Di Muzio and Robbins, 2016; Robbins, 2013; Rowbotham, 1998). Thus, if everyone in the world stopped borrowing tomorrow, there would indeed be a *global* financial crisis. This is extremely problematic for a number of reasons and we explore the leading consequences of allowing banks to create money in the ensuing section. But first we must explore the limitations placed on new credit creation and the role of central banks.

The first limitation is that commercial banks must have willing borrowers that are likely to repay loans with interest added. Second, in uncertain economic conditions where the risk of repayment looks high, banks may stop lending. Third, borrowers may immediately use the loan to pay off old debts, effectively removing the new money from circulation. Last, it is

¹² It should also be noted that there is considerable disagreement among those who agree with credit creation theory or “endogenous money” about what this means for an economy and whether anything should be done about it. See, for instance volume 40, issue 5 of the *Cambridge Review of Economics*. See also the materials on the Positive Money website: <http://positivemoney.org/>

believed that new credit creation is constrained by the interest rate set by a central bank. This rate is the rate banks must pay should they need to borrow from other banks to balance their daily books. The interest rate for borrowers is set by commercial banks and is typically northward of the short-term interest rate set by the central bank. However, whilst it may seem intuitive that higher interest rates would slow the money supply, evidence from the United States suggests that this may not be a simple scientific truth. Figure 2 suggests that despite very high interest rates during the so-called “Volcker Shocks” in the late 1970s, businesses and households continued to borrow. M2 continues to increase despite record high interest rates.

Figure 2



Moreover, as Figures 2 and 3 suggest, the money supply actually expanded more over the period of record high interest rates. From 1960 to 1970, the percentage increase in the money supply was 105 percent while from 1970 to 1982, the period inclusive of the Volcker Shocks, the money supply increased by 179 percent. This is likely due to the fact that money is so central to the economy that businesses and households may continue to borrow even at record high interest rates.

This should not imply that very high interest rates do not slow the growth of the money supply by discouraging some potential borrowers, but from the empirical evidence, the money supply continues to increase despite historically high interest rates. However, as Figure 4 suggests, high interest rates do seem to slow down the pace of new money creation.

Figure 3

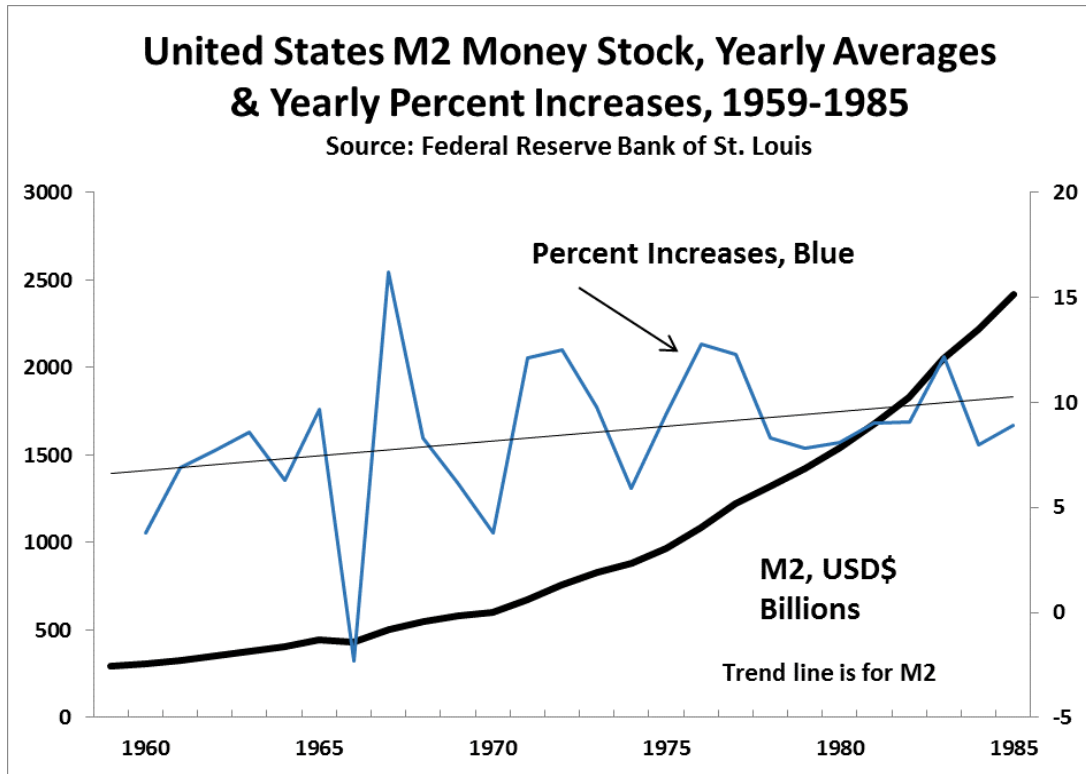
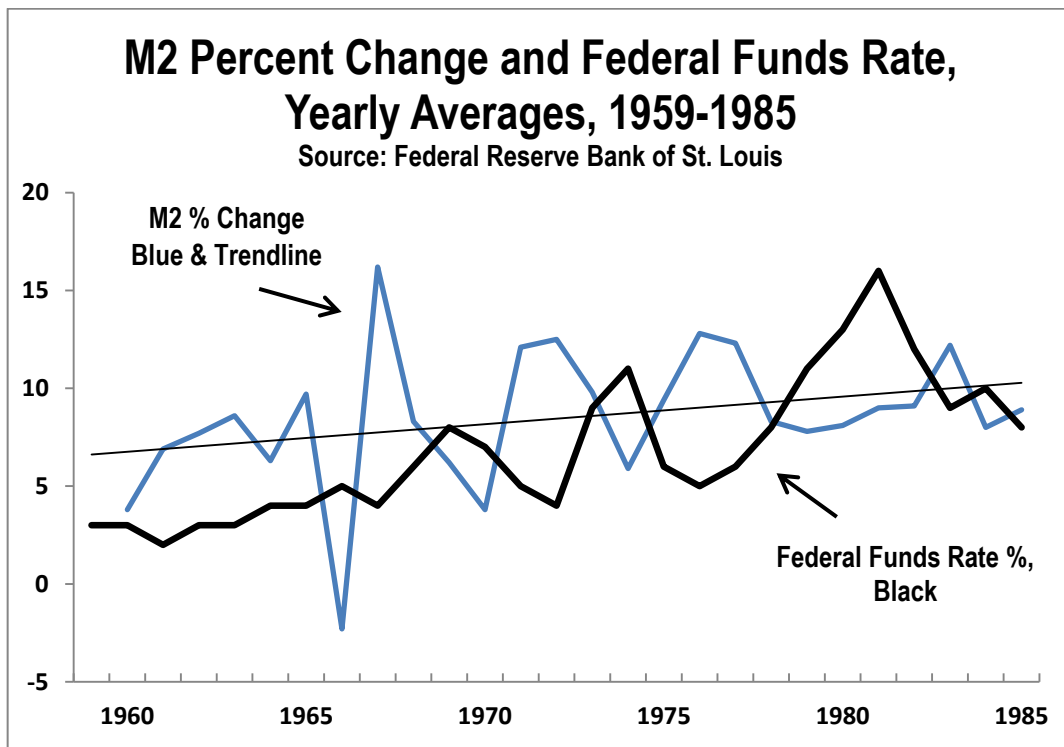


Figure 4



We can now turn to the role of central banks and in particular the role of reserves. Most large commercial banks hold a reserve account at the central bank. This account can be used to lend excess reserves to other banks or to purchase assets such as physical cash from the central bank. There are two types of reserves: 1) digital deposits in a commercial bank's account with the central bank and 2) actual cash. Because of the accounting identities used by the banking system as a whole, reserves can only change in one of three ways. First, the central bank either increases or decreases its assets. Second, the public wants to increase or decrease the cash they hold. Third, the government increases or reduces its deposits. Below we simplify the balance sheet for a central bank and a commercial bank following Sheard (2013).

Central bank

Assets	Liabilities
Government Bonds	Reserves
Foreign Exchange	Bank Notes
Gold	Government Deposits

Commercial bank

Assets	Liabilities
Reserves	Deposits
Loans	Equity
Bonds	

The double-entry bookkeeping used by the banking system means that the following balance sheet identities must hold:

$$\Delta R = \Delta \text{Assets} - \Delta \text{Bank Notes} - \Delta \text{Government Deposits}$$

To provide a quick example, suppose that reserves were at US\$400:

$$\text{Reserves } \$400 = \text{Assets } \$1000 - \text{Bank Notes } \$500 - \text{Government Deposits } \$100 = \$400$$

Should the customers of commercial banks want to increase their use of physical cash, we can see that reserves would go down since this is where bank notes/cash comes from on the balance sheet. In this scenario, it is likely that the commercial bank would have sold some of its assets to the central bank (typically bonds) in return for bank notes/cash.

$$\text{Reserves } \$200 = \text{Assets } \$1000 - \text{Bank Notes } \$700 - \text{Government Deposits } \$100 = \$200$$

Similarly, if customers of commercial banks desire to hold less cash, reserves would increase.

$$\text{Reserves } \$800 = \text{Assets } \$1000 - \text{Bank Notes } \$100 - \text{Government Deposits } \$100 = \$800$$

There is considerable confusion about reserves and we would suggest that this is because the money multiplier/fractional reserve model has been taught for so long combined with a failure to recognize that most money in advanced capitalist economies consists of digital deposits not bank notes and coins. It should also be emphasized that while some central

banks do issue a set reserve requirement, this has *little to no effect* on lending. Indeed, many countries such as Australia, New Zealand, the UK, Sweden and Canada have no reserve requirement. In other words, there is no reserve constraint on lending and banks *never* make loans to customers from their reserves. The only link between bank lending and reserves is that “reserves go down when banknotes increase” (Sheard, 2013: 7). Digital reserve deposits are only transferred from commercial bank account to commercial bank account at the central bank in the interbank money market. If there are excess reserves in one bank’s account and not enough reserves in a second bank’s account, the first bank may lend out its excess reserves to the second bank in order to earn interest. As a whole, these daily transactions help balance the books for the entire banking system.

The other important role played by the central bank is to set a target interest rate that ensures there are neither too few reserves (if so, the interest rate would go up) nor too many reserves (if so, the interest rate will go down) (Sheard, 2013: 8).¹³ Thus, the short-term interest rate set by the central bank fulfills two main functions. First, it sets the price for borrowing reserves in the interbank money market. Second, it provides a base interest rate and acts as a guide to commercial banks when setting their own commercial interest rates its offers to clients. In no way does the interest rate affect a bank’s ability to create new money as loans. It may be the case that interest rates get so high that households and businesses refuse to borrow, but this is not the same as claiming that a bank does not have the capacity to lend because of high interest rates. We are now in a position to examine the consequences of capitalized money creation by commercial banks.

Consequences of capitalizing credit creation

The empirical evidence all suggests that we live in a world of increasing individual, household, corporate and government debt.¹⁴ Debt and the political cry to “balance the books” provides the major excuse for fiscal austerity, the privatization of public assets, layoffs, corporate outsourcing to cut labor costs and more (Di Muzio and Robbins, 2016; Hudson, 2015). The prevalence of debt across the global political economy is hardly surprising when we learn that banks create new money as loans that must be repaid with interest. But why do we need this credit in the first place? Why do citizens not have enough purchasing power to acquire the goods and services produced in an economy? Why are there periodic crises of “overproduction” or “underconsumption” and why do businesses often run under their capacity to produce?

As identified by C.H. Douglas in the early twentieth century, it turns out that the gap between available purchasing power and the total price quantity of goods and services on the market is structural or encoded into the very way in which goods and services are priced (1931: 16ff). It is quite strange that this has been forgotten but perhaps not surprising given the dominance of neoclassical economics and its fixation on supply and demand as the key to price formation. Let us be clear: to price their goods and services, businesses add up their costs and then add a markup or margin on top of the cost of providing a good or service. Generally, the more competitive the market, the lower the markup will be whereas in a less competitive market with a desirable product, the higher the markup will be. As Veblen underscored,

¹³ Adjusting reserves, in normal times, allows the central bank to hit its “announced policy rate” (Sheard, 2013: 8).

¹⁴ The discussion in this section draws on Tim Di Muzio and Richard Robbins (2017) *An Anthropology of Money: A Critical Introduction*. (New York: Routledge).

businesses try to charge “what the traffic will bear” (1923: 85). A simple example should suffice to demonstrate Douglas’ point about a structural gap between purchasing power and the price of goods and services available on the market.

Suppose we started an orange juice company and we will do one run of production. Our cost may look something like the following:

Oranges	\$100
Machines	\$1000
Utilities	\$100
Packaging	\$100
Loans/interest payments	\$300
Tax	\$200
Labor	\$200 Purchasing Power
Total cost of 1 run of production	\$2000

During this first run of production, suppose we created 2000 jugs of orange juice. How should we price our goods? Well, if we sell each jug for under \$1, then we will lose money, certainly not the end goal of business. If we sell each jug for \$1, then we simple break even, again, not the goal of capitalist enterprise. We would certainly want to sell each jug for over \$1. The market for fruit juices is quite competitive but we estimate that we can get a ten percent markup on our costs or \$200. This means we would sell each jug for \$1.10 to realize a total profit of \$200. So the total dollar amount of our goods in the marketplace is $\$1.10 \times 2000 = \2200 .

We can start to see the problem immediately. The only purchasing power created during the first run of production is \$200. C.H. Douglas, an engineer by trade discovered that there is a *perpetual structural gap* between purchasing power and the price of goods outstanding on the market. Since all businesses price their goods and services in a similar manner (figure out costs then add a markup), the gap can never be overcome by the producers of goods and services themselves should they want to remain successful in business by earning a profit. Increasing wages cannot get over this problem simply because labor is always a cost of production. This is why C.H. Douglas argued for a social credit to be dispersed to citizens by the government. Instead of listening to C.H. Douglas, what has happened in practice is that the gap has been partially filled by commercial bank credit and as Douglas recognized, the banks have a monopoly over it. In other words, to avoid severe recessions or depressions, credit and debt are structurally necessary in a capitalist economy that employs a cost-plus manner of pricing.¹⁵ This is a giant gift to the owners of commercial banks since they ultimately profit not only from interest but also from the fees they charge on *needed* credit. This helps us to explain why the commercial bank sector of the global economy is the most

¹⁵ One reviewer of this article asked why the pre-modern world economy was not in permanent recession given that capitalism and the division of labor are older than commercial banking. First, it is difficult to talk about “recession” in the past since it can only be discussed in terms of gross domestic product, a modern calculation introduced by Simon Kuznets and his associates in the early 20th century. Second, historians of energy and economic growth have argued that there was never *sustained* economic growth until Europe, and England in particular, started to use coal in significant historical quantities. Third, at least in England, but likely in Europe as a whole, there was a constant recognition of the dearth of money to circulate goods, suggesting low economic growth until commercial banking and coal energy became more prominent. The connection between energy and the expansion of the money supply is crucial for explaining greater economic growth and the globalization of capitalism (for a summary of this literature see (Di Muzio, 2015:27-46).

heavily capitalized at US\$4.8 trillion.¹⁶ It also helps to explain how recessions and depressions can occur if banks stop lending or customers refuse to borrow. If all borrowing ceased tomorrow, the global economy would be in freefall.

In addition to the lack of purchasing power created in the economy by capitalist production, there is a further problem: there is always more debt in the system than there is the ability to repay the debt (Rowbotham 1998). When banks create money as loans, they create the principal, never the interest. The following example should suffice to illustrate the problem.

Loan A	\$1000	%10 interest	\$100
Loan B	\$1000	%10 interest	\$100
Loan C	\$1000	%10 interest	\$100
Total Money	\$3000	Total Interest	\$300

Thus the bank that made the loans expects to be paid \$3300 dollars, however there is only \$3000 circulating in the economy. Unless new loans are given with a longer maturity date, at least one of the loans must fail. What this suggests is that bankruptcy and the failure to pay debt is a structural feature of modern capitalism and the way new money is created by commercial banks. The money has to be obtained from elsewhere, which is also a key trigger for the need for economic growth and the greater commodification and monetization of nature (Di Muzio and Robbins, 2016; Robbins, 2013). The sabotage of the possibility of public or sovereign money and the private ownership of the capacity to create new money leads to an inevitable need for credit/debt when incomes do not meet spending expectations or a desired lifestyle. For example, most people are forced into debt if they want to buy a home or car. But as Soederberg (2014) points out in her wonderful book, many low income groups have been turning to consumer credit just to make ends meet. Thus, there are two structural features of capitalism that ultimately benefit a small amount of bank owners: 1) the lack of purchasing power in the economy because of cost-plus production, leading to the need for credit; and 2) the fact that there is always more debt in the economy than there is the ability to repay it. But while we argue that these are the main structural features that benefit a tiny minority of dominant bank owners and disadvantage everyone else, there are additional causes for serious concern.

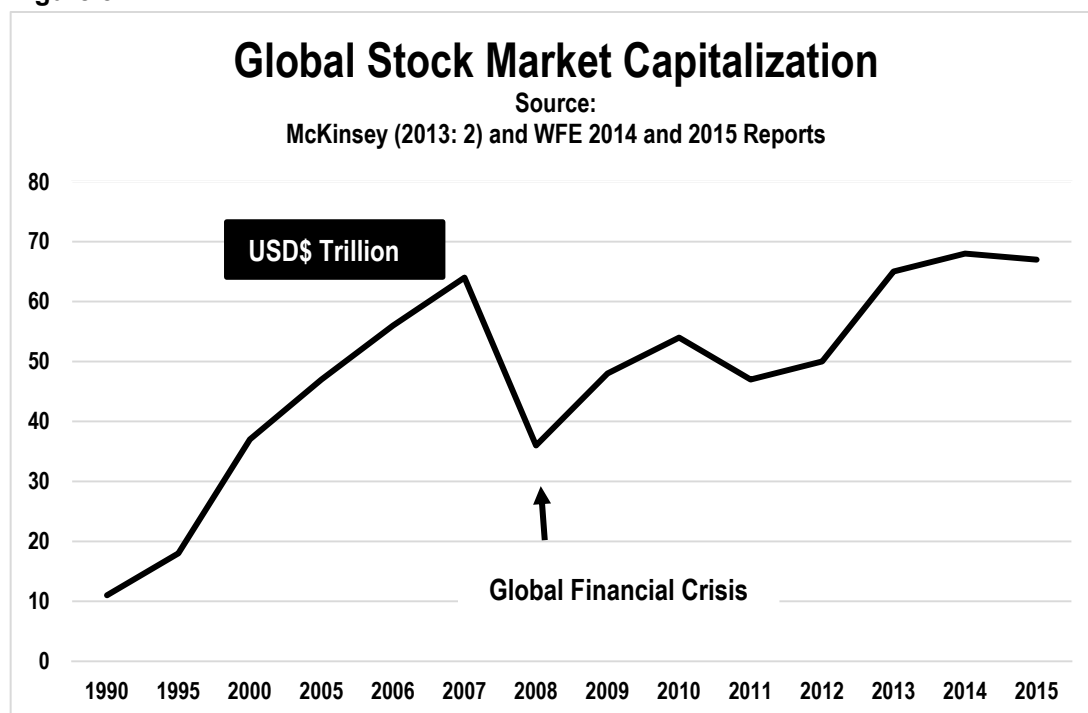
First, democratic governments are not in control of most of the money supply and like individuals and businesses, they are structurally forced into debt to a minority of private social forces who profit immensely from this relationship. The fact that the state has the power to tax the population allows for dominant bank owners to capitalize on this power process and direct a stream of income to themselves through government securities. As Creutz (2010: 139-158) pointed out long ago, it is a mathematical certainty that due to the unequal ownership of government securities (the minority) and the payment of taxes (the majority) more money will be received by the minority of the bondholders from the majority of taxpayers. Though we await more empirical studies from additional states, Sandy Brian Hager's research on the United States' public debt empirically demonstrates that ownership of government securities is highly concentrated with the top one percent owning a little over fifty five percent of the public debt (2016: 41). Currently, there is an ever increasing amount of public debts totaling

¹⁶ <https://www.ft.com/content/1fda5794-169f-11e5-b07f-00144feabdc0> Data are from the *Financial Times* Global 500, a list of the world's largest corporations by market capitalization.

slightly below US\$60 trillion.¹⁷ Even at 1 percent simple interest, the peoples of the world would fork over US\$600 billion, mostly to a minority of creditors.

Second, while governments do set spending, distribution and allocation priorities based on a budget, previous spending, and a public mandate, it is largely commercial banks that set allocation/distribution priorities for society given that they are the primary institutions of new money creation. Banks need not create money for productive purposes and can create money to speculate on securities and real estate. The quantity of money that was created to reflate global stock markets after the crash began in 2007 is difficult to ascertain. But within the span of two years, global market capitalization in publicly listed firms recovered to slightly over what it was at the peak of the crash.

Figure 5¹⁸



Third, the issuance of new money as loans is based on creditworthiness and tied to assets and income. What this means is that the already rich can borrow more money, leading to greater inequality. Those with higher incomes and good credit scores can also borrow more money to buy assets including stocks and real estate. They can typically do so at better interest rates than people with lower incomes who tend to rely on high interest rate loans out of necessity (Bolton and Rosenthal, 2005). These unequal interest rates are often highly gendered and racialized, as evidenced by the subprime mortgage crisis in the United States (Gill and Dymski et al., 2013; Gill and Roberts, 2011: 154-171). Thus, access to credit and on what terms helps to explain the social reproduction of class inequality (Ingham, 2000). Another example is hedge fund managers. Though most money managers leverage their

¹⁷ http://www.economist.com/content/global_debt_clock Data from the *Economist's* public debt clock. (Accessed 7/9/2016).

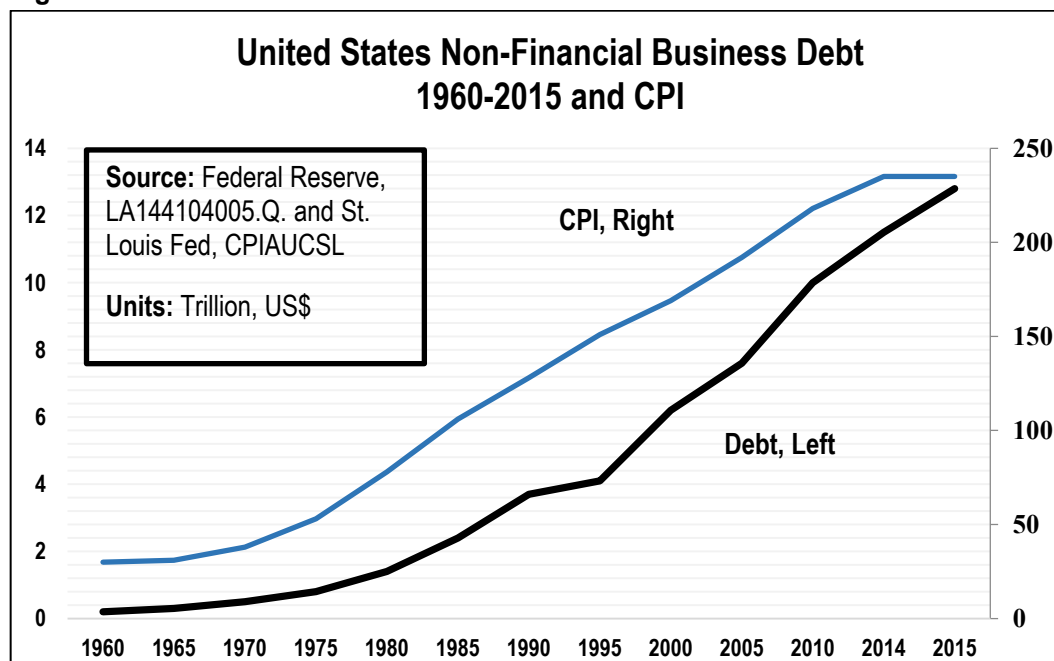
¹⁸ World Federation of Exchanges (2014 and 2015) Market Highlights. <file:///C:/Users/Tim/Downloads/2014%20WFE%20Market%20Highlights.pdf> and <file:///C:/Users/Tim/Downloads/2015%20Market%20Highlights.pdf> (Accessed 14/9/2016)

capital by two times, some can leverage their assets up to ten times. What this means is that when managers control capital of US\$1 billion, they can borrow another US\$10 billion from commercial banks to speculate on income-generating assets (Mallaby, 2010: 12). We have to recall that a five percent return on US\$10 billion is far greater than a five percent return on US\$ 1 billion. This helps to explain the proliferation of hedge fund billionaires since the turn of the second millennium.

Another significant fact to note about the current way we produce new money is that the owners of banks essentially profit from a fraud. Fraud is typically understood to be a deliberate deception in order to secure an unfair gain or advantage. Since the banks create new money and do not act as intermediaries between savers and borrowers, they are indeed deceiving the public and certainly are securing unfair financial gains in an economy where purchasing power can never equal the total cost of all goods and services outstanding.

What is more, interest on money/debt is a key driver of differential inflation. Interest is a cost to business and gets pushed on to consumers. So consumers not only pay for the base costs of a good or service, but also a portion of the interest the business owes to the banks as well as whatever mark-up on costs the business feels it can get away with. This is interest inflation and markup or profit inflation. Though it may have been the case in the early to mid-twentieth century, it is interesting to consider that most businesses do not finance their expansions or operations out of their retained earnings as some might expect.¹⁹ Consider Figure 6 which plots the level of nonfinancial corporate debt in the United States with the consumer price index.

Figure 6

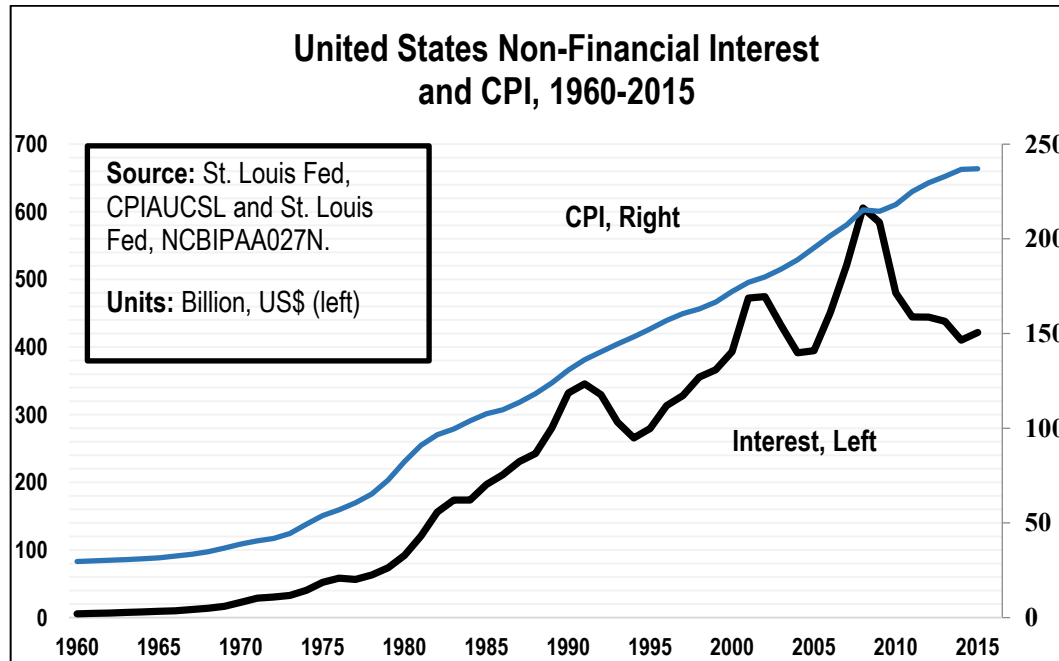


As Figure 6 reveals, non-financial corporations in the United States currently hold just over US\$13 trillion in debt. Not surprisingly, inflation throughout the period under scrutiny largely mirrors the growth of nonfinancial business debt which grew from US\$56 billion in 1945 to

¹⁹ In the United States, nonfinancial business debt was first recorded in 1945 and stood at US\$56 billion compared to today's whopping US\$13.4 trillion in debt.

US\$13.4 trillion in 2015. Over the period, this is an incredible increase in corporate debt loads of 23,811 percent. In Figure 7 we chart the consumer price index with the amount of interest paid by nonfinancial corporations in the United States. Though there are peaks and troughs in the amount of interest paid by nonfinancial corporations (due largely to shifting interest rates rather than overall yearly debt loads), the uptrend is clear with an overall increase for the period at 8,320 per cent. What this means in dollar terms is that nonfinancial corporations paid just over US\$13 trillion in interest to commercial banks from 1960 to 2015.

Figure 7



Taken together, what Figure 6 and 7 suggest is that differential inflation is another structural feature of the way new money is produced as commercial banks loans. This is because the cost of interest bearing loans taken out by nonfinancial corporations gets passed on in consumer prices – in the US case, just over US\$13 trillion in 55 years. We can call this “differential inflation” because different companies will have different debt loads, interest rates and costs of production. Thus, each corporation with debt will contribute to price inflation differentially. However, we should be clear here that *we are not* making the argument that interest on commercial bank loans is the *only* driver of inflation, but it does appear to be a major contributor and should be the subject of future research.

What this analysis also suggests is that government fiscal policy is incredibly important and has more to do with monetary policy than the monetary policy of central banks – which basically regulates the inter-bank market. This is the case because, should an economy stagnate with low or negative growth and high unemployment then it is only governments that can help create effective demand by borrowing and spending into the economy. The only problem with this solution is that, at present, thanks largely to Keynes’ denial of sovereign or publically issued money, governments are *structurally forced* into debt at interest when the cost of their priorities exceed the revenue they receive from taxes, fines, fees and additional measures like the sale of public assets. Interest free currency such as the Greenback in the United States and the Bradbury notes created during World War I in the UK are evidence of how public, interest free money, can be created.

There is another consequence for entrepreneurs who may have a great idea but not enough money to invest in their business to make it viable. Since banks typically do not lend to new small businesses without collateral or some other guarantee, this means that entrepreneurs have to turn to venture capitalists and the like for an investment and therefore give up equity in their companies. This can act to further concentrate wealth and ownership. Though more research would need to be undertaken, the research that does exist shows that the degree of corporate control held by US and UK financial institutions is extremely concentrated, suggesting that these financial institutions have created money over their existence to purchase ownership claims over the entire universe of multinational companies (Vitali et al., 2011). As Ingham has argued, Hilferding and the Marxist tradition have vastly undertheorized the power of finance/banking (2004: 63).

There is a final implication when we realize the multiplier model explains the diminution of money whereas credit creation theory explains new money creation correctly. That is, we need to abandon the notion that savings can lead to investment for the economy as a whole. This is largely false. No saving **as deposits in banks** has to take place before new money can be issued by a commercial or public bank. Furthermore, more saving means less money in an economy, not more.

Conclusion

The shroud of secrecy around money and banking is as enormous as the general confusion experienced by most of the population when it comes to explaining what money is and how the supply of it expands. In this article, we have done our best to help demystify modern money creation. To do so, we began by offering a brief historical account of how the money supply started to expand over and above a supply of gold/silver in England. We did so to suggest that banks were creating new money as credit, albeit backed by a publically *unknown* hoard of silver and later gold. We then considered one of the most popular accounts of money creation offered by Harvard academic N. Gregory Mankiw in his first year textbook, *Macroeconomics*. We have demonstrated by simple math, logic and basic accounting identities used in modern banking why the fractional reserve or money multiplier model cannot explain the expansion of the money supply. Instead, the model actually demonstrates how money gets transferred from borrower to borrower until the money supply disappears as the cumulative reserves held by the banks in the system. With the multiplier model/fractional reserve theory discredited, we moved to discuss how commercial banks create new money when they make loans to customers. In the credit creation theory of monetary expansion, loans create deposits rather than deposits creating loans. We have argued that the capitalization of the money supply by the owners of banks is not only a tremendous power to possess but also one that has severe consequences for society, not least radical inequality in incomes, wealth and life chances.

We are of course not the first to suggest that the public should control the issuance of money, but we strongly believe that this should be the case and that it is completely feasible to create non-interest bearing money without creating inflation. In fact, the current way commercial banks create money guarantees a considerable level of inflation since interest on loans is a cost to business and gets pushed on to consumers as shown in Figures 6 and 7.

We must always keep in mind that the current monetary order was not established by divine intelligence or to better society but to enrich a few state creditors in a particular era where

“real” money was thought to be gold or silver and their paper representatives. Once we realize that current fiscal-monetary mechanics is not “natural” or “inevitable” but a historical creation, this makes change towards a sovereign monetary and new fiscal system possible. How this process should be institutionalized in a democracy can be debated, but the fact that honest scholars need to press this debate should be clear given the evidence we present in this article. Mathematically, there is a structural fault line in capitalist economies identified by C.H. Douglas: there is never enough purchasing power generated to clear the goods and services produced in any given economy. This fact, combined with the way in which the fiscal system has been set up so that governments must borrow instead of finance their own expenditure out of money creation and taxation, leads to a perpetual need for credit. This helps to explain the extension of credit to governments by private social forces, but also the invention and explosion of consumer credit along with other debt instruments such as corporate and financial bonds. Under the present system, debts will continue to mount, contributing to the need for austerity policies and an uncertain and politically dangerous future for most political economies. It should be clear that business failure, structural inequality and financial crises are structurally embedded in the very math of the present monetary and fiscal order.

In conclusion, if there is any novelty in our own argument, it has been to demonstrate, in our understanding for the first time, why the multiplier model cannot explain new money creation, combined with laying out in plain English, the consequences and structural imperatives of the present way new money is produced. Without doubt, if we are to overcome the unfair and historically created structural deficits in the current monetary and fiscal order, there is much work to be done, academically, politically and practically.

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Author contacts: tdimuzio@uow.edu.au and lnoble@uow.edu.au

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