

# Federal Reserve Monetary Intermediation Cost to the American Economy

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## ABSTRACT

*The Federal Reserve System (Fed) controls the monetary policy of the United States based on a fractional reserve deposit banking system. This paper analyzes the Fed and determines its monetary intermediation cost is 90% inefficient (1 - reserve requirement) and on the order of 2½% of GDP per year. The fractional reserve system has been confounded with credit intermediation and results in unearned wealth transfer to the fractional reserve-lending source. Increasing returns to fractional reserve credit intermediation as reserve requirement reduced is shown to come from labor and capital to maintain system value in accordance with the Modigliani-Miller Financial Theorem.*

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To Jack Bogle, for his extensive writing on financial intermediation,  
Milton Friedman, who wrote about the Federal Reserve System, and  
Robert de Fremery for his legacy of financial writing on money.

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## 1. Introduction

The introduction reviews the inefficiency, operating leverage risk and cost of the Federal Reserve's fractional reserve monetary system then discusses historical support for a full reserve system and is followed by the main body of the paper.

The Federal Reserve System (Fed) controls the monetary policy of the United States based on a fractional reserve deposit banking system. This paper analyzes the Fed and determines its monetary intermediation cost is at least 90%<sup>1</sup> inefficient (1 - reserve requirement) and is on the order of 2½% of GDP per year<sup>2</sup>, compounded to over 50% since 1984<sup>3</sup>. This paper will also show that the fractional reserve system has been confounded with credit intermediation resulting in unearned wealth transfer to the fractional reserve-lending source and that the increasing returns to fractional reserve credit intermediation as the reserve requirement is reduced come from labor and capital to maintain system value in accordance with the Modigliani-Miller Financial Theorem<sup>4</sup>.

The American Monetary System could be more efficiently handled by a full reserve credit banking system, development of 100% depositor owned institutions to exclusively hold demand deposits and direct issuance of new money creation, known as seigniorage, to the people. The improvement to the American economy from conversion to a 100% reserve system is expected to be the approximate amount of the reduced monetary intermediation cost, on the order of 2½% of GDP per year<sup>5</sup>, improve the balance sheet of the United States government on the order of \$8.5 trillion<sup>6</sup> as of fiscal year 2012 and restore on the order of ten to twelve million jobs<sup>6</sup>.

### A. Inefficiency of Federal Reserve Fractional Reserve Monetary System

I. Intermediation Cost using Current Federal Reserve Monetary System		
Federal Reserve Monetary Issuance System	\$ Amount	Efficiency of Monetary Increase
1. Federal Reserve acquires government issued debt	\$1,000,000	10.0%
2. Federal Reserve Bank Reserve Requirement <sup>1</sup>	10.0%	
3. Money Stock Increase via Federal Reserve Bank Loans	\$10,000,000	100.0%
4. Fed Reserve Banks net Increased Loans (Intermediation Cost)	\$9,000,000	90.0%

TABLE 1 DATA SOURCE: Federal Reserve Monetary Intermediation Cost Inefficiency, Attachment 1.

II. Direct Monetary Expansion System to People using Government Entity		
Direct Monetary Issuance System (Possible Commerce Dept)	\$ Amount	Beneficiaries of Monetary Increase
1. People issued bills directly from Government (Commerce Dept)	\$1,000,000	100.0%
2. People/Government Portion of issued bills	100.0%	
3. Money Stock Increase to People via Direct Government Issue	\$1,000,000	100.0%
4. Fed Reserve Banks net Increased Loans (Intermediation Cost)	\$0	0.0%

TABLE 2 DATA SOURCE: Federal Reserve Monetary Intermediation Cost Inefficiency, Attachment 1.

<sup>1</sup> Federal Reserve Monetary Intermediation Cost Inefficiency, Attachment 1.

<sup>2</sup> Fed Annual Monetary Intermediation Cost 1984 to 2012 using M2M Money Stock, Attach 3.

<sup>3</sup> Federal Reserve Compounded Monetary Intermediation Cost to Economy 1984 to 2012, Attach 4

<sup>4</sup> Modigliani-Miller Theorem from "The Cost of Capital, Corporation Finance and the Theory of Investment", *American Economic Review*, 48: 261-297, June 1958 and Merton H. Miller "Do the M&M propositions apply to banks?", *Journal of Banking & Finance* 1995.

<sup>5</sup> Fed Annual Monetary Intermediation Cost 1984 to 2012 using M2M Money Stock, Attachment 3

<sup>6</sup> Federal Reserve Monetary Intermediation Cost Impact on Economy and Jobs Estimate, A-7.

*A.1. Federal Reserve Estimated Annual Monetary Intermediation Cost Formula*

(1) Fed Monetary Intermediation Cost<sub>N</sub> = [(MS<sub>N</sub> - MS<sub>N-1</sub>) x (1 - RR) + Fed net operating cost<sub>N</sub>] / [GDP<sub>N</sub>]

Where

GDP = Gross Domestic Product (\$)

I = Interest Rate (%)

MS = Money Stock, used M2M (\$)

N = Year

RR = Reserve Requirement (%)

*B. Monetary Debt Operating Leverage Destabilization of the Economic System*

The chart below shows the impact of fractional reserve monetary leverage, which adds risk to the economic system but does not change returns to the system, shown below as increased amplitudes of the business cycle. The compounding intermediation cost of Federal Reserve monetary debt is shown gradually increasing in size that is actually a reduction to system returns.

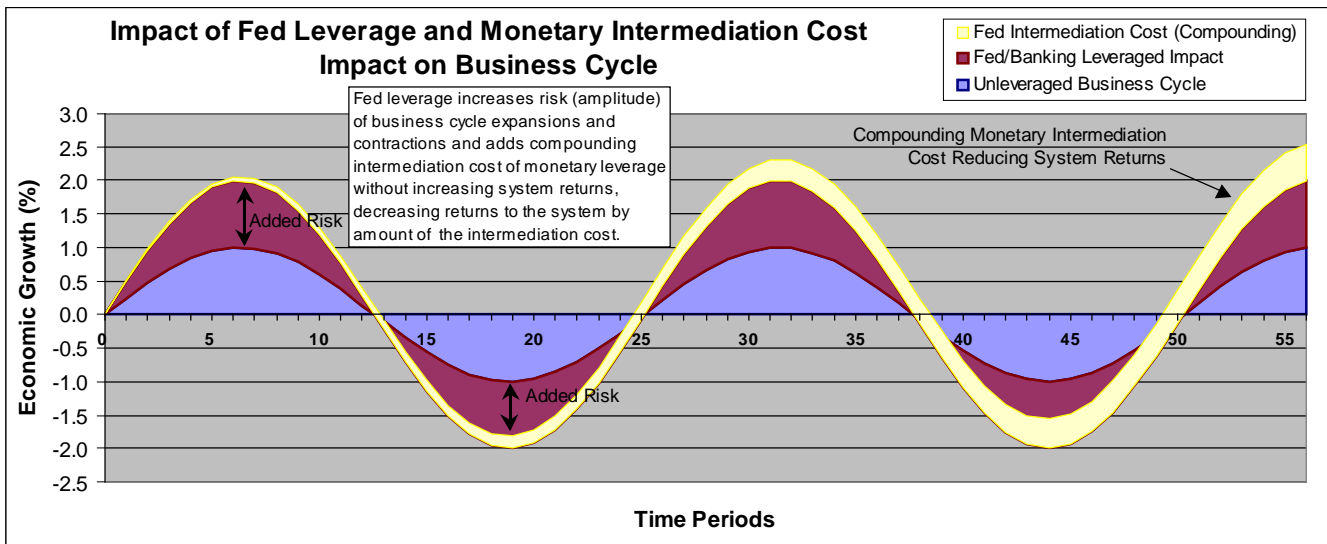


CHART I: Business Cycle with Leverage and Intermediation using Excel Sine Wave Graph.

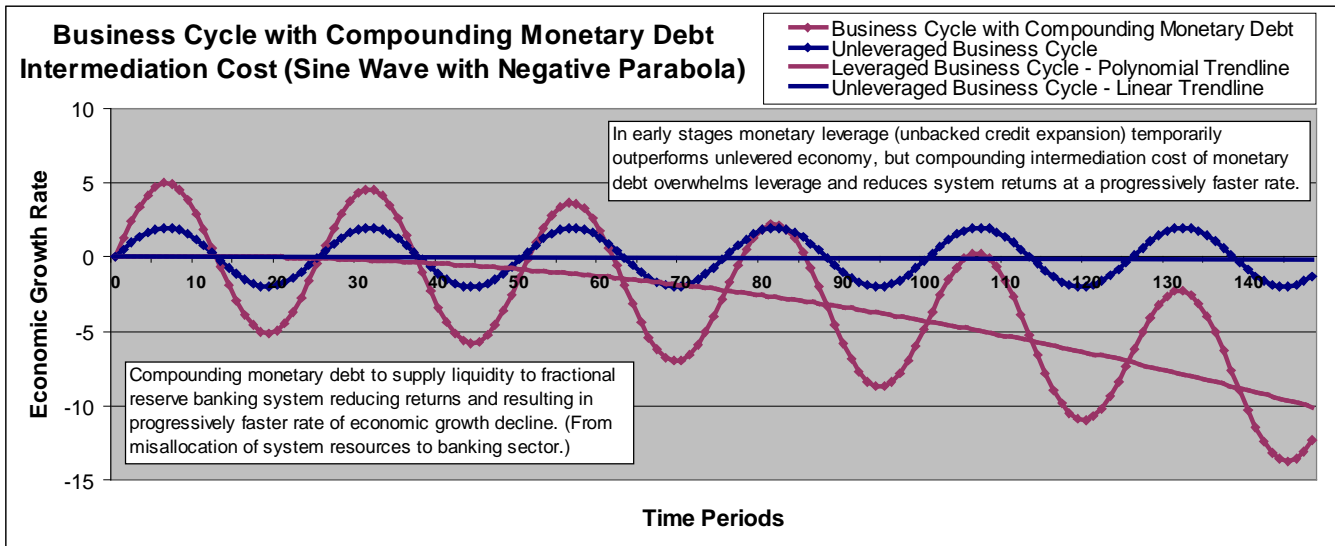


CHART II: Business cycle with compounding monetary intermediation cost. Chart shows the impact of the compounding monetary debt intermediation cost, which mis-allocates system resources to the money creation source and reduces economic growth at a progressively faster rate as the monetary debt compounds.

C. Federal Reserve Monetary Intermediation Cost to the Economic System

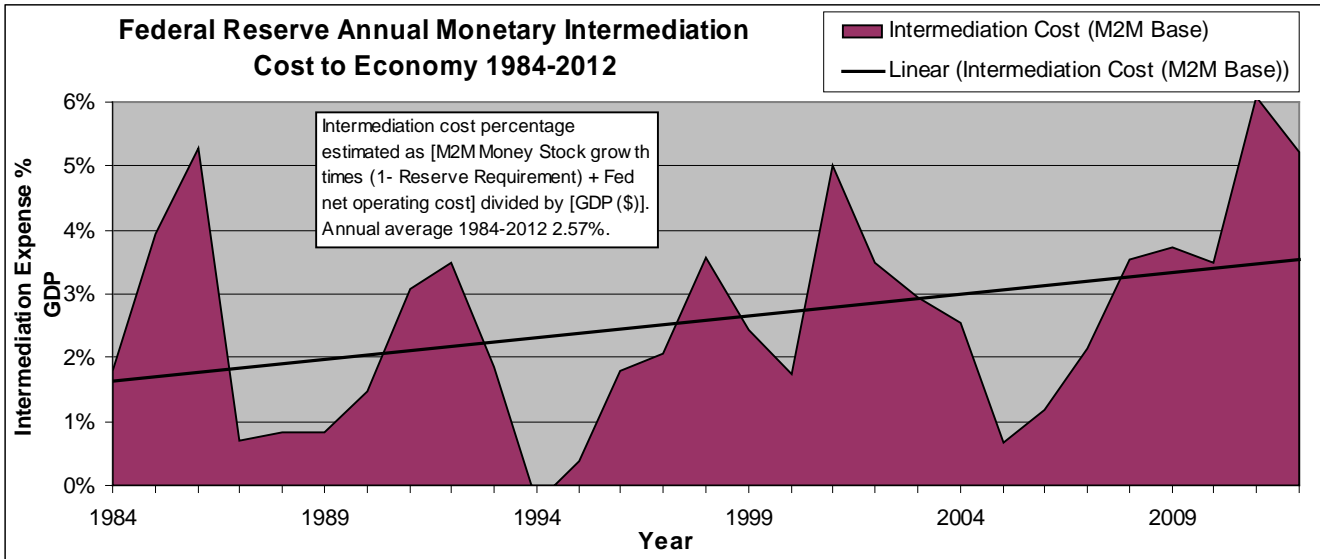


CHART III DATA SOURCE: Fed Annual Monetary Intermediation Cost 1984-2012, Attachment 3.

<b>Fed Monetary Intermediation Cost 1984-2012</b>	<b>\$ Billions</b>	<b>% Percent</b>
Economic (GDP) earnings 2012 w/o Fed intermediation expense	\$15,864.1	100.0%
<u>Economy earnings with Fed Intermediation expense deducted</u>	<u>\$7,730.8</u>	<u>48.7%</u>
Fed Intermediation Expense from Non Bank Economy since 1984	<b>\$8,133.3</b>	<b>51.3%</b>

Fed Intermediation costs, primarily monetary expansion inflation, estimated to have wealth transferred approximately 51.3% of economic system returns to banking sector from 1984 to 2012.

TABLE 3 DATA SOURCE: Fed Compounded Monetary Intermediation Cost 1984 to 2012, Attachment 4.

D. Full Reserve System Alternative with Historical Support

A banking business model based on full reserve financial intermediation, time matched funding spread lending, is not a new concept. It has had historical support from at least five previous Nobel Prize winners; Milton Friedman, 1976, James Tobin, 1981, Maurice Allais, 1988, Merton Miller, 1990 and Frederick Soddy, 1921, at least six past presidents of the American Economic Association; John R. Commons, 1917; Irving Fisher, one of the foremost economists of the first half of the 20<sup>th</sup> Century<sup>7</sup>, 1918; Paul Howard Douglas, 1947; Frank H. Knight, 1950; Milton Friedman, 1967 and James Tobin, 1971; a former Secretary of Agriculture (1933-40) and Vice President of the United States (1941-45), Henry Wallace, at least one former prominent member of the federal reserve system, Lauchlin Currie, and numerous distinguished economists and financial writers listed in Attachment 9.

<sup>7</sup> Allen, William R., "Irving Fisher and the 100 Percent Reserve Proposal", *Journal of Law and Economics* vol. XXXVI (October 1993).

## 2. New Money Creation Monetary Intermediation Cost

When the Federal Reserve creates new money there is a general belief that it is made out of "nothing" or "thin air". This is not true; money is a medium of exchange and represents value in trade. The aggregate value of money equals total wealth divided by the total stock of money, assuming the money is accepted as a medium of exchange. If new money is created the total wealth has not changed so the value of the money must be reduced BUT first use and control of the new money is directly vested in the Fed indicating a transfer of wealth to the Fed every time new money is created.

The economic system is constantly losing and transferring wealth to the Fed to sustain its money creation process, not "thin air" or the government as is widely believed. In this process not only does the Fed dilute and transfer wealth to itself from the other sectors of the economy but charges the economy additional interest from which the wealth was diluted and taken. The economy has no benefit from this structure, which is exclusively a transfer of wealth within the system without adding value to the system as a whole.

### A. Fractional Reserve Lending Wealth Transfer and Earned Financial Intermediation Formulas

(2) Wealth Transfer (Unearned Credit Intermediation) =  $[(1 - RR) \times (1 + I)] / [(1 - RR) + I]$

(3) Earned Financial Intermediary Return =  $(I \times RR) / [(1 - RR) + I]$

Where

I = Interest Rate (%)

RR = Reserve Requirement (%)

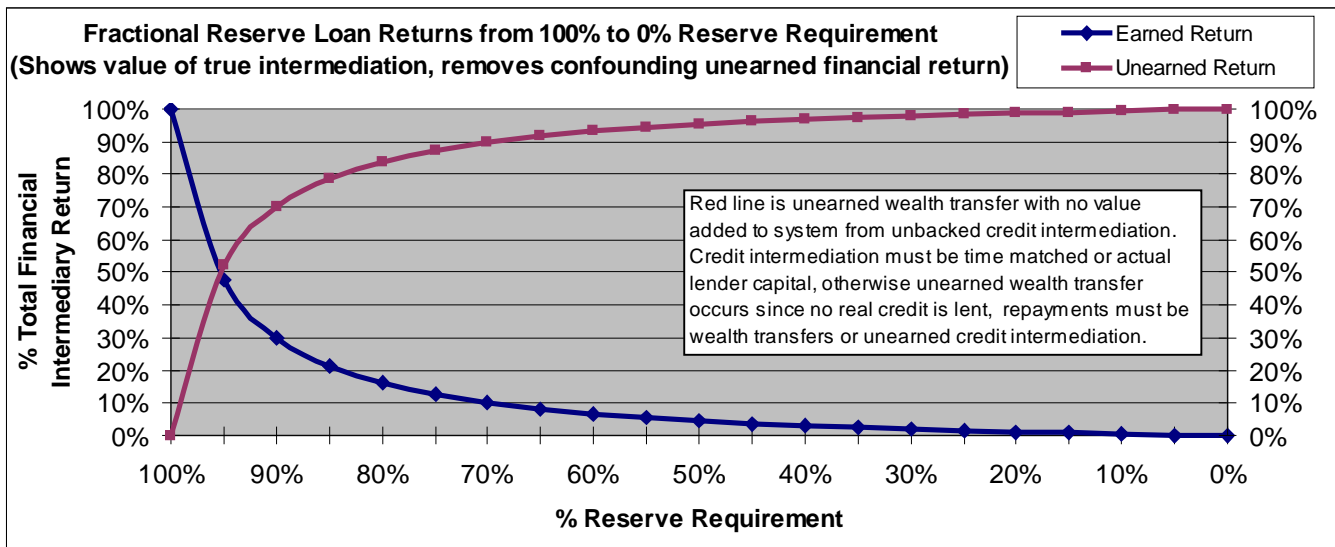


CHART IV DATA SOURCE: Fractional Reserve Loan Analysis Table, Attachment 2(c).

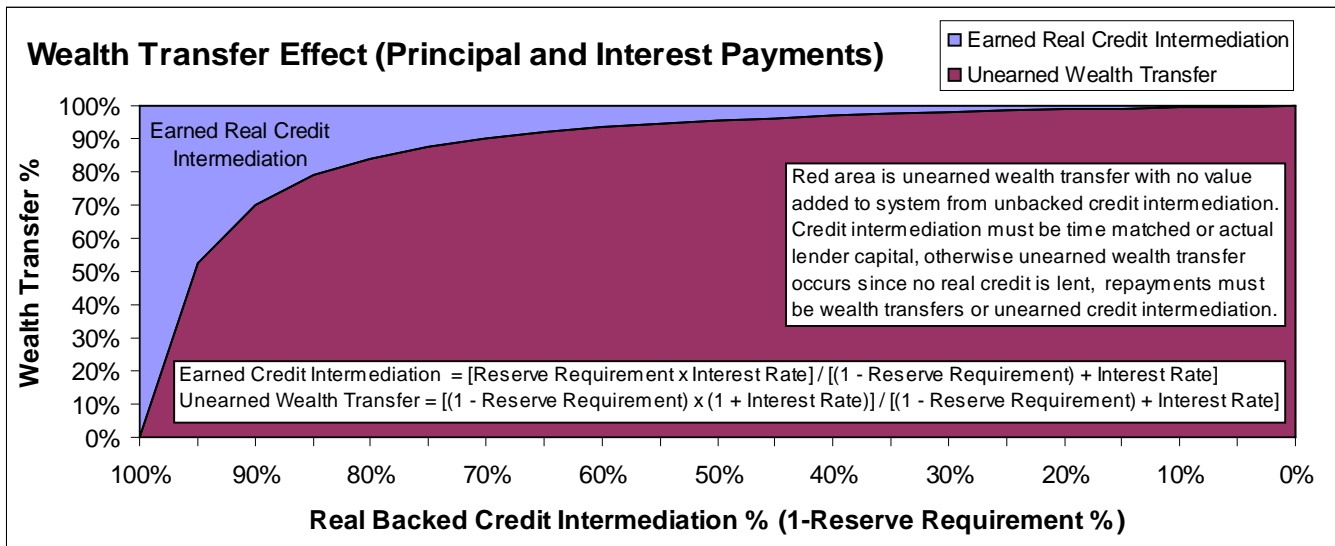


CHART V DATA SOURCE: Fractional Reserve Loan Analysis Table, Attachment 2(c).

Fed intermediation in the monetary creation process is unnecessary and reduces the overall return to the economic system by the amount of its intermediation cost, estimated at approximately 2½% of GDP per year<sup>8</sup>.

<sup>8</sup> Fed Annual Monetary Intermediation Cost 1984-2012 using M2M Money Stock, Attachment 3.



### **3. Confounding the Fractional Reserve System with Credit Intermediation**

The fractional reserve banking system has been confounded with credit intermediation with material adverse effects on the economy because fractional reserve lending results in unearned wealth transfer whereas full reserve lending is earned credit intermediation. The confounding is that these two things appear so closely associated that they are assumed causally related or the same thing.

If fractional reserve lending and credit intermediation were causally related or the same thing increasing fractional reserve lending would increase credit available to the system and for temporary periods this can appear to be the case but it is known from the M&M Theorem that leverage does not change the value of the system so the credit of the system cannot be increasing and must be limited and return to the base wealth of the system itself. Since the fractional reserve lending source appears to add value via profits it is assumed to add value to the economic system under the profit motive theory. The profit is 90%+ inflationary wealth transfer from first use of new money creation. The only profit fractional reserve lending has ever made is inflationary wealth transfer from first use of new money creation during expansions, foreclosure wealth transfer during credit contractions and direct bailout wealth transfer and has reduced the returns to the economic system by the amount of its intermediation cost.

Fractional reserve lending has never added value to the system. The entire history of fractional reserve lending will never be able to show that it added value without wealth transfer outside of the lending process to sustain it. It is virtually impossible to see the confounding defect of the system mixing the appearance of true credit intermediation, real asset lending, with the fractional reserve system of lending unbacked credit, effectively nothing. The only thing happening is wealth transfer via inflationary first use and control of new money creation and direct bailout from the rest of the system to the money creation fractional reserve lending source with no increase in system value. To the extent commercial banks may have used time matched funding and lending of their own capital some true credit intermediation profit was earned, but it is small on a relative basis at approximately 10% (Bank Reserve Requirement) or more exactly formula (1)  $[(1 - RR) \times (1 + I)] / [(1 - RR) + I]$  where I = Interest Rate and RR=Reserve Requirement.

#### *Fractional Reserve Lending Wealth Transfer and Earned Financial Intermediation Formulas (\$ Amounts)*

- (4) Monetary Expansion/Inflation (\$) = Loan Principal (\$) x (1 - RR)
- (5) Unearned Interest (\$) = Loan Principal (\$) x Interest Rate (%) x (1 - RR)
- (6) Unearned Wealth Transfer (\$) = [Loan Principal (\$) + Interest (\$)] x (1 - RR) [Inflation + Unearned interest]
- (7) Earned Financial Intermediary Return (\$) = Loan Principal (\$) x Interest Rate (%) x RR

Where

Interest (\$) = Loan Principal (\$) x Interest Rate (%)

RR = Reserve Requirement (%)

New money creation is the Principal portion of wealth transfer. In a 10% reserve system, 90% of the initial loan is inflationary new money creation wealth transfer with interest repayment as 90% direct wealth transfer without added inflation. In a 100% reserve system there is no inflationary wealth transfer and 100% of the interest earned is true credit intermediation.

An example of direct lending compared to fractional reserve and full reserve lending follows to show the impact of fractional reserve wealth transfer and true credit intermediation. It is composed of Farmer A with a field that a crop is grown on, Farmer B with a Tractor that is rented to Farmer A and a Financial Intermediary that can lend Farmer A the amount of the tractor rent.

**Initial Conditions**

<u>Item</u>	<u>Value (Initial Condition)</u>
Crop Value	\$ 1,500
Tractor Rent (Farmer B)	\$ 500
Loan, if applicable	\$ 500
Loan Interest Rate (5%)	\$ 25

*A. Direct Lending (100% Full Reserve Lending - Real Credit Lending - Tractor)*

<b>I. No Financial Intermediary (Real Asset Tractor Lending)</b>				
	Farmer A	Farmer B	Intermediary	Total
Start (Cash)	\$475	\$475	\$50	\$1,000
Tractor Rent	(\$500)	\$500		\$0
Sell Crop	\$1,500			\$1,500
End (Cash)	\$1,475	\$975	\$50	\$2,500
Direct Net Earnings	\$1,000	\$500	\$0	\$1,500
% Earnings	66.67%	33.33%	0.00%	100.0%

TABLE 4 DATA SOURCE: Fractional Reserve Analysis with 10% Reserve Requirement, Attachment 2(a).

*B. Fractional Reserve Lending (10% Reserve Requirement Intermediation)*

<b>II. With 10% Reserve Financial Intermediation Added ( 10% Real Backing)</b>				
	Farmer A	Farmer B	Intermediary	Total
Start (Cash)	\$475	\$475	\$50	\$1,000
Direct Net Earnings(Above)	\$1,000	\$500	\$0	\$1,500
Loan	\$500		\$500	\$500
Loan Interest	(\$25)		\$25	\$0
Pay Back Loan	(\$500)		\$500	\$0
End (Cash)	\$1,450	\$975	\$525	\$2,950
Net Earnings	\$975	\$500	\$475	\$1,950
% Earnings	50.00%	25.64%	24.36%	100.0%
Wealth Transfer=(Principal+Interest) x (1- RR). Inflation is Principal portion wealth transfer.				18.0%

TABLE 5 DATA SOURCE: Fractional Reserve Analysis with 10% Reserve Requirement, Attachment 2(a).

<b>10% Fractional Reserve Requirement Financial Intermediation/Wealth Transfer Impact</b>						
	(A)=(a) x (1-RR)	(B)= Item x (1-RR)	(C)=Item x RR	(D) = (B) + (C)		
<u>Item</u>	<u>Item \$ Amount</u>	<u>Inflation</u>	<u>\$ Unearned</u>	<u>% Unearned</u>	<u>\$ Earned</u>	<u>Total Return</u>
Loan Principal (a)	\$500.0	\$450.0	\$450.00	90.0%		\$450.0
Interest (Loan(a) x (c))	\$25.0		\$22.50	90.0%	\$2.50	\$25.0
Total	\$525.0	\$450.0	\$472.50	90.0%	\$2.50	\$475.0
<b>Wealth Transfer (Unearned Return = Σ(B))</b>						\$472.50
<b>Financial Intermediation Unearned Return % (Unearned Return/Total Return = Σ(B)/Σ(D))</b>						99.5%
<b>Intermediary Return on \$50 Required Reserve Investment (Total Return/Start Cash)</b>						950.0%
<b>Earned Financial Intermediation (Interest x Reserve Requirement = Σ(C))</b>						\$2.50
<b>Earned Financial Intermediation % of Total Return of \$475 (Earned Return/Total Return)</b>						0.5%

TABLE 6 DATA SOURCE: Fractional Reserve Analysis with 10% Reserve Requirement, Attachment 2(a).

C. Full Reserve Lending (100% Reserve Financial Intermediation)

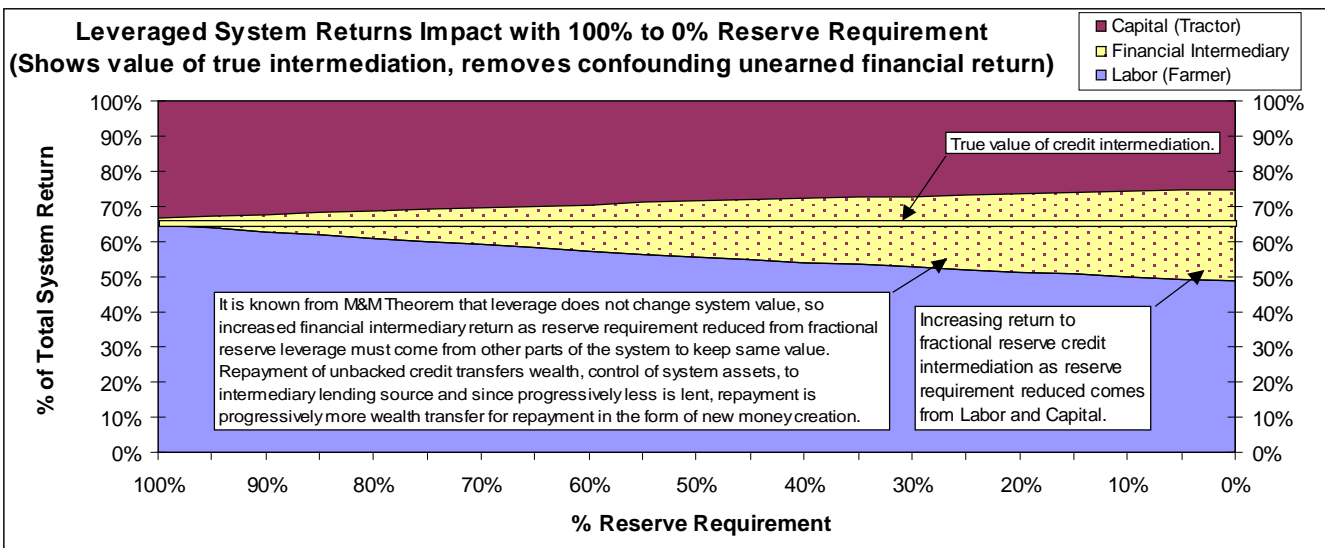
II. With 100% Reserve Financial Intermediation Added ( 100% Real Backing)				
	Farmer A	Farmer B	Intermediary	Total
Start (Cash)	\$250	\$250	\$500	\$1,000
Direct Net Earnings(Above)	\$1,000	\$500	\$0	\$1,500
Loan	\$500		\$500	\$500
Loan Interest	(\$25)		\$25	\$0
Pay Back Loan	(\$500)		\$500	\$0
End (Cash)	\$1,225	\$750	\$525	\$2,500
Net Earnings	\$975	\$500	\$25	\$1,500
% Earnings	65.00%	33.33%	1.67%	100.0%
Wealth Transfer=(Principal+Interest) x (1- RR). Inflation is Principal portion wealth transfer.				0.0%

TABLE 7 DATA SOURCE: Fractional Reserve Analysis with 100% Reserve Requirement, Attachment 2(b)

100% Fractional Reserve Requirement Financial Intermediation/Wealth Transfer Impact						
	(A)=(a) x (1-RR)	(B)= Item x (1-RR)	(C)= Item x RR	(D) = (B) + (C)		
Item	Item \$ Amount	Inflation	\$ Unearned	% Unearned	\$ Earned	Total Return
Loan Principal (a)	\$500.0	\$0.0	\$0.00	0.0%		\$0.0
Interest (Loan(a) x (c))	\$25.0		\$0.00	0.0%	\$25.00	\$25.0
Total	\$525.0	\$0.0	\$0.00	0.0%	\$25.00	\$25.0
<b>Wealth Transfer (Unearned Return = Σ(B))</b>						\$0.00
<b>Financial Intermediation Unearned Return % (Unearned Return/Total Return = Σ(B)/Σ(D))</b>						0.0%
<b>Intermediary Return on \$500 Required Reserve Investment (Total Return/Start Cash)</b>						5.0%
<b>Earned Financial Intermediation (Interest x Reserve Requirement = Σ(C))</b>						\$25.00
<b>Earned Financial Intermediation % of Total Return of \$25 (Earned Return/Total Return)</b>						100.0%

TABLE 8 DATA SOURCE: Fractional Reserve Analysis with 100% Reserve Requirement, Attachment 2(b)

The financial intermediary does not add value to this system and only has earned income to the extent lending was backed by actual reserves. It is known from the M&M Theorem that leverage does not add value to the system so leveraging credit as the reserve requirement is reduced does not add value and the appearance of profit must be wealth transfer.



CHARTS VI (Above) and VII (Below) DATA SOURCE: Chart data from example loan tables, attachment 2(c), using 100% to 0% reserve requirement. Increasing return to fractional reserve credit intermediation in the form of new money creation as

reserve requirement reduced comes from Capital (Tractor Rent) and Labor (Farmer) since it is known from M&M Theorem that leverage does not change system (Asset) value.

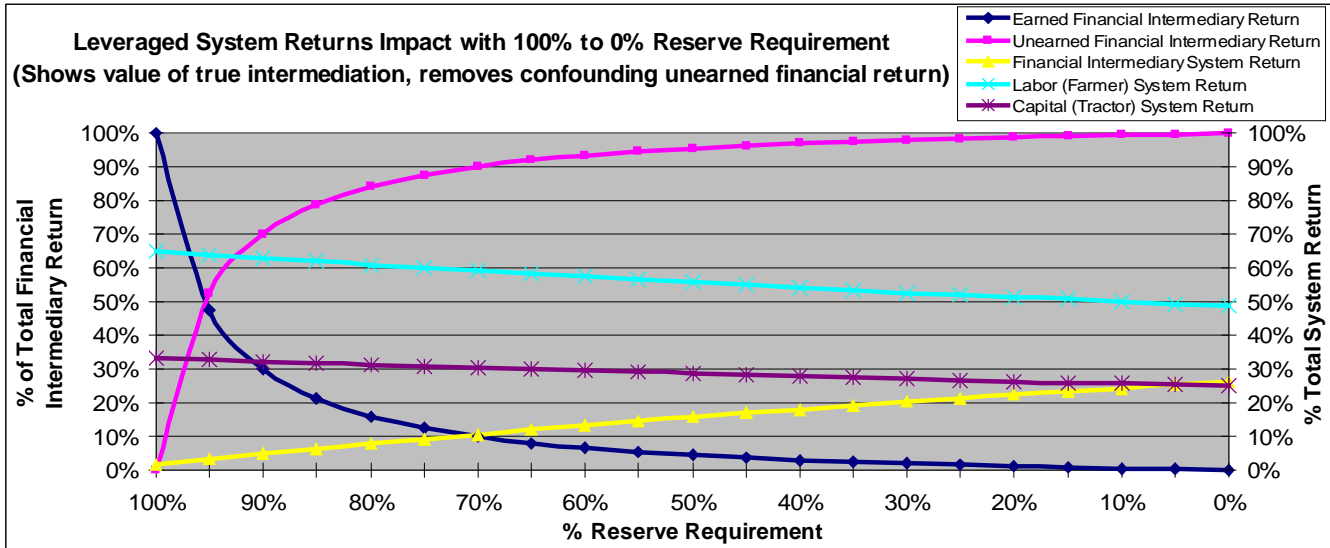


Chart VII DATA SOURCE: Chart data from example loan tables, attachment 2(c), using 100% to 0% reserve requirement. Increasing return to fractional reserve credit intermediation in the form of new money creation as reserve requirement reduced comes from Capital (Tractor Rent) and Labor (Farmer) since it is known from M&M Theorem that leverage does not change system (Asset) value.

*Fractional Reserve Labor and Capital Losses and Unearned Wealth Transfer Formulas (A-2(c) Example)*

For new loans expanding the money supply:

- (8) Labor Loss to Fractional Reserve Loan (%) =  $[CSP - C - (L \times I)] \times [(1/CSP) - (1/(CSP + L \times (1 - RR)))]$
- (9) Capital Loss to Fractional Reserve Loan (%) =  $C \times [(1/CSP) - (1/(CSP + L \times (1 - RR)))]$
- (10) Unearned Wealth Transfer (%) = (8) + (9) =  $[CSP - (L \times I)] \times [(1/CSP) - (1/(CSP + L \times (1 - RR)))]$

Where

- CSP = Crop Sale Price or Value (\$) (Farmer A)
- C (Capital) = Tractor Rent (\$) (Farmer B)
- L = Loan Amount (\$) (Intermediary)
- I = Loan Interest Rate (%)
- RR = Reserve Requirement (%)

Putting "CSP" and "C" in terms of "L" so that CSP = aL and C = bL where a=CSP/L and b=C/L and inserting and rearranging terms yields:

- (11) Labor Loss to Fractional Reserve Loan (%) =  $[a - b - I] \times [(1/a) - (1/(a + (1 - RR)))]$
- (12) Capital Loss to Fractional Reserve Loan (%) =  $b \times [(1/a) - (1/(a + (1 - RR)))]$
- (13) Unearned Wealth Transfer (%) = (11) + (12) =  $[a - I] \times [(1/a) - (1/(a + (1 - RR)))]$

#### **4. Inability of Fed policy makers to forecast better than markets or GDP Index**

The Federal Reserve team of economic forecasters is essentially equivalent to active management of mutual funds in the stock market that have been shown to have overwhelming odds against being able to keep pace with an index of the entire stock market.

The monetary intermediation cost of the Fed is estimated to be on the order of 2½% of GDP per year<sup>9</sup>, primarily through member bank creation and first use of new money instead of a direct issue system to demand deposit accounts. It is not believed Federal Reserve monetary policy management is adding value to the economy according to the M&M Theorem of capital structure irrelevance so the monetary intermediation cost of the Fed must be approximately a 90% (1 - applicable reserve requirement (RR) or more exactly formula (1) [(1 - RR) x (1 + I)] / [(1 - RR) + I] with I = Interest rate) reduction of returns and transfer of wealth to the Fed member banks.

In order for active monetary management to justify itself it would need to add economic performance to the economy by at least the amount of its intermediation cost, which it is not believed it is able to do. It should therefore be replaced with a direct issue GDP index based monetary system with a risk free rate of return or interest rate ( $r_f$ ), that could be operated at much lower intermediation cost and would increase returns to the economic system by the amount of the reduced intermediation cost, on the order of 2½% of GDP per year from the improved efficiency of the monetary system.

John C. Bogle, who has written extensively on financial intermediation, has developed a Cost Matters Hypothesis (CMH) that is material to the monetary policy of the United States:

*“Gross return in the financial markets, minus the costs of financial intermediation, equals the net return actually delivered to investors. While truly staggering amounts of investment literature have been devoted to the EMH (the Efficient Market Hypothesis), precious little has been devoted to what I call the CMH - the Cost Matters Hypothesis. However, to explain the dire odds that investors face in their quest to beat the market we don't need the EMH. We need only the CMH. Whether markets are efficient or inefficient, investors as a group must fall short of the market return by precisely the amount of the aggregate costs they incur. It is the central fact of investing.”<sup>10</sup>*

<b>Intermediation Cost Federal Reserve System (Est. using M2M)</b>			
<b>Year</b> (End 12/31)	<b>GDP</b> (% Growth)	<b>Intermediation</b> (% GDP Cost)	<b>GDP-Intermediation</b> Net (% GDP) ( $r_f$ )
1983			
1984	9.379%	1.795%	7.583%
1985	7.058%	3.948%	3.110%
1986	5.201%	5.267%	-0.066%
1987	7.479%	0.698%	6.781%
1988	7.534%	0.823%	6.711%
1989	6.298%	0.836%	5.462%
1990	4.735%	1.481%	3.255%
1991	4.217%	3.081%	1.136%
1992	6.584%	3.493%	3.090%
1993	4.931%	1.854%	3.077%
1994	6.375%	-0.266%	6.641%
1995	4.060%	0.372%	3.689%
1996	6.371%	1.805%	4.566%
1997	6.016%	2.055%	3.961%
1998	6.135%	3.564%	2.570%
1999	6.427%	2.427%	4.000%
2000	5.434%	1.735%	3.699%
2001	2.402%	5.022%	-2.620%
2002	3.796%	3.495%	0.301%
2003	6.018%	2.942%	3.076%
2004	6.212%	2.540%	3.672%
2005	6.413%	0.673%	5.740%
2006	5.292%	1.173%	4.119%
2007	4.925%	2.151%	2.774%
2008	-1.203%	3.523%	-4.726%
2009	0.369%	3.735%	-3.366%
2010	4.261%	3.490%	0.771%
2011	3.971%	6.073%	-2.102%
2012	3.545%	5.236%	-1.691%
<b>AVERAGES</b>	<b>5.16%</b>	<b>2.57%</b>	<b>2.55%</b>
Count(Years)	29	29	29

TABLE 9 DATA SOURCE: Fed Annual Monetary Intermediation Cost 1984 to 2012 Est. using M2M Money Stock, Attachment 3.

<sup>9</sup> Fed Annual Monetary Intermediation Cost 1984 to 2012 using M2M Money Stock, Attachment 3.

<sup>10</sup> Bogle, John C., "Don't Count on It!", 2010, Chapter 2 The Relentless Rules of Humble Arithmetic, page 26.

## 5. Federal Reserve monetary intermediation cost impact on economy & jobs

Restoring the monetary intermediation cost of the Fed back to the economy is expected to improve economic performance by the amount of the reduced intermediation cost, on the order of 2½ % of GDP per year<sup>11</sup> from the improved efficiency of the monetary system.

The Federal Reserve System has an approximate 90% (1 - Reserve Requirement<sup>12</sup>) intermediation cost (wealth transfer effect) of new money creation. This is a transfer loss of purchasing power from the other sectors of the economy. Assuming a one million-dollar of capital value per job creation, the average \$13.5 Trillion capitalized cost represents an estimated 13,520,000 private sector jobs. Per NY Times estimate the \$540.8 Billion annual cost would be approximately 17,351,000 jobs. These estimates indicate the approximate cost of Fed intermediation is on the order of thirteen to fifteen million or more jobs.

<b>I. Historical Average (2003-2012, Last 10-years)</b>		(\$ Billions)
1. Fed Operations (Fiscal 2012 Actual Net) <sup>1</sup>		\$3.74
2. New Money (M2M) Issued times ( 1 - reserve requirement) <sup>1,a</sup>		\$447.17
	Total Annual Intermediation	\$450.90
	Intermediation Capitalized <sup>2,c</sup>	\$11,272.56

<b>II. Fiscal 2012 Actual</b>		(\$ Billions)
1. Fed Operations (Fiscal 2012 Actual Net) <sup>1</sup>		\$3.74
2. New Money (M2M) Issued times ( 1 - reserve requirement) <sup>1,a</sup>		\$827.10
	Total Annual Intermediation	\$830.84
	Intermediation Capitalized <sup>2,c</sup>	\$20,770.93

<b>III. Monetary Debt Impact</b> <sup>1,2,3 Notes</sup>		(as of 9/30/2012) (\$ Billions)
Bank note to Gov't to cover fractional reserve deposit cash shortage <sup>3,f</sup>		\$5,524.20
Commercial Bank Federal Gov.t Securities Holdings Retired <sup>3</sup>		\$1,848.40
Federal Reserve Gov't Securities Holdings Retired <sup>3</sup>		\$1,146.35
	Intermediation Capitalized	\$8,518.95

TABLE 10 DATA SOURCE: Federal Reserve Monetary Intermediation Cost Impact on Economy and Jobs, Attachment 7.

<b>Federal Reserve System Monetary Intermediation Cost Economic Impact Estimates</b>								
Estimation Basis	(A) Intermediation Cost		(C) Jobs Impact Estimates			(F) Unemployment Reduction %	(G) GDP % Improvement	(H) Federal Debt Reduction %
	Annual	Capitalized	Annual	Capitalized	Average			
	(\$ Billions)	(\$ Billions)	= (A)/NYT Est <sup>7</sup>	= (B)/\$1,000,000 (d)	= [(C)+(D)]/2	= (E)/[Unemployment]	= (A) / [GDP]	= (B)/[Fed Debt]
I. Last 10 Ave (03-12)	\$450.90	\$11,272.56	14,466,367	11,272,555	12,869,461	108.6%	2.8%	
II. Fiscal 2012 Actual	\$830.84	\$20,770.93	26,655,882	20,770,930	23,713,406	200.2%	5.2%	
III. Monetary Debt Est.	\$340.76	\$8,518.95	10,932,589	8,518,947	9,725,768	82.1%	2.1%	75.2%
<b>Averages</b>	<b>\$540.83</b>	<b>\$13,520.81</b>	<b>17,351,613</b>	<b>13,520,811</b>	<b>15,436,212</b>	<b>130.3%</b>	<b>3.4%</b>	<b>75.2%</b>

TABLE 11 DATA SOURCE: Fed Monetary Intermediation Cost Impact on Economy and Jobs, Attachment 7.

<sup>11</sup> Fed Annual Monetary Intermediation Cost 1984 to 2012 using M2M Money Stock, Attachment 3.

<sup>12</sup> Reserve Requirement for Federal Reserve Member Banks as of 12/27/2012 is 10% over \$79.5 Million.

## 6. Optimal Quantity of Money and GDP Standard for Monetary System

It is assumed the optimal quantity of money is the existing amount since it would have the least intermediation cost to change it to in a new system. The optimal quantity of money for the go forward monetary system is therefore the amount currently in use.

### A. GDP Index Based Standard Quantity of Money

It is believed a GDP index based monetary standard would be the most efficient and be easy to implement and maintain. It could be implemented by taking the current amount of money in circulation, dividing it by the current GDP and make that the standard quantity of money per unit of GDP. Increases in GDP would increase the money stock by a matching amount, which would be the risk free rate of return or interest rate ( $r_f$ ), based on a money quantity per unit of GDP standard. A GDP growth standard would also provide a revenue source, the risk free rate of return or interest rate ( $r_f$ ), to fund the non-lending 100% depositor owned depositories proposed in section VII.

#### A.1. $R_m$ Becomes $R_f$ With GDP Index Based Standard Quantity of Money

Using GDP growth for the risk free rate of return or interest rate ( $r_f$ ) at the depositories implies investors could earn the market rate of return without any exposure to stock market risk and that the risk free rate of return and the market rate of return are in fact be the same thing. It follows that if the risk free rate of return is the market rate of return that there is no expected reward for taking on market risk, only leverage risk.

A sample of how the system would have operated for the last ten years along with a comparison showing actual M2M (M<sub>2</sub> Less Small Time Deposits) Money Stock growth is included in the two charts below. M2M was selected for this example, any actual system would have to have an agreed upon measure of the money stock such as M<sub>1</sub>, M<sub>2</sub>, M2M (M<sub>2</sub> Less Small Time Deposits), MZM (Money Zero Maturity), TMS (True Money Stock) or some other well defined monetary measure. GDP is assumed to be the measure for economic performance. The sum total of demand deposits held at the demand depositories could serve as the new go forward monetary standard.

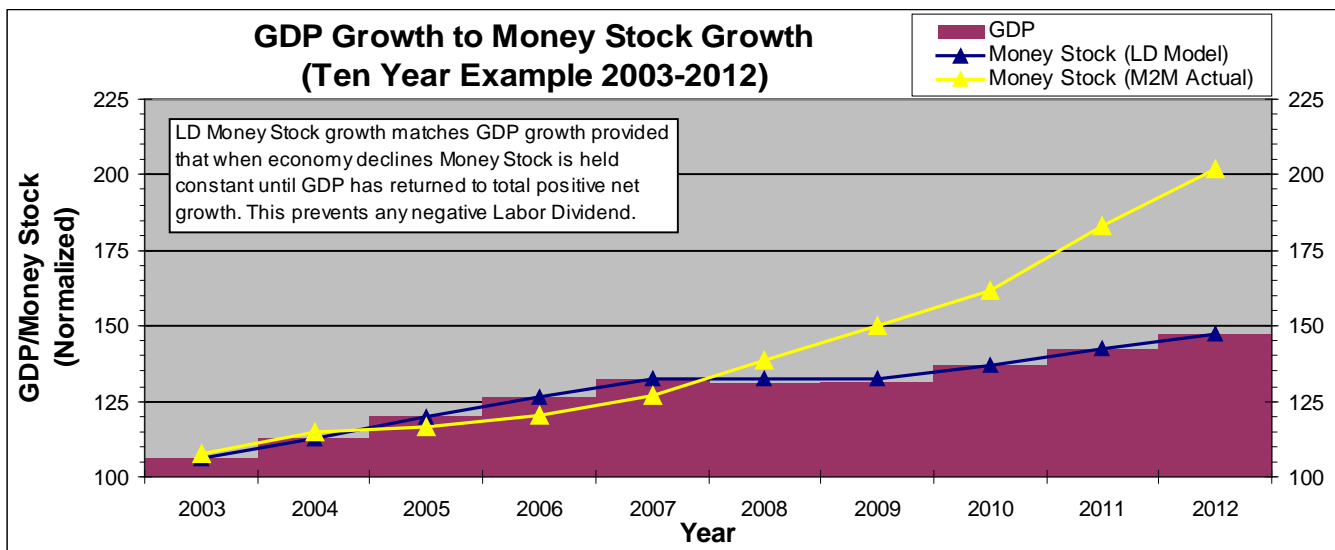


CHART VIII DATA SOURCE: Direct Issuance (Seigniorage) Monetary Intermediation, Attachment 8.

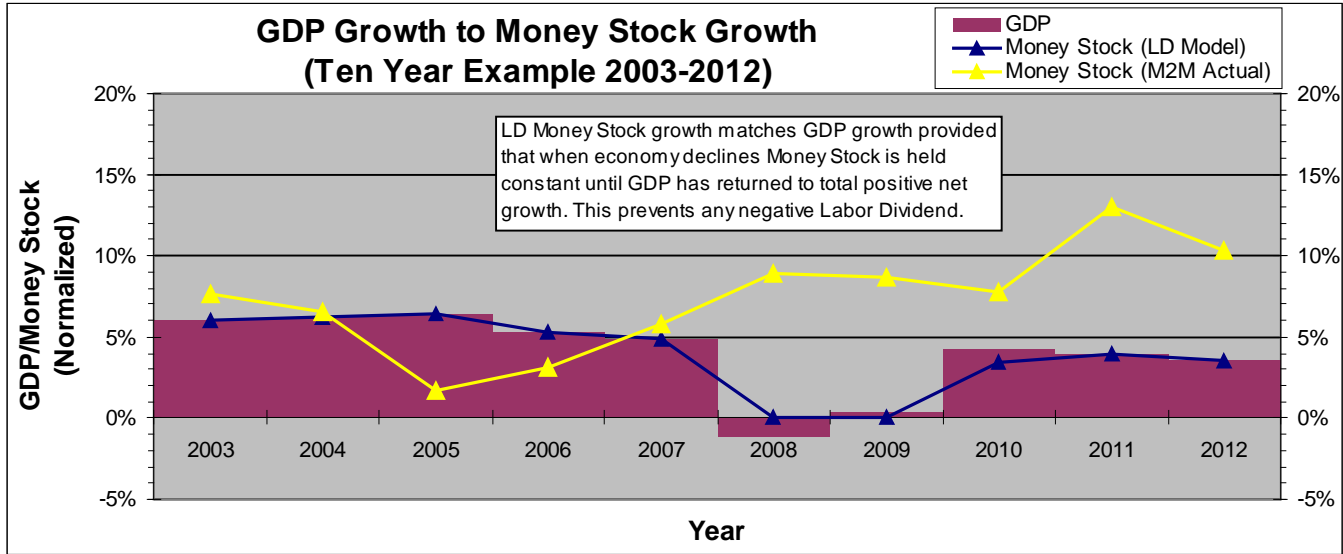


CHART IX DATA SOURCE: Direct Issuance (Seigniorage) Monetary Intermediation, Attachment 8.

Direct issue would be at least a 90%<sup>13</sup> improvement in the intermediation process of adding money to the system and should save on the order of 2½% of GDP per year<sup>14</sup> from the reduced monetary intermediation cost to the system.

*A.2. Establish Monetary Expense Ratio to Measure Performance*

The monetary system needs a measurement standard to measure its performance. Monetary system expenses should be measured in the same way as mutual fund expenses to eliminate the current system confounding fractional reserve loan growth wealth transfer with economic system growth. As shown in Table 12 below for last five years, nominal growth [GDP-Inflation] shows misleading higher growth rate than real r<sub>f</sub> [GDP-Intermediation] that hides the economy's contracting GDP from first use new money creation wealth transfer to the banking sector.

Year	Intermediation Cost Federal Reserve System (% Est.)				Comparison Analysis	
	GDP <sup>3</sup> (% Growth)	Intermediation (% GDP Cost)	Inflation % CPI-U (EOY)	GDP-Intermediation Net (% GDP) (r <sub>i</sub> )	GDP-Inflation Net (% GDP)	Real r <sub>f</sub> GDP - Nominal GDP
2008	-1.203%	3.523%	0.091%	-4.726%	-1.295%	-3.432%
2009	0.369%	3.735%	2.721%	-3.366%	-2.353%	-1.014%
2010	4.261%	3.490%	1.496%	0.771%	2.766%	-1.995%
2011	3.971%	6.073%	2.962%	-2.102%	1.008%	-3.110%
2012	3.545%	5.236%	1.741%	-1.691%	1.804%	-3.495%
<b>Last 5 Yrs Annual Count(Years)</b>	2.165%	4.406%	1.797%	-2.240%	0.368%	-2.614%
<b>2012 to '08 (Compound)</b>	111.302%	124.059%	109.315%	89.290%	101.852%	87.597%
<b>Change since 2008</b>	11.302%	24.059%	9.315%	-10.710%	1.852%	-12.403%
	<b>Nominal GDP Growth w/Inflation</b>	<b>Compounded Intermediation</b>	<b>Compounded Inflation</b>	<b>Real r<sub>f</sub> GDP Growth</b>	<b>Nominal GDP - Inflation</b>	<b>Real r<sub>f</sub> GDP - Nominal GDP</b>

TABLE 12 DATA SOURCE: Fed Annual Monetary Intermediation Cost 1984 to 2012, Attachment 3.

<sup>13</sup> Federal Reserve Monetary Intermediation Cost Inefficiency, Attachment 1.

<sup>14</sup> Fed Annual Monetary Intermediation Cost 1984 to 2012 using M2M Money Stock, Attachment 3.



## **7. Why Gold is not the Answer for the Monetary System**

Gold backing is unnecessary for the monetary system to work efficiently and adds intermediation expense to maintain it in storage.

It is believed a unit of GDP standard would provide better results than a gold standard because it would be easier to maintain and would provide an easily measurable standard for money stock determination. The primary reason gold has been desirable for usage as money was that it had limited availability and was difficult to counterfeit making it a good medium of exchange. The supply of gold is not fixed, nor is any commodity and therefore the price of the commodity backing the currency will fluctuate in value. Gold also has a history of being debased and because it is a commodity it can have wide value shifts making it unsuitable as a measure of value for medium of exchange use. The feature in its favor is its limited availability, however history has shown that gold based currencies have been debased over time and it is not useful as a standard of value.

With a fractional reserve system the right to convert currency to gold would decrease the money stock by more than the amount of the currency converted. The relationship between gold and the money stock is not one to one but one divided by the fractional reserve requirement percentage. At a 10% reserve requirement, converting \$1 to gold would reduce the money stock by \$10, a ten to one relationship that is not sustainable so gold offers no currency/money stock/credit availability security at all without a 100% reserve standard.

The observed fact of history is that prices are based on the medium of exchange actually used, not the commodity backing it as evidenced by the historic periodic monetary devaluations of the dollar in terms of gold, which did not result in a matching increase in prices in the U.S.<sup>15</sup>

A 100% reserve system does not need any commodity backing the currency as long as there is a standard to determine the amount of currency in circulation, which a GDP monetary unit standard would provide.

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<sup>15</sup> De Fremery, Robert, *Money and Freedom*, 1955, Ch. 7 "Shall We Return to a Gold Standard--Now".

## **8. Transition Process to Full Reserve Monetary System**

Conversion to a full reserve monetary system with direct issuance of new money creation, known as Seigniorage, to demand deposit accounts based on a GDP index monetary standard instead of Federal Reserve Member Banks is expected to improve American economic performance by the approximate amount of the reduced monetary intermediation cost, on the order of 2½% of GDP per year<sup>16</sup> and restore on the order of thirteen to fifteen million jobs<sup>17</sup>.

### *A. Currency*

It is anticipated the 100% reserve system would be implemented using existing currency and coinage in circulation since the conversion process between the existing and new monetary system would be done at par to minimize the cost of transition. Existing Federal Reserve Notes would be allowed to continue in circulation and be exchanged with new issue U.S. Bills "backed by the people of the United States" as part of routine currency replacement maintenance.

The conversion process is described below with before and after balance sheets included in Attachments 8(a) to (d).

<i>B. Commercial Banking System</i>	Consolidated Commercial Banks 10/3/12 Balance Sheet - A-8(a)
<i>B.1. Full Reserve Banks</i>	Sample Bank (B of A) 12/31/2012 Balance Sheet - Attachment 8(b)
<i>B.2. Deposit Only Institutions</i>	Sample Bank (B of A) 12/31/2012 Balance Sheet - Attachment 8(b)
<i>C. Federal Reserve System</i>	Federal Reserve 10/3/2012 Consolidated Balance Sheet - A-8(c)
<i>D. U.S. Government</i>	U.S. Government Fiscal 9/30/2012 Balance Sheet - Attachment 8(d)
<i>D.1. Commerce</i>	
<i>D.2. Treasury</i>	

### *B. Commercial Banking System*

Commercial banks would be required to divide themselves into two entities, one being a 100% reserve cash only demand depository<sup>18</sup> that would not make any loans and the other being everything else that the bank does.

Commercial banks and other full reserve institutions would handle lending activity based on a 100% time matched maturity positive spread funding/lending business model utilizing certificates of deposit, funds raised in the bond market and from what ever other alternative sources of capital that were available to them including lending their own capital. The ability of banks to leverage themselves would still be available as in theory a time-matched certificate of deposit (CD) could be up to 100% loaned out. Market experience would be expected to determine the level of leverage banks would stabilize around after conversion. As shown in Section 3 there is no credit intermediation loss with a full reserve system.

The existing fractional reserve mismatched maturity banking business model is a variation of a market timing strategy of buy low and sell high with demand deposits being buy low assets and loans being sell high assets as opposed to a matched maturity buy and hold strategy, which is the prevailing view in

<sup>16</sup> Fed Annual Monetary Intermediation Cost 1984 to 2012 using M2M Money Stock, Attachment 3.

<sup>17</sup> Federal Reserve Monetary Intermediation Cost Impact on Economy and Jobs, Attachment 7.

<sup>18</sup> Suggested by among others David Hume in "Of Money", 1752.

investment theory today. It is believed financial laws of investing are universally applicable and apply to deposit investments within economic systems. Traditional finance, which in a nut shell is to match the duration of liabilities to assets - long to long and short to short, indicates that financing long-term assets with short term liabilities creates non-systematic business risk that can be diversified away by matched funding. Major financial institutions IndyMac, Washington Mutual, Bears Sterns and Lehman Brothers all failed in 2008 utilizing mismatched maturity business models. These are business model risks, not systematic risks that the American economic system can diversify away with matched maturity funding at zero credit intermediation loss to the system. There is no downside to conversion from a systematic point of view and the stability of the banking sector would also be expected to improve from an improved matched funding business model.

*B.1. Full Reserve Commercial Banks*

Commercial banks would transfer, at no charge or fee, their demand deposit accounts to new independent depositor owned 100% reserve institutions. The accounts would be funded with existing bank held cash plus bank holdings of United States government securities that would be credited to the demand deposit accounts and retired as obligations of the U.S. government. Commercial banks would also receive a one-time monetary conversion loan from the U.S. government in the approximate amount of \$5.5 trillion to cover their remaining fractional reserve shortage in demand deposit funds as detailed below.

<b>Commercial Bank Bonded Debt to U.S. Government from conversion to 100% Reserve Demand Deposits<sup>3</sup></b>	
	For Week Ending 10/3/2012
Commercial Bank Deposits (Assumed all Demand) - Liability 31	\$8,979.3
Less: Cash on Hand - Assets 25	(\$1,606.7)
Less: Treasury and Agency Securities Holding - Assets 3	(\$1,848.4)
Bonded Debt to U.S. Government from Funding 100% Demand Deposit Conversion	\$5,524.2

**Source:** H.8; Pages 4 & 5 Assets and Liabilities of Commercial Banks in United States (Not Seasonally Adjusted), FRB

TABLE 13 DATA SOURCE: U. S. Government Consolidated Balance Sheet Fiscal 2012, Attachment 5(d).

The monetary conversion loan from the United States government would be at the risk free rate of return ( $[\text{GDP growth rate}] - [\text{Monetary Intermediation Cost}]$ ) or  $(r_f)$ , but not less than zero, plus a risk premium estimated at 25 basis points (0.25%). The monetary conversion loan would have a laddered maturity structure to match existing loan and/or other asset repayment dates bringing systematic maturities into balance with no anticipated monetary inflation from the conversion process. The banks would also receive a one-time monetary conversion release of liability due to their fractional reserve demand deposit shortage of funds. Government receipts from repayment of the \$5.5 trillion monetary loan would be used to retire outstanding Treasury debt.

Savings & Loan institutions and any other financial institutions that take material demand deposits and/or issue credit would have up to three months or an agreed to time period to convert their accounts to time matched full reserve accounts or transfer them to a new depositor owned depository and be eligible for a monetary conversion loan.

All government sponsored deposit insurance programs would end at the completion of bank, Savings & Loan and credit provider conversion to full 100% reserve institutions. Placing funds with a commercial bank or S&L would be expected to have a premium return over the risk free deposit only institutions. Any public insurance of commercial bank or S&L CD type deposits would be a wealth transfer public credit substitution subsidy and is not needed since risk free interest paying depositor owned accounts would be available at the new deposit only institutions.

### *B.2. Deposit Only 100% Reserve Institutions*

The new deposit only institutions would be created out of existing commercial banks and exclusively hold all of the cash demand deposits used in the United States. As mentioned in the Commercial banks section, fractional reserve lenders would do this in exchange for a monetary conversion loan of approximately \$5.5 trillion to fund demand deposits 100% and a one-time release of liability due to being technically bankrupt from their fractional reserve shortage of funds. Bank holdings of U.S. Government securities would be credited to the demand deposit accounts at the new depositor owned 100% reserve institutions and retired.

The new deposit only institutions would be 100% owned by their depositors and would operate under a Board of Directors composed of elected deposit account holders. The deposit institutions would be expected to generate revenue by developing a debit card network similar to VISA and MasterCard that would have a minimal intermediary charge to cover system costs. A second source of revenue and expected to be the main source would be new money issued, known as Seigniorage, by the Department of Commerce direct deposited on a pro rata basis to demand deposit account holders in accordance with the GDP growth standard. Protection of the depositor's accounts would be provided by the deposit owners themselves, utilizing a Vanguard type mutual fund model, with regular annual public audits. There would be no government provided deposit insurance such as the FDIC because all deposits would be depositor owned and backed 100%.

Cash demand deposit holding institutions will face overwhelming temptation to lend deposits based on the apparently 100% universal indication that that is what has happened in history. Probably the most well known case is the Bank of Amsterdam, which started as a 100% reserve institution in 1609 that went for years without audit and failed in 1790<sup>19</sup> after undisclosed lending activity was revealed requiring governmental/public support, effectively the public bailing itself out with added intermediation costs to boot, and from then on the bank declined and was closed in 1819. Therefore any institution maintaining depositor owned cash accounts must be chartered to never lend money or credit under any circumstances including even overnight lending. Commercial banks and other full reserve institutions will exclusively handle lending activity.

It is anticipated 2% to 4% or more annual increases to the money stock would be made based on GDP growth. The increase would be paid directly to cash demand deposit holders, as Seigniorage, on a pro-rata basis by amount of cash held at the new depositor owned institutions and would be the primary funding source for the operations of the depositories. The payments would be anticipated to be made payable quarterly in arrears if the economy was expanding and could be called the risk free rate of return or interest ( $r_f$ ) or a "Labor Dividend" to reflect that both labor and capital had combined to increase the productivity of the economy during the previous quarter. In the event of a GDP decline no interest or "Labor Dividend" would be paid until the economy had returned to net positive growth from the last dividend payment.

The size of these new 100% reserve demand deposit institutions should be limited so that none are able to grow large enough to present any systematic risk. A preliminary estimate is that no deposit institution should be allowed to grow larger than 1% to 1½% of total system monetary assets and that would be a factor to consider at the time of creation of the depositor owned institutions.

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<sup>19</sup> De Fremery, Robert, *Money and Freedom*, 1955, Ch. 3 "Origin of Banking".

*C. Federal Reserve System*

The Federal Reserve System would be divided into two parts in the same manner as commercial banks. The deposit only portion of the Fed would be assigned to the Department of Treasury and assist with the financial operations of the federal government.

The remaining operations of the Federal Reserve System would sunset or be assigned to Department of Commerce. The ability of the Fed to purchase additional securities to increase the money stock and lender of last resort would be ended. Loan payoffs and investment sales would be credited to the U.S. government and retired. The Department of Commerce would maintain bank regulatory activity going forward.

Federal Reserve Notes would be converted at par with new debt free U.S. Bill currency issued and backed by the people of the United States. Existing Federal Reserve Notes would be allowed to continue in circulation and replaced as part of routine currency maintenance.

<b>Federal Reserve Consolidated Statement Change from conversion to 100% Demand Deposits<sup>3</sup></b>		
	(\$ Millions)	For Week Ending 10/3/2012
Federal Reserve Notes, net of F.R. Bank holdings Retired & Replaced with US Bills		\$1,091,276
Plus: Cash Equivalents Needed to cover U.S. Gov't Demand Deposits		\$55,071
Less: Treasury and Agency Securities Holdings Retired		(\$1,146,347)
Bonded Debt to U.S. Government from Funding 100% Demand Deposit Conversion		\$0
<b>Source:</b> Federal Reserve Statistical Release H.4.1 Table 8. Consolidated Statement of all Federal Reserve Banks		

TABLE 14 DATA SOURCE: Federal Reserve Banks Consolidated Balance Sheet, Attachment 5(c).

The check processing function of the Federal Reserve System would be assigned to the new system of demand depositor owned institutions which would be expected to develop a network for processing checks and debit card transactions to finance their operations.

*D. U.S. Government*

Monetary policy would be transferred to the Legislative Branch to be signed into law and administered by the Executive Branch, believed to be most naturally a function of the Department of Commerce. Increases in the money stock based on the GDP standard would be handled in traditional legislative manner and could be automated based on quarterly GDP results.

*D.1. Department of Commerce*

The Department of Commerce would maintain the money stock and increase it by the net positive GDP growth of the economy. Currency and coinage related activities would be assigned to the Department of Commerce. The Department of

<b>United States Government Debt (Before Conversion)</b>			
Held by the Public (\$ Billions)	As of	10/3/2012	% Total
Financing bills (Term 0 to 1 Yr)		\$1,613.0	14.3%
Government notes, bonds & TIPS		\$9,117.2	80.9%
Nonmarketable, TVA & Other Agency		\$544.5	4.8%
Total United States Government Debt		\$11,274.7	100.0%
<b>United States Government Debt (After Conversion)</b>			
Held by the Public (\$ Billions)	As of	10/3/2012	% Total
Total U.S. Federal Government Debt		\$11,274.7	100.0%
- Fed debt held by the FED retired <sup>c,2</sup>		(\$1,146.3)	-10.2%
- Fed debt held by com. banks retired <sup>c,3</sup>		(\$1,848.4)	-16.4%
- Bank Debt to Gov't from Conversion <sup>b</sup>		(\$5,524.2)	-49.0%
U.S. Fed Gov't Debt after conversion		\$2,755.8	24.4%

TABLES 15 & 16 DATA SOURCE: U. S. Government Consolidated Balance Sheet for Fiscal Year Ending 9/30/2012, Attachment 5(d).

Commerce would also maintain bank regulatory activity going forward and assume the sunsetting non-demand deposit operations of the Federal Reserve System.

The Office of the Comptroller of Currency (OCC) would sunset or be assigned to the Department of Commerce.

*D.2. Department of Treasury*

The mission statement of the Treasury would be redefined to manage the U.S. Government's finances and resources effectively. Managing government accounts, public debt, revenue collection and tax policy would remain functions of the Treasury Department. The deposit only portion of the Fed would be assigned to the Department of Treasury and assist with the financial operation of the federal government.

## **9. How Financial Emergencies Would Be Handled**

The same way they are handled now. What would change is the intermediation cost of introducing new money into the financial system. With a full reserve system there would no longer be deposit bank failures so the financial system would no longer be at risk. Much financial regulation could be retired since it would no longer be applicable, which should also improve economic system performance.

The government would handle emergencies by getting legislative approval signed into law by the President in the following estimated order priority:

- 1) Traditional taxation,
- 2) Issue debt to the general market in the form of bonds, and
- 3) Taxing GDP index monetary seigniorage payments issued to the people.

It is believed that virtually all emergencies would be covered by traditional taxation and debt issuance. Once new money seigniorage is issued directly to the people in item 3) it could be taxed in an emergency situation.

## **10. Conclusion**

This paper has shown that the increasing financial returns to fractional reserve credit intermediation as the reserve requirement is reduced come from capital and labor to maintain system value in accordance with the Modigliani-Miller Financial Theorem and that the Federal Reserve Banking System is not the most efficient means of controlling the money stock in the United States. The Fed adds unnecessary intermediation cost to the economy since no value is added from its money creation and fractional reserve activity and therefore it lowers returns to the economy by the amount of its intermediation cost.

Replacing the fractional reserve Fed with a 100% reserve GDP index based direct issue monetary system would result in an approximately 90%<sup>20</sup> lower monetary intermediation cost, reduce the amplitude of economic cycles from less structural leverage, more efficiently allocate capital and result in a higher standard of living for all Americans. Unfair and unequal discretionary financial bailouts of some companies and not others would be eliminated<sup>21</sup> and critically involuntary wealth transfers to the banking sector from the other sectors of the economy would also be eliminated.<sup>22</sup>

It is believed that with the discovery of the Modigliani-Miller Financial Theorem in 1958 of the irrelevance of capital structure that proof of the superiority of the full reserve system has existed because of its lower monetary intermediation cost. The improvement to the United States economy from conversion is expected to be the approximate amount of the reduced monetary intermediation cost, on the order of 2½% of GDP per year<sup>23</sup>. Conversion to a full reserve monetary system is also estimated to improve the balance sheet of the United States government on the order of \$8.5 trillion<sup>24</sup> as of fiscal year 2012 and restore on the order of thirteen to fifteen million jobs<sup>24</sup>.

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<sup>20</sup> Federal Reserve Monetary Intermediation Cost Inefficiency, Attachment 1.

<sup>21</sup> "Wall Street Aristocracy Got \$1.2 Trillion in Secret Fed Loans", Bloomberg 8/22/2011.

<sup>22</sup> "Financial Rescue Nears GDP as Pledges top \$12.8 Trillion" Cost Summary as of March 31, 2009, Bloomberg March 31, 2009.

<sup>23</sup> Fed Annual Monetary Intermediation Cost 1984 to 2012 using M2M Money Stock, Attachment 3.

<sup>24</sup> Federal Reserve Monetary Intermediation Cost Impact on Economy and Jobs, Attachment 7.



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## **12. Attachments**

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## Attachment 1

## Federal Reserve Monetary Intermediation Cost to the American Economy Monetary Intermediation Cost Inefficiency (with Wealth Transfer Effect)

### I. Intermediation Cost using Current Federal Reserve Monetary System

Federal Reserve Monetary Issuance System	\$ Amount	Efficiency of Monetary Increase	
1. Federal Reserve acquires government issued debt	\$1,000,000	10.0%	People/Gov't Benefit
2. Federal Reserve Bank Reserve Requirement <sup>1</sup>	10.0%		
3. Money Stock Increase via Federal Reserve Bank Loans	\$10,000,000	100.0%	Intermediation Cost
4. Fed Reserve Banks net Increased Loans (Intermediation Cost)	\$9,000,000	90.0%	

### Intermediation Cost Inefficiency Utilizing Federal Reserve Banking Monetary System

With the Federal Reserve System's approximate 10% fractional reserve lending requirement, 90% of the money stock increase is in the form of new Fed Reserve member bank loans with 10% of the increase to the government from new debt issuance indicating that the cost of using the Federal Reserve System as an intermediary to increase the money stock is 90%. The money stock increase dilutes the existing money stock and transfers wealth from the other sectors of the economy to the banking sector by the amount of the money stock increase. Money creation and first use, known as seigniorage, by the Fed is equivalent to 90% direct wealth transfer.

### II. Direct Monetary Expansion System to People using Government Entity

Direct Monetary Issuance System (Possible Commerce Dept)	\$ Amount	Beneficiaries of Monetary Increase	
1. People issued bills directly from Government (Commerce Dept)	\$1,000,000	100.0%	People/Gov't Benefit
2. People/Government Portion of issued bills	100.0%		
3. Money Stock Increase to People via Direct Government Issue	\$1,000,000	100.0%	Intermediation Cost
4. Fed Reserve Banks net Increased Loans (Intermediation Cost)	\$0	0.0%	

### Intermediation Efficiency Increase with Direct Issuance of Currency

With direct issuance of money stock increases to the American people and/or people holding dollar denominated demand deposit accounts, anticipated to most naturally be voted on by Congress and administered by the Department of Commerce, 100% of the increase in the money stock goes direct to the American people with no intermediation loss. Direct issuance of money stock increases eliminating the intermediation cost of the Federal Reserve System would be at least 90% more efficient than the current system and eliminate the wealth transfer to the banking sector issue. The government could tax the new money seigniorage at issuance to the people if necessary or as a regular part of the income tax collection process.

Deposit Reserve Requirement Ratios <sup>1</sup>		
	Effective Date	% of liabilities
\$0 to \$12.4 Million	12/27/2012	0.00%
\$12.4 to \$79.5 Million	12/27/2012	3.00%
More than \$79.5 Million	12/27/2012	10.00%
Nonpersonal time deposits	12/27/1990	0.00%

#### SOURCE:

1-Reserve Requirement from Board of Governors of the Federal Reserve System at <http://www.federalreserve.gov/monetarypolicy/reservereq.htm>

# Federal Reserve Monetary Intermediation Cost to the American Economy

## Fractional Reserve Loan Analysis with 10% Reserve Requirement (Example)

### No Financial Intermediary Analysis

When no financial intermediary is involved, intermediation must be real direct asset lending. In this example, Farmer B as Intermediary lends Farmer A a tractor to use for \$500. Farmer A rents the tractor from Farmer B and grows a crop which is sold. In this system \$1,500 of wealth is created from crop sale split \$1,000 to Farmer A and \$500 to Farmer B for use of the tractor with financial intermediary not participating at \$0.

#### I. No Financial Intermediary (Real Asset Tractor Lending)

	Farmer A	Farmer B	Intermediary	Total	
Start (Cash)	\$475	\$475	\$50	\$1,000	Begin Cash
Tractor Rent	(\$500)	\$500		\$0	
Sell Crop	\$1,500			\$1,500	
End (Cash)	\$1,475	\$975	\$50	\$2,500	End Cash
Direct Net Earnings	\$1,000	\$500	\$0	\$1,500	Earnings (\$)
% Earnings	66.67%	33.33%	0.00%	100.0%	Earnings (%)

#### II. With 10% Reserve Financial Intermediation Added ( 10% Real Backing)

	Farmer A	Farmer B	Intermediary	Total	
Start (Cash)	\$475	\$475	\$50	\$1,000	Begin Cash
Direct Net Earnings(Above)	\$1,000	\$500	\$0	\$1,500	
Loan	\$500		\$500	\$500	
Loan Interest	(\$25)		\$25	\$0	
Pay Back Loan	(\$500)		\$500	\$0	
End (Cash)	\$1,450	\$975	\$525	\$2,950	End Cash
Net Earnings	\$975	\$500	\$475	\$1,950	Earnings (\$)
% Earnings	50.00%	25.64%	24.36%	100.0%	Earnings (%)
Wealth Transfer=(Principal+Interest) x (1- RR). Inflation is Principal portion wealth transfer.				18.0%	Inflation Cash

#### 10% Fractional Reserve Requirement Financial Intermediation/Wealth Transfer Impact

Item	Item \$ Amount	Inflation	\$ Unearned	% Unearned	\$ Earned	Total Return			
							(A)=(a) x (1-RR)	(B)= Item x (1-RR)	= (1 - RR)
Loan Principal (a)	\$500.0	\$450.0	\$450.00	90.0%		\$450.0			
Interest (Loan(a) x (c))	\$25.0		\$22.50	90.0%	\$2.50	\$25.0			
Total	\$525.0	\$450.0	\$472.50	90.0%	\$2.50	\$475.0			
<b>Wealth Transfer (Unearned Return = <math>\sum(B)</math>)</b>							\$472.50		
<b>Financial Intermediation Unearned Return % (Unearned Return/Total Return = <math>\sum(B)/\sum(D)</math>)</b>							99.5%		
<b>Intermediary Return on \$50 Required Reserve Investment (Total Return/Start Cash)</b>							950.0%		
<b>Earned Financial Intermediation (Interest x Reserve Requirement = <math>\sum(C)</math>)</b>							\$2.50		
<b>Earned Financial Intermediation % of Total Return of \$475 (Earned Return/Total Return)</b>							0.5%		

### 10% Fractional Reserve Financial Intermediation Analysis

In this 10% fractional reserve system the Financial Intermediary adds a \$500 loan into the system 90% (1-reserve requirement) backed by no real or financial assets, increasing fractional reserve returns by \$450 to \$1,950 from the sale of the exact same crop now split \$975 to Farmer A, \$500 to Farmer B and \$475 to the intermediary that added 10% real credit. Farmer A pays back a \$500 loan and pays interest of \$25 for 10% (\$50) of true credit intermediation. In the real world Farmer A would not borrow money this way unless he thought he was getting something, in this case Farmer A might take this type of loan to maintain some liquidity during the growing period before crop harvest. The Financial Intermediary loan captures 24.36% of the system earnings in the form of inflation and interest in a 90% direct transfer of wealth since the same crop is produced.

### Fractional Reserve Intermediation Analysis

In this system Wealth Transfer is (Loan Principal + Interest) x (1- Reserve Requirement)). Inflation is Principal portion of wealth transfer. In a 10% reserve system 90% of the loan repayment results in inflation with interest payments as direct wealth transfer without added inflation. In a 100% reserve system there is no inflationary wealth transfer and 100% of the interest earned is true credit intermediation.

### Assumptions

Initial System Cash	\$1,000
Tractor Rent \$	\$500
Crop Sale Price	\$1,500
(a)-Loan Amount \$	\$500
(b)-Reserve Requirement (RR)	10.00%
(c)-Interest Rate	5.00%

# Federal Reserve Monetary Intermediation Cost to the American Economy

## Fractional Reserve Loan Analysis with 100% Reserve Requirement (Example)

### No Financial Intermediary Analysis

When no financial intermediary is involved, intermediation must be real direct asset lending. In this example, Farmer B as Intermediary lends Farmer A a tractor to use for \$500. Farmer A rents the tractor from Farmer B and grows a crop which is sold. In this system \$1,500 of wealth is created from crop sale split \$1,000 to Farmer A and \$500 to Farmer B for use of the tractor with financial intermediary not participating at \$0.

#### I. No Financial Intermediary (Real Asset Tractor Lending)

	Farmer A	Farmer B	Intermediary	Total	
Start (Cash)	\$250	\$250	\$500	\$1,000	Begin Cash
Tractor Rent	(\$500)	\$500		\$0	
Sell Crop	\$1,500			\$1,500	
End (Cash)	\$1,250	\$750	\$500	\$2,500	End Cash
Direct Net Earnings	\$1,000	\$500	\$0	\$1,500	Earnings (\$)
% Earnings	66.67%	33.33%	0.00%	100.0%	Earnings (%)

#### II. With 100% Reserve Financial Intermediation Added ( 100% Real Backing)

	Farmer A	Farmer B	Intermediary	Total	
Start (Cash)	\$250	\$250	\$500	\$1,000	Begin Cash
Direct Net Earnings(Above)	\$1,000	\$500	\$0	\$1,500	
Loan	\$500		\$500	\$500	
Loan Interest	(\$25)		\$25	\$0	
Pay Back Loan	(\$500)		\$500	\$0	
End (Cash)	\$1,225	\$750	\$525	\$2,500	End Cash
Net Earnings	\$975	\$500	\$25	\$1,500	Earnings (\$)
% Earnings	65.00%	33.33%	1.67%	100.0%	Earnings (%)
Wealth Transfer=(Principal+Interest) x (1- RR). Inflation is Principal portion wealth transfer.				0.0%	Inflation Cash

#### 100% Fractional Reserve Requirement Financial Intermediation/Wealth Transfer Impact

Item	Item \$ Amount	Inflation	\$ Unearned	% Unearned	\$ Earned	Total Return	(A)=(a) x (1-RR) (B)= Item x (1-RR) = (1 - RR) (C)=Item x RR (D) = (B) + (C)	
Loan Principal (a)	\$500.0	\$0.0	\$0.00	0.0%		\$0.0		
Interest (Loan(a) x (c))	\$25.0		\$0.00	0.0%	\$25.00	\$25.0		
Total	\$525.0	\$0.0	\$0.00	0.0%	\$25.00	\$25.0		
<b>Wealth Transfer (Unearned Return = <math>\sum(B)</math>)</b>							\$0.00	
<b>Financial Intermediation Unearned Return % (Unearned Return/Total Return = <math>\sum(B)/\sum(D)</math>)</b>							0.0%	
<b>Intermediary Return on \$500 Required Reserve Investment (Total Return/Start Cash)</b>							5.0%	
<b>Earned Financial Intermediation (Interest x Reserve Requirement = <math>\sum(C)</math>)</b>							\$25.00	
<b>Earned Financial Intermediation % of Total Return of \$25 (Earned Return/Total Return)</b>							100.0%	

### 100% Fractional Reserve Financial Intermediation Analysis

In this 100% fractional reserve system the Financial Intermediary adds a \$500 loan into the system 100% backed by real financial assets (intermediary start cash), increasing fractional reserve returns by \$0 to the same \$1,500 from the sale of the exact same crop now split \$975 to Farmer A, \$500 to Farmer B and \$25 to the intermediary that added 100% real credit. Farmer A pays back a \$500 loan and pays interest of \$25 for 100% (\$500) of true credit intermediation. In the real world Farmer A would take this type of loan to maintain some liquidity during the growing period before crop harvest. The Financial Intermediary loan captures 1.67% of the system earnings in the form of interest with no unearned transfer of wealth in the form of fractional reserve lending inflation since the same crop is produced with no cash added to the system.

### Fractional Reserve Intermediation Analysis

In this system Wealth Transfer is (Loan Principal + Interest) x (1- Reserve Requirement)). Inflation is Principal portion of wealth transfer. In a 0% reserve system 100% of the loan repayment results in inflation with interest payments as direct wealth transfer without added inflation. In a 100% reserve system there is no inflationary wealth transfer and 100% of the interest earned is true credit intermediation.

### Assumptions

Initial System Cash	\$1,000
Tractor Rent \$	\$500
Crop Sale Price	\$1,500
(a)-Loan Amount \$	\$500
(b)-Reserve Requirement (RR)	100.00%
(c)-Interest Rate	5.00%

# Federal Reserve Monetary Intermediation Cost to the American Economy

## Fractional Reserve Loan Analysis Tables from 100% to 0% Reserve Requirement (Example)

### Fractional Reserve Lending Financial Intermediation Analysis

In this example Farmer A (Labor) sells a crop for \$1,500 with the Financial Intermediary making a \$500 loan at 5% to Farmer A backed by the fractional reserve requirement to pay the \$500 tractor rent to Farmer B (Capital). As the reserve requirement is reduced, the financial intermediary's fractional reserve loan returns are increased via monetary expansion from loan repayment from the exact same crop production. It is known from the Modigliani-Miller Financial Theorem that leverage does not change value and only shifts the returns within the system as is the case in this example. In this system the only addition to system value is the crop produced and the returns are split between Labor, Capital and the Financial Intermediary. The increased financial intermediary return from fractional reserve leverage as the reserve requirement is reduced must come from other parts of the system to keep the same value. Since progressively less is lent as the reserve requirement is reduced, repayment is progressively more wealth transfer for repayment of unbacked credit in the form of new money creation.

#	\$ Amount Earnings						Fin Intermediary Return	
	Formula = (d) x (c)	(1)	(2)	(3)	(4)	(5)	(6)	
	(d)-Reserve Requirement	Loan Req'd Res	Labor (Farmer A)	Capital (Tractor)	Financial Intermediary	System Total	Earned	Unearned
0	100%	\$500	\$975	\$500	\$25	\$1,500	\$25.00	\$0.00
1	95%	\$475	\$975	\$500	\$50	\$1,525	\$23.75	\$26.25
2	90%	\$450	\$975	\$500	\$75	\$1,550	\$22.50	\$52.50
3	85%	\$425	\$975	\$500	\$100	\$1,575	\$21.25	\$78.75
4	80%	\$400	\$975	\$500	\$125	\$1,600	\$20.00	\$105.00
5	75%	\$375	\$975	\$500	\$150	\$1,625	\$18.75	\$131.25
6	70%	\$350	\$975	\$500	\$175	\$1,650	\$17.50	\$157.50
7	65%	\$325	\$975	\$500	\$200	\$1,675	\$16.25	\$183.75
8	60%	\$300	\$975	\$500	\$225	\$1,700	\$15.00	\$210.00
9	55%	\$275	\$975	\$500	\$250	\$1,725	\$13.75	\$236.25
10	50%	\$250	\$975	\$500	\$275	\$1,750	\$12.50	\$262.50
11	45%	\$225	\$975	\$500	\$300	\$1,775	\$11.25	\$288.75
12	40%	\$200	\$975	\$500	\$325	\$1,800	\$10.00	\$315.00
13	35%	\$175	\$975	\$500	\$350	\$1,825	\$8.75	\$341.25
14	30%	\$150	\$975	\$500	\$375	\$1,850	\$7.50	\$367.50
15	25%	\$125	\$975	\$500	\$400	\$1,875	\$6.25	\$393.75
16	20%	\$100	\$975	\$500	\$425	\$1,900	\$5.00	\$420.00
17	15%	\$75	\$975	\$500	\$450	\$1,925	\$3.75	\$446.25
18	10%	\$50	\$975	\$500	\$475	\$1,950	\$2.50	\$472.50
19	5%	\$25	\$975	\$500	\$500	\$1,975	\$1.25	\$498.75
20	0%	\$0	\$975	\$500	\$525	\$2,000	\$0.00	\$525.00

#	% Earnings						Fin Intermediary Return	
	(7)	(8)	(9)	(10)	(11)	(12)		
	Labor (Farmer A)	Capital (Tractor)	Financial Intermediary	System Total	Earned	Unearned		
0	65.0%	33.3%	1.7%	100.0%	100.00%	0.00%		
1	63.9%	32.8%	3.3%	100.0%	47.50%	52.50%		
2	62.9%	32.3%	4.8%	100.0%	30.00%	70.00%		
3	61.9%	31.7%	6.3%	100.0%	21.25%	78.75%		
4	60.9%	31.3%	7.8%	100.0%	16.00%	84.00%		
5	60.0%	30.8%	9.2%	100.0%	12.50%	87.50%		
6	59.1%	30.3%	10.6%	100.0%	10.00%	90.00%		
7	58.2%	29.9%	11.9%	100.0%	8.13%	91.88%		
8	57.4%	29.4%	13.2%	100.0%	6.67%	93.33%		
9	56.5%	29.0%	14.5%	100.0%	5.50%	94.50%		
10	55.7%	28.6%	15.7%	100.0%	4.55%	95.45%		
11	54.9%	28.2%	16.9%	100.0%	3.75%	96.25%		
12	54.2%	27.8%	18.1%	100.0%	3.08%	96.92%		
13	53.4%	27.4%	19.2%	100.0%	2.50%	97.50%		
14	52.7%	27.0%	20.3%	100.0%	2.00%	98.00%		
15	52.0%	26.7%	21.3%	100.0%	1.56%	98.44%		
16	51.3%	26.3%	22.4%	100.0%	1.18%	98.82%		
17	50.6%	26.0%	23.4%	100.0%	0.83%	99.17%		
18	50.0%	25.6%	24.4%	100.0%	0.53%	99.47%		
19	49.4%	25.3%	25.3%	100.0%	0.25%	99.75%		
20	48.8%	25.0%	26.3%	100.0%	0.00%	100.00%		

#### Formulas (Earnings \$ Amounts)

- (1) - Earnings Labor = Crop Sale(a) - Tractor Rent(b) - (Loan Amount(c) x Interest Rate(e))
- (2) - Earnings Capital = Tractor Rent(b)
- (3) - Earnings Financial Intermediary = Loan Amount(c) x (1 - Reserve Requirement(d) + Interest Rate(e))
- (4) - Earnings Total = Crop Sale(a) + Loan Amount(c) x (1 - Reserve Requirement(d))
- (5) - Earned Financial Intermediary Return = Loan Amount(c) x Interest Rate(e) x Reserve Requirement(d)
- (6) - Unearned Financial Intermediary Return = Loan Amount(c) x (1 + Interest Rate(e)) x (1 - Reserve Requirement(d))

#### Monetary Expansion Formula (Column Not Shown)

Monetary Expansion = Loan Amount(c) x (1 - Res Req(d))

#### Assumptions

Initial System Cash	///
(a) Crop Sale Price	\$1,500
(b) Tractor Rent	\$500
(c) Loan Amount	\$500
(d) Reserve Requirement (RR)	See Table
(e) Interest Rate	5.00%

#### Formulas (Earnings % Total)

- (7) - Earnings Labor = [Crop Sale(a) - Tractor Rent(b) - (Loan Amount(c) x Interest Rate(e))] / [Crop Sale(a) + Loan Amount(c) x (1 - Reserve Requirement(d))]
- (8) - Earnings Capital = [Tractor Rent(b)] / [Crop Sale(a) + Loan Amount(c) x (1 - Reserve Requirement(d))]
- (9) - Earnings Financial Intermediary = [Loan Amount(c) x ((1 - Reserve Requirement(d)) + Interest Rate(e))] / [Crop Sale(a) + Loan Amount(c) x (1 - Reserve Requirement(d))]
- (10) - Earnings Total = [Crop Sale(a) + Loan Amount(c) \* (1 - Reserve Requirement(d))] / [Crop Sale(a) + Loan Amount(c) \* (1 - Reserve Requirement(d))]
- (11) - Earned Financial Intermediary Return = [Interest Rate(e) x Reserve Requirement(d)] / [(1 - Reserve Requirement(d)) + Interest Rate(e)]
- (12) - Unearned Financial Intermediary Return = [(1 + Interest Rate(e)) x (1 - Reserve Requirement(d))] / [(1 - Reserve Requirement(d)) + Interest Rate(e)]

Attachment 3  
**Federal Reserve Monetary Intermediation Cost to the American Economy**  
**Fed Annual Monetary Intermediation Cost 1984 to 2012 using M2M Money Stock<sup>1</sup>**

**Assumptions**

Fed Reserve Requirement (RR)

Intermediation Cost Federal Reserve System (\$)										Intermediation Cost Federal Reserve System (% Est.)						Comparison Analysis	
(N)	(A)	(B) = (A <sub>N</sub> ) - (A <sub>N-1</sub> )	(C) = (B <sup>4</sup> ) x (1-RR)	(D)	(E) = (C) + (D)	(F)	(G) = (F <sub>N</sub> - F <sub>N-1</sub> ) / F <sub>N-1</sub>	(H) = (E) / (F)	(I)	(J) = (G) - (H)	(K) = (G) - (I)	(L) = (J) - (K)					
#	Year (End 12/31)	MoneyStock M2M-NS <sup>1</sup> (\$ Billions)	\$ Increase Prior Year (\$ Billions)	Money Stock Change Intermediation Cost (\$ Billions)	Actual (Net) Budget <sup>2</sup> (\$ Billions)	Total Annual Intermediation Cost (\$ Billions)	GDP <sup>3</sup> (\$ Billions)	GDP <sup>3</sup> (% Growth)	Intermediation (% GDP Cost)	Inflation % CPI-U (EOY) <sup>4</sup>	GDP-Intermediation Net (% GDP) (r <sub>i</sub> )	GDP-Inflation Net (% GDP)	Real r <sub>i</sub> GDP - Nominal GDP	Reported Growth	Difference w/Real		
0	1983	\$1,349.9					\$3,688.1										
1	1984	\$1,429.7	\$79.8	\$71.82	\$0.607	\$72.427	\$4,034.0	9.379%	1.795%	3.949%	7.583%	5.430%	2.153%				
2	1985	\$1,618.6	\$188.9	\$170.01	\$0.487	\$170.497	\$4,318.7	7.058%	3.948%	3.799%	3.110%	3.259%	-0.149%				
3	1986	\$1,883.9	\$265.3	\$238.77	\$0.504	\$239.274	\$4,543.3	5.201%	5.267%	1.098%	-0.066%	4.103%	-4.169%				
4	1987	\$1,921.2	\$37.3	\$33.57	\$0.504	\$34.074	\$4,883.1	7.479%	0.698%	4.434%	6.781%	3.045%	3.737%				
5	1988	\$1,968.6	\$47.4	\$42.66	\$0.564	\$43.224	\$5,251.0	7.534%	0.823%	4.419%	6.711%	3.115%	3.596%				
6	1989	\$2,019.8	\$51.2	\$46.08	\$0.582	\$46.662	\$5,581.7	6.298%	0.836%	4.647%	5.462%	1.651%	3.811%				
7	1990	\$2,115.3	\$95.5	\$85.95	\$0.604	\$86.554	\$5,846.0	4.735%	1.481%	6.106%	3.255%	-1.371%	4.626%				
8	1991	\$2,323.1	\$207.8	\$187.02	\$0.685	\$187.705	\$6,092.5	4.217%	3.081%	3.064%	1.136%	1.152%	-0.017%				
9	1992	\$2,574.3	\$251.2	\$226.08	\$0.771	\$226.851	\$6,493.6	6.584%	3.493%	2.901%	3.090%	3.683%	-0.593%				
10	1993	\$2,713.7	\$139.4	\$125.46	\$0.894	\$126.354	\$6,813.8	4.931%	1.854%	2.748%	3.077%	2.183%	0.894%				
11	1994	\$2,691.2	(\$22.5)	(\$20.25)	\$0.958	(\$19.292)	\$7,248.2	6.375%	-0.266%	2.675%	6.641%	3.700%	2.941%				
12	1995	\$2,721.2	\$30.0	\$27.00	\$1.029	\$28.029	\$7,542.5	4.060%	0.372%	2.538%	3.689%	1.522%	2.167%				
13	1996	\$2,880.9	\$159.7	\$143.73	\$1.084	\$144.814	\$8,023.0	6.371%	1.805%	3.322%	4.566%	3.048%	1.517%				
14	1997	\$3,073.9	\$193.0	\$173.70	\$1.124	\$174.824	\$8,505.7	6.016%	2.055%	1.702%	3.961%	4.314%	-0.353%				
15	1998	\$3,430.1	\$356.2	\$320.58	\$1.192	\$321.772	\$9,027.5	6.135%	3.564%	1.612%	2.570%	4.523%	-1.952%				
16	1999	\$3,687.8	\$257.7	\$231.93	\$1.214	\$233.144	\$9,607.7	6.427%	2.427%	2.685%	4.000%	3.742%	0.258%				
17	2000	\$3,881.7	\$193.9	\$174.51	\$1.245	\$175.755	\$10,129.8	5.434%	1.735%	3.387%	3.699%	2.047%	1.652%				
18	2001	\$4,458.9	\$577.2	\$519.48	\$1.411	\$520.891	\$10,373.1	2.402%	5.022%	1.552%	-2.620%	0.850%	-3.470%				
19	2002	\$4,875.3	\$416.4	\$374.76	\$1.534	\$376.294	\$10,766.9	3.796%	3.495%	2.377%	0.301%	1.419%	-1.118%				
20	2003	\$5,246.6	\$371.3	\$334.17	\$1.655	\$335.825	\$11,414.8	6.018%	2.942%	1.879%	3.076%	4.138%	-1.063%				
21	2004	\$5,587.1	\$340.5	\$306.45	\$1.498	\$307.948	\$12,123.9	6.212%	2.540%	3.256%	3.672%	2.957%	0.716%				
22	2005	\$5,681.9	\$94.8	\$85.32	\$1.476	\$86.796	\$12,901.4	6.413%	0.673%	3.416%	5.740%	2.997%	2.743%				
23	2006	\$5,857.2	\$175.3	\$157.77	\$1.613	\$159.383	\$13,584.2	5.292%	1.173%	2.541%	4.119%	2.752%	1.367%				
24	2007	\$6,195.2	\$338.0	\$304.20	\$2.411	\$306.611	\$14,253.2	4.925%	2.151%	4.081%	2.774%	0.844%	1.930%				
25	2008	\$6,743.6	\$548.4	\$493.56	\$2.536	\$496.096	\$14,081.7	-1.203%	3.523%	0.091%	-4.726%	-1.295%	-3.432%				
26	2009	\$7,326.9	\$583.3	\$524.97	\$2.914	\$527.884	\$14,133.6	0.369%	3.735%	2.721%	-3.366%	-2.353%	-1.014%				
27	2010	\$7,894.8	\$567.9	\$511.11	\$3.211	\$514.321	\$14,735.9	4.261%	3.490%	1.496%	0.771%	2.766%	-1.995%				
28	2011	\$8,924.8	\$1,030.0	\$927.00	\$3.398	\$930.398	\$15,321.0	3.971%	6.073%	2.962%	-2.102%	1.008%	-3.110%				
29	2012	\$9,843.6	\$918.8	\$826.92	\$3.737	\$830.657	\$15,864.1	3.545%	5.236%	1.741%	-1.691%	1.804%	-3.495%				
TOTALS		\$9,843.6	\$8,493.7	\$7,644.33	\$41.443	\$7,685.773	\$273,495.9	5.16%	2.57%	2.86%	2.55%	2.30%	0.25%				
Averages (1984-2012)			\$292.89	\$263.60		\$265.03	Count(Years)	29	29	29	29	29	29				
Ave Last 10 Years (2003-2012)			\$496.83	\$447.15	\$2.45	\$449.59	Last 10 Yrs	3.95%	3.14%	2.41%	0.77%	1.54%	-0.76%				
							Count(Years)	10	10	10	10	10	10				
							Last 5 Yrs Annual	2.16%	4.41%	1.80%	-2.24%	0.37%	-2.61%				
							Count(Years)	5	5	5	5	5	5				
							2012 Economy to 2008 (Last 5 Compounded)	111.3%	124.1%	109.3%	89.3%	101.9%	87.6%				
							Change since 2008 (Last 5 Compounded Net Change)	11.3%	24.1%	9.3%	-10.7%	1.9%	-12.4%				
							Nominal GDP Growth w/Inflation	Compounded Intermediation	Compounded Inflation	Real r <sub>i</sub> GDP Growth	Nominal GDP - Inflation	Real r <sub>i</sub> GDP - Nominal GDP					

Difference between reported nominal GDP and real r<sub>i</sub> GDP.

For last five years, [GDP-Inflation] shows misleading higher growth rate than real r<sub>i</sub>. First use new money creation wealth transfer to banks hides economy's contracting GDP.

**Notes**

- 1-M2M-NS Money Stock consists of: 1) currency in circulation, 2) traveler's checks of nonbank issuers, 3) demand deposits, 4) other checkable deposits (OCDs), primarily negotiable order of withdrawal (NOW) accounts, 5) savings deposits (which include money market deposit accounts, or MMDAs), and 6) balances in retail money market mutual funds (MMMFs). NS - Not seasonally adjusted.
- 2-Includes Board of Governors Expenses less recoverable expenses, Table 2 since 2011 Report.
- a-Ignores interest rate manipulation intermediation cost since primarily funded by monetary expansion

**SOURCES:**

- 1-M2M Money Stock data from St. Louis Fed at <http://research.stlouisfed.org/fred2/series/M2MNS> Last Updated 2/22/2013
- 2-FRS actual budget data from Publications Annual Reports Table 2 at <http://www.federalreserve.gov/publications/budget-review/default.htm>
- 3-GDP numbers from St. Louis Fed economic data at <http://research.stlouisfed.org/fred2/series/GDP> Last Updated 3/28/2013
- 4-Inflation CPI-U (Dec to Dec) data from Bureau of Labor Statistics at <http://www.bls.gov/cpi/> Download Date 2/4/2013



# Federal Reserve Monetary Intermediation Cost to the American Economy

## Federal Reserve Compounded Monetary Intermediation Cost to Economy 1984 to 2012<sup>1</sup>

### M2M (M2 Less Small Time Deposits) Money Stock Basis

(a)-Net GDP Productivity Growth Rate to economy (GDP Growth Rate (c) minus Intermediation Cost (b)) - ( r<sub>p</sub>)  
 (b)-Intermediation Cost Percentage<sup>2</sup>  
 (c)-GDP Growth Rate (Net GDP + Intermediation Percentage)<sup>2</sup>

Assumptions	%TotalGrowth
(a)	50.1%
(b)	49.9%
(c)	100.0%

GDP EARNINGS WITH FED INTERMEDIATION EXPENSE INCLUDED										
(N)	(A)	(B) = (A) x (c)	(C) = (A) x (b)	(D) = (A)+(B)+(C)	(E)=Σ (C) Compounded					
Period	Year	Net GDP <sup>3</sup> Year(Begin) (\$ Billions)	Productivity Growth (Net) (\$ Billions)	Fed Intermediation Expense <sup>2</sup>	Net GDP Year (End) (\$ Billions)	Compounded Intermediation Expense <sup>4</sup>				
							%			
1	1984	\$3,688.1	\$190.3	(\$95.0)	\$3,783.4	\$95.0	2.4%			
2	1985	\$3,783.4	\$195.2	(\$97.4)	\$3,881.2	\$197.3	4.8%			
3	1986	\$3,881.2	\$200.3	(\$99.9)	\$3,981.5	\$307.4	7.2%			
4	1987	\$3,981.5	\$205.4	(\$102.5)	\$4,084.5	\$425.8	9.4%			
5	1988	\$4,084.5	\$210.7	(\$105.2)	\$4,190.0	\$552.9	11.7%			
6	1989	\$4,190.0	\$216.2	(\$107.9)	\$4,298.3	\$689.3	13.8%			
7	1990	\$4,298.3	\$221.8	(\$110.7)	\$4,409.5	\$835.5	15.9%			
8	1991	\$4,409.5	\$227.5	(\$113.5)	\$4,523.4	\$992.2	18.0%			
9	1992	\$4,523.4	\$233.4	(\$116.5)	\$4,640.4	\$1,159.8	20.0%			
10	1993	\$4,640.4	\$239.4	(\$119.5)	\$4,760.3	\$1,339.1	22.0%			
11	1994	\$4,760.3	\$245.6	(\$122.6)	\$4,883.3	\$1,530.8	23.9%			
12	1995	\$4,883.3	\$252.0	(\$125.7)	\$5,009.6	\$1,735.5	25.7%			
13	1996	\$5,009.6	\$258.5	(\$129.0)	\$5,139.1	\$1,954.0	27.5%			
14	1997	\$5,139.1	\$265.2	(\$132.3)	\$5,271.9	\$2,187.2	29.3%			
15	1998	\$5,271.9	\$272.0	(\$135.7)	\$5,408.2	\$2,435.8	31.1%			
16	1999	\$5,408.2	\$279.0	(\$139.2)	\$5,548.0	\$2,700.7	32.7%			
17	2000	\$5,548.0	\$286.2	(\$142.8)	\$5,691.4	\$2,982.9	34.4%			
18	2001	\$5,691.4	\$293.6	(\$146.5)	\$5,838.5	\$3,283.3	36.0%			
19	2002	\$5,838.5	\$301.2	(\$150.3)	\$5,989.4	\$3,603.0	37.6%			
20	2003	\$5,989.4	\$309.0	(\$154.2)	\$6,144.2	\$3,943.1	39.1%			
21	2004	\$6,144.2	\$317.0	(\$158.2)	\$6,303.0	\$4,304.8	40.6%			
22	2005	\$6,303.0	\$325.2	(\$162.3)	\$6,465.9	\$4,689.2	42.0%			
23	2006	\$6,465.9	\$333.6	(\$166.5)	\$6,633.1	\$5,097.6	43.5%			
24	2007	\$6,633.1	\$342.2	(\$170.8)	\$6,804.5	\$5,531.4	44.8%			
25	2008	\$6,804.5	\$351.1	(\$175.2)	\$6,980.4	\$5,992.0	46.2%			
26	2009	\$6,980.4	\$360.2	(\$179.7)	\$7,160.8	\$6,480.9	47.5%			
27	2010	\$7,160.8	\$369.5	(\$184.4)	\$7,345.9	\$6,999.6	48.8%			
28	2011	\$7,345.9	\$379.0	(\$189.1)	\$7,535.8	\$7,549.9	50.0%			
29	2012	\$7,535.8	\$388.8	(\$194.0)	<b>\$7,730.6</b>	<b>\$8,133.5</b>	<b>51.3%</b>			
Growth Rates		2.58%	2.58%		2.58%	16.59%				
Count (Years)		29	29		29	29				

GDP EARNINGS WITH FED INTERMEDIATION EXPENSE REMOVED										
(N)	(A)	(B) = (A) x (c)	(C) = (A) x (b)	(D) = (A)+(B)+(C)						
Period	Year	GDP <sup>3</sup> Year(Begin) (\$ Billions)	Productivity Growth(Total) (\$ Billions)	Fed Intermediation Expense <sup>2</sup>	GDP Year (End) (\$ Billions)					
1	1984	\$3,688.1	\$190.3	\$0.0	\$3,878.4					
2	1985	\$3,878.4	\$200.1	\$0.0	\$4,078.5					
3	1986	\$4,078.5	\$210.4	\$0.0	\$4,288.9					
4	1987	\$4,288.9	\$221.3	\$0.0	\$4,510.2					
5	1988	\$4,510.2	\$232.7	\$0.0	\$4,742.9					
6	1989	\$4,742.9	\$244.7	\$0.0	\$4,987.6					
7	1990	\$4,987.6	\$257.3	\$0.0	\$5,245.0					
8	1991	\$5,245.0	\$270.6	\$0.0	\$5,515.6					
9	1992	\$5,515.6	\$284.6	\$0.0	\$5,800.2					
10	1993	\$5,800.2	\$299.3	\$0.0	\$6,099.4					
11	1994	\$6,099.4	\$314.7	\$0.0	\$6,414.1					
12	1995	\$6,414.1	\$330.9	\$0.0	\$6,745.1					
13	1996	\$6,745.1	\$348.0	\$0.0	\$7,093.1					
14	1997	\$7,093.1	\$366.0	\$0.0	\$7,459.1					
15	1998	\$7,459.1	\$384.9	\$0.0	\$7,843.9					
16	1999	\$7,843.9	\$404.7	\$0.0	\$8,248.6					
17	2000	\$8,248.6	\$425.6	\$0.0	\$8,674.2					
18	2001	\$8,674.2	\$447.6	\$0.0	\$9,121.8					
19	2002	\$9,121.8	\$470.6	\$0.0	\$9,592.4					
20	2003	\$9,592.4	\$494.9	\$0.0	\$10,087.3					
21	2004	\$10,087.3	\$520.5	\$0.0	\$10,607.8					
22	2005	\$10,607.8	\$547.3	\$0.0	\$11,155.1					
23	2006	\$11,155.1	\$575.6	\$0.0	\$11,730.7					
24	2007	\$11,730.7	\$605.3	\$0.0	\$12,335.9					
25	2008	\$12,335.9	\$636.5	\$0.0	\$12,972.4					
26	2009	\$12,972.4	\$669.3	\$0.0	\$13,641.7					
27	2010	\$13,641.7	\$703.9	\$0.0	\$14,345.6					
28	2011	\$14,345.6	\$740.2	\$0.0	\$15,085.7					
29	2012	\$15,085.7	\$778.4	\$0.0	<b>\$15,864.1</b>					
Growth Rates		5.16%	5.16%	N.A.	5.16%					
Count (Years)		29	29	29	29					

**Notes/Sources:**

- 1-Format adapted from "The Tyranny of Compounding Costs" at <http://www.pbs.org/wgbh/pages/frontline/retirement/etc/tyranny.html>
- 2-Intermediation and GDP growth rate estimates from Attachment 3.
- 3-Initial GDP from Attachment 3 via St. Louis Fed economic data at <http://research.stlouisfed.org/fred2/series/GDP>
- 4-Fed M2M Intermediation expenses compounded at total growth rate.

Fed Monetary Intermediation Cost 1984-2012	\$ Billions	% Percent
Economic (GDP) earnings 2012 w/o Fed intermediation expense	\$15,864.1	100.0%
Economy earnings with Fed Intermediation expense deducted	\$7,730.6	48.7%
Fed Intermediation Expense from Non Bank Economy since 1984	<b>\$8,133.5</b>	<b>51.3%</b>
Fed Intermediation costs, primarily monetary expansion inflation, estimated to have wealth transferred approximately 51.3% of economic system returns to banking sector from 1984 to 2012.		



# Federal Reserve Monetary Intermediation Cost to the American Economy

## U.S. Commercial Banks Consolidated Conversion Estimate<sup>1</sup>

October 3, 2012

(\$ Billions)

### I. Conversion to 100% Reserve Demand Deposits

October 3, 2012

ASSETS	Existing (Before)	Funds Transfers	Converted Form (After)	
	(\$ Billions)			
<b>CASH</b>				
25 Cash and Cash Equivalents	\$1,606.7	\$7,372.6	\$8,979.3	100.0%
Total Cash	\$1,606.7	\$7,372.6	\$8,979.3	
<b>INVESTMENTS</b>				
3 Treasury and Agency Securities <sup>2</sup>	\$1,848.4	(\$1,848.4)	\$0.0	
7 Mortgaged Backed Securities	\$129.4	\$0.0	\$129.4	
8 Non-Mortgaged Backed Securities	\$708.0	\$0.0	\$708.0	
26 Trading Assets	\$312.5	\$0.0	\$312.5	
Total Investments	\$2,998.3	(\$1,848.4)	\$1,149.9	
<b>LOANS AND LEASES</b>				
10 Commercial and Industrial Loans	\$1,473.5	\$0.0	\$1,473.5	
11 Real Estate Loans	\$3,539.5	\$0.0	\$3,539.5	
15 Consumer Loans	\$1,112.9	\$0.0	\$1,112.9	
19 & 23 Fed Funds and Reverse RPs	\$425.0	\$0.0	\$425.0	
20 All Other Loans and Leases	\$728.7	\$0.0	\$728.7	
21 LESS: Allowance for loan and lease losses	(\$151.0)	\$0.0	(\$151.0)	
24 Interbank Loans to Commercial Banks	\$11.8	\$0.0	\$11.8	
Total Loans	\$7,140.4	\$0.0	\$7,140.4	
<b>OTHER ASSETS</b>				
29 Other Assets	\$1,144.1	\$0.0	\$1,144.1	
Total Other Assets	\$1,144.1	\$0.0	\$1,144.1	
<b>30 Total Assets</b>	<b>\$12,889.5</b>	<b>\$5,524.2</b>	<b>\$18,413.7</b>	
<b>LIABILITIES &amp; EQUITY</b>				
<b>DEMAND DEPOSITS (CASH EQUIVALENTS)</b>				
32 Large time deposits <sup>3</sup>	\$1,507.6	\$0.0	\$1,507.6	
33 Other Deposits <sup>3</sup>	\$7,471.7	\$0.0	\$7,471.7	
31 Total Demand Deposits	\$8,979.3	\$0.0	\$8,979.3	
<b>BORROWINGS</b>				
35 Borrowings from banks in the U.S.	\$139.1	\$0.0	\$139.1	
36 Borrowings from others <sup>4</sup>	\$1,429.1	\$0.0	\$1,429.1	
34 Total Borrowings	\$1,568.2	\$0.0	\$1,568.2	
<b>NON-DEPOSIT LIABILITIES</b>				
Bonded Debt to U.S. Government <sup>5</sup>	\$0.0	\$5,524.2	\$5,524.2	
37 Trading Account Liabilities	\$289.5	\$0.0	\$289.5	
40 Net due to foreign offices <sup>6</sup>	\$98.6	\$0.0	\$98.6	
41 Other Liabilities <sup>6</sup>	\$463.6	\$0.0	\$463.6	
Total Non-Deposit Liabilities	\$851.7	\$5,524.2	\$6,375.9	
<b>42 Total Liabilities</b>	<b>\$11,399.2</b>	<b>\$5,524.2</b>	<b>\$16,923.4</b>	
<b>RESIDUAL/EQUITY</b>				
43 Shareholder Residual/Equity	\$1,490.3	\$0.0	\$1,490.3	
<b>Total Residual/Equity</b>	<b>\$1,490.3</b>	<b>\$0.0</b>	<b>\$1,490.3</b>	
<b>Total Liabilities &amp; Equity/Capital</b>	<b>\$12,889.5</b>	<b>\$5,524.2</b>	<b>\$18,413.7</b>	
Equity to Assets Ratio	11.56%		8.09%	

### II. Split into Deposit Only and Commercial Bank

October 3, 2012

Depositor Owned Depository	Commercial Intermediary	Reconciliation Total
DEMAND SECTION		
\$8,979.3	\$0.0	\$8,979.3
\$8,979.3	\$0.0	\$8,979.3
	NON-DEMAND SECTION	
	\$0.0	\$0.0
	\$129.4	\$129.4
	\$708.0	\$708.0
	\$312.5	\$312.5
\$0.0	\$1,149.9	\$1,149.9
	\$1,473.5	\$1,473.5
	\$3,539.5	\$3,539.5
	\$1,112.9	\$1,112.9
	\$425.0	\$425.0
	\$728.7	\$728.7
	(\$151.0)	(\$151.0)
	\$11.8	\$11.8
\$0.0	\$7,140.4	\$7,140.4
Start-up(Est.) <sup>4</sup>	\$286.0	\$858.1
	\$286.0	\$858.1
<b>Total Assets</b>	<b>\$9,265.3</b>	<b>\$9,148.4</b>
DEMAND SECTION		
\$1,507.6		\$1,507.6
\$7,471.7		\$7,471.7
\$8,979.3	\$0.0	\$8,979.3
	NON-DEMAND SECTION	
	\$139.1	\$139.1
For Start-up <sup>4</sup>	\$286.0	\$1,143.1
	\$286.0	\$1,282.2
	\$5,524.2	\$5,524.2
	\$289.5	\$289.5
	\$98.6	\$98.6
	\$463.6	\$463.6
\$0.0	\$6,375.9	\$6,375.9
<b>Total Liabilities</b>	<b>\$9,265.3</b>	<b>\$7,658.1</b>
\$0.0	\$1,490.3	\$1,490.3
<b>Total Residual</b>	<b>\$0.0</b>	<b>\$1,490.3</b>
<b>\$9,265.3</b>	<b>\$9,148.4</b>	<b>\$18,413.7</b>
0.00%	16.29%	8.09%

### NOTES

1-Line numbers from Federal Reserve Statistical Release H.8 pages 4 and 5 (Not Seasonally Adjusted). Amounts in \$ Billions.

2-Treasury and Agency funds would be retired as a book entry and netted with borrowing from government required to fully fund US Bill cash demand deposit accounts.

3-All deposits treated as demand deposits and reserved 100%.

4-Start-up for depository locations and FF&E estimated % of Item 29 Other assets at  Match fund w/36 Borrowings from others liability.

5-Bonded debt to U.S. Government at risk free rate (r<sub>f</sub>) for United States, but not less than zero + a risk premium estimated at 25 basis points (0.25%) and repaid as loans payoff.

6-Some "Other Liabilities" may be considered demand liabilities, in which case they would require 100% reserves also and transfer to the new Depository Institution.

### SOURCE:

1-Federal Reserve Statistical Release H.8 Assets and Liabilities of Commercial Banks in the United States, Release Date 10/12/2012 (Not seasonally adjusted) pp. 4-5 at:

<http://www.federalreserve.gov/econresdata/statisticsdata.htm>

<http://www.federalreserve.gov/releases/h8/default.htm>

Commercial Bank Debt to U.S. Government from conversion to 100% Reserve Demand Deposits <sup>3</sup>	
	For Week Ending 10/3/2012
Commercial Bank Deposits (Assumed all Demand) - Liability 31	\$8,979.3
Less: Cash on Hand - Assets 25	(\$1,606.7)
Less: Treasury and Agency Securities Holding - Assets 3	(\$1,848.4)
Bonded Debt to U.S. Government from Funding 100% Demand Deposit Conversion	\$5,524.2
<b>Source: H.8; Pages 4 &amp; 5 Assets and Liabilities of Commercial Banks in U.S. (Not Seasonally Adjusted), FRB</b>	

## Federal Reserve Monetary Intermediation Cost to the American Economy

## Federal Reserve Member Bank Conversion (Sample Bank Estimate)

Bank of America Corp., of Charlotte, North Carolina.<sup>1</sup>

4th Qtr 2012 Averages (\$ Millions, FTE Basis)

FTE (Fully taxable-equivalent) basis is a non-GAAP measure<sup>1</sup>Assumptions  
2-Reserve for Savings Account Withdrawals (Minimum Req'd) 100.0%

I. Conversion to 100% Reserve Demand Deposits				II. Split into Deposit Only and Commercial Bank		
				(\$ Millions)	(\$ Millions)	(\$ Millions)
ASSETS	Existing (Before)	Funds Transfers	Converted Form (After)	Depositor Owned Depository	Commercial Intermediary	Reconciliation Total
	(\$ Millions)	→	→	DEMAND SECTION	NON-DEMAND SECTION	TOTAL
<b>CASH</b>						
Cash and Cash Equivalents	\$111,671	\$760,296	\$871,967	\$871,967	\$0	\$871,967
Total Cash	\$111,671	\$760,296	\$871,967	\$871,967	\$0	\$871,967
<b>INVESTMENTS</b>						
Time Deposits and other short-term investments <sup>2</sup>	\$16,967	\$189,142	\$189,142		\$189,142	\$189,142
Federal Funds (U.S. Government Securities) <sup>3</sup>	\$241,950	(\$241,950)	\$0		\$0	\$0
Trading Account Assets	\$195,800	\$0	\$195,800		\$195,800	\$195,800
Debt Securities	\$339,779	\$0	\$339,779		\$339,779	\$339,779
Total Investments	\$794,496	(\$69,775)	\$724,721	\$0	\$724,721	\$724,721
<b>LOANS</b>						
Loans & Leases - Consumer	\$556,949	\$0	\$556,949		\$556,949	\$556,949
Loans & Leases - Commercial	\$336,217	\$0	\$336,217		\$336,217	\$336,217
Total Loans	\$893,166	\$0	\$893,166	\$0	\$893,166	\$893,166
<b>OTHER ASSETS</b>						
Other Earning Assets	\$101,274	\$0	\$101,274		\$101,274	\$101,274
Other Assets, less allowance for losses	\$309,758	\$0	\$309,758	\$11,116	\$298,642	\$309,758
Total Other Assets	\$411,032	\$0	\$411,032	\$11,116	\$399,916	\$411,032
<b>Total Assets</b>	<b>\$2,210,365</b>	<b>\$690,521</b>	<b>\$2,900,886</b>	<b>\$883,083</b>	<b>\$2,017,803</b>	<b>\$2,900,886</b>
<b>LIABILITIES &amp; EQUITY</b>						
<b>DEMAND DEPOSITS (CASH EQUIVALENTS)</b>						
NOW & Money Market Demand deposits	\$479,130	\$0	\$479,130	\$479,130		\$479,130
Non-U.S. Bank Deposits (Interest Bearing)	\$11,964	\$0	\$11,964	\$11,964		\$11,964
Non-U.S. Gov't & Official Institutional Deposits	\$876	\$0	\$876	\$876		\$876
Non-interest-bearing Deposits	\$379,997	\$0	\$379,997	\$379,997		\$379,997
Total Demand Deposits	\$871,967	\$0	\$871,967	\$871,967	\$0	\$871,967
<b>NON-DEMAND DEPOSITS</b>						
Saving (U.S. Interest Bearing) <sup>4</sup>	\$41,294	\$0	\$41,294		\$41,294	\$41,294
Consumer CDs and IRAs	\$91,256	\$0	\$91,256		\$91,256	\$91,256
Negotiable CDs, public funds & other time deposits	\$19,904	\$0	\$19,904		\$19,904	\$19,904
Non-U.S. Time, Savings & Other (Interest Bearing)	\$53,655	\$0	\$53,655		\$53,655	\$53,655
Total Non-Demand Deposits	\$206,109	\$0	\$206,109	\$0	\$206,109	\$206,109
<b>NON-DEPOSIT LIABILITIES</b>						
Bonded Debt to U.S. Government <sup>5</sup>	\$0	\$690,521	\$690,521		\$690,521	\$690,521
Federal Funds & Other Short Term Borrowings	\$336,341	\$0	\$336,341		\$336,341	\$336,341
Trading Account Liabilities	\$80,084	\$0	\$80,084		\$80,084	\$80,084
Other Liabilities <sup>6</sup>	\$199,458	\$0	\$199,458		\$199,458	\$199,458
Long Term Debt <sup>7</sup>	\$277,894	\$0	\$277,894	\$11,116	\$266,778	\$277,894
Total Non-Deposit Liabilities	\$893,777	\$690,521	\$1,584,298	\$11,116	\$1,573,182	\$1,584,298
<b>Total Liabilities</b>	<b>\$1,971,853</b>	<b>\$690,521</b>	<b>\$2,662,374</b>	<b>\$883,083</b>	<b>\$1,779,291</b>	<b>\$2,662,374</b>
<b>EQUITY</b>						
Shareholder Equity	\$238,512	\$0	\$238,512	\$0	\$238,512	\$238,512
<b>Total Equity</b>	<b>\$238,512</b>	<b>\$0</b>	<b>\$238,512</b>	<b>\$0</b>	<b>\$238,512</b>	<b>\$238,512</b>
<b>Total Liabilities &amp; Equity</b>	<b>\$2,210,365</b>	<b>\$690,521</b>	<b>\$2,900,886</b>	<b>\$883,083</b>	<b>\$2,017,803</b>	<b>\$2,900,886</b>
Equity to Assets Ratio	10.79%	→	8.22%	Equity to Assets Ratio	0.00%	11.82%

## NOTES

1-BofA considered representative bank. Federal Reserve Member Bank conversion into a depositor owned depository and intermediation bank is a general estimation and not intended as a detailed plan.

2-Initial reserve for savings account activity estimated at minimum of 100% to handle activity until conversion to CD's or transfer to new depositor owned depository.

3-Federal Funds from Federal Reserve would be retired as a book entry and netted with government borrowing required to fully fund US Bill cash demand deposit accounts.

4-Savings accounts at Bank of America converted to time deposits such as CD's or transferred to new Depository within a reasonable transition period, say up to a year.

5-Bonded debt to U.S. Government at risk free rate ( $r_f$ ) for United States, but not less than zero + a risk premium estimated at 25 basis points (0.25%) and repaid as loans payoff.

6-Some "Other Liabilities" may be considered demand liabilities, in which case they would require 100% reserves also and transfer to the new Depository Institution.

7-Start-up for depository locations and FF&amp;E estimated % of Long Term Debt at 4.0% BofA premises and equipment 2012, net of depreciation \$11,858,000,000.

(From Consolidated Balance Sheet)

## SOURCE:

1-Bank of America 2012 Annual Report Table XIII Quarterly Average Balances and Interest Rates, p.138 at

<http://www.bankofamerica.com/annualreport/>

# Federal Reserve Monetary Intermediation Cost to the American Economy

## Federal Reserve Banks Consolidated Balance Sheet

Assumptions

2-Reserve for Savings Account Withdrawals (Minimum Req'd)

10.0%

Conversion Estimate<sup>1</sup>

October 3, 2012

(\$ Millions)

### I. Conversion to 100% Reserve Demand Deposits

October 3, 2012

ASSETS	Existing (Before)	Funds Transfers	Converted Form (After)	
	(\$ Millions)	→	DEMAND SECTION	
<b>CASH EQUIVALENTS</b>				
Gold certificate account	\$11,037	\$0	\$11,037	→
Special drawing rights certificate account	\$5,200	\$0	\$5,200	→
Coins	\$2,180	\$55,071	\$57,251	→
<b>Total Cash</b>	<b>\$18,417</b>	<b>\$55,071</b>	<b>\$73,488</b>	100.00%
<b>U.S. GOVERNMENT SECURITIES</b>				
Treasury Bills <sup>2</sup>	\$0	\$0	\$0	→
Treasury notes and bonds, nominal <sup>2</sup>	\$1,571,169	(\$1,064,572)	\$506,597	→
Treasury notes and bonds, inflation indexed <sup>2</sup>	\$71,784	(\$71,784)	\$0	→
Inflation compensation <sup>2</sup>	\$9,991	(\$9,991)	\$0	→
<b>Total U.S. Gov't Securities</b>	<b>\$1,652,944</b>	<b>(\$1,146,347)</b>	<b>\$506,597</b>	→
<b>INVESTMENTS</b>				
Federal agency debt securities <sup>3</sup>	\$83,405	\$0	\$83,405	→
Mortgage-backed securities <sup>3</sup>	\$834,992	\$0	\$834,992	→
Net Maiden Lane Holdings LLC, I, II & III <sup>3</sup>	\$1,815	\$0	\$1,815	→
Net TALF Holdings LLC <sup>3</sup>	\$853	\$0	\$853	→
<b>Total Investments</b>	<b>\$921,065</b>	<b>\$0</b>	<b>\$921,065</b>	→
<b>LOANS</b>				
Loans <sup>3</sup>	\$1,572	\$0	\$1,572	→
<b>Total Loans</b>	<b>\$1,572</b>	<b>\$0</b>	<b>\$1,572</b>	→
<b>OTHER ASSETS</b>				
Items in process of collection	\$229	\$0	\$229	→
Bank premises	\$2,344	\$0	\$2,344	→
Central bank liquidity swaps <sup>3</sup>	\$12,551	\$0	\$12,551	→
Other Assets <sup>3</sup>	\$201,076	\$0	\$201,076	→
<b>Total Other Assets</b>	<b>\$216,199</b>	<b>\$0</b>	<b>\$216,199</b>	→
<b>Total Assets</b>	<b>\$2,810,196</b>	<b>(\$1,091,276)</b>	<b>\$1,718,920</b>	→
<b>LIABILITIES &amp; EQUITY</b>				
<b>DEMAND DEPOSITS - U.S. GOVERNMENT</b>			DEMAND SECTION	
U.S. Treasury, General Account deposits	\$73,488	\$0	\$73,488	→
U.S. Treasury, Supplementary Financing Account	\$0	\$0	\$0	→
<b>Total Demand Deposits</b>	<b>\$73,488</b>	<b>\$0</b>	<b>\$73,488</b>	→
<b>DEPOSITS - NON-U.S. GOVERNMENT</b>				
Term deposits held by depository institutions	\$3,040	\$0	\$3,040	→
Other deposits held by depository institutions	\$1,464,625	\$0	\$1,464,625	→
Foreign official deposits	\$5,561	\$0	\$5,561	→
Other deposits	\$16,784	\$0	\$16,784	→
<b>Total Non-Demand Deposits</b>	<b>\$1,490,010</b>	<b>\$0</b>	<b>\$1,490,010</b>	→
<b>NON-DEPOSIT LIABILITIES</b>				
Federal Reserve Notes, net of F.R. Bank holdings <sup>2</sup>	\$1,091,276	(\$1,091,276)	\$0	→
Reverse repurchase agreements <sup>3</sup>	\$87,263	\$0	\$87,263	→
Deferred availability cash items	\$899	\$0	\$899	→
Other liabilities and accrued dividends <sup>4</sup>	\$12,528	\$0	\$12,528	→
<b>Total Non-Deposit Liabilities</b>	<b>\$1,191,966</b>	<b>(\$1,091,276)</b>	<b>\$100,690</b>	→
<b>Total Liabilities</b>	<b>\$2,755,464</b>	<b>(\$1,091,276)</b>	<b>\$1,664,188</b>	→
<b>EQUITY/CAPITAL</b>				
Capital paid in	\$27,366	\$0	\$27,366	→
Surplus	\$27,366	\$0	\$27,366	→
<b>Total Capital/Equity</b>	<b>\$54,732</b>	<b>\$0</b>	<b>\$54,732</b>	→
<b>Total Liabilities &amp; Equity/Capital</b>	<b>\$2,810,196</b>	<b>(\$1,091,276)</b>	<b>\$1,718,920</b>	→
Equity to Assets Ratio	1.95%	→	3.18%	

### II. Split into Deposit Only and Commerce Dept.

October 3, 2012

Treasury Owned Depository <sup>5</sup>	Fed/Commerce Sunset <sup>6</sup>	Reconciliation Total
DEMAND SECTION		
\$11,037		
\$5,200		
\$57,251	\$0	\$57,251
\$73,488	\$0	\$73,488
	\$0	\$0
	\$506,597	\$506,597
	\$0	\$0
	\$0	\$0
	\$0	\$0
	\$83,405	\$83,405
	\$834,992	\$834,992
	\$1,815	\$1,815
	\$853	\$853
	\$0	\$921,065
	\$1,572	\$1,572
	\$1,572	\$1,572
	\$229	\$229
	\$2,344	\$2,344
	\$12,551	\$12,551
Start-up(Est.) <sup>5</sup>	\$0	\$201,076
	\$0	\$216,199
<b>Total Assets</b>	<b>\$73,488</b>	<b>\$1,645,432</b>
DEMAND SECTION		
\$73,488		\$73,488
\$0		\$0
\$73,488	\$0	\$73,488
	\$3,040	\$3,040
	\$1,464,625	\$1,464,625
	\$5,561	\$5,561
	\$16,784	\$16,784
	\$0	\$1,490,010
	\$0	\$0
	\$87,263	\$87,263
	\$899	\$899
	\$12,528	\$12,528
For Start-up <sup>5</sup>	\$0	\$100,690
	\$0	\$100,690
<b>Total Liabilities</b>	<b>\$73,488</b>	<b>\$1,590,700</b>
	\$27,366	\$27,366
	\$27,366	\$27,366
<b>Total Capital</b>	<b>\$0</b>	<b>\$54,732</b>
<b>\$73,488</b>	<b>\$1,645,432</b>	<b>\$1,718,920</b>
	3.33%	3.18%

### NOTES

1-General estimation of Federal Reserve Bank conversion into a Treasury owned depository and remaining bank.

2-Treasury and Agency Securities Holdings would be credited and retired against Federal Reserve Notes which would be exchanged for new US Bills issued by the people.

3-Investment sales and loan payoffs and would be credited to US government and retired.

4-Some "Other Liabilities" may be considered demand liabilities, in which case they would require 100% reserves also and transfer to the new Treasury Deposit Institution.

5-Deposit Bank would be assigned to Treasury Department.

6-Remaining operations of the Federal Reserve System would be assigned to Department of Commerce or sunset. Loan payoffs would be credited to US government and retired.

### SOURCE:

1-Federal Reserve Statistical Release H.4.1 October 4, 2012 Table 8. Consolidated Statement of all Federal Reserve Banks at:

<http://www.federalreserve.gov/releases/h41/>

Federal Reserve Consolidated Statement Change from conversion to 100% Demand Deposits <sup>3</sup>		
(\$ Millions)	For Week Ending	10/3/2012
Federal Reserve Notes, net of F.R. Bank holdings Retired & Replaced with US Bills		\$1,091,276
Plus: Cash Equivalents Needed to cover U.S. Gov't Demand Deposits		\$55,071
Less: Treasury and Agency Securities Holdings Retired		(\$1,146,347)
Bonded Debt to U.S. Government from Funding 100% Demand Deposit Conversion		\$0
<b>Source:</b> Federal Reserve Statistical Release H.4.1 Table 8. Consolidated Statement of all Federal Reserve Banks		

## United States Government Consolidated Balance Sheet

Conversion Estimate<sup>a,1</sup>

September 30, 2012

(From Notes refer to Source 1 document.)

## I. Conversion Retiring Fed Debt Holdings at Book

September 30, 2012

ASSETS	Existing	Funds Transfers	Converted Form
	(Before)	→	(After)
	(\$ Billions)	→	(\$ Billions)
<b>CURRENT ASSETS</b>			
Cash (Unrestricted and restricted) (From Note 2.)	\$118.3	\$0.0	\$118.3
International monetary assets (From Note 2.)	\$76.8	\$0.0	\$76.8
Gold and silver (I. Book value/II. Market) <sup>d</sup> (Note 2.)	\$11.1	\$0.0	\$11.1
Accounts and taxes receivable, net	\$111.2	\$0.0	\$111.2
Inventories and related property, net	\$299.0	\$0.0	\$299.0
Total Current Assets	\$616.4	\$0.0	\$616.4
<b>INVESTMENTS</b>			
Bonded Debt to U.S. Government from Conversion <sup>b</sup>	\$0.0	\$5,524.2	\$5,524.2
Loans receivable and mortgage backed securities, net	\$859.6	\$0.0	\$859.6
TARP direct loans and equity investments, net	\$40.2	\$0.0	\$40.2
Debt and equity securities (net of AIG Interest)	\$107.6	\$0.0	\$107.6
Investments in Government-Sponsored Enterprises	\$109.3	\$0.0	\$109.3
Beneficial interest in AIG trust	\$2.6	\$0.0	\$2.6
Total Investments	\$1,119.3	\$5,524.2	\$6,643.5
<b>OTHER ASSETS</b>			
Property, plant, and equipment, net	\$855.0	\$0.0	\$855.0
Other assets	\$157.6	\$0.0	\$157.6
Total Other Assets	\$1,012.6	\$0.0	\$1,012.6
<b>Total Assets</b>	<b>\$2,748.3</b>	<b>\$5,524.2</b>	<b>\$8,272.5</b>
			301.0%
<b>LIABILITIES &amp; EQUITY</b>			
<b>CURRENT LIABILITIES</b>			
Accounts payable	\$65.2	\$0.0	\$65.2
Accrued Interest Payable (From Note 14.)	\$57.6	\$0.0	\$57.6
Benefits due and payable	\$166.2	\$0.0	\$166.2
Total Current Liabilities	\$289.0	\$0.0	\$289.0
<b>MONETARY LIABILITIES</b> (From Note 19.)			
International Exchange Stabilization	\$59.7	\$0.0	\$59.7
Gold Certificates (pledged to Fed Res. System) <sup>d</sup>	\$11.0	\$0.0	\$11.0
Total Monetary Liabilities	\$70.7	\$0.0	\$70.7
<b>OPERATIONAL LIABILITIES</b>			
Federal employee and veteran benefits payable	\$6,274.0	\$0.0	\$6,274.0
Insurance and guarantee program liabilities	\$156.4	\$0.0	\$156.4
Loan guarantee liabilities	\$74.6	\$0.0	\$74.6
Environmental and disposal liabilities	\$339.0	\$0.0	\$339.0
Other liabilities (Less Monetary Liabilities Shown Separately)	\$361.9	\$0.0	\$361.9
Total Operational Liabilities	\$7,205.9	\$0.0	\$7,205.9
<b>INVESTMENT LIABILITIES</b>			
Liabilities to Government-Sponsored Enterprises	\$9.0	\$0.0	\$9.0
Total Investment Liabilities	\$9.0	\$0.0	\$9.0
<b>DEBT LIABILITIES</b>			
Federal debt held by the Federal Reserve System <sup>c,2</sup>	\$1,652.9	(\$1,146.3)	\$506.6
Federal debt securities held by commercial banks <sup>c,3</sup>	\$1,848.4	(\$1,848.4)	\$0.0
Federal debt securities held by the public (Note 14.) <sup>1</sup>	\$7,773.4	\$0.0	\$7,773.4
Total Debt Liabilities	\$11,274.7	(\$2,994.7)	\$8,280.0
<b>Total liabilities</b>	<b>\$18,849.3</b>	<b>(\$2,994.7)</b>	<b>\$15,854.6</b>
<b>EQUITY/CAPITAL (Net Position)</b>			
Earmarked funds	\$665.3	\$0.0	\$665.3
Non-earmarked funds	(\$16,766.3)	\$8,518.9	(\$8,247.4)
<b>Total net position (Capital Shortage/Funding Gap)</b>	<b>(\$16,101.0)</b>	<b>\$8,518.9</b>	<b>(\$7,582.1)</b>
<b>Total Liabilities &amp; Equity/Capital</b>	<b>\$2,748.3</b>	<b>\$5,524.2</b>	<b>\$8,272.5</b>
Equity to Assets Ratio	-585.85%	→	-91.65%

Totals may not equal sum of components due to rounding.

## NOTES

a-General estimation of financial impact of converting to 100% reserve system and retiring Federal Reserve Treasury holdings. (Not all dates match so general purposes only)

b-Initial seigniorage, first use new money creation, allocated to government to loan for 100% funding of commercial bank demand deposits. Bank debt to U.S. Government est. at 0.25% premium over risk free rate (r<sub>f</sub>) [net GDP growth rate] secured by Loan Assets and/or other assets and would be repaid as loans payoff. Subsequent seigniorage direct issued to the people, who created increased productivity to justify it, on a pro rata basis as a "Labor Dividend" or as interest to demand deposit accounts held at new depositor owned 100% depository only institutions.

c-Treasury &amp; Agency Securities Holding by Commercial Banks would be retired as a book entry and netted with bank borrowing required to fully fund US Bill cash demand deposit accounts.

d-From Note 2.-Treasury held 261,498,927 oz of gold with 9/30/2012 market value of \$464.4 billion pledged as collateral for gold certificates issued &amp; authorized to the FRBs by Treasury Secretary.

Gold information (From Source 1)	Treasury Gold oz	Book Value/oz	Book Value (\$ Billions)
Gold Asset (From Note 2. p.64)	261,498,927	\$42.2222	\$11.04
Gold Certificate Liability est. (From Note 19. pp.105-6)	260,525,847	\$42.2222	\$11.00

## SOURCES:

1-Financial Statement of the U.S. Government for the Years Ended 9/30 2012 and 2011 from 2012 rpt p.45 at: <http://www.fms.treas.gov/ft/> (From Notes refer to Source 1 document.)

2-Federal Reserve Banks Consolidated Balance Sheet as of October 3, 2012, Attachment 5(c).

3-Federal Reserve Statistical Release H.8 Assets and Liabilities of Commercial Banks in the U.S. October 12, 2012 (Not seasonally adjusted) pp. 4-5 (Week ending Oct 3) at:

<http://www.federalreserve.gov/econresdata/releases/statisticsdata.htm> <http://www.federalreserve.gov/releases/h8/default.htm>

United States Government Debt (Before Conversion)			
Held by the Public (\$ Billions)	As of	10/3/2012	% Total
Financing bills (Term 0 to 1 Yr)		\$1,613.0	14.3%
Government notes, bonds & TIPS		\$9,117.2	80.9%
Nonmarketable, TVA & Other Agency		\$544.5	4.8%
Total United States Government Debt		\$11,274.7	100.0%

United States Government Debt (After Conversion)			
Held by the Public (\$ Billions)	As of	10/3/2012	% Total
Total U.S. Federal Government Debt		\$11,274.7	100.0%
- Fed debt held by the FED retired <sup>c,2</sup>		(\$1,146.3)	-10.2%
- Fed debt held by com. banks retired <sup>c,3</sup>		(\$1,848.4)	-16.4%
- Bank Debt to Gov't from Conversion <sup>b</sup>		(\$5,524.2)	-49.0%
U.S. Fed Gov't Debt after conversion		\$2,755.8	24.4%

Commercial Bank & FED Monetary Debt to U.S. Government from conversion to 100% Reserve Demand Deposits <sup>3</sup>			
	(\$ Billions)	For Week Ending	10/3/2012
Federal Reserve Bonded Debt to U.S. Government from Monetary Conversion - Attachment 5(c)			\$0.0
Commercial Bank Deposits (Assumed all Demand) - Liability 31			\$8,979.3
Less: Cash on Hand - Assets 25			(\$1,606.7)
Less: Treasury and Agency Securities Holding - Assets 3			(\$1,848.4)
Bank Bonded Debt to U.S. Government from Funding 100% Demand Deposit Conversion			\$5,524.2
<b>Source: H.8; Pages 4 &amp; 5 Assets and Liabilities of Commercial Banks in United States (Not Seasonally Adjusted), FRB</b>			<b>100.0%</b>

## Attachment 6

# Federal Reserve Monetary Intermediation Cost to the American Economy

## Federal Debt Securities Held by the Public and Accrued Interest<sup>a</sup>

For Fiscal Year ending September 30th.

Treasury securities (public): Marketable securities:	Maturity (Term in Yrs)	Federal Debt Securities			Average Interest Rate		Interest Paid 2012 (Est.) (\$ Billions)	Security
		Fiscal Yr 2011 (\$ Billions)	Net Change During Year (\$ Billions)	Fiscal Yr 2012 (\$ Billions)	2012	2011		
Treasury bills	0 to 1	\$1,475.6	\$137.4	\$1,613.0	0.1%	0.1%	\$1.613	Treasury bills
Treasury notes	1 to 10	\$6,407.0	\$708.0	\$7,115.0	2.0%	2.3%	\$142.300	Treasury notes
Treasury bonds	10+	\$1,016.4	\$178.3	\$1,194.7	5.4%	5.8%	\$64.514	Treasury bonds
Treasury TIPS <sup>b</sup>	5+	\$705.3	\$102.2	\$807.5	1.4%	1.9%	\$11.305	Treasury (TIPS)
<b>Total Marketable Treasury Securities</b>		<b>\$9,604.3</b>	<b>\$1,125.9</b>	<b>\$10,730.2</b>	<b>2.05%</b>	<b>2.30%</b>	<b>\$219.732</b>	Total Marketable <sup>c</sup>
<b>Nonmarketable securities</b>		<b>\$522.7</b>	<b>\$16.7</b>	<b>\$539.4</b>	<b>2.1%</b>	<b>2.8%</b>	<b>\$11.327</b>	Nonmarketable
Net unamortized premium/(discounts)		(\$29.5)	\$10.3	(\$19.2)				
<b>Total Nonmarketable Treasury Securities</b>		<b>\$493.2</b>	<b>\$27.0</b>	<b>\$520.2</b>				
					<b>Weighted Average Rate</b>		(\$ Billions)	
<b>Total Treasury Securities, Net (Public)</b>		<b>\$10,097.5</b>	<b>\$1,152.9</b>	<b>\$11,250.4</b>	<b>2.05%</b>	<b>2.33%</b>	<b>\$231.059</b>	Total Interest
<b>Agency securities:</b>								
Tennessee Valley Authority		\$24.4	(\$0.4)	\$24.0				
All other agencies		\$0.3	\$0.0	\$0.3				
<b>Total Agency Securities Net unamortized</b>		<b>\$24.7</b>	<b>(\$0.4)</b>	<b>\$24.3</b>				
<b>Accrued interest payable</b>		<b>\$51.9</b>	<b>\$5.7</b>	<b>\$57.6</b>				
<b>Total Federal debt + accrued interest (Public)</b>		<b>\$10,174.1</b>	<b>\$1,158.2</b>	<b>\$11,332.3</b>				

### Public Debt and Interest Rates Note

It is anticipated commercial banks will receive a one time loan from the government to fully fund demand deposits 100%. The interest rate for the approximate \$5.5 Trillion loan is anticipated to be at the same interest rate for all banks based on the risk free rate (rf) for United States ((GDP growth rate) - [Monetary Intermediation Cost]), but not less than zero + a risk premium estimated at 25 basis points (0.25%). Interest rate calculations for bank note and jobs impact based on weighted ave 2012 public debt.

### Note 14 Comments

Federal debt securities held by the public outside the Government are held by individuals, corporations, State or local governments, FRBs, foreign governments, and central banks. The above table details Government borrowing primarily to finance operations and shows marketable and nonmarketable securities at face value less net unamortized premiums and discounts including accrued interest.

### Securities that represent Federal debt held by the public are issued primarily by the Treasury and include:

- (1) - Interest-bearing marketable securities (bills, notes, bonds, and inflation-protected).
- (2) - Interest-bearing nonmarketable securities (government account series held by deposit and fiduciary funds, foreign series, State and local government series, domestic series, and savings bonds).
- (3) - Non-interest-bearing marketable and nonmarketable securities (matured and other).

Section 3111 of Title 31, U.S. Code (U.S.C.) authorizes the Secretary of the Treasury to use money received from the sale of an obligation and other money in the General Fund of the Treasury to buy, redeem, or refund, at or before maturity, outstanding bonds, notes, certificates of indebtedness, Treasury bills, or savings certificates of the Government. There were no buyback operations in fiscal years 2012 and 2011.

Gross Federal debt (with some adjustments) is subject to a statutory ceiling (i.e., the debt limit). Prior to 1917, the Congress approved each debt issuance. In 1917, to facilitate planning in World War I, Congress and the President first enacted a statutory dollar ceiling for Federal borrowing. With the Public Debt Act of 1941 (Public Law 77-7), Congress and the President set an overall limit of \$65 billion on Treasury debt obligations that could be outstanding at any one time; since then, Congress and the President have enacted a number of debt limit increases. Most recently, on August 2, 2011, Public Law 112-25 was enacted, which increased the statutory debt limit to \$14,694.0 billion on August 2, 2011, \$15,194.0 billion after close of business on September 21, 2011, and \$16,394.0 billion after close of business on January 27, 2012. Prior to the August 2011 and January 2012 increases, Treasury faced a period that required it to depart from its normal debt management procedures and to invoke legal authorities to avoid exceeding the statutory debt limit. As of September 30, 2012, and 2011, debt subject to the statutory debt limit was \$16,027.0 billion and \$14,746.6 billion, respectively. The debt subject to the limit includes T the public and Government guaranteed debt of Federal agencies (shown in the table above) and intragovernmental debt holdings (not shown from the table on p.93 totaling \$4,852.9 billion as of 9/30/2012).

### NOTES

a-Data from U.S. Financial Statement Note 14. Federal Debt Securities Held by the Public and Accrued Interest pp. 91-93, Source 1.

b-TIPS = Treasury Inflation Protected Securities.

c-Weighted Average Interest Rate.

### SOURCE

1-Financial Statements of the U.S. Government for the Years Ended 9/30 2012 and 2011 (Detailed) at:

<http://www.fms.treas.gov/fr/>



## Attachment 7

# Federal Reserve Monetary Intermediation Cost to the American Economy

## Monetary Intermediation Cost Impact on Economy and Jobs

## Assumptions

a-Bank Reserve Requirement (From Attachment 1)	10.00%
b-Bank Note Rate Est.(Risk Free Rate( $r_f$ ) [Not less than zero] + Risk Premium est. at 25bp)	0.25%
Federal Funds Overnight Rate for Reference Rate	1/11/2013 0.16%
c-Economic Growth Rate (Est.) for Cap Rate	4.00%
d-Capital Value per Job Est. (Adjustable)	\$1,000,000
7-New York Times 7/6/2009 Estimated Job Creation Cost (\$)	\$31,169

### Step 1. Estimate Monetary Intermediation Cost

#### I. Historical Average (2003-2012, Last 10-years)

	(\$ Billions)
1. Fed Operations (Fiscal 2012 Actual Net) <sup>1</sup>	\$3.74
2. New Money (M2M) Issued times ( 1 - reserve requirement) <sup>1,a</sup>	\$447.17
Total Annual Intermediation	\$450.90
Intermediation Capitalized <sup>2,c</sup>	\$11,272.56

#### II. Fiscal 2012 Actual

	(\$ Billions)
1. Fed Operations (Fiscal 2012 Actual Net) <sup>1</sup>	\$3.74
2. New Money (M2M) Issued times ( 1 - reserve requirement) <sup>1,a</sup>	\$827.10
Total Annual Intermediation	\$830.84
Intermediation Capitalized <sup>2,c</sup>	\$20,770.93

#### III. Monetary Debt Impact<sup>1,2,3 Notes</sup>

	(as of 9/30/2012) (\$ Billions)
Bank note to Gov't to cover fractional reserve deposit cash shortage <sup>3,d</sup>	\$5,524.20
Commercial Bank Federal Gov.t Securities Holdings Retired <sup>3</sup>	\$1,848.40
Federal Reserve Gov't Securities Holdings Retired <sup>3</sup>	\$1,146.35
Intermediation Capitalized	\$8,518.95

#### Notes

- 1-United States government debt holdings by commercial banks expected to be credited and retired for use in funding full reserve deposits.
- 2-Bank debt to U.S. gov't estimated to be first lien at the same interest rate for all banks based on the risk free rate ( $r_f$ ) for United States, but not less than zero + a risk premium estimated at 25 basis points (0.25%).
- 3-Ignores interest rate manipulation intermediation cost since primarily funded by monetary expansion.

#### Sources

- 1-Fed Operations and M2M increases from Attachment 3 Fed Annual Monetary Intermediation Cost 1984 to 2012 using M2M Money Stock.
- 2-Intermediation Capitalized = [Annual Intermediation] ÷ [Economic Growth est. for Cap Rate (c)]
- 3-Bank Note and Treasuries Retired from attachment 5(d) United States Consolidated Balance Sheet.
- 4-GDP from St. Louis Fed economic data at <http://research.stlouisfed.org/fred2/series/GDP> Last Updated 3/28/2013
- 5-Total Central Government debt from Attachment 9 Federal Debt Securities Held by the Public and Accrued Interest.
- 6-Unemployment data from European Commission eurostat, Harmonised unemployment, Not seasonally adjusted, total of both sexes - total (teilm010) at [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=une\\_nb\\_m&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=une_nb_m&lang=en) Last Updated 5/21/2013
- 7-New York Times 7-6-2009 article "The Costs of Entrepreneurial Job Creation" estimated at \$31,169 per job at <http://boss.blogs.nytimes.com/2009/07/06/how-much-does-it-cost-to-create-a-job-by-encouraging-entrepreneurship/>

### Step 2. Estimate Monetary Intermediation Cost Impact on Economy and Jobs

There is no economic reward for monetary leverage from M&M Theorem (Corollary, risk free rate ( $r_f$ ) should be GDP growth rate, not gov't debt rate.)

#### United States Economic Indicators (as of 12/31/2012 or Fiscal 9/30/2012)

GDP Fiscal 2012 (\$ Billions) <sup>4</sup>	\$15,864.1
Total Central Government Debt (\$ Billions) <sup>5</sup>	\$11,332.3
Unemployment, 2012-12 [une_nb_m] <sup>6</sup>	11,845,000

#### Risk Free Rate ( $r_f$ ) for bank note, not less than 0%

[GDP] - [Monetary Intermediation] (Net % GDP)	
1984 to 2012 ( 29 Years)	2.55%
2003 to 2012 (10 Years)	0.77%
2008 to 2012 (5 Years)	-2.24%
Last Year 2012	-1.69%

Source: Attachment 4

#### Federal Reserve System Monetary Intermediation Cost Economic Impact Estimates

Estimation Basis	(A) Intermediation Cost		(C) Jobs Impact Estimates			(F) Unemployment Reduction %	(G) GDP % Improvement	(H) Federal Debt Reduction %
	Annual (\$ Billions)	Capitalized (\$ Billions)	Annual	Capitalized	Average			
			= (A)/NYT Est <sup>7</sup>	= (B)/\$1,000,000 (d)	= [(C)+(D)]/2	= (E)/[Unemployment]	= (A) / [GDP]	= (B)/[Fed Debt]
I. Last 10 Ave (03-12)	\$450.90	\$11,272.56	14,466,367	11,272,555	12,869,461	108.6%	2.8%	
II. Fiscal 2012 Actual	\$830.84	\$20,770.93	26,655,882	20,770,930	23,713,406	200.2%	5.2%	
III. Monetary Debt Est.	\$340.76	\$8,518.95	10,932,589	8,518,947	9,725,768	82.1%	2.1%	75.2%
<b>Averages</b>	<b>\$540.83</b>	<b>\$13,520.81</b>	<b>17,351,613</b>	<b>13,520,811</b>	<b>15,436,212</b>	<b>130.3%</b>	<b>3.4%</b>	<b>75.2%</b>

The Fed fractional reserve monetary system has an average 90.0% (1 - RR) intermediation cost (wealth transfer effect) of new money creation. This is a loss of capital from the other sectors of the economy to the banking sector. Assuming \$1,000,000 of capital value per job creation, the average \$13.5 trillion capitalized cost represents an estimated 13,520,000 private sector jobs. Per NY Times estimate the \$540.8 billion annual cost would be approximately 17,351,000 jobs. These estimates indicate the approximate cost of monetary intermediation is on the order of thirteen to fifteen million or more jobs.

## Attachment 8

## Federal Reserve Monetary Intermediation Cost to the American Economy

## Direct Issuance (Seigniorage) Monetary Intermediation

M2M<sup>1</sup> (M2 Less Small Time Deposits) Money Stock Basis Assumed

## Initial Conditions

Initial conditions would be to take GDP of economy in base year and divide it by itself and call the result 100 and the same for the money stock, take the chosen money stock indicator and divide it by itself and call it 100. Then, one possible way to allocate the productivity increase of the economy back to the economy itself in the most direct, efficient and least costly way would be for any increases in the money stock to be directly credited by the government as interest/Labor Dividend pro rata to the accounts held at the new 100% cash depositories. If the economy grows at a 2% rate then 2% seigniorage interest would be credited to the demand deposit accounts. In recessionary cycles, if any, no interest/Labor Dividend would be paid. In that sense these 100% reserve checking accounts would appear to earn interest/Labor Dividends and be the same as today's fractional reserve checking accounts that are paying effectively no interest in recessionary periods and some interest in expansionary periods. There would be no need for FDIC insurance because the depository would have 100% cash and demand deposits - it would not be possible for such a depository to not have 100% funds on hand to cover any withdrawal situation including up to 100%. Commercial Banks would no longer take demand deposits but could take CDs and make time matched funding loans and lend their own capital and continue to offer other financial services without FDIC Insurance.

**Formula** If economy declines, no Labor Dividend until fully recovered to avoid inflation.

$$\begin{aligned} \text{[% Change MS}_N] &= \frac{MS_N - MS_{N-1}}{MS_{N-1}} = \frac{\text{Money Stock}_N \times \text{GDP}_N - 1}{\text{Money Stock}_{N-1} \times \text{GDP}_0} \\ \text{[Labor Dividend (LD)]} & \quad \text{[Seigniorage]} \end{aligned}$$

Provided [GDP<sub>N</sub>] greater than any previous [GDP<sub>X</sub>] in the series 0 to N-1, if not then [% Change MS<sub>N</sub>] = 0%

**Where**

MS =Money Stock/Supply  
 GDP =Gross Domestic Product, measure of economic performance  
 N = Year, (period between measurements used)  
 LD =Labor Dividend [Seigniorage/interest]

### Economic (GDP) Performance

	Year/Period (N)										
	0	1	2	3	4	5	6	7	8	9	10
Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
GDP <sup>2</sup> (End of Year \$ Billions)	\$10,766.9	\$11,414.8	\$12,123.9	\$12,901.4	\$13,584.2	\$14,253.2	\$14,081.7	\$14,133.6	\$14,735.9	\$15,321.0	\$15,864.1
Economy GDP (Begin GDP <sub>N-1</sub> )		100.000	106.018	112.603	119.825	126.166	132.380	130.787	131.269	136.863	142.297
Economy GDP (End GDP <sub>N</sub> /GDP <sub>0</sub> )	100.000	106.018	112.603	119.825	126.166	132.380	130.787	131.269	136.863	142.297	147.341
% GDP Change (GDP <sub>N</sub> /GDP <sub>N-1</sub> - 1)		<b>6.018%</b>	<b>6.212%</b>	<b>6.413%</b>	<b>5.292%</b>	<b>4.925%</b>	<b>-1.203%</b>	<b>0.369%</b>	<b>4.261%</b>	<b>3.971%</b>	<b>3.545%</b>
% Change Cumulative (GDP <sub>N</sub> /GDP <sub>0</sub> - 1)	0.000%	6.018%	12.603%	19.825%	26.166%	32.380%	30.787%	31.269%	36.863%	42.297%	47.341%

### Money Stock Growth

	Year/Period (N)										
	0	1	2	3	4	5	6	7	8	9	10
Money Stock (Begin 1/1)		100.000	106.018	112.603	119.825	126.166	132.380	132.380	132.380	136.863	142.297
% Change (Period N from GDP% N-1)		6.018%	6.212%	6.413%	5.292%	4.925%	-1.203%	0.369%	4.261%	3.971%	3.545%
% Change Cumulative (Σ MS from 0)		6.018%	12.603%	19.825%	26.166%	32.380%	30.787%	31.269%	36.863%	42.297%	47.341%
<b>Labor Dividend (Year N)<sup>3</sup></b>		<b>6.018%</b>	<b>6.212%</b>	<b>6.413%</b>	<b>5.292%</b>	<b>4.925%</b>	<b>0.000%</b>	<b>0.000%</b>	<b>3.387%</b>	<b>3.971%</b>	<b>3.545%</b>
Money Stock (End)	100.000	106.018	112.603	119.825	126.166	132.380	132.380	132.380	136.863	142.297	147.341
Labor Div Cumulative (MS <sub>N</sub> /MS <sub>0</sub> - 1)	0.000%	6.018%	12.603%	19.825%	26.166%	32.380%	32.380%	32.380%	36.863%	42.297%	47.341%
<b>Money Stock (LD Model) (Begin)</b>		\$4,875.3	\$5,168.7	\$5,489.8	\$5,841.8	\$6,151.0	\$6,453.9	\$6,453.9	\$6,453.9	\$6,672.5	\$6,937.4
<b>Labor Dividend (Year/Period N)</b>		<b>\$293.4</b>	<b>\$321.1</b>	<b>\$352.1</b>	<b>\$309.2</b>	<b>\$302.9</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>\$218.6</b>	<b>\$264.9</b>	<b>\$245.9</b>
<b>Money Stock (LD Model) (End)</b>	\$4,875.3	\$5,168.7	\$5,489.8	\$5,841.8	\$6,151.0	\$6,453.9	\$6,453.9	\$6,453.9	\$6,672.5	\$6,937.4	\$7,183.3
<b>Money Stock (M2M Actual)</b>	\$4,875.3	\$5,246.6	\$5,587.1	\$5,681.9	\$5,857.2	\$6,195.2	\$6,743.6	\$7,326.9	\$7,894.8	\$8,924.8	\$9,843.8
<b>Variance (with LD Model)</b>	Over / (Under)	1.5%	1.8%	-2.7%	-4.8%	-4.0%	4.5%	13.5%	18.3%	28.6%	37.0%

<b>Money Stock (LD Model)/GDP Ratio</b>	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	101.2%	100.8%	100.0%	100.0%	100.0%
Variance	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	0.8%	0.0%	0.0%	0.0%

### Notes/Sources

1-M2M Money Stock data (\$ Billions, Not Seasonally Adjusted) from St. Louis Fed at

<http://research.stlouisfed.org/fred2/series/M2MNS>

Last Updated

2-GDP numbers (\$ Billions, End of Year) from St. Louis Fed economic data at

<http://research.stlouisfed.org/fred2/series/GDP>

Last Updated

3-Also known as Seigniorage. It is percent (%) increase in money stock for period N, provided the economy has total net positive growth above all previously paid Labor Dividends.

Seigniorage money supply expansions would be paid like interest, direct deposited into depository account holders accounts on a pro rata basis.

## Attachment 9

## Federal Reserve Monetary Intermediation Cost to the American Economy

### Historical Support for 100% Full Reserve Demand Deposit Banking

All of the persons listed supported a 100% reserve banking system and although many likely had different versions of the exact structure such a system might have they were all supportive of 100% reserve (time matched lending without money creation ability) banking. One version was known as "The Chicago Plan" primarily by Henry Simons was supported by hundreds of economists in the 1930's.

#### # Nobel Prize Winners

- 1 Milton Friedman Nobel Prize Economics 1976, Economics Professor primarily University of Chicago. Past President American Economic Association 1967.
- 2 James Tobin Nobel Prize Economics 1981, Economics Professor Yale and Harvard. Past President American Economic Association 1971. (March 5, 1918 – March 11, 2002)
- 3 Maurice Allais Nobel Prize Economics 1988, Economics Professor, École Nationale Supérieure des Mines de, Paris (May 31, 1911 – October 9, 2010)
- 4 Merton H. Miller Nobel Prize Economics 1990 for discovery of M&M Theorem in "Do the M&M propositions apply to Banks?" Journal of Banking & Finance 19, 1995. Past President of the American Finance Association 1976.
- 5 Frederick Soddy Nobel Prize Chemistry 1921 (believed to be first discover of 100% reserve principle in 1926, author 1934 *The Role of Money* pp. 67-68 quote "[Fractional Reserve] Banks have never been solvent".

#### # Bankers

- 1 Frank A. Vanderlip President National City Bank (1909-1919) (now Citicorp), Assistant Secretary of Treasury (1891-1901) and member of original Jekyll Island Conference for the creation of the Federal Reserve System (1864 – June 30, 1937).
- 2 Alexander Efron Originated no minimum balance checking known as Checkmaster Plan while Vice President National Safety Bank & Trust, New York, (1893 – December 24, 1950).
- 3 Mervyn King Past governor of the Bank of England, England's Central Bank in "Banking: From Bagehot to Basel, and Back Again" Speech at Buttonwood Gathering, New York City, Monday October 25, 2010.

#### # Economists

- 1 American Economic Association Leading economics society in the world, 1937 poll by Irving Fisher indicated 1,100 members had signed approval of 100% reserve banking with 96 indicating specific reservations.
- 2 Irving Fisher Economics Professor, Yale, one of the most respected economists from the first half of the 20th century advocated for 100% reserve system from 1934 for the remainder of his life. President AEA 1918. (1864-1947)
- 3 Herman E. Daly Economics Professor, University of Maryland, author in 2007 of "Ecological economics and sustainable development: selected essays of Herman Daly", p.114.
- 4 Laurence Jacob Kotlikoff Economics Professor, Boston University (January 30, 1951 – )
- 5 Jesús Huerta de Soto Ballester Economics Professor, Rey Juan Carlos University, Madrid, Spain (December 23, 1956 – )
- 6 Jörg Guido Hülsmann Economics and Law Professor, Université d'Angers, Angers, France
- 7 Richard A. Werner International Banking Professor, University of Southampton, England
- 8 Joseph Huber co-author with James Robertson of *Creating New Money: A Monetary Reform for the Information Age*, 2000, chair of economic and environmental sociology at Martin Luther University of Halle-Wittenberg, Germany (1948-).
- 9 James Robertson co-author with Joseph Huber of *Creating New Money: A Monetary Reform for the Information Age*, 2000, British political and economic thinker/activist (born August 11, 1928).
- 10 Lauchlin Currie Assistant to Former Federal Reserve Chairman Marriner Eccles during Roosevelt administration (October 8, 1902 – December 23, 1993).
- 11 Murray Rothbard Notable Austrian School Economist (March 2, 1926 – January 7, 1995)
- 12 Ludwig von Mises Prominent Early Austrian School Economist (September 29, 1881 – October 10, 1973)
- 13 Henry C. Simons Economics and Law Professor, U. Chicago and a primary author of the "Chicago Plan" 100% banking reserves plan letter March 1933 on file in Roosevelt Library in Hyde Park, NY.
- 14 Garfield V. Cox Finance Professor and Dean of the Chicago School of Business (1945-52), Past President of the American Finance Association 1954. (May 4, 1893 – )
- 15 Aaron Director Economics and Law Professor, U. Chicago signed 100% banking reserves letter March 1933 on file in Roosevelt Library in Hyde Park, NY (1901 – September 11, 2004).
- 16 Albert Gailord Hart Economics professor at Columbia University, supported "Chicago Plan" signing March 1933 Letter on file in FDR Library in Hyde Park, NY. Past Vice President American Economic Association 1962.
- 17 Frank H. Knight Economics Professor, U. Chicago (1922-52) signed 100% banking reserves letter March 1933 on file in FDR Library in Hyde Park, NY. Past President AEA 1950. (11/7/1885 - 4/15/1972).
- 18 Lloyd W. Mints Economics professor, U. Chicago signed 100% banking reserves letter March 1933 on file in Roosevelt Library in Hyde Park, NY (1888 – ).
- 19 Henry Schultz Economics professor, U. Chicago signed 100% banking reserves letter March 1933 on file in FDR Library in Hyde Park, NY (9/4/1893 – 11/26/1938). One of 16 Econometric Society founding members.
- 20 Frank D. Graham Economics and International Finance Professor Princeton (1890-1949). Frank D. Graham Memorial Lecture at Princeton is named in his honor.
- 21 Charles R. Whittlesley Economics professor at Princeton and Wharton School, U. Penn (1900-79).
- 22 Richard A. Lester Labor Economics Professor, Former Chairman Princeton Department of Economics author "Gold Wharney, Bank Money, and Real Money" VQR Spring 1941 (3/1/1908 – 12/31/1997). AEA VP 1961.
- 23 Earl J. Hamilton Economics Professor Duke (1927-44) and U. Chicago (1947-67), also editor of the Journal of Political Economy for seven years and president of the Economic History Association 1951-52. (1899 – 1989).
- 24 Willford I. King Economics Professor, NYU 1927-45 (1880-1962).
- 25 Charles O. Hardy Associate Economist at Fed during Marriner Eccles Roosevelt era Chairmanship, fellow at Brookings Institution and author including "Credit Policies of the Federal Reserve System in 1932.
- 26 John R. Commons Economics Professor and Labor Historian University of Wisconsin-Madison. Past President of the American Economic Association 1917. (October 13, 1862 – May 11, 1945).
- 27 James W. Angell Economics Professor Columbia University (1898-1986).

#### # Government Members

- 1 Robert L. Owen U.S. Senator (D-OK) 1907-25, Chairman Senate Committee on Banking and Currency (1913-1919) and Senate sponsor of the Glass-Owen Bill (H.R. 7837) which became the Federal Reserve Act signed into law 12/23/1913, (February 2, 1856 – July 19, 1947).
- 2 Henry Wallace 33rd Vice President of the United States (1941-45), Secretary of Agriculture (1933-40) and Secretary of Commerce (1945-46) under Roosevelt Administration
- 3 Paul Howard Douglas U.S. Senator from Illinois 1948-66 and former Univ of Chicago economics professor supported 100% reserve banking including co-authoring *A Program for Monetary Reform* in July 1939. President AEA 1947. (3/26/1892 – 9/24/1976)
- 4 Bronson Cutting U.S. Senator from New Mexico (interim 1928 and 1929-35) introduced 100% reserve banking legislation in Senate June 6, 1934 (S. 3744)(June 23, 1888 – May 6, 1935).
- 5 Wright Patman U.S. Congressman (D) from 1st District Texas (1929-1976) and chair of the House Committee on Banking and Currency (1965-75) introduced legislation in House in 1934 (H.R. 9855)(August 6, 1893 – March 7, 1976).
- 6 Jerry Voorhis U.S. Congressman (D) from 12th District California 1937-1947. Voorhis supported 100% reserve banking and teamed with Wright Patman to force Fed to pay most interest earned on federal securities to the U.S. Government (April 6, 1901 – September 11, 1984).
- 7 T. Alan Goldsborough U.S. Congressman (D) from 1st District Maryland (1921-1939) introduced legislation to end fractional reserve banking system in 1937 (HR 31) (September 16, 1877 – June 16, 1951).
- 8 Ron Paul U.S. Congressman from 14th District Texas (1997-2012) and two time Republican candidate for President.
- 9 Dennis J. Kucinich U.S. Congressman from 10th District Ohio (1997-2012).
- 10 Douglas Carswell MP in British Parliament

#### # Notable Historic Supporters

- 1 Thomas Edison Greatest Inventor of 20th Century (February 11, 1847 – October 18, 1931).
- 2 David Hume One of the most important figures in the history of Western philosophy in *Of Money* 1752.
- 3 Robert de Fremery Respected financial writer and author *Money and Freedom* 1955.
- 4 Gertrude M. Coogan First woman to receive MBA from Northwestern, earned in 1922 with special honors and author of *Money Creators* 1935.

#### SOURCES:

- 1-Robert de Fremery from *Money and Freedom*, 1954 at <http://www.wcf.com/mandi/>
- 2-"Irving Fisher and the 100% Reserve Proposal", William Allan, UCLA, 1993 at <http://www.fullreservebanking.com/papers.htm>
- 3-"The 'Chicago Plan' and New Deal Banking Reform", Ronnie J. Phillips, 1992 at <http://www.levyinstitute.org/pubs/wp/76.pdf>



**Attachment 10****Federal Reserve Monetary Intermediation Cost to the American Economy Formulas****Symbol Key**

- GDP = Gross Domestic Product (\$), measure of economic output of economy.  
 MS = Money Stock (\$) at end of given period X (M2M-NS used for calculations).  
 N = Last Observation in series 0 to N, assumed year but could be quarterly or other selected period.  
 RR = % Reserve Requirement for Federal Reserve Member Banks. [% demand deposit accounts banks must hold in reserve for withdrawals from demand deposit (checking/debit card type) liabilities].  
 X = Any specific observation in time series 0 to N.

**Annual Monetary Intermediation Cost (\$) of Federal Reserve Banking System Estimate**

$$= [(MS_N) - (MS_{N-1})] \times [1 - RR(\%)] + [\text{Net Annual Operating Expenses}]$$

**Annual Monetary Intermediation Cost (%) of Federal Reserve Banking System Estimate**

$$= \frac{[(MS_N) - (MS_{N-1})] \times [1 - RR(\%)] + [\text{Net Annual Operating Expenses}]}{[GDP_N]}$$

**Economy Increase/Change Formula**

$$[\% \text{ Change } GDP_N] = \frac{[GDP_N - GDP_{N-1}]}{[GDP_{N-1}]}$$

**Money Stock Increase Formulas**

$$[\% \text{ Change Money Stock}_N] = \frac{[\text{Money Stock}_0] \times [GDP_N] - 1}{[\text{Money Stock}_{N-1}] \times [GDP_0]}$$

[Interest]  
[Seigniorage]

Provided if [% Change Money Stock<sub>N</sub>] less than 0%, then 0%.

(Positive growth condition, [GDP<sub>N</sub>] must be greater than any previous [GDP<sub>x</sub>] in the series 0 to N-1 for Payment of Labor/Productivity Dividend)

Money stock increase will remain at zero [Money Stock<sub>N-1</sub>] until economy fully recovered from GDP decline. Since people receive seigniorage, creation and first use of new money, directly on a pro rata basis there is no economic benefit of inflating the money stock during periods of economic decline. [Money stock is increased now via direct wealth transfer from the other sectors of the economy to the banking system, making recessions worse for everyone but the banking sector.]

$$[\text{Money Stock}_N] = [\text{Money Stock}_{N-1}] \times \frac{[GDP_N]}{[GDP_{N-1}]}$$

Provided if [% Change Money Stock<sub>N</sub>] less than 0%, then [Money Stock<sub>N</sub>] = [Money Stock<sub>N-1</sub>].

(Positive growth condition, [GDP<sub>N</sub>] must be greater than any previous [GDP<sub>x</sub>] in series 0 to N-1 for [Money Stock<sub>N</sub>] increase)